

**Mainland Chinese Women's Perception of Risk of Cervical Cancer: A Model to
Understand Factors Determining Cervical Screening Behaviour**

GU, Can

**A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy
in
Nursing**

The Chinese University of Hong Kong

September, 2010

UMI Number: 3483879

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI 3483879

Copyright 2011 by ProQuest LLC.

All rights reserved. This edition of the work is protected against unauthorized copying under Title 17, United States Code.



ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

Thesis/Assessment Committee

Professor Dominic Chan (Chair)

Professor Carmen W. H. Chan (Thesis Supervisor)

Professor Sheila F. Twinn (Thesis Co-supervisor)

Professor Ann Shiu (Committee Member)

Professor Carol E. Smith (External Examiner)

PREFACE

	Page
Abstract (English).....	vi
Abstract (Chinese).....	vii
Acknowledgements.....	ix
Publications and Presentations.....	x
Table of Contents.....	xi
Appendices.....	xvii
List of Tables.....	xix
List of Figures.....	xx

ABSTRACT

Background: Cervical cancer is the most common type of cancer, and is the second most common cause of cancer death in women in mainland China. Cervical screening is the most important intervention for the secondary prevention of cervical cancer. Theories of health behaviour and empirical research highlight risk perception as a significant factor motivating people to opt for cancer screening. However, little is known about the risk perception of cervical cancer and the factors influencing the screening participation of women in mainland China.

Aim: To explore the knowledge and the perception of the risk of cervical cancer, identify the factors determining cervical screening behaviour, and develop a model to understand cervical screening behaviour among women in mainland China.

Methods: A mixed method design consisting of two phases was used, employing both quantitative and qualitative methods of data collection. First, a cross-sectional survey was conducted to collect a baseline assessment of women's knowledge of cervical cancer and screening, their perceptions of the risk of cervical cancer, and the relationship between these factors and their cervical screening behaviour. Findings from this phase also guided the purposive sampling of participants in phase two.

Then in phase two, qualitative research was conducted using semi-structured interviews of 27 women, 16 of whom had been screened and 11 had not. The interview structure was based on an initial analysis of the data from phase one and from a review of the related literature. The data from the interviews were analyzed using latent content analysis, involving an interpretative reading of the symbolism underlying the surface structure in the text. The audio recordings of the interviews were transcribed verbatim in Chinese, and then the key phrases which were

important for the objectives of the study were identified. The key phrases and words were grouped according to their commonality of meaning. Then, these groups of data were sorted and classified to create categories and sub-categories, which were mutually exclusive, explicit and accurate without overlapping.

Results: The findings from phase one demonstrated that the availability of an organized screening programme was a major motivator for women to opt for cervical screening. Multivariate analysis shows that having children (OR=2.57, p=0.026), a perception that visiting doctors regularly is important for health (OR=2.66, p=0.025), average (OR=4.84, p=0.006) and high levels of knowledge about cervical screening (OR=9.66, p=0.001) were significantly associated with having been screened in the previous three years.

Two themes emerged from the qualitative data from phase two. Theme I was that perceptions of cervical cancer and cervical screening included five categories: the perceived effects of suffering from cervical cancer; the perception of cervical screening; a lack of understanding about cervical cancer and screening; the perceived risk of cervical cancer; and factors related to the cultural beliefs system. Theme II was that the institutional and health care practitioner system included two categories: availability of an organised physical examination programme and the role of the health care practitioner in encouraging cervical screening utilization.

A model was developed in this study to understand women's cervical screening behaviour. It revealed that the interaction among institutional factors, risk appraisal, coping appraisal, and health beliefs and cultural factors contributed to the complex nature of screening behaviour among Chinese women. The institutional component provided the contextual factors within which women perceived the risk of cervical cancer, perceived the practice of cervical screening, and decided to take or not to take cervical screening. Risk appraisal provided the premise factor that induces

women to seek coping strategies to reduce or remove the risk. During the process of coping appraisal, women's motivation to have cervical screening could be increased or decreased as the perceived benefits and costs of screening interacted with each other. The importance of the women's health beliefs and cultural factors was reflected in the way that they were affected by their notions of health behaviour and their cultural beliefs about cervical cancer risk and cervical screening participation. Commitment to participate in screening was a reinforcing factor inducing women to take up an offer of cervical screening.

Conclusion: This study provides evidence of the complex factors influencing cervical screening behaviour and contributes new knowledge to the understanding of cervical screening behaviour within the Chinese cultural context. It further informs programmes for the promotion of cervical screening among this population.

論文摘要

研究背景：宮頸癌是女性常見的一種惡性腫瘤，是中國大陸女性排名第二位的癌症死亡原因。參加宮頸癌篩查是最重要的宮頸癌二級預防手段。健康行為理論和實證研究的資料都強調對疾病發生的危險感知是推動人們參加腫瘤篩查的一個重要因素。但是目前對中國大陸女性對宮頸癌危險性的認識，以及影響宮頸癌篩查行為的因素卻知之甚少。

研究目的：本研究的目的是探索中國大陸女性對宮頸癌危險性的認識，探索影響宮頸癌篩查行為的因素，以及發展一個模式來理解中國大陸女性的宮頸癌篩查行為。

研究方法：本研究採用兩階段的混合研究法，混合應用量性和質性的資料收集方法。首先，採用橫斷面調查方法收集關於中國婦女宮頸癌和宮頸癌篩查的知識，對宮頸癌的危險性的認識，以及這些因素和宮頸癌篩查行為的關係的基礎測量資料。這個階段的結果將指導第二階段的目的性抽樣。

接下來採用質性研究的方法，對共 27 名參與者包括 16 名參加過宮頸癌篩查的婦女和 11 名沒有參加過宮頸癌篩查的婦女進行了半結構式的訪談。訪談中所使用的訪談計畫是從對第一階段的資料進行的初步分析，以及相關文獻回顧的基礎上發展而來的。訪談資料採用潛在內容分析方法進行分析。面談的錄音被逐字抄錄成中文的書面記錄，然後研究者在書面記錄中在與研究目的有關的關鍵短語下劃線。然後表達相同意思的關鍵短語和詞語被歸類成一組，研究者把成組的資料分類，界定，最後形成主題和次主題。這些主題和次主題是互相排斥的，明晰的，準確的，沒有重疊的。

研究結果：第一階段的結果顯示有組織的健康體檢活動是女性進行宮頸癌篩查的一個重要的推動因素。多變數分析發現女性是否在過去的三年內參加過宮頸癌篩查和以下三個因素有著明顯的統計學關聯：有孩子(OR=2.57, p=0.026)，認

為規律的看醫生對健康很重要(OR=2.66, p=0.025), 一般或較好的關於宮頸癌篩查的知識(OR=9.66, p=0.001)。

從第二階段的質性研究資料產生了兩個部分的結果。第一個部分是對宮頸癌和宮頸癌篩查的認識, 這個部分包括五個主題: 對罹患宮頸癌的影響的認識, 對宮頸癌篩查的認識, 對宮頸癌和宮頸癌篩查缺乏瞭解, 對宮頸癌危險性的認識, 以及和文化信仰相關的因素。第二個部分是關於機構制度和健康護理人員的因素, 這個部分包括兩個主題: 有組織的健康體檢活動和健康護理人員在推動宮頸癌篩查中的角色。

本研究發展的模式表明機構制度因素, 對危險性的評估, 對應對方式的評估, 健康信念和文化因素的交互作用決定了中國女性宮頸癌篩查行為的複雜性。機構制度因素提供了婦女感知宮頸癌的危險性, 感知宮頸癌篩查, 以及決定參加或者不參加篩查的背景因素。危險性的評估提供了婦女認為有必要採取應對策略去降低或者消除這種危險性的前提因素。在對應對方式評估的過程中, 隨著婦女對參加宮頸癌篩查的好處的感知和對參加宮頸癌篩查的代價的感知交互作用, 她們參加宮頸癌篩查的動機也隨之增強或者減弱。健康信念和文化因素的重要性體現在婦女的行為被他們自身的健康行為觀念, 以及她們所持有的與宮頸癌的危險性和宮頸癌篩查有關的文化信仰所影響。引導婦女承擔參加宮頸癌篩查的義務是加強婦女宮頸癌篩查行為的一個重要因素。

研究結論: 本研究的證據顯示一系列複雜的因素影響宮頸癌篩查行為。本研究對在中國文化的背景下理解中國婦女的宮頸癌篩查行為提供了新的認識。研究還為在中國女性中進一步推動宮頸癌篩查的計畫指明了方向。

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude and sincere thanks to my supervisors, Professor Carmen Chan and Professor Sheila Twinn, for their thoughtful guidance and insightful comments and their constant encouragement and support throughout the course of this study. Their expert feedback and support has guided me on a path leading to a higher level of academic work. Without their assistance I would never have completed this study.

Special thanks are given to Professor Dominic Chan for his constructive advice and kind support in completion of this study. Special thanks are also due to Dr. Judy Siu, and Dr. K. C. Choi whose constructive advice and valuable comments on the completion of this study, are deeply appreciated. Deep appreciation is also extended to the staff of the Nethersole School of Nursing of the Chinese University of Hong Kong for their support and words of encouragement throughout my study period in Hong Kong.

I am most grateful to the women who participated in this study. Without their cooperation and support, I would have been unable to achieve my study goals. Special acknowledgements are also given to my classmates in the Nethersole School of Nursing – Ms. Cheng Hui Lin, Ms. Yu Ming Ming, and Ms. Cheng Ho Yu –for their encouragement and help throughout the study period.

Finally I would like to express my deep gratitude to my family for their love and never-ending support during the completion of my study in Hong Kong. My husband and my little son have been unstinting in their support and have shown extraordinary tolerance during the preparation of this thesis. My parents have taken care of my little son and have provided tremendous support, giving me the time and space to persevere throughout the many hours of work needed to complete this thesis.

PUBLICATIONS AND PRESENTATIONS

The following original articles arose from the research reported in this thesis:

Gu, C, Chan, C. W. H., & Twinn, S. (In press). How sexual history and knowledge of cervical cancer and screening influence Chinese women's screening behavior in Mainland China. *Cancer Nursing*.

Gu, C, Chan, C. W. H., Twinn, S., & Choi, K.C. The influence of knowledge and perception of the risk of cervical cancer on screening behaviour in mainland Chinese women. *Journal of Advanced Nursing*, undergoing review.

TABLE OF CONTENTS

Contents	Page
CHAPTER ONE. INTRODUCTION	
1.1 Introduction	1
1.2 Prevalence and incidence of cervical cancer	1
1.3 Natural history of cervical cancer development	2
1.4 Risk factors for cervical cancer	3
1.4.1 HPV infection	4
1.4.2 Sexual risk factors	5
1.4.3 Other risk factors	8
1.5 Preventive strategies for cervical cancer	9
1.5.1 Primary prevention	10
1.5.1.1 Lifestyle change	10
1.5.1.2 Sexual-behavioural strategies	10
1.5.1.3 HPV testing	11
1.5.1.4 HPV vaccine	12
1.5.2 Secondary prevention- Cervical cancer screening	13
1.6 Significances and aims of the study	16
1.7 Overview of the thesis	17
CHAPTER TWO. BACKGROUND	
2.1 Introduction	19
2.2 Cervical screening among Chinese women	19
2.3 Various barriers for screening utilization among Chinese women	20
2.3.1 Structural barriers	20
2.3.2 Socio-demographic barriers	21
2.3.3 Knowledge of cervical cancer and cervical screening	23
2.3.4 Barriers related to culture and belief systems	25
2.3.5 The role of health providers in facilitating screening utilization	28
2.3.6 Risk perception of cervical cancer	29
2.4 Risk perception research and theoretical models related	30
Protection Motivation Theory	31
2.5 Summary	33
CHAPTER THREE. RISK PERCEPTION OF CERVICLA CANCER AND CERVICAL SCREENING BEHAVIOUR: LITERATURE REVIEW	
3.1 Introduction	35
3.2 Literature search strategies	35
3.3 Critically review of individual studies	37

3.3.1 Study characteristics	37
3.3.2 Subject characteristics	49
3.3.3 Measurement strategies of risk perception	49
3.3.4 Outcome characteristics	52
3.3.4.1 Women's risk perception of cervical cancer	52
3.3.4.2 Women's risk perception and cervical screening behaviour	54
3.4 Implications for future work and justifications for the current study	56
3.4.1 Theoretical framework	56
3.4.2 Study variables	59
3.4.3 Study population	60
3.4.4 Design	62
3.5 Overview of mixed methods research	65
3.7 Summary of the chapter	67

CHAPTER FOUR. METHODOLOGY

4.1 Introduction	69
4.2 Theoretical framework of the study	69
4.3 Research aims and objectives	70
4.3.1 Aims	70
4.3.2 Objectives	70
4.4 Definitions of terms	71
4.5 Research design	71
4.5.1 Design	71
4.5.2 Rationales for the selected design	73
4.6 Settings	74
4.7 Phase one Quantitative component	74
4.7.1 Sample and sampling	75
4.7.2 Questionnaire	76
4.7.2.1 Section one: women's participation pattern for cervical screening	76
4.7.2.2 Section two: Women's perception of body health	77
4.7.2.3 Section three: Women's knowledge about cervical cancer and cervical screening	77
4.7.2.4 Section four: Protection Motivation Theory measures	78
4.7.2.5 Section five: Socio-demographic information, sexual history, & willingness to participate in phase two	81
4.7.3 Data collection procedure	82
4.7.4 Data analysis	83
4.7.5 Issues of validity and reliability	84
4.7.6 Pilot study of phase one	85
4.8 Phase two: Qualitative component	85
4.8.1 Sample and sampling	85
4.8.2 Data collection procedure	88
4.8.3 Data collection method	90
4.8.4 Data analysis	91

4.8.4.1 Data preparation	92
4.8.4.2 Content Analysis	92
4.8.5 Issues of validity and reliability	95
4.8.6 Pilot study of phase two	97
4.9 Integration of data from phase one and two of the study	98
4.10 Ethical consideration for phase one and two of the study	101

CHAPTER FIVE. FINDINGS OF PHASE ONE OF THE STUDY

5.1 Introduction	103
5.2 Recruitment of participants	103
5.3 Socio-demographic information and sexual history of participants	104
5.4 Women's participation pattern of cervical screening	105
5.5 Reasons for women not being screened	106
5.6 Perception related to body health & health-related behaviours	107
5.7 Women's knowledge about cervical cancer and screening	108
5.7.1 Women's knowledge about cervical screening	109
5.7.2 Women's knowledge about risk factors for cervical cancer	110
5.8 Protection-motivation theory measures	112
5.8.1 Perceived risk	113
5.8.2 Perceived severity	114
5.8.3 Fear arousal	114
5.8.4 Response efficacy and response cost	114
5.8.5 Self efficacy	115
5.8.6 Protection motivation	116
5.8.7 Factors associated with perceived risk	116
5.9 Factors associated with women's screening behaviour	116
5.10 Women's willingness to take part in phase two study	119
5.11 Purposive sampling for phase two of the study	120
5.12 Interpretation of findings	121
5.12.1 Women's participation pattern of cervical screening	122
5.12.2 Protection Motivation Theory (PMT) variables	123
5.12.2.1 Risk appraisal (perceived risk, perceived severity, & fear arousal)	123
5.12.2.2 coping appraisal (response cost, self efficacy, & response efficacy)	125
5.12.2.3 Protection motivations to take part in screening	126
5.12.3 Other significant factors influencing women's cervical screening behaviour	128
5.12.3.1 Marriage and childbirth	128
5.12.3.2 Knowledge about cervical cancer and screening	130
5.12.3.3 Cultural factors	131
5.13 Summary of the chapter	133
5.14 Implications for phase two study	134

CHAPTER SIX. RESULT OF PHASE TWO OF THE STUDY

6.1 Introduction	136
6.2 Socio-demographic characteristics of the participants	137
6.3 Categories identified from content analysis	139
6.4 Theme I: Perception of cervical cancer & cervical screening system	142
6.4.1 Perceived influence of suffering from cervical cancer	142
6.4.1.1 Perception of cervical cancer as a deadly disease	142
6.4.1.2 Jeopardizing sexual and marital relationship	143
6.4.1.3 Physical and psychological suffering	144
6.4.1.4 Financial burden on the family	144
6.4.2 Perception of cervical screening	144
6.4.2.1 Perceived benefit of cervical screening	145
6.4.2.2 Inconsistent knowledge about cervical screening	145
6.4.2.3 Embarrassment and physical discomfort	146
6.4.2.4 Cervical screening is unnecessary	147
6.4.3 Lack of understanding about cervical cancer and screening	147
6.4.3.1 Feelings of uncertainty	148
6.4.3.2 Misinformation about cervical screening	148
6.4.3.3 Limited information about cervical cancer	149
6.4.4 Perception of risk associated with cervical cancer	149
6.4.4.1 Understanding of risk factors	150
6.4.4.2 Perceived risk related to sexual partner	151
6.4.4.3 Perceived personal risk of cervical cancer	152
6.4.4.4 Personal connection to cervical cancer risk	153
6.4.4.5 Emotional response associated with cervical cancer risk	154
6.4.5 Factors related to cultural belief system	154
6.4.5.1 The social and cultural meaning of the womb	155
6.4.5.2 Moral obligations associated with cervical screening	156
6.4.5.3 Procrastinating about screening participation	157
6.4.5.4 Social pressure associated with cervical cancer	157
6.4.5.5 Notions about factors related to feminine health	158
6.5 Theme II: Institutional & health care practitioner system	159
6.5.1 Organized health examination programmes	159
6.5.1.1 The role of organized programme in facilitating screening	159
6.5.1.2 Perceived structural barrier associated with organized programmes	160
6.5.1.3 Lack of programme for unmarried women	161
6.5.1.4 Recommendations for educational campaign	161
6.5.2 The role of health care practitioner in cervical screening utilization	162
6.5.2.1 Negative perception of health care practitioners	162
6.5.2.2 Communication with health care practitioners	163
6.5.2.3 Preference within the screening service	164
6.6 Comparison between women who had or not had taken a cervical screening	164
6.6.1 Theme I: perception of cervical cancer & cervical screening	165

system	
6.6.2 Theme II: Institutional & health provider system	170
6.7 Interpretation of the phase two findings	172
6.7.1 Perception of cervical cancer & cervical screening system	172
6.7.1.1 Perceived influence of suffering from cervical cancer	173
6.7.1.2 Perception of cervical screening	174
6.7.1.3 Lack of understanding about cervical cancer and screening	175
6.7.1.4 Perception of risk associated with cervical cancer	176
6.7.1.5 Factors related to cultural belief system	177
6.7.2 Institutional & health care practitioner system	179
6.7.2.1 Organized health examination programmes	179
6.7.2.2 The role of health care practitioner in cervical screening	181
utilization	
6.8 Summary	181

CHAPTER SEVEN. DISCUSSION

7.1 Introduction	184
7.2 Analysis of the experiences of using the mixed method in this study	185
7.2.1 “Qualitative and quantitative results converged; in this case, these results lead to the same conclusion.”	186
7.2.2 “Qualitative and quantitative results were divergent or contradictory.”	186
7.2.3 “Qualitative and quantitative results related to different objectives or phenomena but were complementary to each other and thus can be used to supplement each other.”	188
7.3 Socio-demographic backgrounds & sexual history of subjects	190
7.4 Women’s participation pattern of cervical screening	191
7.5 Women’s knowledge and perception of cervical cancer screening	193
7.6 Women’s knowledge and perception of risk and personal risk factors in relation to cervical cancer	195
7.6 Understanding of Chinese women’s perception of risk of cervical cancer	195
7.6.1 Perceived influence of suffering from cervical cancer	195
7.6.2 Perceived level of personal risk of cervical cancer	196
7.6.3 Personal connection to cervical cancer risk	198
7.6.4 Emotional response associated with cervical cancer risk	199
7.6.5 Knowledge and perception of personal risk factors	200
7.7 Factors influencing Chinese women’s cervical screening behaviour	202
7.7.1 Institutional & health care practitioner system	203
7.7.1.1 Women’s perception of organized programme	203
7.7.1.2 Women’s perception of health care practitioners	205
7.7.2 Health beliefs and cultural factors	206
7.8 Summary	207

CHAPTER EIGHT. A MODEL TO UNDERSTAND CHINESE’S WOMEN’S CERVICAL SCREENING BEHAVIOUR

8.1 Introduction	209
------------------	-----

8.2 Risk appraisal	212
8.2.1 Impact of cervical cancer	212
8.2.2 Beliefs about personal risk factors	213
8.2.3 Perceived level of personal risk of cervical cancer	214
8.2.4 Personal connection to cervical cancer risk	214
8.2.5 Emotional response to cervical cancer risk	215
8.3 Coping appraisal	216
8.3.1 Screening benefit	216
8.3.2 Screening cost	217
8.4 Health beliefs and cultural factors	218
8.4.1 Cultural beliefs about health and cancer	218
8.4.2 Commitment	220
8.4.1 Social role of women	221
8.4.2 Beliefs about health behaviour	222
8.5 Institutional factors	224
8.5.2 Organized programme	224
8.5.3 Health care practitioners	225
8.6 Comparison between PMT model and the present model	225
8.7 Summary	228
 CHAPTER NINE. CONCLUSION	
9.1 Introduction	230
9.2 Limitations	230
9.3 Implications for nursing practice	234
9.4 Recommendations for future study	239
9.5 Conclusion	242
REFERENCES	244
APPENDICES	268

APPENDICES

		Page
Appendix 1	Sample search strategy	268
Appendix 2	Permission Letter for use of knowledge scale	269
Appendix 3a	English version – Cover page of questionnaire	270
Appendix 3b	Chinese version – Cover page of questionnaire	271
Appendix 4a	English version – Section one: Women’s participation pattern for cervical screening	272
Appendix 4b	Chinese version – Section one: Women’s participation pattern for cervical screening	274
Appendix 5a	English version – Section two: Women’s perception of body health	276
Appendix 5b	Chinese version – Section two: Women’s perception of body health	277
Appendix 6a	English version – Section three: Women’s knowledge about cervical cancer and cervical screening	278
Appendix 6b	Chinese version – Section three: Women’s knowledge about cervical cancer and cervical screening	279
Appendix 7a	English version – Section four: Protection motivation theory measures	280
Appendix 7b	Chinese version – Section four: Protection motivation theory measures	284
Appendix 8a	English version – Section five: Socio-demographic information, sexual history, & willingness to participate in phase two	287
Appendix 8b	Chinese version – Section five: Socio-demographic information, sexual history, & willingness to participate in phase two	290
Appendix 9a	English version – Interview schedule (Phase two)	293
Appendix 9b	Chinese version – Interview schedule (Phase two)	295
Appendix 10	The development of the category ‘Perception of cervical screening’	297
Appendix 11	Ethics Approval from the Survey and Behavioural Research Ethics Committee, CUHK	301
Appendix 12a	English version – Consent form (Phase one)	302

Appendix 12b	Chinese version – Consent form (Phase one)	304
Appendix 13a	English version – Information sheet (Phase one)	305
Appendix 13b	Chinese version – Information sheet (Phase one)	306
Appendix 14a	English version – Consent form (Phase two)	307
Appendix 14b	Chinese version – Consent form (Phase two)	308
Appendix 15a	English version – Information sheet (Phase two)	309
Appendix 15b	Chinese version – Information sheet (Phase two)	310

LIST OF TABLES

Table		Page
Chapter Three. Risk perception of cervical cancer and cervical screening behaviour: A critical review		
Table 1	Table 1 Summary of research studies	38
Chapter four. Methodology		
Table 2	No. of items and definitions of Seven domains of PMT model	81
Chapter five. Result of phase one of the study		
Table 3	Background characteristics of the study sample	105
Table 4	Screened women's participation pattern of cervical screening	106
Table 5	Reasons for non-screened women not taking part in screening	107
Table 6	Perception related to body health & health-related behaviours of the screened and non-screened women	108
Table 7	Knowledge about cervical screening	110
Table 8	Knowledge about risk factors for cervical cancer	111
Table 9	Comparison of seven domain of PMT measures between screened and non-screened women	113
Table 10	Comparison of group frequencies of women's responses to perceived risk items	114
Table 11	Factors associated with having attended for cervical screening in the previous three years	118
Table 12	Background information of women who were or were not willing to be interviewed	120
Table 13	Comparison of group frequencies of women's responses to perceived absolute risk item	121
Chapter six. Findings of phase two of the study		
Table 14	The socio-demographic characteristics and sexual history of the participants	138
Table 15	Comparison of knowledge scores and seven domain of PMT measures between screened and non-screened women	139
Table 16	Categories and subcategories from Data Analysis	141

LIST OF FIGURES

Figure		Page
Chapter Eight. A model to understand Chinese women's cervical screening behaviour		
Figure 1	Model to understand Chinese women's cervical screening behaviour	211

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Cervical cancer remains a critical public health problem, being the second most common type of cancer in women worldwide. The disproportionate prevalence of cervical cancer in Asian women is mainly due to lack of screening, which is currently the best available method for reducing the incidence and mortality of cervical cancer. However, existing data suggest that Chinese women tend not to have regular screenings. Since theories of health behaviour and empirical research highlight risk perception as a significant factor for people adopting cancer screening, it is essential to understand mainland Chinese women's knowledge and perception of cervical cancer risk and its influence on their cervical screening behaviour.

This chapter starts with an overview of the topic of the study in terms of the prevalence and incidence of cervical cancer, its natural history, its risk factors, and preventive strategies. Particular focus is placed on the secondary prevention of cervical cancer, namely cervical cancer screening, which is currently the most important method of cervical cancer prevention. Finally, the significance and aims of the study and an overview of the thesis are presented.

1.2 Prevalence and Incidence of Cervical Cancer

Despite the introduction of the human papillomavirus (HPV) vaccine, cervical cancer remains an important public health problem. It is currently the second most common type of cancer and the third most common cause of cancer deaths in women, with an estimated 493,000 new cases and 274,000 deaths annually worldwide (Parkin,

Bray, Ferlay, & Pisani, 2005; World Health Organization, 2005). According to the American Cancer Society (2006), 10,370 women were diagnosed with cervical cancer and 3,710 women died of it in 2005. According to systematic sources compiled by the International Agency for Research on Cancer (IARC) for the year 2000, in terms of the number of cases, Asia contributes nearly a quarter of a million new cases per year, and the next highest rates are found in countries in Central and South America (Ferlay, Bray, Pisani, & Parkin, 2001). The disproportionate prevalence of cervical cancer in developing countries and elsewhere in medically underserved populations is mainly due to a lack of screening (American Cancer Society, 2006). In Hong Kong, the age-standardized incidence rate of cervical cancer was 7.7 per 100 000 women and the age-standardized incidence rate of death with cervical cancer was 2.3 per 100 000 women in 2007, which was comparatively low in Asia but remained higher than other western countries (Hong Kong Cancer Registry, 2007).

Evidence from the Chinese Centre for Disease Control and Prevention (2005) reported that cervical cancer was the most common type of cancer and ranks the second most common cause of cancer deaths in women in mainland China. An estimated 131,500 women are diagnosed with cervical cancer and 30,000 women die of the disease annually in mainland China (Ministry of Health of the People's Republic of China, 2009). However, reports and detailed data from epidemiological research on cervical cancer in individual districts and provinces in China are limited.

1.3 Natural History of Cervical Cancer Development

Cervical cancer is one of the few cancers with a readily detectable and treatable precursor stage. The natural history of the development of cervical cancer has been better understood in recent years. There are two distinct conditions, 'carcinoma in

situ' and 'invasive cervical cancer'. The former refers to the development of pre-malignant lesions, whilst the latter is a more advanced stage in which a tumour is present (American Society for Colposcopy & Cervical Cancer Pathology, 2006). Pre-invasive lesions and early invasive cervical cancer are usually asymptomatic, and these will only be detected by screening (Ansink, 2007). Most cervical pre-cancers develop slowly, so nearly all cases can be prevented if a woman is screened regularly (American Cancer Society, 2006). Most HPV infections disappear spontaneously within two to four years, and only a small percentage progress to cervical pre-cancer, histologically confirmed cervical intraepithelial neoplasia grade 3 (CIN), or carcinoma in situ. Precancerous changes may progress to invasive cervical cancer if not detected and treated (American Cancer Society, 2006). Symptoms of cervical cancer include postcoital bleeding, irregular bleeding, and vaginal discharge in the early stages. In the case of advanced disease, additional symptoms such as voiding problems, low back pain, pain in one leg, lymphoedema, weight loss, and uraemia may occur (Ansink, 2007).

1.4 Risk Factors for Cervical Cancer

Aetiological associations and possible risk factors for cervical cancer have been extensively studied. The predominant risk factor is well established to be persistent infection with one of the oncogenic human papillomavirus (HPV) types (Cuschieri et al., 2005; Munoz et al., 2003; Bosch, Lorincz, Munoz, Meijer, & Shah, 2002). Sexual risk behaviours play an important role in the development of cervical cancer, and these include an early age at first coitus, multiple sexual partners (Biswas, Manna, Maiti, & Sengupta, 1997; Burk et al., 1996; Cuzick, Sasieni, & Singer, 1996.), and high-risk sexual behaviour of male partners (Bosch et al., 1996; Thomas et al., 2001). Other factors include smoking (Slattery et al., 1989), high parity

(Brinton et al., 1989; Munoz et al., 2002; Parazzini et al., 1998), long-term use of an oral contraceptive (Moreno et al., 2002), and infection with other sexually transmitted diseases (Jamieson et al., 2002; Fontaine et al., 2005).

1.4.1 HPV Infection

Human papillomavirus (HPV) is the most common sexually transmitted infection (STI) worldwide (Frazer et al., 2006), with up to 75% of sexually active adults being infected at some time (Koutsky, 1997). The scientific evidence accumulated from virological, molecular, clinical, and epidemiological studies has demonstrated unequivocally that cervical cancer is in fact a sequel to long-term unresolved infection with certain genotypes of HPV (Bosch et al., 2002). It is understood that infection by high-risk types of HPV, most frequently HPV 16 and HPV 18 (Bosch et al., 1995), is central and probably essential in the development of cervical neoplasia, and up to 99% of all cases may be attributed to infection by oncogenic HPV genotypes (Bosch et al., 1995; Walboomers et al., 1999). The strength of this evidence suggests that the prevention of cervical cancer should start with the prevention of HPV. The International Biological Study on Cervical Cancer (IBSCC), which collected data from 22 countries, reported a worldwide HPV prevalence of 93%, based on the MY09/11 polymerase chain reaction (PCR) assay (Bosch et al., 1995). A review from Bosch et al. (2002) claimed that case-control studies, case series, and prevalence surveys have unequivocally shown that HPV DNA can be detected in adequate specimens of cervical cancer in 90-100% of cases, compared with a prevalence of 5-20% in cervical specimens from women identified as suitable epidemiological controls.

Oncogenic HPV genotype infections are thought to cause low grade lesions which may progress to high grade lesions and then carcinoma in situ and cervical

cancer (Frazer et al., 2006). HPV can result in cervical cancer 5-30 years after the initial infection (WHO, 1998). Follow-up studies have clearly shown that HPV infection preceded the development of cervical cancer by several years and confirmed that sexual transmission is the predominant mode of HPV acquisition (Bosch et al., 1995; Bosch et al., 2002). It is estimated that approximately half of all sexually active adolescents and young people will acquire HPV infection within five years of initiating intercourse (Frazer et al., 2006).

Although suggesting a causal role of HPV infection in cervical cancer is no longer controversial, there are multiple factors implicated in this complex relationship. Not all HPV types are associated with cervical cancer, and not all people infected with HPV types which can lead to pre-malignant neoplasias eventually develop one (Bosch et al., 2002). It is also suggested that HPV infection is necessary for the development of cervical cancer, but insufficient to cause it alone. It is likely that the additional factors that combine with HPV infection to complete a sufficient cause are endogenous rather than environmental in nature (Bosch et al., 2002). It is assumed that cofactors are involved in the persistence of HPV infection and progression to malignant lesions of the cervix. Persistence of the infection and progression to cancer may be influenced by many factors, such as immunosuppression, cigarette smoking, and nutritional factors (American Cancer Society, 2006).

1.4.2 Sexual Risk Factors

Sexually active women are vulnerable to abnormal cervical cell changes as a result of skin contact with a partner infected with HPV during sexual contact (Ackerson & Gretebeck, 2007). As many studies indicate, three aspects of sexual behaviour that are consistently associated with the development of cervical cancer

are the commencement of sexual activity at a young age, having more than one sexual partner, and having a sexual partner who has one or more other sexual partners (Fernandez-Esquer, Ross, & Toorres, 2000).

Women having their first sexual intercourse at an early age are at higher risk of developing cervical cancer than women whose first sexual intercourse is later in life (Biswas et al., 1997; Green et al., 2003; Thomas et al., 2002). The risk of cervical cancer associated with an earlier age at first intercourse is higher for both squamous cell carcinoma and adenocarcinoma, with an odds ratio of 2.70 (95% CI: 1.78-4.11) and 2.01 (95% CI: 1.23-3.30), respectively (Green et al., 2003). Biswas et al. (1997) conducted a case-control study in rural India in 1997 which confirmed the association between an early age at first coitus and cervical cancer in women with a low rate of sexual promiscuity; they suggested that the significant effect of an early age at first coitus persisted after adjustment for the latency period, which also showed its independent risk association with cervical cancer in the multivariate analysis. An almost simultaneous study conducted by Cuzick et al. (1996) in England has also suggested that factors related to sexual behaviour proved to be the most important for predicting risk for cervical cancer, and both the number of partners and the age at first intercourse were highly significant and remained so after adjustment for the other variables.

Cervical cancer risk is also directly proportional to the number of sexual partners in a woman's lifetime. Although difficult to separate epidemiologically, there is evidence to indicate that an early age at first coitus and the number of sexual partners have independent effects on cervical cancer risk (Green et al., 2003). The greater number of sexual partners a woman has without the use of condoms, the greater her risk of coming into contact with HPV and of later developing cervical cancer (Shepherd, Peersman, Weston, & Napuli, 2000). In addition, infection with high-risk HPV types has been strongly and independently associated with both

multiple sexual partners and age at first intercourse in all age groups (Andersson-Ellstrom et al., 1996; Biswas et al., 1997; Bosch et al., 1996; Franco, Villa, Ruiz, & Costa, 1995).

Male sexual behaviour also plays a substantial role in the transmission and acquisition of HPV infection (Bosch et al., 2002; Thomas et al., 2001), which is the key risk factor for cervical cancer. There are studies supporting the role of men as vectors of the HPV types that are related to cervical cancer. Researchers report an increase in the risk of cervical cancer in female partners of men with HPV (Zunzunegui et al., 1986). The odds of developing cervical cancer among monogamous women increased by 9.5-fold when high-risk HPV types were present in the penis of their husbands (Bosch et al., 1996). Penile HPV DNA prevalence was significantly related to the reported number of female sexual partners (Bosch et al., 1996; Smith, Kinlen, White, Adelstein, & Fox, 1980). The risk of cervical cancer is strongly related to the number of a woman's sexual partners, and to and to the number of lifetime partners of a woman's sexual partners (Bosch et al., 1996; Burk et al., 1996; Zunzunegui, King, Coria, & Charlet, 1986). Men who report multiple sexual partners or who are carriers of HPV DNA may be vectors of high-risk HPV types and may place their female partners at high risk of developing cervical cancer (Bosch et al., 1996). If the number of sexual partners of the male partner is 20 or more, the risk of cervical cancer for his female partner is five-fold higher than the risk for a woman whose male partner has had fewer than 20 sexual partners (Zunzunegui et al., 1986).

Another male partner characteristic that has received attention as a risk factor for female cervical cancer is circumcision status. Male circumcision can reduce the risk of cervical cancer in female partners and underlines the importance of the male in the risk of HPV acquisition and cervical neoplasia in the female partner

(Castellsague, Bosch, & Munoz, 2003). Male circumcision is associated with a reduced risk of penile HPV infection and, in the case of men with a history of multiple sexual partners, a reduced risk of cervical cancer in their current female partners (Castellsague et al., 2002).

1.4.3 Other Risk Factors

The established cofactors in cervical cancer along with a persistent HPV infection are smoking, long-term oral contraceptive use, high parity, and HIV infection (Munoz, Castellsague, de Gonzalez, & Gissmann, 2006; National Cancer Institute, 2005). Cigarette smoking has emerged as an important aetiological factor in squamous cell carcinoma (SCC) of the cervix. The increased risk for smokers is approximately two-fold, with the highest risk observed in long-term or high-intensity smokers (NCI, 2005). Smoking among men was a risk factor for cervical cancer in their wives and there was a significant dose-response relationship with duration of smoking, and average number of cigarettes smoked per day (Bosch et al., 1996). Evidence showed that smoking increased the risk of cervical cancer among HPV-positive women, and recent increasing trends of smoking among young women could have a serious impact on cervical cancer incidence in the coming years (Plummer et al., 2003). High parity increases the risk of squamous-cell carcinoma of the cervix among HPV-positive women. A general decline in parity might therefore partly explain the reduction in cervical cancer recently seen in most countries (Munoz et al., 2002).

Use of oral contraceptives has been found to be associated with cervical cancer in many but not all epidemiological studies that adjusted for HPV status. In studies restricted to HPV-positive women, the evidence for an association is in general weaker. Castellsague & Munoz (2003) reported that only three of six studies found

statistically significant positive associations, but these were for a particular histological type or for a subgroup of women. However, strong evidence from the IARC suggested that long-term use of oral contraceptives could be a cofactor that increased the risk of cervical carcinoma by up to four-fold in women who were positive for cervical HPV DNA (Moreno et al., 2002).

1.5 Preventive Strategies for Cervical Cancer

Cervical cancer is preventable if detected early, and it is highly suitable for primary prevention, due to the typically long pre-clinical phase of this disease (Austoker, 1994; Ponten et al., 1995). The current approach to cervical cancer prevention focuses on detecting abnormalities at an early stage by screening. The cervical screening strategy has been viewed as the most important prevention approach, although it represents the secondary prevention of cervical cancer (Fernandez-Esquer et al., 2000). In light of current concepts, primary prevention, involving education of the public (males and females) about HPV and promoting safe sex to reduce HPV transmission, becomes an option (Verhoeven et al., 2006). However, it is suggested that even after the introduction of a safe and effective vaccine, it will be necessary to have a dual approach balancing immunization and screening over a long time (Jacob, Bradley, & Barone, 2005), which means that regular cervical cancer screening and treatment of precancerous lesions remain the key strategies for preventing cervical cancer in the meantime (Friedman & Sheppard, 2006). It will be many years before the vaccination programme has an effect upon cervical cancer incidence, so there are as yet no plans to alter the programme. Vaccinated women are advised to continue cervical screening as the vaccination will not prevent all types of cervical cancer. The most cost-effective health intervention should be a combination of type-specific HPV vaccination along with cervical

screening (Kulasingam & Myers, 2003).

1.5.1 Primary Prevention

A primary prevention approach to cervical cancer is not only justified by the need to prevent sexual transmission, but by the fact that the treatment of pre-neoplastic cervical lesions is costly and the management of low-grade lesions is uncertain (Lytwyn & Sellors, 1997). The contribution of primary prevention for cervical cancer is often ignored, perhaps because most HPV infections cause no symptoms (American Cancer Society, 2006) and have a high prevalence among sexually active women and men (Koutsky, 1997). Furthermore, in some populations of women, elaborating the sexually transmitted nature of HPV may add a level of stigma to cervical screening that may be counterproductive (Fernandez-Esquer et al., 2000). Primary preventive strategies for cervical cancer include lifestyle changes, sexual behavioural strategies, HPV testing, and HPV vaccinations.

1.5.1.1 Lifestyle Changes

Evidence suggests that important elements of a lifestyle that reduces the risk of invasive cervical cancer include smoking cessation, attendance for cervical screening, and reduced exposure to carcinogens in the household environment (Ferrera et al., 2000).

1.5.1.2 Sexual Behavioural Strategies

In light of the causal role of HPV in the development of cervical cancer, health education to promote the use of condoms for sexual intercourse, a limited number of pregnancies, a reduction in the number of sexual partners, and negotiated safer sex strategies have been recommended as a necessary approach to limit the spread of

HPV (de Vet & Sturmans, 1994). Indeed, there are several reasons why sexual behavioural prevention strategies aimed at reducing the sexual transmission of HPV infections have received limited attention. These reasons include equivocal findings about condom use, the ubiquity of HPV infection, non-sexual routes of transmission, and the lack of an effective treatment (Fernandez-Esquer, et al., 2000).

It is well known that condom use protects against a variety of sexually transmitted infections, in particular HIV infection, but it does not fully protect against HPV infection (Baay, Verhoeven, Peramans, Avonts, & Verhoeven, 2006). Although available data about the protective effects of condom use in HPV infection and invasive cervical cancer (ICC) are inconsistent, it is suggested that while condom use may not prevent HPV infection, it may protect against genital warts, CIN II or III, and ICC (Manhart & Koutsky, 2002). Cuzick et al. (1996) found that use of a diaphragm or condom was found to be protective, and this was particularly apparent when use was long-term. Women who used barrier methods for more than eight years had 15% of the risk of women who had never used them.

1.5.1.3 HPV Testing

HPV has now been clearly established as the primary cause of cervical cancer in nearly all cases. Thus, it should not be surprising that testing for HPV should have a role in measures aimed at control of this disease (Thomas & Keerti, 2004). The importance of HPV DNA testing in cervical cancer screening policy is increasing. HPV testing is highly recommended since it adds several potential advantages to conventional cytological screening, such as increased sensitivity, avoiding an excessive number of colposcopies, and increasing screening intervals for HPV-negative women (Solomon, Schiffman, Tarone, & ALTS Study, 2001). Already, in England, HPV detection is used in the triage of borderline or mildly dyskaryotic smear results (NHSCSP, 2007). In 2004, the United States Food and Drug

Administration approved Didene's Hybrid Capture 2 assay for use with cervical screening to adjunctively screen women aged 30 years and older for the presence of high-risk HPV infection (Hughes, Garnett, & Koutsky, 2002).

1.5.1.4 HPV Vaccine

Perhaps the most important implication of the establishment of sexually transmitted HPV infection as the central cause of cervical cancer (Bosch et al., 2002) is the potential for cervical cancer prevention through prophylactic vaccination against the oncogenic HPVs. (Harper et al., 2004; Koutsky et al., 2002; Thomas & Keerti, 2004). The new HPV vaccine has been hailed as a breakthrough in cervical cancer prevention. One would assume that the greatest impact would be achieved by vaccinating both sexes if the goal is to decrease the prevalence of an STI (Thomas & Keerti, 2004). Two prophylactic HPV vaccines protecting against HPV types 16 and 18 have been developed. While vaccination will provide protection against HPV 16- and HPV 18-associated invasive cervical cancer in the long term, there is potential for short term benefit in reducing abnormal Pap test results, colposcopy referrals, cervical biopsies, and genital warts, since HPV 6, HPV 11, HPV 16, and HPV 18 are associated with approximately 40% of histologically-confirmed CIN (Saslow et al., 2007). The American Cancer Society recommended limitation of the current HPV vaccines, since (1) these vaccines do not protect against all carcinogenic HPV types; (2) the vaccines do not treat prevalent/existing HPV infections; (3) the duration of protection and the required length of protection to prevent cancer are unknown; (4) the cost of primary vaccination and the possible need for additional booster vaccinations will likely limit vaccine use among the medically underserved and the uninsured; and (5) a three-dose regimen for primary vaccination may not be achievable in a population where follow-up is poor, such as uninsured and migrant

populations or those living in underserved areas (Saslow et al., 2007).

Certain vaccine implementation issues will be unique to developed countries because there have been cervical screening programmes that function to effectively reduce cervical cancer risk. An effective vaccine would decrease the effectiveness of the current Pap screening programme since fewer malignant and premalignant cervical lesions would be identified (Thomas & Keerti, 2004). On the other hand, high cost would be the main barrier to widespread distribution in many poor countries (Thomas & Keerti, 2004). Hughes et al. (2002) also found that if a vaccine gives protection against some but not all high-risk types of HPV, the reduction in disease may be less than the reduction in HPV because the remaining high-risk HPV types may replace the disease caused by the eliminated types (Hughes et al., 2002). Such evidence highlights the necessary caution when considering possible changes in screening policies in response to an effective HPV vaccine.

1.5.2 Secondary Prevention: Cervical Cancer Screening

One of the most important methods for the prevention of cervical cancer is early detection, which includes routine cervical screening that can lead to diagnosis and treatment of cervical lesions before their progression to cervical cancer. Detection of advanced premalignant lesions by cervical screening, followed by effective treatment, is also an important primary protection for invasive cervical cancer (American Cancer Society, 2006). This cancer control strategy has been viewed as the most important prevention approach, although it represents the secondary prevention of cervical cancer. The recommendation from the American Cancer Society is that women, whether vaccinated or not, continue screening according to current ACS early detection guidelines (Saslow et al., 2007).

The risk of developing cervical cancer is greater among women who have never

been screened and those who have not been screened in the previous five years (NCI, 2005). The incidence of invasive cervical cancer, and consequently mortality, decreased dramatically due to adequate screening programmes in the developed countries in the last thirty years (Bergstrom, Sparen, & Adami, 1999; Peto, Gilham, Fletcher, & Matthews, 2004). Additionally, the survival data show that the prognosis is directly related to the stage of cancer diagnosis. According to the CDC (2004), for women diagnosed with a preinvasive lesion who received treatment, the survival rate was approximately 100%. For those initially diagnosed with a terminal stage of cancer, the chance of surviving for five years dropped to less than 20%.

In the US, widely available and utilized cervical screening has contributed greatly to the 70% decrease in the death rate over the past 50 years (Centers for Disease Control and Prevention, 1998). In Australia (Australian Institute of Health and Welfare, 2006), with the impact of a comprehensive Pap screening programme, the number of new cases of cervical cancer has fallen from 1,091 in 1991 to 689 in 2002, with the age-standardized rate almost halving, from 17 per 100,000 women aged 20-69 to 9 per 100,000. In addition, the number of deaths in this period fell from 329 in 1991 to 212 in 2004. Because of the free cervical screening programme for all women in the UK, a marked decrease in the cervical cancer incidence since 1988 has been achieved (NHS Cervical Screening Programme, 2009). Mortality rates have also been declining and the reduction is around 7% per year, whereas previously the decline in mortality had been around 1% per year (Bankhead et al., 2003).

Essentially, all sexually active women are at risk of cervical cancer and eligible to enter a screening programme. Once entered, the routine interval for screening is determined by the findings on each screening (Fitch, Greenberg, Spaner, & Taylor, 1998). The practice of cervical cancer screening varies in different countries and

districts. For example, a national cervical screening programme has been established in the UK since 1988. Every 3-5 years, women aged 20-64 are sent an invitation asking them to attend for a smear test followed by a series of reminder letters if they do not respond (Bush, 2000). Cervical screening uses cytology to detect areas of nuclear abnormalities that are described as dyskaryosis. Women may undergo a further procedure called colposcopy to provide a histological diagnosis of cervical intraepithelial neoplasia (CIN), or may undergo more frequent screening (Bankhead et al., 2003). In the US (Saslow et al., 2006), screening for cervical cancer should begin three years after initiating intercourse, or by the age of 21, whichever comes first, to detect changes that occur early in the disease process. Thereafter, women should undergo annual cervical screening using a conventional test, or every two years with a liquid-based test. At the age of 30, cervical screening should be conducted at least every three years if two previous consecutive cervical smears were normal. This continues until the age of 65, when cervical screening can be discontinued if the previous three consecutive cervical smears were normal and no abnormal results were reported within the previous 10 years.

Although at present there are no national guidelines for cervical screening practice in mainland China, in Hong Kong (a Special Administrative Region of China), guidelines for cervical screening recommend that women between the ages of 25 and 64 who have ever had sex should attend for cervical screening every three years once two normal screenings have been recorded (Department of Health, Hong Kong, 2007). At present, there is also no centrally organized, systematic, population-based cervical screening programme in mainland China. Most screening services are either opportunistic or offered as part of a general well-woman check-up by the National Family Planning Programme at designated health facilities, usually maternal and child health (MCH) centres. These programmes offer free physical

examinations for married women yearly.

1.6 Significance and Aims of the Study

Cervical cancer remains a critical public health problem. One of the most important methods of prevention of cervical cancer is early detection, which includes routine cervical screening. Chapter two reviews cervical screening behaviour among Chinese women and factors influencing Chinese women's screening uptake, and demonstrates that generally, Chinese women tend to have less regular screenings. Many studies have identified complex factors influencing the utilization of cervical screening among Chinese women in Hong Kong and Taiwan and overseas. A low perceived risk of cervical cancer may be an influencing factor in Chinese women's cervical screening decisions. However, very few studies have focused on mainland Chinese women. Risk perception of developing illness is central to most theories of health behaviour and in particular, it has been identified as an important predictor of cancer screening attendance. Chapter 3 critically reviews risk perception of cervical cancer and cervical screening behaviour and finds that risk perception of cervical cancer has not been extensively studied. Importantly, there is little information about how women perceive the risk of cervical cancer and how personal risk factors are interpreted. Very little is known about the risk perception of cervical cancer and factors influencing screening uptake among mainland Chinese women.

The proposed study therefore aims to examine Chinese women's risk perception of cervical cancer and the role of personal risk factors in determining screening behaviour. A mixed method design consisting of two phases is adopted in this study, employing both quantitative and qualitative methods. A convenience sample of 170 Mandarin-speaking Chinese women living in Changsha, aged from 25 to 50 years old (both screened and non-screened women), were recruited in phase one. A set of

questionnaires were administered to provide baseline information regarding the women's knowledge, attitudes, and perceptions about risk of cervical cancer, the role of personal risk factors, and their cervical screening status. Approximately 27 informants for phase two were purposively selected from the sample of phase one. Women with a high or low risk perception of cervical cancer, who were willing to share their feelings with the researcher, were recruited and interviewed face-to-face. The qualitative data collected in phase two provided an in-depth exploration of women's perception of risk of cervical cancer and the role of personal risk factors in determining screening behaviour. The integration of the findings from both phase one and phase two contributed to the development of a model to understand Chinese women's cervical screening behaviour.

1.7 Overview of the Thesis

In summary, the study described in this thesis explored women's risk perception of cervical cancer and factors influencing their cervical screening behaviour. The thesis is composed of nine chapters. Chapter 2 contains an introduction of background information of the study in terms of cervical screening among Chinese women and factors influencing Chinese women's cervical screening behaviour. Chapter 3 reviews the literature relevant to risk perception and cervical screening behaviour over the last 20 years, and provides justification for the current study with respect to study population, design, and use of a mixed method design employing both quantitative and qualitative methods of data collection. Chapter 4 describes the methodology of the main study, including the research objectives, research design, data collection, and data analysis of phase one and phase two of the study, pilot studies for the two phases, and the ethical considerations of the study. Chapter 5 reports the findings from phase one of the study and provides interpretations of the

findings. Chapter 6 presents the findings from phase two of the study, describes categories which emerged from the data, compares the findings between the two groups, and interprets the findings of phase two. Chapter 7 discusses and interprets the integration of findings from phases one and two of the study; this chapter also explores factors influencing Chinese women's cervical screening behaviour. Chapter 8 presents the development of a conceptual model to understand Chinese women's cervical screening behaviour based on the integration of both phases of the study. The final chapter, Chapter 9, examines the strengths and weaknesses of the current study and highlights its implications for practice and research. This chapter also concludes the study with a summary of its contribution to knowledge of this field and recommendations for future study.

CHAPTER TWO

BACKGROUND

2.1 Introduction

This chapter contains an introduction of background information of the study. In view of the fact that Chinese women's cervical screening rate is less than those of Western populations, factors influencing Chinese women's cervical screening uptake is reviewed. Various barriers to screening utilization among Chinese women are discussed, including structural barriers, socio-demographic barriers, knowledge of cervical cancer and cervical screening, barriers related to culture and belief systems, the role of health providers, and risk perception of cervical cancer. Descriptions of risk perception research and related theoretical models are given.

2.2 Cervical Screening among Chinese Women

For screening to be effective, women need to attend regularly for a cervical smear. However, existing data suggest that Chinese women tend not to have regular screenings (Department of Health, Hong Kong, 2006; Family Planning Association, Hong Kong, 2005; Taylor et al., 2002), despite their higher risk of cervical cancer (Hong Kong Cancer Registry, 2007) and the effectiveness and availability of screening programmes. A goal of Healthy People 2010 is to have 90% of eligible women having had cervical screening within the previous three years (US Department of Health and Human Services [USDHHS], 2000). Although data on the uptake of cervical screening among mainland Chinese women is scarce, despite the known value of cervical screening, the uptake of cervical screening among Chinese women in Hong Kong and Taiwan and overseas is relatively low compared with

other populations (Family Planning Association, Hong Kong, 2005; Taylor et al., 2002). In a government population household survey, women reported an ever-screened rate of 42% (The University of Hong Kong, 2005), compared with 79% for women aged 18 and older in the US (Centre for Disease Control and Prevention, 2005) and 84% for women aged 25-64 living in England (Department of Health, UK, 2005). A similar low rate of screening has also been observed among Chinese women in other Chinese populations such as in Taiwan and overseas (Hou, Fernandez, Baumler, & Parcel, 2002; Jacob et al., 2005).

2.3 Various Barriers to Screening Utilization among Chinese Women

Most research studies among Chinese women were descriptive-correlational, and conducted amongst populations of Chinese women in Hong Kong and Taiwan and overseas. Some studies undertaken in recent years (Abdullah & Leung, 2001; Holroyd, Twinn, & Adab, 2004; Hou, 2002; Twinn & Cheng, 2000; Twinn, Shiu, & Holroyd, 2002) found that knowledge about risk factors, educational level, economic factors, low perceived risk, marital status, having children, the role of healthcare workers, age, fear of pain, and cultural issues such as fatalism, modesty, and embarrassment contributed to Chinese women's screening attendance. These factors can be grouped into six categories: structural barriers, socio-economic barriers, knowledge barriers, barriers related to culture and beliefs, the role of health providers, and risk perception of cervical cancer. In this review, these six categories serve as a framework to understand influencing factors for Chinese women's screening utilization.

2.3.1 Structural Barriers

Structural barriers are the organization and delivery of the screening service, as well as accessibility and availability of the service. Access to the cervical screening service is indeed a barrier shared by all women of low income, regardless of their culture (Fernandez-Esquer, et al., 2000). A lack of an established, regular source of health care influences women's access to cervical screening services (Ackerson & Gretebeck, 2007; Gao, Paterson, De Souza, & Lu, 2008; Taylor et al., 2002; Hiatt et al., 2001). For example, women without a regular source of health care were not aware of the available services within their community for cervical screening and were less likely to obtain regular cervical cancer screening. When a woman accesses regular health care or is engaged with gynaecological or family planning services, she has a better chance of taking part in a public health prevention programme (Gao et al., 2008). Having a regular source of health care was strongly related to having health insurance coverage for cervical screening; women with health insurance were more likely to seek cervical screening. Indeed, providing health insurance to the uninsured would probably be the most effective method of increasing the use of preventive services (McMullin, Alba, Chavez, & Hubbell, 2005).

Another frequently cited structural barrier to screening attendance was having no time to have the test because of a busy schedule (Twinn et al., 2002). Other structural barriers, including lack of transport, lack of child care, difficulties getting time off work, and financial problems, have also been frequently cited by Western and Chinese populations (Hou & Lessick, 2002; Kelaher et al., 1999).

2.3.2 Socio-demographic Barriers

Many socio-economic barriers to cervical cancer screening, including lower household income, lower educational status, single status, older age, not having

children, and less acculturation, were found to have a significant association with participation in cervical screening in studies among Chinese women in Hong Kong and Taiwan and overseas (Boonpongmanee & Jittanoon, 2007; Ackerson & Gretebeck, 2007; Abdullah & Leung, 2001, Hislop, Teh, Lai, Labo, & Taylor, 2000; Hislop et al., 2003, Twinn et al., 2002). Women who are younger, more highly educated, and socially advantaged are more likely to adhere to cervical screening (Lee, Seow, Ling, & Peng, 2002). Older, single, less acculturated Chinese women with less education and income were less likely to have been screened for cervical cancer (Hislop et al., 2003).

Acculturation was found to influence cervical screening practices among overseas Chinese. It was measured via three findings: birthplace (US versus non-US); whether the questionnaire was filled out in English or Chinese; and primary language used for speaking, thinking, and reading. Inability to speak English, living in the US for less than five years, preferring to speak Chinese, and filling out the questionnaire in their native language were associated with a lack of cervical cancer screening in the Chinese population (Ackerson & Gretebeck, 2007, Jacob et al., 2005; Kandula, Wen, Jacobs, & Lauderdale, 2006).

Marital status has been shown to be strongly associated with cervical cancer screening among Chinese women (Hou & Lessick, 2002; Twinn et al., 2002). Compared with women who were never married, currently married women had a higher Pap screening adherence. The relationship between marital status and cervical screening may be confounded by women's sexual experiences. In fact, Chinese women share the same belief, that they will get a test after they are married, which means once they are sexually active. Thus, a visit to a gynaecologist by an unmarried woman might be counter to the cultural belief that only married women should have a pelvic examination. Holroyd et al. (2004), in a study of the social-cultural

influences on cervical screening in Chinese women, found that although some described screening as a means of self-protection, frequently screening was not self-initiated; instead, it was generally prompted by marriage and childbirth.

2.3.3 Knowledge about Cervical Cancer and Cervical Screening

Even though the general consensus in the field of health promotion indicates that knowledge alone may be insufficient for behavioural change to take place, it is clearly necessary to influence risk and preventive health behaviour (Fernandez-Esquer et al., 2000). The literature suggests that the most important influences are women's beliefs in the value of cervical screening (Hislop et al., 2003, Taylor et al., 2002). Lack of knowledge about the importance of cervical screening to their own health was also identified as a barrier for unscreened Chinese women in a study conducted by Twinn, Holroyd, & Adab (2006) in Hong Kong. Another study conducted among Taiwan Chinese women (Hou et al., 2003) found that although most women had a high level of knowledge related to cervical screening, knowledge levels were significantly higher among adherent women. Women who thought cervical screening was necessary for asymptomatic women were much more likely to have been screened recently compared with women who did not think screening was necessary for asymptomatic women (Gao et al., 2008).

Indeed, a review of women's attitudes, knowledge, and behaviour related to cervical screening demonstrated that lack of knowledge about cervical cancer and its risk factors, and poor understanding of cervical screening procedures, were significant reasons for women failing to attend for screening (Fylan, 1998). Twinn et al. (2002) found that Chinese women needed more knowledge about preventive strategies, particularly the processes involved in the screening procedure. Both non-attendees and attendees identified a concern about the risk of infection after

cervical screening, highlighting once again the significance of accurate information and knowledge about the screening procedure to women's attendance for screening. A report from Hong Kong's Department of Health concluded that although many women knew the risk factors associated with cervical cancer, they did not consider "having no cervical screening" as a risk factor. Women lack knowledge about the nature of this disease, the need for regular and frequent screening, the availability of screening, and the need to screen even in the absence of symptoms (Department of Health, Hong Kong, 2004).

Importantly, knowledge alone is not a major factor determining Chinese women's screening uptake (Twinn et al., 2002). Most educational interventions to improve cervical screening rates have resulted in only modest increases in cervical screening, and appeared not to address the complex reasons why some women do not take part in screening (Thomas & Keerti, 2004; Lam et al., 2003; Jackson et al., 2000; Hiatt et al., 2001).

Knowledge about HPV

Previous findings indicated that awareness of and concern about HPV infection remained low, despite the fact that HPV is the most common sexually transmitted infection and the primary cause of cervical cancer. Friedman & Sheppard (2006) conducted a national survey in the US to address the general public's knowledge, attitudes, perceptions, and beliefs in relation to HPV, as well as their information needs and communication preferences; a total of 314 people participated in 35 focus groups. They found that participants were unaware of the link between HPV and cervical cancer, and only three participants knew that HPV can cause cervical cancer; all groups expressed concern that they had not previously heard about HPV. Awareness of the role of HPV in the aetiology of cervical cancer is also very low in

Britain (Waller, McCaffery, & Wardle, 2004). Moreira et al. (2006) reported that women, even those with higher educational attainment, demonstrated a poor knowledge of how HPV is diagnosed and treated, and less than 10% of the participants acknowledged that HPV might lead to cervical cancer; in contrast, most women (66.7%) knew that HPV is sexually transmitted. A recent study conducted in mainland China found that HPV awareness is low among Chinese women, and specific knowledge was generally poor, even among HPV-aware women (Li, et al., 2009).

Stagg-Elliott (2004) reported that healthcare providers have found a communication gap in discussing results of HPV tests because less than a third of patients have ever heard of the virus; they warned that this kind of communication failure in discussing HPV could result in fear, and this was related to patients' failure to return for follow-up. HPV awareness is becoming increasingly important as the availability of HPV DNA testing expands as a cervical cancer screening and management tool, and as the new HPV vaccine comes on the market. Regardless of whether the most effective policy for control of HPV infection involves primary prevention or management of disease, young adults should be informed about this family of viruses and the risk associated with infection without creating needless anxiety or exaggerating the consequences (Baer, Allen, & Braun, 2000). Women's awareness of HPV and its association with cervical cancer may motivate them to participate in HPV primary prevention efforts and engage in other risk-reduction programmes such as routine cervical screening (Moreira et al., 2006).

2.3.4 Barriers Related to Culture and Belief Systems

Culturally-based beliefs or values relating to cervical cancer screening have been studied among Chinese women in Hong Kong and Taiwan and overseas.

Cultural beliefs about the causes of cancer such as fate, unbalanced yin and yang, and poor qi or blood circulation were not found to have an influence on the uptake of cervical screening among overseas Chinese women (Gao et al., 2008; Taylor et al., 2002). Chinese cultural barriers to screening behaviour have been found to include avoidance of social assertiveness and the association of screening procedures with immodesty and sexually inappropriate behaviour (Hou & Lessick, 2002; Mo, 1992). Reluctance to undergo physical examination of intimate body parts by a non-family member combined with modesty about the body in general has been found to be a barrier for Asian women attending for health care (Mo, 1992). Embarrassment is a common response to having to lie supine with one's legs restrained during a vaginal examination and Pap test (Hou & Lessick, 2002). Data available from Chinese women in Hong Kong suggested that women in both screened and non-screened groups described the embarrassment and pain associated with attendance for cervical screening (Holroyd et al., 2004). This would influence adherence to further cervical screening in this population, as shown by an earlier study involving 276 Chinese women (21-65 years old) which found that women who had ever had a smear were less likely to want to return if they perceived the test to be uncomfortable or embarrassing (Seow, Wong, Smith, & Lee, 1995).

Chinese women's beliefs about sexual behaviour also serve as a barrier to seeking screening services. Holroyd et al. (2004) found that both screened and non-screened Chinese women linked risk factors for cervical cancer to promiscuity, marriage, youth or old age, and poor personal hygiene of their husbands or themselves. Fear of moral judgment and an STD- (sexually transmitted disease) associated stigma could serve as a powerful barrier to cervical screening and seeking information about cervical cancer prevention (Friedman & Sheppard, 2006; Twinn et al., 2006). Another study among Latina women (Martinez, Chavez, & Hubbell, 1997)

produced similar findings. Martinez et al. (1997) argued that Latina women's knowledge about cervical cancer risk factors were imbued with moral compunction: women who engaged in "unnatural" and "immoral" behaviour such as having many lovers, sex during menstruation, and abortions were more likely than others to get cervical cancer. Latinas who believed that high-risk sexual behaviour increased the risk of cervical cancer were less likely than others to have had a cervical screening within the previous three years (Hubbell et al., 1996; Martinez et al., 1997). These findings supported the notion that morality plays a role in women's decisions to obtain regular cervical screening.

Moreover, due to the sensitive nature of sexuality, communication regarding personal risk factors for cervical cancer is lacking among Chinese women. In one study (Hou & Lessick, 2002), a Chinese woman expressed a commonly held view in this way: "In Chinese culture...we don't talk about this at home. Parents would not raise this type of issue...I am not comfortable with discussing my body". Chinese families seldom encourage female members to have a Pap smear. There is little or no communication about sensitive or embarrassing issues in Chinese society (Hou & Lessick, 2002). The lack of frank discussion about the importance of sexual behaviour across populations, and of specific sexual practices, may be partly due to the fear of stigmatizing HPV due to its association with sexual transmission. Without a clear discussion about the behavioural implications of HPV infection, it will be difficult to reduce its incidence, particularly in countries that cannot implement Pap smear screening routinely among women (Fernandez-Esquer et al., 2000). In contrast, Gregg (2000) found that women in Brazil responded to a public health campaign that clearly defined cervical cancer as a sexually transmitted disease (STD). The campaign was successful in increasing cervical cancer screening, suggesting that many Latinas, at least in the villages of Brazil, were not so stigmatized by the notion

that cervical cancer was an STD that they did not access cervical screening.

2.3.5 The Role of Health Providers in Facilitating Screening Utilization

The possibility of taking part in population-based screening programmes has been on the rise in recent decades worldwide. It is obvious that effective cervical screening programmes can markedly reduce cervical cancer deaths, as evidenced by studies from Sweden and the UK. In Sweden, a 53% reduction in mortality is attributed to screening (Mahlck, Jonsson, & Lenner, 1994). The UK cervical screening programme has been successful in securing the participation of a high proportion of targeted women, and has seen a fall in mortality rates of those suffering from cervical cancer (NHS cervical screening programme, 2009). Some studies have found that the main reason for having the first screening was that it was part of a gynaecological or obstetric service or a family-planning visit (Gao, et al., 2008; Lee et al., 2002), once again suggesting the role of engagement in general health services in facilitating cervical screening attendance.

Findings from the literature highlight the importance of health practitioners in influencing women's attendance patterns. A strong association between physicians' recommendations and women's use of cervical screening has been documented in diverse populations, including Chinese women (Gao et al., 2008; Hislop et al., 2003; Taylor et al., 2002). Physician characteristics and behaviours are also strongly associated with cervical screening uptake. A preference for a female physician for vaginal examinations is expressed among Chinese women in almost all research (Abdullah & Leung 2001; Holroyd et al., 2004; Hou, 2002; Twinn & Cheng, 2000). Some Chinese women may forgo screening simply because a female provider is not available (Hou, 2002). In Abdullah & Leung's (2001) study, 70% of Chinese women in Hong Kong stated a preference for a doctor rather than a nurse, 80% of the

respondents stated a preference for a female doctor, and 45% of the respondents reported “staff manner” as the most important factor in their future screening behaviour.

Staff manner, caring and considerate communication skills, privacy, and experience and expertise of the care giver have all been found to contribute to the likelihood of further cervical screening among Chinese women (Abdullah & Leung, 2001; Twinn & Cheng, 2000). Twinn & Cheng (2000) found that the caring nature of the practitioner, which included understanding women’s feelings, the sensitivity of the practitioner, and taking time to talk to women, was identified as an important factor to Chinese women in influencing their experience of the test and their subsequent screening pattern. This study also demonstrated that Chinese women tended to give descriptions of the pain and discomfort they experienced during the screening, particularly when the interpersonal skills of the practitioner appeared poor or uncaring.

2.3.6 Risk Perception of Cervical Cancer

Consistent findings from Hong Kong and Taiwan have indicated that Chinese women tended to rate their risk for cervical cancer to be below average (Twinn et al., 2006; Hou, 2002). This finding may be partly explained by an “optimistic bias”, which has been presented in a variety of populations (Fontaine & Smith, 1995) and particularly in Chinese populations (Facione, Giancarlo, & Chan, 2000). In Asian women, feelings of invulnerability to reproductive cancer represent a strong contrast to the over-stated vulnerability often expressed in studies of women from other cultural groups (Facione, Dodd, Holzemer, & Meleis, 1997; Thompson, Montano, & Mahloch, 1997, Rajaram & Rashidi, 1998). Perceived risk of reproductive cancer has been reported to be lower in Chinese Americans than Caucasian Americans (Hoeman,

Ku, & Ohl, 1996, Facione et al., 2000). Evidence from Taiwan also suggests that Chinese women's low risk perception of cervical cancer may represent an influencing factor for women's cervical screening decisions (Hou & Lessick, 2002).

2.4 Risk Perception Research and Related Theoretical Models

An individual's risk perception is thought to be a significant factor in the adoption of precautionary health behaviour and has been incorporated into a number of health behaviour models as a central factor (Rosenstock, Strecher, & Becker, 1988; Rogers, 1975). Perceived risk or perceived susceptibility in these models is explained as an individual's belief about the likelihood or probability of harm, namely the probability that a health problem will be experienced if no precautionary or preventive behaviour occurs. Among them are the Health Belief Model (Rosenstock et al., 1988), the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the Theory of Planned Behaviour (Ajzen, 1988; 1991), and the Protection Motivation Theory (Rogers, 1975). These models claim that elevated levels of perceived vulnerability, perceived severity, and response efficacy would alter people's motivation to pursue preventive behaviour.

For example, the Health Belief Model (Rosenstock et al., 1988) is a cognitive-behavioural model that attempts to describe and predict an individual's protective health behaviour. This model indicates that whether or not a person changes their behaviour will be influenced by an evaluation of its feasibility and its benefits weighed against its costs. The Health Belief Model consists of four core beliefs (perceptions): (1) perceived susceptibility, which concerns the likelihood of the illness or injury happening to them; (2) perceived severity, which concerns the severity of the illness or injury; (3) perceived benefits, which concerns how likely it is to protect the individual from illness or injury; and (4) perceived barriers, which

concerns the barriers to preventive action. It is explained that perceived threat is high only when perceived susceptibility and perceived severity are high, and when perceived benefits outweigh perceived barriers, this may lead to action.

However, Seydel, Taal, & Wiegman (1990) compared the Health Belief Model with the Protection Motivation Theory in predicting preventive behaviour with respect to cancer, and suggested the superiority of the Protection Motivation Theory over the Health Belief Model in predicting preventive behaviour in the context of cancer risk. The PMT model has been consistently subjected to experimental studies and applied to health issues that include cervical cancer screening (Orbell & Sheeran, 1998), breast cancer screening (Helmets, 2002), breast self-examination (Hodgkins & Orbell, 1998), testicular self-examination (Block & Keller, 1998), insulin use (Palardy, Greening, Ott, Dolderby, & Atchison, 1998), cigarette smoking (Greening, 1997), and physical exercise (Fruin, Pratt, & Owen, 1991). Risk perception research has been influenced by a wide range of theoretical perspectives such as public health, cognitive psychology, and social psychology, and has employed various methodological approaches. Many studies have assessed risk perception to test models which demonstrate an association between risk perception and preventive health behaviour. On the other hand, many studies have tested how social and cultural factors would affect an individual's risk perception. Research on cancer risk perception has focused on areas related to screening utilization and other preventive strategies. It is suggested that individuals who personally perceive a higher probability of developing cancer are more likely to follow through with cancer screening and to engage in cancer risk reduction activity (Katapod et al., 2004).

Protection Motivation Theory

The Protection Motivation Theory (PMT) provides one of the most dominant

accounts of an individual's motivation to take or not take protective health measures (Rogers, 1975). Guided by the principle that behaviour results from expected consequences and perceived value, the PMT originally consisted of three crucial components: the individual's perceived magnitude of noxiousness of a depicted threat (severity), the probability of that threat's occurrence (risk), and the efficacy of a protective response (response efficacy). Therefore, "a basic postulate is that protection motivation arises from the cognitive appraisal of a depicted event as noxious and likely to occur, along with the belief that a recommended coping response can effectively prevent the occurrence of the aversive event" (Rogers, 1975, p. 99). Importantly, these processes are sequential; people must first believe that a threat applies to them (threat appraisal) before considering preventive behaviours (coping appraisal) (Maddux & Rogers, 1983). Later in 1983, the construct of self-efficacy was independently inserted into the theory, referring to people's belief in their capability to perform a preventive action, because self-efficacy had a direct effect on intentions and has an interaction with two other variables of the PMT, namely perceived risk and response efficacy (Maddux & Rogers, 1983). Hodgkins & Orbell (1998) suggested that fear arousal and response cost should also be included in the PMT model, with fear arousal assessing how much fear the threat arouses in the individual and response cost referring to beliefs about how costly it will be to perform the recommended response.

After expanding the components of threat appraisal and coping appraisal, the present construct of threat appraisal consists of three components, which are perceived risk, perceived severity, and fear arousal. The construct of coping appraisal also comprises three components, which are response efficacy, self-efficacy, and response cost (Hodgkins & Orbell, 1998; Rogers, 1975).

Orbell and Sheeran (1998) conducted a longitudinal study of the association

between the motivation to undertake a health protective action and subsequent actual behaviour on women's uptake of cervical screening. All variables derived from the PMT were measured for a sample of 166 never-screened women. They found that there were four predictors for motivation to be screened, namely higher perceived vulnerability to cervical cancer, higher perceived response efficacy, higher self-efficacy to overcome barriers to uptake, and higher perception that the test would bring peace of mind. Additionally, the motivation to undergo screening was negatively associated with the use of avoidant coping. They also found that five variables in the PMT contributed to actual uptake of screening, namely motivation to have a screening, higher objective risk, stronger perception of vulnerability, less anxiety about cervical cancer, and expectancy that any abnormalities detected were curable. With respect to the PMT model, the findings confirmed that PMT variables were successful predictors of both motivation to undergo cervical screening and subsequent uptake. PMT was employed as the theoretical framework to guide the selection of variables and the instrument in phase one of the present study.

2.5 Summary

Existing data suggest that Chinese women tend not to have regular screenings. While many studies have identified complex factors influencing the utilization of cervical screening among Chinese women in Hong Kong and Taiwan and overseas, very few have focused on mainland Chinese women. While Chinese women share some of the issues of other populations, such as structural barriers, socio-demographic barriers, knowledge of cervical cancer and cervical screening, and knowledge about HPV, existing studies have suggested that other factors are more significant for Chinese women. These factors included barriers related to culture and beliefs such as marital status, sexual behaviour, gender of the screening

provider, and low perceived risk. The review from this chapter suggests that the exploration of Chinese women's screening behaviour and factors influencing screening uptake should incorporate the Chinese cultural context, in which an association between promiscuity and cervical cancer has been identified as an intrinsic barrier to women taking part in screening and seeking information about cervical cancer prevention.

The literature highlights the role of risk perception in an individual adopting precautionary health behaviour. It supports the suggestion that individuals who perceive a high risk of cancer are more likely to take preventive action. It is not yet clear whether making individuals aware of their personal risk of cervical cancer will or will not increase their participation in screening. The next chapter presents a critical review of women's risk perception of cervical cancer and cervical screening behaviour.

CHAPTER THREE

RISK PERCEPTION OF CERVICAL CANCER AND CERVICAL SCREENING BEHAVIOUR: A CRITICAL REVIEW

3.1 Introduction

This chapter presents a selective and critical review of the literature centred on issues related to women's risk perception of cervical cancer and cervical screening behaviour. This critical review focuses on risk perception because that is the core and primary interest of the present study and the hypothesis of the researcher is that risk perception would be a major predictor of cervical screening behaviour. Search strategies of the critical review are described first. Risk perception of cervical cancer and its relationship with women's cervical screening participation is systematically reviewed and discussed. Critical reviews of individual studies are described in terms of study characteristics, subject characteristics, measurement strategies of risk perception employed in the studies, and outcome characteristics. After identifying trends and discrepancies from the literature and offering some preliminary interpretations, implications for future work and justification for the current study in terms of theoretical framework, study variables, study population, and study design are discussed. Finally, an overview and rationales of mixed method research and a summary of the chapter are provided.

3.2 Literature Search Strategies

The literature review included a search of PubMed, Ovid MEDLINE, CLINAL,

EMBASE, PsycINFO, and China Journal Net (CJN), as well as the Cochrane database of systematic reviews. Research articles included in this literature review had to meet the following inclusion criteria: a qualitative or quantitative research design, cervical cancer screening as the primary health-promoting behaviour studied, and published between 1990 and 2010.

The relevant topic areas in this literature review included women's risk perception of cervical cancer, factors influencing women's risk perception, and the relationship between risk perception and cervical screening behaviour. The following key words were used: "cervical cancer", "uterine cervix cancer", and "uterine cervix neoplasms"; "cervical cancer and risk perception"; "cervical cancer screening"; "cervical screening and risk perception"; and "perceived risk", "risk perception", "perceived vulnerability", "perceived susceptibility", "perceived likelihood", and "subjective risk perception". Supplementary searching of reference lists of articles in Ovid MEDLINE, PubMed, and PsychInfo databases were identified using the key words "risk perception", "perceived risk", and "cervical screening". The initial database search identified 72 articles. All abstracts were reviewed; reference lists of these articles were back-checked to identify other studies that may have been missed initially. Research about the risk perception of health providers and epidemiological studies about the risk factors of cervical cancer, meeting and dissertation abstracts, and articles published in a language other than English or Chinese were excluded. This search procedure resulted in the identification of 34 studies, including one literature review and 33 primary studies. This literature review is included in the present review because it summarizes and synthesizes research findings on risk perception related to cancer screening behaviour, including cervical screening. A sample search strategy in the Medeline OVIDSP is provided in Appendix 1.

3.3 Critical Review of Individual Studies

3.3.1 Study Characteristics

The selected studies and their characteristics are summarized in Table 1. In the current review, the researcher focused on research examining how the construct variously called “perceived risk”, “risk perception”, “perceived vulnerability”, or “perceived susceptibility” related to cervical cancer screening behaviour. The studies were published between 1995 and 2010. Apart from one literature review (Vernon, 1999), the research designs of the 33 studies were varied and included cross-sectional surveys (twenty studies), face-to-face interviews (four studies), prospective research (two studies), case-control studies (two studies), a longitudinal study (one study), experimental studies (three studies), and secondary data analyses (one study). One article included secondary data analyses of a subset of the sample of a cross-sectional phone interview study (Zhang, Borders, & Rohrer, 2007). Theoretical or conceptual models were described in 39.4% (n=13) of the studies; these included the Health Belief Model (seven studies), the Health Belief Framework (one study), the Protection Motivation Theory (one study), PEN-3 (a conceptual model for health education programmes), and the Interaction Model of Client Health Belief (one study). One study used a Compliance Model that incorporated four existing theoretical models, including the Theory of Planned Behaviour, the Health Belief Model, Social Cognitive Theory, and the Transtheoretical Model and Stages of Changes. Overall, most of the studies reviewed employed a quantitative research method; little qualitative research and very little mixed method research were undertaken.

Table 1: Summary of Research Studies

Author and Year	Study Design and Population	Sample Size	Outcome Measure	Result	Comments
Abotchie (2009) Ghana	Cross-sectional research design College students aged 18 years and above	(n=157)	Knowledge of cervical cancer risk factors Cervical cancer health beliefs	About half perceived themselves to be at risk. The prevalent barriers were lack of perceived benefits, concerns about what others may think, and lack of information. Perceived risk was not associated with screening uptake.	This study highlighted that a literate population of college women lacked information about cervical cancer and its risk factors and the most significant influence of perceived barriers on screening behaviour. Cross-sectional design can not make causal inferences of association between risk perception and screening behaviour.
Ackerson (2008) USA	Qualitative research Face-to-face interview Low-income African American women (21-37 years)	(n=7)	Perceived risk Screening uptake	Women perceived either high or low risk of cervical cancer. 3 women believed risk of cervical cancer was due to have family history. Women who perceived low risk did not obtain a screening. Social influence from family and physicians and previous health care experiences influence screening attendance.	This qualitative study highlighted the background variables of social support and previous health care experience in explaining women's screening behaviour. Most of participants were from the STD clinic where they were seeking health care services for STD, not cervical screening. These women may feel confusing between STD test and Pap test. Small sample size (n=7) was used and no information on data saturation was reported.
Ben-Natan (2009) Israeli	Correlational quantitative study Israeli lesbian women aged 18-41 years	(n=108)	Health Belief Model (HBM) variables Cervical screening behaviour	Perceived benefits and barriers were associated with actual screening uptake. Perceived risk, perceived benefits, and general health motivation were associated with	This study highlighted providing knowledge about cervical screening, raising physician's awareness of offering the test to lesbian and women-based medical team in promoting screening among this sample. Self-reported data

Boonpongmanee (2007) Thailand	Cross-sectional research design Working women in Bangkok (25-55 years)	(n=189)	Perceived risk Perceived benefits and barriers for cervical screening	Perceived barriers were significant predictors of cervical screening. Perceived risk was not associated with screening uptake.	affect actual rates of cervical screening. Research population was not representative because of the use of convenience sample and involving only lesbian women. This study indentified the specific barriers for working women in Thailand to engaging in screening were embarrassment, fear, time constraints, knowledge deficit, and cost, highlighting cultural issues in screening utilization. The finding may not be generalized to unemployed women.
Byrd (2004) USA	Cross-sectional research design Hispanic women (18-25 years old)	(n=189)	HBM variables Screening uptake	Majority of women were aware of their susceptibility of cervical cancer, the seriousness of cervical screening. But no association between perceived risk and screening uptake. Perceptions about Pap tests posed barriers to undergo screening.	This study highlighted that although women understand the risk and seriousness of cervical cancer, their perceived barriers associated with screening may influence screening participation. Participants were selected from a group of young women. Self-reported prior experience of Pap tests was not validated.
Denny-Smith (2006) USA	Cross-sectional research design Convenience sample (19-58 years)	(n=240)	Health Belief Model variables, HPV/cervical cancer knowledge, Sexual behaviour, cervical screening behaviour.	Participants demonstrated a low knowledge level, low perceived risk, and low perceived seriousness of cervical cancer. No relationship between previous screening behaviour and perceived susceptibility and perceived seriousness. Positive relationship between perceived	This study highlighted that a lack of knowledge combine with low perception of susceptibility and seriousness to HPV and cervical cancer make college women more likely to contract STDs, including HPV, and increase the risk of cervical cancer. The majority of sample was married and finding may be different compared to single students.

Eaker (2001) Sweden	Case-control study Population-based sample (non-attenders & attenders) 430 non-screened and 514 screened	(n=954)	HBM variables Screening behaviour	risk and number of partners. Attendance was positively associated with perceived severity of cervical cancer and satisfactory benefits, but negative associated with practical barriers. Perceived risk was not a predictor of screening uptake.	The strength of the study is the population-based design and a database covering all cytological screening in the area. Important differences in attitudes and beliefs exist between non-attenders and attenders. However, the study is limited by the low response rate (71%) particularly among non-attenders (69%).
Eiser (2002) USA	Cross-sectional research design Convenience sample College women aged 20 to 25 years	(n=70)	Perceived risk Knowledge about cervical cancer and screening Screening behaviour	Optimistic bias was found. No relationship between perceived risk and screening intentions and actual uptake. No relationship between perceived risk and knowledge about cervical cancer and screening. Cognitive closure is a significant factor influencing screening behaviour.	Although participants were a selective younger women sample, this study highlighted that women's rating of relative risk seemed neither to guide behaviour, nor to be based on relevant knowledge about cervical cancer and suggests psychological factors in determining women's motivation to do a screening.
Fernandez (2009) USA	Experimental study using an educational intervention Women 50 years and older who were no adherent to cervical screening	(n=243)	Screening behaviour Acculturation Perceived pros and cons Perceived risk Self-efficacy.	Screening completion is higher among intervention group. The intervention increased cervical screening self-efficacy, perceived benefits, and subjective norms, but it did not change screening knowledge and perceived risk.	This study added to the evidence concerning the effectiveness of lay health worker intervention for increasing cervical screening. But the intervention was proved not to influence perceived susceptibility of cervical cancer and the study did not report the relationship between perceived susceptibility and screening behaviour.

French (2004) UK	Prospective research design. Convenience sample 226 women with normal test result 180 non-consecutive inadequate test results	(n=406)	Perceived risk Cervical screening result	Women with inadequate smear test result perceived higher risk of cervical cancer than women with normal test result. Receiving an inadequate smear test result raises state anxiety and concern and anxious women are less likely to attend for a repeat smear test.	This study highlighted that informing women have an inadequate smear test result is associated with raised level of perceived risk and anxiety about the test. The study was observational in design, it was not possible to infer the causal associations between variables.
Goldman (2004) USA	Qualitative research design using face-to face interview Dominicans and Puerto Ricans in Rhode Island (18 years and older)	(n=147)	Perception about cervical cancer and screening.	Cervical cancer risks were mostly attributed to carelessness about health care and sexual behaviour by interviewees. A strong sense of fatalism and feelings of embarrassment coexist with firm beliefs about the importance of screening, and increasing normalization of at least the idea of Pap test.	The findings from this qualitative study underscore the complexity of the issues concerning cancer perceptions and behaviours, and provide meaning and context that help explain some of the conflicting perceptions. But no information about women's perceived personal risk of cervical cancer is discussed in this study.
Ho (2005) USA	Cross-sectional research design Convenience sample of women (20-88 years old)	(n=209)	HBM variables Screening uptake	Perceived risk was not a predictor of screening uptake. Perceived severity was a significant predictor of screening uptake.	The study found many significant predictors of Pap test and informed the future study to addressing these factors in next adherence study. The data were collected by postal survey, which was not validated. 86-item questionnaire may cause feeling of tiredness and boring, which was not validated.

<p>Holloway (2003) UK</p>	<p>Cluster-randomized controlled intervention research; the intervention comprised a brief specific counselling session. Women were recruited when attending for cervical screening</p>	<p>(n=1890)</p>	<p>Short-term outcome was stated preference for future screening interval. Long-term outcome was actual screening behaviour at four-year follow up.</p>	<p>Intervention group were less likely to express a preference of a shorter than recommended interval and less likely to attend for screening sooner than their recommended recall. The impact of perceived risk on actual screening behaviour was equivocal.</p>	<p>The strength of this study is the large sample and longitudinal experimental study. This study suggests that risk perception of women regarding cervical screening were amenable to individualized risk communication intervention. This intervention was proved to benefit screening program and may relieve anxiety. Differences in numbers between the intervention and control group (829 vs. 630) because of different attrition rate may affect the comparability between two groups.</p>
<p>Hoque (2009) Botswana</p>	<p>Cross-sectional research design Women who were above 18 years old</p>	<p>(n=300)</p>	<p>Perceived severity Screening uptake</p>	<p>60% of non-screened women had low perceived severity while 33% of screened had high perceived severity. No relationship between perceived severity and screening uptake.</p>	<p>Participants were a selected women population who attended a district hospital. Participants may have felt sensitive to report negative results such as perceived barriers, introducing self-bias.</p>
<p>Hou (2003) Taiwan</p>	<p>Cross-sectional research design A convenience sample of women with mean age was 38 years in Taiwan</p>	<p>(n=125)</p>	<p>Prior screening experiences Perceived pros and cons of a test Perceived norms Perceived risk Knowledge of cervical cancer and screening</p>	<p>Screening adherence was associated with knowledge, perceived pros, cons, and norms of cervical screening. Final logistic regression model did not support perceived risk as a successful predictor.</p>	<p>This study identified important psychological factors associated with screening uptake among Chinese women in Taiwan, which informed intervention efforts tailoring these factors. Since all women voluntarily agreed to participate in the study, volunteer bias may exist. Since women were recruited from a hospital setting, these women may be more open to health-related information.</p>

Kahn (2001) USA	Cross-sectional research design 12-24 years old women	(n=490)	Compliance Model variables Screening behaviour	Perceived risk was not associated with intention to return for cervical screening. Personal beliefs of cervical screening, perceptions of other's beliefs, and cues to action were associated with intention to return.	This study indentified many significant factors that were associated with intention to return for screening. However, participants were a selective younger women sample and predicted intention to return for screening may not explain actual return. The scales that measured knowledge, perceived risk and severity, were skewed and did not adjust the normality. These results were dichotomized for analysis, which limited the ability to detect significance.
Kavanagh (1998) Australia	Qualitative research design using face to face interview. Women who had an abnormal Pap smear (19-70 years old).	(n=29)	Women's understanding of the nature of their cervical abnormality, and how they made sense of abnormality in the context of their everyday lives.	The multiplicity of meanings of 'risk' complicated the efforts of public health. Many women had not considered themselves to be at risk of cervical cancer before their abnormal Pap smear.	This study highlighted that the noun 'risk' has multidimensional meaning for individuals and suggests the needs of people to integrate health threats into their daily personal lives. However, The study associated women's understanding of the risk with health risk behaviour, but did not associated understanding of the risk with cervical screening attendance.
Kim (2010) USA	Cross-sectional research design Women from 4 ethnic groups of white, African American, Latina, and Chinese (50-80 years).	(n=1160)	Perceived risk Self-reported screening behaviour	Compared with white women, Latinas perceived a high risk of cervical cancer Chinese had a low perceived risk. No relationship between risk perception for cervical cancer and screening uptake was identified.	This study compared risk perception of cervical cancer and screening behaviour among diverse women including Chinese Americans and found significant difference in risk perception between Chinese and other ethnic groups. All women were established patients in clinics with primary care clinicians and had visited a clinic in the past 2 years.

Lee (2002) Singapore	Cross-sectional research design Population-based sample of Asian women (30-59 years)	(n=726)	Knowledge, attitude, and practices of cervical screening. Reasons for not adherent to regular screening	The primary reason for regular attendance for screening was screening as a part of health checkups. Chief barriers to regular screening were low perceived risk and low accessibility.	resulting in selective bias. This study highlighted important factors influencing women's adherence to regular screening including health service-related factors and perceived risk of cervical cancer. Women who could not be contacted on three attempts constituted a sizeable proportion of the non-respondents, but the study did not measure the difference between them.
Marlow (2009) UK	An experimental repeated design British women aged 16-75 years	(n=965)	HPV awareness Risk perception Cervical screening behaviour	Overall, HPV information did not have an effect on perceived risk. But HPV information affected women's cervical cancer risk perceptions in the younger women. There was also a significant time by screening attendance interaction, with an increase in perceived risk among women who did not regularly attend screening	This study contributes to the knowledge about the effect of HPV information on perceived risk of cervical cancer across different population group. But the relationship between risk perception and screening behaviour was not assessed. Response rate was modest and no control group was used. Women rated their perceived risk immediately after reading information about HPV, and it was possible the PR would be different in the longer term.
Martean (2002) UK	Cross-sectional research design smokers and non-smokers (20-64 years old)	(n=722)	Perceived risk Smoking behaviour Screening uptake	Perceived risk was a predictor of intention to attend for screening. Smokers were unaware of their increased risks of cervical cancer.	This study indicated that smokers seemed unaware of their increased risk of cervical cancer, informing interventional study in the future. The measure of smoking was indirect, and it was uncertain of how biases in responding have affected the results. The study sample is less educated than the general population.

McMullin 2005 USA	Qualitative research Semi-structured face-to-face interview Purposive sample of Mexican Americans (mean age was 39 years)	(n=20)	Beliefs about the role of sexual activities in cervical cancer aetiology and the impact of the beliefs on screening uptake.	The majority of women had limited knowledge about cervical cancer and no knowledge about HPV; believed that infections caused by physical trauma, certain sexual activities, and poor hygiene caused cervical cancer. women expressed that if they did not engage in unwise behaviours, they would be not at risk of cervical cancer and be less likely to get a screening.	This study suggests that culturally related beliefs about the etiology of cervical cancer play a role in the decision to obtain a screening for Latina immigrants. The study focused specifically on beliefs about sexual behaviours and screening uptake. Other risk factors were not discussed in the study. It can not comment on the relative importance of sexual behaviours compared with other risk factors for cervical cancer in the minds of the respondents or the magnitude of the impact on screening uptake.
Merrill (2002) USA	Cross-sectional research design Women aged 18 years and older	(n=3221)	Religion preference Church activity Screening uptake Perceived risk	The relation between religious preference, church activity, and screening uptake was dependent on marital status. A low risk perception may result in the low use of cervical screening.	This study incorporate religious preference, church activity, and risk perception into understanding women's screening behaviour, which provided new insight into the issue studied. The study is limited because of the use of cross-sectional telephone survey. 33% of women chose not to participate; self-selected bias may influence the results.
Orbell (1998) UK	A longitudinal study A random sample of unscreened women aged 20-64 years.	(n=166)	Protection Motivation Theory variables Screening behaviour	Perceived risk was a predictor of motivation to take a screening. Motivation, high perceived risk, less worry, and high response efficacy were significant predictors of actual screening uptake at one-year follow-up.	This study highlighted that PMT model provides a useful framework for predicting both willingness to undergo cervical screening and actual uptake of the test. The measure employed in this study is validated by the work of Orbell (1996). The actual uptake of screening is measured objectively from medical

Orbell (1996) UK	Cross-sectional research design Women aged 20-60 years	(n=276)	Behavioural risk Previous test experiences Behavioural expectation Threat appraisal (perceived risk, perceived severity, fear)	Most women were willing to undergo future tests. Future screening expectations were explained not by perceived risk, but by a sense of obligation to attend and aversiveness of cervical screening procedure.	record. This study suggests the importance a sense of moral obligation and perception of cervical screening practice in motivating women to take a screening However, the variance explained in behavioural expectations was modest (22%), suggesting future exploration of perception of risk and cervical screening from women's perspectives.
Orbell (1995) UK	Case-control design (307 screened and 307 non-screened) 20-64 years old women	(n=614)	Screening behaviour, behavioural risk, attitudes and beliefs concerning cervical screening, practical difficulties, and social class.	Non-screened women and women with low class were less likely to believe that they were at risk of cervical cancer.	The study highlighted socio-cultural factors such as social class in motivating women to take a screening following a regional call program. The low response rate (77.5%) may result in response bias.
Saules (2007) USA	Cross-sectional research design College female student (18-24 years old)	(n=135)	Smoking behaviour Screening uptake Perceived risk	Current smoker perceived a high risk of cervical cancer. Abnormal screening history was a predictor of risk perception. Relationship between risk perception and screening participation was not reported.	This study examined women's smoking behaviour and perceived risk of cervical cancer, and intention to quite smoking. However, it did not examine women's cervical screening behaviour in relation to these factors. Smoking behaviour is collected by self-report, introducing self bias.
Scarinci (2003) USA	Cross-sectional research design low-income Latina immigrants (18-42)	(n=225)	Ethnic differences regarding cervical cancer knowledge and socio-cultural	All non-Latina women had cervical screening in the past compared to 81% of Latina women. Latina women displayed	This study highlighted that Latina immigrants tended to display culturally based knowledge and beliefs regarding cervical cancer and screening that

	years old)		factors associated with cervical screening	significant less knowledge regarding cervical cancer than non-Latina. Women perceived they were not at risk for cervical cancer since they do not have 'perceived risk factors'.	influenced screening attendance. Given that only 20 women that did not have a screening, this study did not have enough power to examine further comparison among women who had a screening and ones who had not.
Seow (1995) Singapore	Cross-sectional research design 21-65 years old women (Chinese women accounting for 80%)	(n=385)	HBM variables Screening behaviour	Overall, perceived risk is very high (58.9% perceived a high risk). Among women who had never been screened, perceived risk was an important predictor of their willingness to be screened.	The study involved Chinese women in Singapore, accounting for about 80% of the total sample and highlighted culture-specific health beliefs and attitude in increasing the acceptance of the Pap smear. But the predictive value of HBM is limited because it is inherently a psychosocial model and neglects contextual factors and normative beliefs.
Tacken (2006) Dutch	Cross-sectional research design A two-stage cluster sample of women who were eligible for the Dutch population-based screening program (30-60 years old)	(n=1392)	Screening uptake Women's level variables: perceived risk, personal moral obligation, normative beliefs. Practice level variables	Beliefs about cervical screening and attendance including personal moral obligation and normative beliefs of others impacted on the uptake rate. Organizational factors also influenced on screening uptake. But perceived risk was not associated with screening uptake.	Because the response rate was selective, a non-response study performed indicated that who dropped out of the prevention program perceived low risk of cervical cancer and were more convinced the cancer was fatal. This study highlighted that cervical screening rates were likely to be influenced by beliefs about cervical screening and organizational factors.

Taylor (2004) USA	Cross-sectional research design Vietnamese American women (18-64 years)	(n=352)	Health Belief Framework variables Screening uptake	No association between perceived risk and adherence to cervical screening. Being married, knowing Pap testing is necessary for asymptomatic women, doctor had recommended testing, and had asked doctor for testing were factors associated with screening participation.	This study confirmed low levels of cervical screening among Vietnamese women and demonstrated the importance of physician-patient communication in increasing screening participation. The difference between study sample and unreached and refused participation were not reported.
Walsh (2006) Ireland	Prospective quantitative design Women aged 25-60 in Irish	(n=1114)	Attendance for cervical screening, Knowledge and access to information about cervical cancer, Experience of cervical screening, Perceived risk, Barriers to attendance.	Women have poor levels of knowledge about cervical cancer and screening. Factors influencing women's decision to attend for a screening included that increased perception of risk, level of understanding about cervical screening, and perceived barriers.	The strengths of this study were large sample size, and that computerized records from the cytology lab was used as an objective measure of screening attendance. This study identified many significant factors influencing screening uptake, suggesting an urgent need for health provider to address these factors in future.
Zhang (2007) USA	Secondary data analysis using a subset sample of a cross-sectional study Elderly women (≥ 65 years)	(n=1044)	Intent to have a screening, previous gynaecologic history, Benefit/attitudes related to cervical screening.	Among women who had not undergone a hysterectomy perceived risk, previous Pap smear test, perceived pain of the test, and perceived importance was positive correlate of intention to have a screening.	This study contributes to our knowledge of cervical screening because of its differentiation between elderly women who had and had not undergone a hysterectomy. The study only assessed intention to have a Pap test rather than actual uptake, but intention was not always translated into actual action.

3.3.2 Subject Characteristics

Sampling techniques varied, although researchers used convenience samples most frequently (58%, nineteen studies), followed by random sampling (27%, nine studies) and purposive sampling (15%, five studies). The sample size and characteristics varied among the studies. The sample sizes of these studies ranged from 7 to 3,221. The study participants ranged from 18 to 75 years old. Four studies were conducted among a selectively younger female population, with an age range of 12 to 25 years (Byrd, Peterson, Chavez, & Heckert, 2004; Eiser & Cole, 2002; Kahn, Goodman, Slap, Huang, & Emans, 2001; Saules et al., 2007). Most studies examined Caucasian or Western populations, with only one study involving Chinese women in Taiwan (Hou, Fernandez, Baumler, Parcel, & Chen, 2003), two studies involving Chinese women in Singapore (Lee et al., 2002; Seow et al., 1995), and one study involving 354 Chinese American subjects (Kim et al., 2008). Thirteen studies were conducted in the US, seven studies in the UK, two studies in Singapore, one study in Taiwan, and eight studies in other areas of the world. On the whole, most of the studies reviewed were conducted in Western populations such as the US and UK; few studies focused on Chinese populations.

3.3.3 Measurement Strategies for Risk Perception

A wide range of methods have been used to assess risk perceptions of cancer, resulting in apparently contradictory findings. The most common measures of perceived risk were (a) a comparative measure using a six-point scale from “less likely” to “more likely”, asking participants, “Are you more likely or less likely to suffer from cervical cancer in the future than other women of the same age?” or asking women to rate their perceived risk of developing cancer on a five-point scale from “much higher than average”, to “much lower than average” (Eiser & Cole, 2002;

French, Maissi, & Marteau, 2004; Marlow, Waller, & Wardle, 2009; Marteau, Hankins, & Collins, 2002); (b) an absolute measure using a five-point scale from “strongly agree” to “strongly disagree”, asking participants to respond to the statement, “I’m at risk of developing cervical cancer” (Abotchie & Shokar, 2009; Denny-Smith, Bairan, & Page, 2006; Walsh, 2006); (c) a quantitative rating of personal risk and general population risk (0-100%) (Taylor et al., 2002); and (d) a verbal measure such as “very low” to “very high”, or “big risk” and “not big risk” (Merrill & Madanat, 2002; Eaker, Adami, & Sparen, 2001; Kim et al., 2008). Most studies undertaken assessed people’s risk perception of cervical cancer by a single or two likelihood questions such as comparative measure and a verbal measure. Response choices for these questions always use quantified multipoint scales anchored by numbers, verbal phases, or comparisons to other people. For example, in Saules’s (2007) study, participants rated their risk of developing cervical cancer on a five-point scale ranging from “much below average” to “much above average”, and in Marteau’s (2002) study, respondents were asked to state whether they considered their risk of cervical cancer to be “much below average”, “below average”, “average”, “above average”, or “much above average”, with no number scales.

However, these measurements of people’s risk perception do not adequately apprehend individuals’ complex feelings and perceptions about their cancer risk (Solvic, Finucane, Peters, & MacGregor, 2002). Weinstein (1988) also highlights problems in measuring perceived risk when participants are asked to estimate their personal risk but are not given an option to say that they were unaware of the threat in question. All of the quantitative studies included in the present review have measured perceived risk in this problematic way. This traditional operationalization of risk assumes the variable to be static. However, evidence indicated that the anchors for subjective and comparative measures, such as verbal expression and

quantitative rating, even standard “language of risk”, can mean different things to different people and even to the same people in different contexts (Wallsten, Budescu, Rapoport, Zwick, & Forsyth, 1986; Walter & Britten, 2002).

Hay, Shuk, Cruz, & Ostroff (2005) summarized that at least two underlying assumptions limited the adequacy of quantitative measurement strategies for risk perception. First, these measures assume a much greater level of mathematical comprehension, or “numeracy,” than has been shown to exist in the general population (Schwartz, Woloshin, Black, & Welch, 1997) or even among the college educated (Lipkus, Samsa, & Rimer, 2001). Although these scales might feel like second nature for statistically trained researchers or health care providers, not all lay people are comfortable using statistical probabilities to convey their risk perceptions. On the other hand, the existing scales assume that individuals can easily and consistently think about their cancer risk unencumbered by emotion or life context. Recently, authors in this area have suggested that measurement of risk perception should include subjectively relevant meanings surrounding risk (Rothman & Kiviniemi, 1999).

Participants in Hay et al.’s (2005) qualitative study on the perception of cancer risk explicitly and frequently told the interviewer that the numerical risk perception scales were difficult to use, impersonal or hard to identify with, too abstract, and, as one participant put it, “dishonest.” It was resoundingly clear that these participants, although cooperative with the procedures of the interview, were largely uncomfortable using numerical risk estimates. Diefenbach, Weinstein & O’Reilly (1993) suggested that respondents found verbal measurements easier to use and did a better job of representing their true feelings verbally than by using numeric scales. Therefore, verbal measurements of risk perception were used in the present study, and all scale points for risk perception items were labelled in order to ensure that

respondents were clear about what each point represented.

3.3.4 Outcome Characteristics

Because risk perception may be an important motivator of cervical screening behaviour, it is important to understand both the determinants of risk perception and the pattern of association between perceived risk and cervical screening behaviour. Actually, existing quantitative studies failed to provide good estimates of the extent to which people overestimate or underestimate their risk because of a lack of acknowledged assessment of actual risk of cervical cancer up to now (Vernon, 1999). To date, much debate and uncertainty has surrounded the choice of risk perception measures for clinical and research use, and there are also no gold criteria of very low or high risk perception, particularly in the context of cervical cancer risk.

3.3.4.1 Women's Risk Perception of Cervical Cancer

Women's risk perception of cervical cancer varied among studies. Many studies demonstrated that women rated their relative risk for cervical cancer in the future to be below average (Eiser & Cole, 2002, Kavanagh & Broom, 1998; Marteau et al., 2002; Seow et al., 1995; Taylor et al., 2004). Kavanagh & Broom (1998) found that many women had not considered themselves to be at risk of cervical cancer before their abnormal Pap smear, and to some, a cervical abnormality signified their vulnerability and made them aware of their risk of cervical cancer and death. Smokers seemed to be unaware of their increased risk of cervical cancer and hence the increased value for them of regular smears (Marteau et al., 2002). Taylor et al. (2004) found that 77% of women thought that Vietnamese women were less likely to get cervical cancer than Caucasian women. Another study involving Chinese women in Singapore (Seow et al., 1995) also reported that only 58.9% of women considered

themselves at equal risk of getting cervical cancer with others, and a substantial proportion (48.7%) of women believed that cancer could not be prevented.

However, there are also different findings. A high proportion (73%) of women were concerned about cervical cancer, and a very significant proportion (68%) of women perceived a moderate to high risk of cervical cancer among young women in Moreira et al.'s (2006) study. Byrd et al. (2004) conducted a cross-sectional survey among Hispanic women between the ages of 18 and 25 years, and found that up to 90% of them considered themselves to be at risk of developing cervical cancer. Kim et al. (2010) identified significant differences in how risk of cancer is perceived in a sample of diverse women. Differences in perceived risk of cervical cancer persisted after controlling for demographics, numeracy, and personal and family history. Compared with Caucasian women, Asians had the lowest risk perception for cervical cancer and Latina women had a higher risk perception.

Most of the studies involved risk perception as a possible factor influencing cervical screening behaviour, and did not explore factors influencing women's risk perception. Limited evidence found that factors influencing the risk perception of cervical cancer included smoking behaviour, number of sexual partners, inconclusive screening results, screening experience, social class, perceived severity, and HPV information (Saules et al., 2007; Denny-Smith et al., 2006; French, et al., 2004; Orbell, 1995; Marlow et al., 2009). Marlow et al. (2009) found that HPV information facilitates a more accurate estimation by women of their personal risk of cervical cancer. Perceived risk of cervical cancer increased in younger women after reading information about the sexually transmitted nature of HPV and the importance of cervical screening. However, Eiser & Cole (2002) and Fernandez et al. (2009) suggested that perceived risk rating is not based on relative knowledge about cervical cancer and its causes. Fernandez et al. (2009) tested the effectiveness of lay health

worker intervention to increase cervical cancer screening among low-income Hispanic women, and found that educational intervention significantly increased cervical screening self-efficacy, perceived benefits of screening, subjective norms, and perceived survivability of cancer, but it did not change perceived risk of cervical cancer.

In conclusion, risk perception of cervical cancer has not been extensively studied, compared with risk perception of breast cancer. There is no meta-analysis about risk perception of cervical cancer, such as the meta-analysis in breast cancer risk (Katapodi et al., 2004). It is difficult to reach conclusions about the tendency of perceived risk of cervical cancer and factors which influence risk perception of cervical cancer because of limited evidence.

3.3.4.2 Women's Risk Perception and Cervical Screening Behaviour

The relationship between women's risk perception of cervical cancer and their screening behaviour also varied among studies. Currently it is unclear whether making individuals aware of their personal risk of cervical cancer will or will not increase their participation in cervical screening, because of the limited understanding and inconsistent findings from previous studies. The review (Vernon, 1999) also pointed out that there were not enough data to draw firm conclusions about the pattern or magnitude of the associations between perceived risk and cervical cancer screening. Some studies supported the suggestion that perceived risk of cervical cancer was a significant positive predictor of women's screening behaviour (Ackerson, Pohl, Low, 2008; Lee et al., 2002; Marteau et al., 2002; McMullin et al., 2005; Merrill & Madanat, 2002; Orbell & Sheeran, 1998; Scarinci, Beech, Kovach, & Bailey, 2003; Seow et al., 1995; Walsh, 2006; Zhang et al., 2007). Women's perceptions of the likelihood of developing cervical cancer were identified

as an intrinsic promoter for screening behaviours, and women who perceived themselves as being at low risk were less likely to have been screened previously or less likely to take part in screening in the future. McMullin et al. (2005) conducted semi-structured face-to-face interviews with a purposive sample of 20 Mexican women, and found that physical trauma related to abortion or rough sex, an infected partner, and lack of feminine hygiene were found to be factors that Hispanic women believed made an individual vulnerable to cervical cancer. If Hispanic and African American women did not feel that they were personally vulnerable to cervical cancer, they were less likely to take part in cervical screening (McMullin et al., 2005; Scarinci et al., 2003). A longitudinal study by Orbell and Sheeran (1998) also found that PMT variables such as perceived risk, fear arousal, and response efficacy were predictors of women's actual screening participation, and perceived risk of cervical cancer was also a successful predictor of women's motivation to be screened in the future.

However, there are also contradictory findings. Many studies demonstrated that there was no relationship between perceived risk of cervical cancer and screening behaviour (Abotchie & Shokar, 2009; Ben-Natan & Adir, 2009; Boonpingmanee & Jittanoon, 2007; Byrd et al., 2004; Denny-Smith et al., 2006; Eaker et al., 2001; Kahn et al., 2001; Eiser & Cole, 2002; Ho et al., 2005; Goldman & Risica, 2004; Hoque et al., 2009; Hou et al., 2003; Kim et al., 2008; Orbell, 1996; Tacken et al., 2006; Taylor et al., 2004). In these studies, risk perception could not predict the actual screening uptake or expressed future intention. For example, Orbell's (1996) study demonstrated that future cervical screening expectations were best explained not by risk perception of cervical cancer, but by a sense of obligation to attend and by perceptions of the aversiveness of the screening procedure. Other studies did not report the association between risk perception and cervical screening behaviour

(Fernandez et al., 2009; French et al., 2004; Kavanagh & Broom, 1998; Marlow et al., 2009; Saules et al., 2007). In conclusion, because of the limited understanding and inconsistent findings from previous studies, it is still unclear whether making individuals aware of their personal risk of cervical cancer will or will not increase their participation in cervical screening.

3.4 Implications for Future Work and Justification for the Current Study

In this section, based on the critical review of the selected studies, major gaps in knowledge and methodological insights are discussed and justification for the current study is presented.

3.4.1 Theoretical Framework

A small number of studies (13 studies) employed existing theoretical models of health behaviour, and others did not use any theoretical framework. Seven studies used the Health Belief Model to explain women's cervical screening behaviour, including previous screening behaviour and expressed future intention. It has been observed that the predictive value of the HBM is limited because it is inherently a psychosocial model and neglects environmental factors (such as the accessibility of services) and normative beliefs (or perception of how others view the behaviour) (Seow et al., 1995). Although the HBM may predict who initially agrees to take part in screening, it does not predict actual compliance and future adherence (Ho et al., 2005). Others have criticized the model for over-emphasizing the rationality of behaviour and excluding emotional factors from the decision-making process (Orbell, 1996).

Only one study employed the Protection Motivation Theory to study cervical

screening behaviour. Orbell & Sheeran (1998) conducted a longitudinal study to apply the PMT among a sample of non-screened women in order to understand the association between motivation to undertake screening and subsequent behaviour. This study supported the suggestion that PMT variables were successful predictors of both motivation to take part in cervical screening and subsequent uptake. The PMT model has been applied to a variety of health issues, including different cancer screening behaviours. The PMT has an advantage over the HBM, the Theory of Reasoned Action, and the Theory of Planned Behaviour in that it has been consistently subjected to experimental tests. In these studies, researchers have presented communications designed to manipulate PMT variables and then measured the effects of the communications on PMT variables (Stanley & Maddux, 1986; Wurtele, 1988; Wurtele & Maddux, 1987). Milne, Sheeran, & Orbell (2000) conducted a meta-analytic review of the PMT and summarized that the threat- and coping-appraisal components of the PMT were found to be useful in the prediction of health-related intentions, and that the model was useful in predicting concurrent behaviour.

Despite the superiority of the PMT over other theoretical models in predicting cancer screening behaviour, and the fact that variables specified in the PMT have received considerable empirical support in previous studies (Ben-Natan & Adir, 2009; Eaker et al., 2001; Ho et al., 2005; Marteau et al., 2002; Orbell & Sheeran, 1998; Walsh, 2006), a number of controversial issues and criticisms have been raised by a number of theoretical and empirical studies. Orbell & Sheeran (1998) also found that the association between motivation to take part in cervical screening and actual action was far from perfect. That means that the PMT variables may not be adequate to explain the action of those whose positive motivation did not lead to screening uptake. Other studies provided support for the contention that variables outside those

specified by the PMT may need to be addressed in order to acquire a fuller understanding of health-related motivation. Empirical studies in this critical review suggest a variety of factors outside those specified by the PMT that are significantly associated with women's cervical screening behaviour, including social influence from family and physicians (Ackerson et al., 2008; Taylor et al., 2004), previous health care experiences (Ackerson et al., 2008), cognitive closure (Eiser & Cole, 2002), a sense of fatalism and normalization of the idea of cervical screening (Goldman & Risica, 2004), normative beliefs of others (concerns about what others may think) (Abotchie & Shokar, 2009; Kahn et al., 2007; Taken et al., 2006), contextual factors such as screening as part of a health check-up (Lee et al., 2002), religious preference (Merrill & Madanat, 2002), and personal moral obligation (Orbell, 1996; Taken et al., 2006). For example, Orbell's study (1996) showed that the inclusion of personal moral obligation in the regression model resulted in a dramatic improvement in variance explained in intention, suggesting that threat- and coping-appraisal variables are not sufficient to explain motivation to enact preventive behaviour. Similar direct effects of personal moral obligation on intention to be screened have been demonstrated by Taken et al. (2006).

It has been suggested by previous studies that a fuller understanding of screening uptake would be achieved by greater attention to social motivational processes and culture-related beliefs than those that are provided by either the HBM or the PMT. Such evidence suggests a need for the development of a culturally relevant model to understand women's cervical screening behaviour if we are to promote cervical screening participation among Chinese women. This is considered to be of particular importance given that within the Chinese cultural context, an association between screening procedures and immodesty or sexually inappropriate behaviour has been identified as a cultural barrier to women taking part in cervical

screening (Hou & Lessick, 2002).

In view of the superiority of the PMT over other theoretical models in predicting cancer screening behaviour, the PMT was employed in phase one of the present study to guide the selection of the variables and instrument and the interpretation of the findings. In view of the fact that PMT variables have been proved by previous studies to be insufficient to explain motivation for cancer screening, a new culturally relevant model was developed from the present study through a fuller understanding of complex factors affecting Chinese women's cervical screening behaviour in mainland China.

3.4.2 Study Variables

In conclusion, risk perception of cervical cancer and its association with cervical screening behaviour has not been extensively studied. Up to now, because of limited evidence and inconclusive findings, it has been difficult to form a conclusion about the relationship between the perceived risk of cervical cancer and cervical screening behaviour. Nor is there clarity concerning the factors which influence women's perception of risk of cervical cancer, how women perceive the risk of cervical cancer, how personal risk factors are interpreted, and the influence of cultural issues on cervical screening behaviour. Few studies have explored the meaning of risk for women themselves or the relationship between risk perception and cervical screening behaviour.

For an individual to make an accurate assessment of disease risk and subsequent coping strategies, they must first be aware of relevant risk factors for the disease (Marlow et al., 2009). However, little research has explored the role of personal risk factors in determining screening behaviour. Frazer et al. (2006) argued that the recognition of HPV infection and sexual lifestyle as risk factors for cervical cancer

has far-reaching consequences for prevention strategies and for counselling patients. Ethical, cultural, social, and religious issues will need to be addressed if we are to be successful in lowering cervical cancer rates. Highlighting the association with sexual behaviour may lead to stigma and guilt in patients who develop cancer. Feelings of anxiety and stigma were also observed in women with normal cytology who tested positive for HPV (McCaffery, Waller, Forrest, Cadman, Szarewski, & Wardle, 2004). Previous research revealed an STD-associated stigma which could serve as a powerful barrier to HPV-related information seeking, screening, and treatment behaviours (Friedman & Sheppard, 2006).

Recently, the need to develop an improved understanding of women's perception of the risk of cervical cancer and the role of personal risk factors and potential modification has been identified as an important cancer research direction for the future (Bankhead et al., 2003). A better understanding of women's perception of risk of cervical cancer might give us a better insight into how women see cervical cancer risk and how personal risk factors are interpreted, thereby facilitating the subsequent utilization of screening services. Efforts have been made in the present study to understand women's risk perception of cervical cancer and the role of personal risk factors in determining screening behaviour.

3.4.3 Study Population

Most of the studies were conducted in the West with non-Asian populations. Findings of these studies may have limited generalizability to Asians with diverse cultural beliefs, religious practices, and family and social norms that are distinctly different from those of Western societies. A few studies have involved Chinese women in Taiwan and Singapore and Chinese Americans, but it should also be noted that there are many cross-district differences among Chinese people in Taiwan,

overseas, and in mainland China, for instance, in socio-economic status and health care systems. Yet, studies on the risk perception of cervical cancer and its influence on women's cervical screening attendance among Chinese women, particularly those residing in mainland China, were scarce.

Importantly, cultural values have been found to affect cancer communication and screening in several ethnic minority populations (Liang, Yuan, Mandelblatt, & Pasick, 2004). The importance of providing cervical screening services in a culturally appropriate manner is well established (Hislop et al., 2003; Holroyd et al., 2004; Taylor et al., 2002). With regard to Chinese culture, beliefs about the body, health, and illness are not only conceptualized in a different way than in Western culture, but also may contribute to a failure to participate in cancer screening or a delay in participation (Kwok, Sullivan, & Cant, 2006). The limited qualitative data suggest that traditional Chinese cultural views may include several constructs such as fatalism, a hot-cold balanced diet, conformity with nature, modesty, and self-care to avoid a medical visit (Liang et al., 2008; Mo, 1992). Chen (1996) described perceptions of disease prevention and health promotion among Chinese Americans. In Chen's model, health is viewed holistically, with the ultimate goal of harmonizing with the environment. In addition, a positive view about the effect of Chinese herbal medicine and a preference for using Chinese herbs over Western medicine have been identified in older Chinese and Chinese cancer patients (Liang et al., 2004; Simpson, 2003). These values may keep Chinese individuals from seeking help through Western medicine, such as regular screening, and they influence conceptions of illness and cancer (Hoeman et al., 1996; Liang et al., 2004; Yamashiro & Matsuoka, 1997).

Chinese women also have specific cultural views about sexually-related issues; these views might exert a profound influence on women's perception of the risk of

cervical cancer and subsequent implementation of the primary and secondary prevention strategies for cervical cancer. Modesty is a cultural characteristic of traditional Chinese women that can render inappropriate even talking about screening for cervical cancer (Hoeman et al., 1996; Mo, 1992). In many Asian cultures, the expectation of obedience to a spouse is in conflict with another cultural expectation to remain healthy in order to serve the needs of the family (Holroyd et al., 2004). Both screened and non-screened Chinese women's notions of modesty in regard to cervical screening included a concern for maintaining expectations of the correct female behaviour and further reflect the attitudes of male sexual partners. Chinese values with respect to modesty and sexuality, especially in unmarried women, have contributed partially to Chinese women's lack of attention to reproductive health (Mo, 1992; Hou, 2002).

Therefore, in the present study, efforts were made to explore risk perception and cervical screening practice among Chinese women living in mainland China, the largest Chinese population in the world.

3.4.4 Design

Importantly, the literature linking risk perception variables to cervical cancer screening behaviour is growing and is more fragmented. In line with most studies of risk perception in the context of other health threats (Wilkinson, 2001), studies in the present review sought to investigate a range of divergent and theoretical "risk" constructs with the aim of improving the communication of risk information between health professionals and the general public. However, because of the variety of measurement strategies employed, it is difficult to compare women's risk perception of cervical cancer among the studies. Perhaps the most serious sociological criticism of risk perception research concerns the fact that studies record snapshots of risk

judgments outside the specific social contexts in which people live out their day-to-day lives (Rogers, 1997: 745). Individuals' perceptions of risk are by no means constant; rather, they change in different social settings and in relation to new knowledge and experience of life events (Bellaby, 1990).

Limitations of the studies reported in this literature review included the study population, methods used for data collection, and lack of in-depth explorations of risk perception from women's perspectives. Because most of the studies employed a cross-sectional design and retrospective report, it is not possible to infer causal relationships between women's future screening uptake and their risk perception of cervical cancer. Orbell & Sheeran (1998) highlighted the problem of interpreting correlations between perceived personal risk and behaviour in cross-sectional studies. This is because both positive and negative associations between risk and behaviour are possible. If a person feels vulnerable to a health threat, they may decide to adopt a protective behaviour, then a positive relationship between the two variables will be obtained. However, once the protective behaviour has been adopted, the individual may no longer feel at risk, and therefore the association between perceived risk and behaviour will be negative. A related difficulty with cross-sectional studies is that it cannot be determined whether perceived risk influences behaviour, or vice versa. Despite the limitations of a cross-sectional study, it should be noted that a cross-sectional design allows the researcher to collect baseline data in a short period of time, and the baseline data can be used as a foundation for the next part of the study.

Most studies reviewed assessed women's risk perceptions of cervical cancer by one or two likelihood questions; evidence has shown that these quantitative measurements do not adequately capture an individual's complex feelings and perceptions about cervical cancer risk (Slovic et al., 2002). These limitations of

existing risk perception measures are perhaps most obvious within cultural and ethnic groups when multiple health, social, and financial hazards influence the context in which the threat of cancer is perceived (Huerta & Macario, 1999). A review of current developments in risk research claimed that recent developments reflect a general movement to acknowledge the significance of social and cultural factors in understanding risk (Taylor-Gooby & Zinn, 2006). Within the literature on cervical cancer perception and prevention decision-making, existing quantitative approaches have been unable to explain incongruent findings or to describe the full range of women's understanding of the risk of cervical cancer and subsequent screening uptake, suggesting the need for alternative approaches and research settings.

Previous work made little attempt to examine in depth the feelings related to the risk of cervical cancer and how women understand their personal risk factors. A mixed method approach that provided insights and a more comprehensive understanding of the social phenomena being studied than either a quantitative or qualitative method alone was considered (Greene, Benjamin, & Goodyear, 2001). This is of particular importance, given that less attention has previously been paid to the undoubtedly complex issue of risk perception of cervical cancer, particularly within the Chinese cultural context in mainland China. It is expected that the present study, which employs both quantitative and qualitative methods, will provide an in-depth understanding of how women see cervical cancer risk and how personal risk factors are interpreted in relation to cervical screening behaviour within the context of Chinese culture. A model to understand Chinese women's cervical screening behaviour was developed based on the integration of the findings from both the qualitative and quantitative components; this will provide a common framework to facilitate screening participation within the Chinese population.

3.5 Overview of Mixed Method Research

In this review, none of the 34 studies adopted a mixed method design. The limitations of a single method approach were raised earlier (3.4.4), and some discussion of mixed method research is indicated. Over the past 25 years, numerous calls for increased methodological diversity and alternative research methods have been made (Gelso, 1979; Goldman, 1976; Howard, 1983). These calls have led to important discussion about incorporating qualitative methods in counselling research and including qualitative studies in traditional publication outlets (Hoshmand, 1989; Maione & Chenail, 1999; Morrow & Smith, 2000). They have also led to discussions about integrating quantitative and qualitative methods, commonly referred to as a mixed method design. Despite the availability of books, chapters, and journal articles related to mixed method research, virtually nothing has been written about mixed method research designs in the risk perception of cervical cancer and cervical screening behaviour. The general absence of discussion on mixed method research designs may be due to a number of factors, including the historical precedent of favouring quantitative and experimental methods in psychology (Gergen, 2001; Waszak & Sines, 2003), the difficulty in learning and applying both types of methods (Behrens & Smith, 1996; Ponterotto & Grieger, 1999), and the general lack of attention given to diverse methodological approaches in graduate education and training (Aiken, West, Sechrest, & Reno, 1990).

When both quantitative and qualitative data are included in a study, researchers may enrich their results in ways that one form of data does not allow (Brewer & Hunter, 1989; Tashakkori & Teddlie, 1998). Using both forms of data, for example, allows researchers to simultaneously generalize results from a sample to a population and to gain a deeper understanding of the phenomenon of interest. It also allows researchers to test theoretical models and to modify them based on participant

feedback. Results of precise, instrument-based measurements may, likewise, be augmented by contextual, field-based information (Greene & Caracelli, 1997). Quantitative and qualitative data could also be complementary. Each could, for example, “uncover some unique variance which otherwise may have been neglected by a single method” (Jick, 1979, p. 603).

In conclusion, Hanson et al. (2005), Mertens (2003), and Punch (1998) suggest that mixed method investigations may be used to (a) better understand a research problem by converging numeric trends from quantitative data and specific details from qualitative data; (b) identify variables/constructs that may be measured subsequently through the use of existing instruments or the development of new ones; (c) obtain statistical quantitative data and results from a sample of a population and use them to identify individuals who may provide qualitative data through which the results may be expanded; and (d) convey the needs of individuals or groups of individuals who are marginalized or underrepresented.

Despite this growth and development, a number of controversial issues and debates have limited the widespread acceptance of mixed method designs. Some researchers have argued that mixed method research was untenable (i.e., incommensurable or incompatible) because certain paradigms and methods could not “fit” together legitimately (Smith, 1983). Reichardt and Cook (1979) countered this viewpoint by arguing that paradigms and methods are not inherently linked, citing a variety of examples to support their position (e.g., quantitative procedures are not always objective, and qualitative procedures are not always subjective). Indeed, the perspective exists today that multiple methods may be used in a single research study to, for example, take advantage of the representativeness and generalizability of quantitative findings and the in-depth, contextual nature of qualitative findings (Greene & Caracelli, 2003).

Another perspective is that mixed method research uses competing paradigms intentionally, giving each one relatively equal footing and merit. This “dialectical” perspective recognizes that using competing paradigms gives rise to contradictory ideas and contested arguments, features of research that are to be honoured and that may not be reconciled (Greene & Caracelli, 2003). This perspective maintains that mixed method research may be viewed strictly as a “method”, thus allowing researchers to use any number of philosophical foundations for its justification and use.

In addition, Rossman and Wilson (1985) differentiated between methodological purists, situationalists, and pragmatists. The purists believed that quantitative and qualitative methods are derived from different, mutually exclusive epistemological and ontological assumptions about research. The situationalists believed that both methods have values but that certain methods are more appropriate under certain circumstances. The pragmatists, in contrast, believed that, regardless of circumstances, both methods may be used in a single study. Recently, Tashakkori & Teddlie (2003) have attempted to formally link pragmatism and mixed method research, arguing that, among other things, the research question should be of primary importance – more important than either the method or the theoretical lens, or paradigm, that underlies the method. At least 13 other prominent mixed method researchers and scholars also believe that pragmatism is the best philosophical basis of mixed method research (Tashakkori & Teddlie, 2003).

3.6 Summary of the Chapter

One review article and 33 primary studies are reviewed in this chapter. In conclusion, risk perception of cervical cancer has not been extensively studied. Most of the studies employed a quantitative research method and only four studies

employed a qualitative research method to explore women's risk perception of cervical cancer. However, common quantitative measurement strategies for risk perception, which involve numerical likelihood estimation, do not adequately capture women's thoughts and feelings about cervical cancer risk. The shortcomings of using a single method were discussed and the debate about mixed method designs was presented. Moreover, most of the studies focused on Caucasian, American, and British populations, and only one study dealt with Chinese women in Taiwan. Chinese women in mainland China are understudied.

Very little is known about risk perception of cervical cancer and its influence on women's cervical screening attendance among mainland Chinese women. It is crucially important to understand these issues among this largest Chinese population in view of the fact that Chinese women are less likely to attend for regular cervical screening compared with other populations.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

In this chapter, a description of the methods used to achieve the aims and objectives of the study are discussed. First, the theoretical framework employed in the study is described, followed by an overview of the mixed method design and a presentation of the rationale for the selected design in this study. The sampling method, data collection method, data collection procedure, methods of data analysis, issues of validity and reliability, and pilot study for each phase of the study are then discussed. The final section highlights the ethical considerations of the study.

4.2 Theoretical Framework of the Study

The Protection Motivation Theory (PMT) (Rogers, 1975, 1983) provides one of the most dominant accounts of precautionary behavior in the health domain and has the potential to account for some of the major determinants of cancer screening behaviour. Neuwirth, Dunwoody, & Griffin (2000) summarized that on both theoretical and practical grounds, the PMT can and will continue to serve risk communication researchers as a vehicle for conducting fruitful research. Indeed, Rogers & Prentice-Dunn (1997) also suggested that one of the major frontiers for future research would be to find different facets of PMT components that have theoretical and practical importance.

In view of the superiority of the PMT over other theoretical models in predicting cancer screening behaviour, the PMT was employed as the theoretical framework in phase one of the present study. The constructs specified in the PMT

model provided a conceptual framework to guide the selection of variables and the instrument in this study. The PMT model also guided the interpretation of findings in relation to women's risk perception of cervical cancer (threat appraisal), their attitudes towards cervical screening practice (coping appraisal), and to what extent these factors influence their screening uptake. Most importantly, the PMT model guided the purposive sampling for phase two of the study (the qualitative component) and provided an important starting point from which to understand the complex factors affecting Chinese women's cervical screening behavior in mainland China. A new culturally relevant model has been developed based on a fuller understanding of Chinese women's cervical screening behaviour from the integration of qualitative and quantitative findings of the present study.

4.3 Research Aim and Objectives

4.3.1 Aims

The aims of the study were firstly to explore Chinese women's knowledge and perception of cervical screening, their perception of risk of cervical cancer, and their perception of personal risk factors for cervical cancer. The second aim was to examine the role of these factors in determining women's screening behaviour and develop a model to understand cervical screening behaviour among Chinese women.

4.3.2 Objectives

In order to achieve the aims of the study, the following objectives were identified:

1. To identify participation patterns for cervical screening.
2. To examine women's knowledge and perception of cervical cancer screening.
3. To examine women's knowledge and perception of risk and personal risk factors

in relation to cervical cancer.

4. To examine factors associated with cervical screening behaviour. Potential factors included socio-demographic characteristics, perception of health, knowledge, risk perception, and perception of personal risk factors.
5. To develop a culturally-relevant model to understand Chinese women's cervical screening behaviour.

The quantitative component of the study achieved objective 1, and partly achieved objectives 2, 3, and 4. The in-depth exploration of the qualitative component achieved objectives 2, 3, and 4. The integration of the quantitative and qualitative components of the study contributed to the final objective.

4.4 Definitions of Term

The following definitions were adopted to define the major concepts understanding the design of this study.

Perception of risk: For the purpose of the study, perception of risk is defined as “an individual's cognitive appraisal of the likelihood or probability of a harm or noxious event” (Rogers, 1975, p.102).

4.5 Research Design

4.5.1 Design

To achieve these objectives, a mixed method design consisting of two phases was adopted in this study, employing both quantitative and qualitative methods of data collection. Mixed method designs may be defined as “those that combine the qualitative and quantitative approaches into the research methodology of a single study or multiphased study” (Tashakkori & Teddlie, 2003, pp. 17-18). Designing a mixed method study involves at least three additional steps compared to those taken

in traditional research methods. These include deciding whether to use an explicit theoretical lens, identifying the data collection procedure, and identifying the data analysis and integration procedures (Greene & Caracelli, 1997; Tashakkori & Teddlie, 2003). The present study did not use an explicit theoretical lens. In this study, a sequential mixed design method was used, in which “multiple approaches to data collection, analysis, and inference are employed in a sequence of phases” (Tashakkori & Teddlie, 2003, pp. 149-150).

The study collected data sequentially, first collecting quantitative survey data, and then collecting qualitative interview data. Phase one consisted of a cross-sectional survey of Chinese women. This phase provided a baseline assessment of Chinese females’ socio-demographic information, knowledge and perception of cervical cancer and screening, perception of risk of cervical cancer, and the relationship between these factors and cervical screening behaviour. Most importantly, the baseline information collected was used to guide the purposive sampling of women in phase two. In phase two, a qualitative approach was used to explore Chinese women’s perception of risk of cervical cancer and personal risk factors associated with cervical cancer, and examine which factors contribute to Chinese women’s cervical screening behaviour. This study emphasized the qualitative part as a major component of the study and collected qualitative data in more detail than in the quantitative part. A model to understand Chinese women’s cervical screening behaviour was developed from the integration of findings from phases one and two of the study. The data analysis and integration strategies for the quantitative and qualitative data are described in section 4.8, “Integration of data from phases one and two”.

4.5.2 Rationales for the Selected Design

Tashakkori & Teddlie (2003) identified three aspects in which mixed method designs are superior to single method designs. The first aspect is that a mixed method design can answer research questions that the single approach can not. Other authors, such as Punch (1998), have suggested that quantitative research is confirmatory and more directed at theory verification, while qualitative study is more directed at exploration and theory generation. A mixed method design enables the researchers to answer confirmatory and exploratory questions simultaneously. The second aspect is that a mixed method design provides stronger inferences than a single approach design. A qualitative approach provides greater depth of the phenomenon, while a quantitative approach provides greater breadth of the phenomenon; together they offset the disadvantages of certain single methods and give results from which one can make better inferences. The third aspect is that a mixed method design provides the opportunity for presenting a greater diversity of divergent views. Divergent findings generated from quantitative and qualitative components lead to a re-examination of the conceptual frameworks and the assumptions underlying each of the two components.

In the overall view, in the present study, the quantitative findings from phase one provided baseline information regarding women's knowledge and perceptions about cervical cancer risk and cervical screening, and demographic characteristics. The use of a qualitative research method in phase two of the present study was useful because it provided insights into Chinese women's thoughts and ideas about the risk of cervical cancer and personal risk factors, from their perspective. Trustworthiness was also strengthened during the interview, as the dialogue facilitated clarification of potential misunderstandings. The integration of the findings from phases one and two provided the researcher with a better insight into how Chinese women perceived

cervical cancer risk and how personal risk factors were interpreted, and this was used to develop a model to understand Chinese women's cervical screening behaviour. Mixed method analysis allows the researcher to use the strengths of both quantitative and qualitative analysis techniques so as to understand a phenomenon better (Greene, et al., 2001). This was considered to be of particular importance given that less attention has previously been paid to the undoubtedly complex issue of perception of risk of cervical cancer within the Chinese cultural context.

4.6 Settings

The study was conducted in Changsha, the capital city of Hunan province. Changsha is situated in the south region of China and has a population of about 1.6 million. A substantial proportion of women in Changsha work outside the home and have access to occupational well-women check-ups. Two drugstores and two supermarkets in Changsha where most of the employees are female were introduced through a personal network as study settings.

4.7 Phase One: Quantitative Component

Despite the acknowledged limitations of cross-sectional designs, the present study still employed a cross-sectional survey in phase one of the study because one of the main purposes of phase one was to guide the purposive sampling of participants for phase two, and the cross-sectional survey allowed the researcher to obtain screened and non-screened participants in a short period of time. Phase one consisted of a cross-sectional survey to collect baseline information, including women's cervical screening behaviour, knowledge about cervical cancer and screening, perceived risk and coping for cervical cancer, demographic characteristics, sexual history, perception of health and health behaviour, and willingness to

participate in phase two.

4.7.1 Sample and Sampling

A non-probability sampling method was adopted in phase one. Convenience sampling allowed the use of any available group of research subjects (Polit & Hungler, 1999), and allowed the researcher to obtain screened and non-screened subjects in a short period of time. The sample included women who had never attended for cervical screening (non-screened group), as well as women who had attended for cervical screening within the previous three years (screened group). The inclusion criteria were (1) 25 to 50 years of age; (2) community-dwelling; (3) Chinese-speaking; (4) sexually active (married or with a sexual partner); and (5) willing to participate in this study. The exclusion criteria were (1) a diagnosis of cervical cancer; (2) difficulties in listening, reading, writing, or speaking; and (3) a known history of psychological, psychiatric, or chronic medical conditions which would make them unfit to participate in an interview. Since there are not national guidelines for cervical screening in mainland China, the study focused only on women from 25 to 50 years of age, because evidence showed a moderately high incidence rate of cervical cancer in Chinese women within this age range (Hong Kong Cancer Registry, 2007).

Sample size is a significant factor in attaining the desired power for the specified significant criteria and hypothesized population effect size. In this study, group comparison and logistic regression analyses were undertaken, and all the significance tests were performed with the significance criterion of 0.05. Following Cohen's (1992) guidelines, the decision was made to recruit 85 subjects for each group (screened group and non-screened group) so as to detect an effect size of 0.3 or more using a Chi square test at a 5% significance level and a power of 80%. So the

total sample size was 170, with 85 screened women and 85 non-screened women.

4.7.2 Questionnaire

A confidential questionnaire was administered to the participants by an interviewer in the study settings. The questionnaire consisted of five sections and all sections were adopted from previous studies (Orbell & Sheeran, 1998; Twinn et al., 2002). Permission letter for use of knowledge scale is provided in Appendix 2. The cover page of questionnaire is provided in Appendix 3a.

4.7.2.1 Section One: women's Participation Pattern for Cervical Screening.

This section (Appendix 4a) is adapted from the work of Twinn et al. (2002), who had undertaken a study with Chinese women in Hong Kong. The participation pattern for cervical screening in Twinn et al.'s study included recording whether or not the subject had attended for cervical screening, as well as the time, the venue, and prompting factors for the most recent cervical screening. In the pilot study of phase one of the present study, 12 out of 14 screened women had had their last cervical screening as part of a routine health examination programme organized by the workplace or the community. Modifications to the preliminary questionnaire were made accordingly. Three questions were added into the questionnaire, including whether or not they had participated in an organized physical examination for women, which kind of programme they had participated in, and whether or not they had paid for the screening. Participants were also asked whether they had known about cervical screening and where they got this information. If they had not heard of cervical screening or they were not sure of that, they were provided with uniform information about cervical screening by the researcher. The following open-ended question explored non-screened women's barriers to attending for cervical screening:

“Could you tell me the main barrier for you to attending for cervical screening?”

4.7.2.2 Section Two: Women’s Perception of Body Health.

This section (Appendix 5a) is also adopted from the work of Twinn et al. (2002), who had undertaken a study with Chinese women in Hong Kong. Questions related to body health recorded women’s perceived overall personal health and their perception of lifestyle factors which were important to health. Health-related behaviours such as attending for a mammogram, contraception, measuring blood pressure, and so on were also collected from participants.

4.7.2.3 Section Three: Women’s Knowledge about Cervical Cancer and Cervical Screening.

Twinn et al. (2002) developed the Chinese questionnaire on women’s knowledge about cervical cancer and cervical screening that was adapted from the previous work of Seow and colleagues (1995), who had undertaken a population-based study with women in Singapore. Twinn et al. (2002) undertook a preliminary pilot study to investigate the level of knowledge about cervical cancer and cervical screening among a population of 242 Hong Kong Chinese women, of whom 135 (57%) had attended for screening and 85 (43%) had not. The validity and reliability of this Chinese instrument was also established by the work of Twinn et al. (2002). The Chinese instrument (Appendix 6a) consisted of two subsections: women’s knowledge about cervical cancer screening and their knowledge about risk factors associated with cervical cancer. This questionnaire consisted of 21 statements, comprising 11 items about cervical screening and 10 items about the risk factors associated with cervical cancer. A participant received a 1 for a correct response and 0 for an incorrect response or a response of “don’t know”. Thus, possible scores for

this part ranged from 0 (low) to 21 (high).

4.7.2.4 Section Four: Protection Motivation Theory Measures.

The section (Appendix 7a) about PMT measures is a structured instrument measuring the constructs specified by the protection-motivation theory (Rogers, 1975, 1983) and previous work (Orbell, 1996; Orbell & Sheeran, 1998; Hodgkins & Orbell, 1998; Eiser & Cole, 2002). PMT model has been applied to cervical screening by the work of Orbell & Sheeran (1998), in which a structured questionnaire measuring the cognitions specified by PMT was devised. This longitudinal study supported the notion that PMT variables were successful predictors of both motivation to take part in cervical screening and subsequent uptake. The validity and reliability of the principal components of analysis of the English version of PMT measures was established by means of a successful replication among an independent sample of 305 women who had been screened. The findings demonstrated that the values of internal consistency for these factors are all in the acceptable range.

Modifications have been made to the construct of perceived risk, with one question added to measure the concept of comparative risk perception in addition to the original absolute risk perception (the individual's rating of their personal risk). This modification was determined by several considerations. Evidence suggests that the single concept of absolute risk perception cannot provide an accurate estimate of individuals' overall perception of risk. As a result, more than one concept should be used to improve the measurement of perceived risk (Weinstein, 1999). Woloshin, Schwartz, Black, & Welch (1999) highlighted the importance of the measure used to assess perceived risk and argued that a more rigorous method is achieved by using comparative measures (the individuals' rating of their risk compared to the average). Indeed, it is recommended that measurements of both absolute and comparative risk

perception should be incorporated into research on cancer risk perception (Lipkus et al., 2000). The domain of perceived risk in this study therefore involved both absolute risk perception measurement and comparative risk perception measurement.

Although subjects' responses to items labelling all scale points or only the endpoints have not been found to show a significant difference (Dixon, Bobo, & Stevick, 1984), special consideration is also given to these two items of perceived risk. All scale points for these two items were labelled in order to ensure that respondents were clear about what each point represented. Therefore, verbal measurements of both absolute and comparative risk perception were used in the present study, by asking women to estimate their chance of developing cervical cancer (1, very low; 2, moderately low; 3, neither high nor low; 4, moderately high; 5, very high); and to compare their chance of developing cervical cancer to that of an average woman of the same age (1, much lower; 2, moderately lower; 3, about the same; 4, moderately higher; 5, much higher).

One bilingual nursing professional translated the questionnaire into standard (mainland) Chinese and back translation of the scale was performed by another bilingual nursing professional. The two then met to decide on a consensus translation. Both conceptual and linguistic equivalence were considered during the translation process so that the translation would be sensitive to the local dialect and culture. For instance, the translation of item 9 ("The atmosphere will be cold and clinical") and item 14 ("Which of six practical difficulties applied to you? 1. Employment") were considered meaningless for mainland Chinese people, so the closest semantic equivalents were used instead. This was based on the judgment that direct translation of the phrase might not be understood by women resident in Changsha. Therefore, equivalent versions were created for item 9 ("Health professionals appeared to have very little concern for the patient") and item 14 ("Which of six practical difficulties

applied to you? 1. Inconvenience related to employment”).

A panel of experts in the area of knowledge of the instrument and selected potential users were invited to evaluate the content validity in terms of the accuracy, appropriateness, and applicability of the translated version. This panel comprised two gynaecologists, two nursing specialists, and two women: one screened and one non-screened. The panel members were asked to rate the relevance of each item on a 4-point scale with 1=not relevant, 2=somewhat relevant, 3=quite relevant, and 4=highly relevant. The content validity of the items in the mainland Chinese version of the PMT measures was assessed by calculating the content validity index (CVI) (Polit & Beck, 2004) for each item, as well as the overall scale. The overall CVI was .94, which was calculated by the average item level CVI and indicated satisfactory agreement among the panel members on the Chinese version of the PMT measures. To address the reliability of the PMT measures, test and retest assessment during a lapsed time period of two weeks was conducted on a sample of 20 women. Test-retest reliability was well established with all of the intra-class coefficients (ICCs) of the PMT measures higher than 0.70. The translated version was piloted in Changsha among 28 women (14 non-screened and 14 screened). The scale was found to be psychologically acceptable and no revision was required.

The Chinese version of the PMT measures in the present study consisted of seven domains: perceived risk (two items), perceived severity (one item), fear arousal (one item), response efficacy (four items), response cost (four items), self efficacy (six items), and protection motivation (one item). A five-point Likert scale was employed for all items except the domain of protection motivation, which was assessed by the statement, “Would you be willing to have a test in the future?” using a dichotomy answer (Yes/No). Apart from the domains of perceived severity and fear arousal, scores across items within each domain were summed and divided by the

number of items to facilitate subsequent data analysis. Therefore, possible scores for each domain ranged from 1 to 5, with high scores indicating a high level of perceived risk, perceived severity, fear arousal, and so on, and vice versa. Table 2 demonstrates the number of items and the definitions of the seven domains.

Table 2: Number of Items and Definitions of the Seven Domains of PMT Model

Domain	No. of Items	Definition
Perceived risk	2	Individual's perceived probability of the occurrence of cervical cancer
Perceived severity	1	Individual's perceived magnitude of noxiousness of cervical cancer
Fear arousal	1	How much fear cervical cancer arouses for the individual
Response efficacy	4	Beliefs about whether cervical screening will be effective in preventing the occurrence of cervical cancer.
Self efficacy	6	Individual's beliefs about whether he or she is able to take part in screening
Response cost	4	Beliefs about how costly participation in screening will be
Protection motivation	1	Intention to take part in cervical screening in the future

4.7.2.5 Section Five: Socio-demographic Information, Sexual History, & Willingness to Participate in Phase Two.

Finally, participants were asked a brief set of questions concerning socio-demographics and sexual history (Appendix 8a). Details on the socio-demographic characteristics of respondents including age, educational status, household income, and whether or not they had children, were collected. Data on participants' sexual behaviour, including the age at first intercourse and the total number of sexual partners, were also obtained from respondents. The last question

asked respondents if they were willing to proceed to participate in phase two of this study. Women who agreed to be contacted for phase two were asked to give a preferred time and venue for the interview, as well as a contact telephone number.

4.7.3 Data Collection Procedure

The first attempts to contact available subjects were made through the researcher's personal network. Then two drugstores and two supermarkets where most of the employees are female were involved through that personal network. The researcher contacted the women who met the inclusion criteria and provided them with information about this study. A brief enrolment survey was conducted to ensure the women's screening status and eligibility. If an eligible woman agreed to participate in the study, she was given an information sheet, which contained a brief description of the research project, and assurance of participant anonymity and the voluntary nature of participation (including the assurance that lack of participation would not affect her in any way). The woman was then asked to complete the informed consent form before the questionnaire was administered. In these four settings, the employees have a one-hour noon break when they are working, and the workplaces provide an undisturbed common room in which they can rest. With strong support from the study settings, the private rest rooms were borrowed for research use. The surveys were all conducted in a private room, and a "Do not disturb" sign was displayed outside the room when data collection commenced. During the first stage of data collection, efforts were made to recruit as many as possible subjects including screening and non-screened women. Then in the latter stage of data collection, efforts were made to ensure involving equal number of both screened and non-screened women.

4.7.4 Data Analysis

The descriptive statistics were used for data cleansing, and any discrepancy between the raw data and the entered data was eliminated. The total samples of cases, and the frequencies and measures of central tendency and dispersion were used to check for any errors in a data set, and any values that were out of the normal limits for the variables were detected by these methods (Portney & Watkins, 2000). Listwise deletion was used in this study. Listwise deletion refers to the elimination of cases for which data are missing (Polit & Beck, 2004). If the missing information for a particular participant was extensive, or if the missing information concerned the key dependent variables (cervical screening behaviour and perceived risk of cervical cancer), then the data for the participant were removed (Polit & Beck, 2004).

SPSS v16.0 (Statistical Program for Social Sciences Inc., Chicago, IL, USA) was used for statistical analysis. Ordinal variables and normal-like distributed variables were respectively presented as a median (inter-quartile range) and mean (standard deviation). Categorical data were presented as a frequency (percentage). Univariate comparisons between non-screened and screened groups were done using the Pearson Chi-square test, the exact Chi-square test, and the T-test or Mann-Whitney test, as appropriate. For example, comparisons in demographic information and sexual history between non-screened and screened groups were undertaken using the Pearson Chi-square test or exact Chi-square test. Comparisons in knowledge scores between non-screened and screened groups were undertaken using the T-test or Mann-Whitney test.

Logistical regression analysis was employed to identify factors that were associated with screening behaviour during the previous three years (screened/non-screened). A p-value < 0.25 is a convention for this type of analysis (Hosmer, & Lemeshow, 2000). Those variables with a p-value < 0.25 in univariate

analysis were selected as candidate variables for stepwise logistical regression to delineate factors independently associated with screening behaviour in the previous three years. Odds ratios (Ors) and 95% confidence intervals (CIs) were used to estimate the relative risk of being an attender at screening for cervical cancer in the logistical regression model. Likelihood ratio tests were used to validate different models against each other. To test the best-fitting multivariate model, we conducted a Hosmer-Lemeshow goodness-of-fit test. All statistical hypotheses were tested using two-tailed tests. A p-value < 0.05 was considered statistically significant, indicating that the risk of making a Type I error was set at 5%.

4.7.5 Issues of Validity and Reliability

Validity refers to the degree to which an instrument measures what it is supposed to measure, and it is necessary for determining the usefulness of the data (Portney & Watkins, 2000). The questionnaire that was used in this study consisted of five sections, which were all adopted from previous work. A panel of expert practitioners was invited to review this questionnaire in terms of clarity of language and acceptability. All experts in the panel agreed that the items of the women's awareness of risk of cervical cancer questionnaire were culturally relevant to participants in mainland China. To increase the validity of the data analysis of this phase, data verification procedures were conducted to ensure the accuracy of the data-entry process. Any discrepancy was compared between the raw data and the entered data. A total sample of the survey was visually compared with the data entered in the database to ensure data-entry accuracy. Systematic data-entry errors were corrected throughout the database.

Reliability refers to the degree of consistency with which an instrument measures the attribute it is supposed to measure (Portney & Watkins, 2000). The

internal consistencies of the individual sections in this questionnaire were well established by previous work. To address the reliability of the questionnaire, test and retest assessments during a lapsed time period of two weeks were conducted on a sample of 35 women, which accounted for about 20% of the total sample. Test-retest reliability was well established, with all of ICCs of all sections of the women's awareness of risk of cervical cancer questionnaire higher than 0.70.

4.7.6 Pilot Study of Phase One

A pilot study was conducted in phase one of this study. A pilot study involves a small-scale test of the entire study, testing not only the instruments but also the sampling plan, the intervention, and the study procedure (Pilot & Hungler, 1999). The aim of the pilot study was to test the administration of the questionnaires, to confirm how much time was required to complete the questionnaire, and to identify any parts of the sections that were difficult to read or understand, or any parts of the data collection procedures found to be offensive to the women. In this phase of the study, the pilot study was carried out on 28 women (14 screened and 14 non-screened). In the pilot study, it took 15 to 20 minutes to administer one questionnaire, and most of the participants showed acceptance of the length of the questionnaire.

4.8 Phase Two: Qualitative Component

Phase two consisted of a semi-structured face-to-face interview designed to provide an in-depth examination of the women's risk perception of cervical cancer and factors in determining screening behaviour.

4.8.1 Sample and Sampling

Participants for phase two of this study were purposively selected from the sample of phase one, and the sampling was based on women's perceived risk of cervical cancer and their willingness to be interviewed. Sampling in this stage was also divided into two parts, so that relatively equal samples were selected from the screened and non-screened groups of phase one.

Among those women who were willing to be interviewed, women's response to the measurement of absolute risk perception was used to identify the sample for phase two of the study. Although the literature highlights the role of measurement of comparative risk perception in an accurate assessment of respondents' risk perception (Gurmankin, Levy, Shea, Williams, Quistberg, & Armstrong, 2006), there are limited examples of assessment of comparative risk perception in cervical cancer. Moreover, during the data collection procedure in the pilot study of phase one, some participants expressed difficulty in rating their risk compared to other people. They explained, "I just know my own situation, I don't know others", so it's hard to compare." Therefore, in the main study, the criteria of very low or high risk perception were based on women's rating of absolute risk perception. Indeed, to date, there are no gold criteria for defining perception of very low or high risk. In a study by Gurmankin et al. (2006), very high risk perception was defined as a selection of the verbal description, "very high". In the present study, perceived risk was considered high if a woman's response to the absolute risk perception measurement was moderately high (4) or very high (5). On the other hand, perceived risk was considered low if a woman's response to the absolute risk perception measurement was moderately low (2) or very low (1).

Therefore, the sampling was based on the following criteria:

(1) A high risk perception of cervical cancer (response to the absolute risk perception measurement is moderately high [4] or very high [5]).

(2) A low risk perception of cervical cancer (response to the absolute risk perception measurement is moderately low [2] or very low [1]).

(3) Willingness to share with the researcher their perceptions and feelings about the risk of cervical cancer.

(4) Age: to ensure involving both young (25-35 years) and old women (36-50 years).

Purposive or judgment sampling is a non-probability sampling method, and this type of sampling allows the researcher to select particular participants for the study based on his or her judgment of which participants are representative of the population (Polit & Hungler, 1999). Purposive sampling was used in this phase because the purposive selected sample of participants allowed the researcher to obtain rich information about the research questions, as they represented those women (screened or non-screened) who had a high or low risk perception of cervical cancer. This also allowed the researcher to adequately capture a wide range of participants' perspectives on the risk of cervical cancer.

Sampling strategies in this stage followed the two principles for qualitative sampling: appropriateness and adequacy. Appropriateness refers to "the identification and utilization of the participants who can best inform the research according to the theoretical requirements of the study" (Morse, 1991). Appropriateness of the sample was maintained by selecting the sample from women who had a high or low risk perception of cervical cancer. The women recruited for this phase of the study met the criteria for appropriateness of participants, and they were selected based on their level of perceived risk and experience of cervical cancer screening during the previous three years. Inclusion of women with a high or low level of risk perception enabled the researcher to explore their perceptions from a wider perspective.

Adequacy refers to the sufficiency and quality of the data (Morse & Field, 1996). Informational adequacy was ensured by the completeness and the amount of

information rather than the number of cases. Indeed, an important principle guiding the sampling in qualitative research is that the greater the richness and depth of the information obtained, the fewer the number of informants required to reach data saturation (Morse, 2000). There are no firmly established criteria or rules for sample size in qualitative studies, and the sample size must be determined on the basis of informational needs. Safman and Sobal (2004) suggested a sample size of between 20 and 30 for a study using the qualitative interview for data extensiveness, and data collection continued to the point of data saturation, at which no new information about the participants' experiences or perception of the risk of cervical cancer emerged from further interviews (Morse, 1991). After 20 interviews were conducted, the researcher found lots of repeat information for each categories and sub-categories. Then 7 more interviews were conducted to ensure reach the data saturation. A total of 27 participants in the current study provided very rich and extensive data during the interviews, which lasted between 35 and 85 minutes. Such richness in the data indicates the appropriateness and adequacy, and therefore contributes to data saturation (Morse, 2000). In addition, one researcher alone collected all of the data, thus enhancing data saturation. The quality of the information given by the participants proved to be appropriate and adequate to answer the research questions in this study.

4.8.2 Data Collection Procedure

Telephone calls were made to confirm with the women fulfilling the inclusion criteria their availability, and if they were available, both the time and the place of interview were selected according to the participants' preference and confirmed by the individual participant. Finally, all interviews were conducted with participants after work. Nineteen interviews were conducted in a private room at the women's

workplace, where privacy was provided for the participants to openly share their experiences and perceptions. Seven interviews were conducted in a separate room at a teahouse near the women's workplace, and a "Do not disturb" sign was displayed when the interview commenced. One interview was conducted in a room at a participant's house, as she was not willing to be interviewed elsewhere.

At the beginning of each interview, a clear explanation of the study was given and written consent was obtained. The participants were informed that the interview would be audio taped. It was not too difficult to establish rapport with the participants, because the researcher had had previous contact with the participants in phase one of the study. However, the researcher also had to be careful in self-presentation and avoid misunderstandings, leading questions, or making any judgment on the participants' descriptions.

The interview schedules were conducted in Mandarin by the same researcher. The schedule served only as a starting point for ongoing conversation between the participants and the researcher. The researcher started with some general questions and allowed the participants to talk freely about their experiences and to describe their own views as fully as possible. The researcher listened attentively and enthusiastically, followed the participants' descriptions carefully, and was sensitive to their answers. The researcher also followed up any unclear points or issues needing clarification or elaboration by the informants, and asked them more about the details if not fully understanding the meaning of their responses (Rubin & Rubin, 2005). The questions were not necessarily asked in the same order as was written in the interview schedule.

All the participants' interviews were audio recorded using a portable recorder with a built-in microphone and counter to enable the researcher to locate the particular interview on the file more easily. The length of the interview was

determined by the participants. The interviews were conducted for the purpose of recalling their perceptions of cervical cancer risk and cervical cancer screening practices, and the exploration of topics was conducted until the participants expressed no further information.

4.8.3 Data Collection Method

The predominant method of data collection in qualitative research is the semi-structured interview (Morse & Richard, 2002). The rationale for adopting semi-structured interviews in this study was that this technique ensured that the researcher could collect all the information required, and at the same time allow participants to interpret freely and answer questions in their own language (Morse & Field, 1996). The interview schedule (Appendix 9a) was developed by the researcher, with reference to an initial analysis of the data from phase one of the study and a review of related literature (Hay et al., 2005). For example, the analysis of the data from phase one raised a question as to why non-screened women did not take part in screening even when access to the screening service was free. Therefore, the question, “Could you tell me why you’ve not attended for cervical screening?” was addressed in the interview schedule to clarify the above issue among the non-screened participants.

The schedule was critically examined by an expert to identify any poorly-worded questions, offensive questions, or questions revealing the researcher’s own biases or personal values (Berg, 2007). The interview schedule was translated into Chinese. Topics were arranged in an order appropriate for the purpose and included the use of prompts to ensure data consistency. A list of open-ended questions was used to understand women’s perspectives on cervical cancer risk and cervical screening; follow-up questions specific to women’s perception of cervical

cancer risk and the role of personal risk factors were asked, as well as questions aimed at understanding women's perceived association between their relationship with their sexual partners and their perceived risk of cervical cancer and screening behaviour. These interview questions were used to guide the interview, encourage conversations without leading only to "yes" or "no" responses, and ensure that all areas of interest could be covered (Kvale, 1996). To ensure active inquiry and successful data collection, the interview included probes or probing questions, which often guided the participants to focus on the topic and asked them to explain their earlier answers in detail. For example, the questions "Would you tell me more about how you come to this estimation of your chance of developing cervical cancer?" and "As you know, sexual behaviour is a risk factor for cervical cancer; to what extent do you think your relationship with your sexual partner would have an influence on your risk of cervical cancer?" were used to elicit more in-depth information about the participants' perception of the risk of cervical cancer and to verify what they had said.

The researcher was also alert to when the informants started giving "yes" or "no" responses, which would not provide much information for data analysis. These responses prompted the researcher to probe further with questions such as, "Please tell me more about ...". This ensured that the information needed for further in-depth exploration was provided, and that the interview was more fruitful (Berg, 2007). In addition, the researcher appropriately used probes in a neutral manner to elicit more useful or detailed information from the participants and ensure the richness and quality of the interview data collected.

4.8.4 Data Analysis

The aims of a qualitative data analysis are to organize, provide structure to, and

elicit meaning from narrative data. Analysis in qualitative research refers to the categorization and ordering of data in order to make sense of the data and draw inferences that are valid and reliable (Morse, 1991). Data in the present qualitative exploratory study were analyzed using content analysis, which is defined as “a research technique for making replicable and valid inferences from text (or other meaningful matter) to the context of their use” (Krippendorff, 2004, p. 18).

4.8.4.1 Data Preparation

Prior to content analysis, an important initial task was to become very familiar with the data. Therefore, the researcher listened carefully to the content of the recorded interviews as early as possible after the interview. Subsequently, the audio recordings of the in-depth interviews were transcribed verbatim in Chinese. The interview data were precisely and objectively transcribed word by word from the interview, and nothing was rephrased, altered, omitted, or explicated. Expressions, such as laughter, crying, and silence, which implied the emotional part of the informants' experiences, were also included in the transcript (Kvale, 1996). The transcription was then examined against the audio file for precision, and revised if necessary.

4.8.4.2 Content Analysis

Content analysis is a method used in qualitative data analysis to sort the narrative data in the study into different categories. Each interview was segmented by the topics into categories. Latent content analysis, which involved an interpretative reading of the symbolism underlying the surface structure in the text (Berg, 2007), was used for the datasets of the individualized face-to-face interviews in the present study. In this process, the investigator selects, focuses, simplifies, abstracts, and transforms the raw data so as

to make sense of it and to identify the patterns and categories (Berg, 2007). The researcher is concerning about not only the surface structure presented in the text, but also the underlying meaning in each passage of the text. The analysis should go beyond the surface theme and appearance to reveal the underlying phenomena and their interpretation. Accordingly, latent content analysis was used to reveal in greater depth the perception of the risk associated with cervical cancer and factors in determining cervical screening behaviour.

There were three basic steps involved in content analysis, namely developing meaningful units, developing the set of categories, and developing the rationale and illustration to guide the coding of data into categories (Berg, 2007). Firstly, the researcher read and reread each interview in its entirety, in an effort to understand the interview as a whole and to grasp the words or phrases that had a meaningful importance for cervical screening participation and perceptions of risk of cervical cancer in the comments of the participants. The text was then divided into meaningful units, and each meaningful unit was sorted from the transcription. At the same time, the data were coded according to the meaning of the sentence. Coding was used to identify the threads and various dimensions of the participants' perception of the risk of cervical cancer and personal risk factors.

Secondly, the researcher revisited and condensed the data into descriptive categories that formulated the meaning in different areas of the experiences as perceived by the participants. Frequently occurring meaningful units that appeared to deal with the same content were organized into subcategories. The subcategories were then analyzed according to how the meaningful units in each subcategory fitted together and to what extent the differences were clear. Similar subcategories were grouped together into categories. These categories captured the nature of the perception and provided a meaningful whole (DeSantis & Ugarriza, 2000). The

researcher sorted and classified these groups of data to develop and finalize the categories and subcategories, which were mutually exclusive, explicit, and accurate without overlapping (Miles & Huberman, 1994). Finally, when the categories were fully saturated, descriptive paragraphs were written about the categories, and any relationships between them were explored. In this step, the author had to make a judgment on the appropriate categories for each response or unit of analysis (Porter, 1996). Appendix 10 presents an illustration of the development of the category 'Perception of cervical screening'.

The data were coded manually. The main category was usually labelled in each paragraph by writing the code in the margin. The labelled paragraphs were cut and pasted onto a large sheet of paper for manual sorting. The relevant phrases or sentences were highlighted to assist in the grouping of that portion of text with corresponding extracts in the next stage of data analysis.

In order to ensure the accuracy of data analysis, the first four interview transcripts were translated into English by the researcher for data analysis under the instruction of supervisors. Content analysis was done on both the Chinese transcripts and English transcripts, and findings from four data sets were compared with each other by an expert to find any discrepancy. A high level of agreement between two findings was required and minor modifications were made. After that, the data analysis of the remaining interviews was undertaken in Chinese, which is the mother tongue of both the researcher and the participants. The Chinese and English versions of the categories were compared and discussed with a bilingual supervisor to ensure their equivalence. In addition, all quotations were translated and were then cross-checked for consistency. The quotations were finally checked by two English-speaking supervisors for syntactical accuracy.

4.8.5 Issues of Validity and Reliability

Measurement in qualitative research refers to the series of judgments made by the researcher about collected information related to its truthful representation of the desired content, its comparability with known information, and its verifiability across subjects and across situations. Qualitative research is done to understand and explain the phenomenon, and does not require manipulation of the independent variables. Therefore, internal validity is not a goal for qualitative research (Brink, 1991).

According to Brink (1991), the key notion in reliability and validity of qualitative data is the idea of error. Error that occurs at any stage of the research process compromises the outcomes of the study and limits the credibility of the data. The errors occurring in a qualitative study mainly concern (1) sampling errors, such as the sample not being representative; (2) measurement errors, such as a faulty or ambiguous wording of questions; (3) coding errors, such as incomplete data or incorrect recording; and (4) data analysis errors, for instance, incorrect recording or faulty interpretation of data measurement (Brink, 1991). In this study, several techniques were adopted to minimize those errors.

Firstly, the participants for interviews were purposively selected by the researcher, and this contributed to the desired representation of the participants. Even though only one woman met the inclusion criteria of the high risk perception group, this woman appropriately represented this group that perceived a high risk of cervical cancer. Secondly, the validity of the study relies on the quality of the questions in the interview schedule, and on ensuring that the information being obtained provides relevant answers to the study questions (Marshall & Rossman, 2006). The validity of this study was ensured by formulating the interview schedule from an initial analysis of the data from phase one of the study and a review of previous studies about risk perception and cervical cancer screening, and comparing these data with concepts

obtained from the interviews. Before the interviews, all informants were told that there were not right or wrong answers to every question, and were assured of the confidentiality of the information collected.

There were some questions concerning sensitive issues such as sexual partners and sexual behaviour, and the respondents' personal risk of cervical cancer. The issue of Chinese women's reluctance to discuss sexual matters openly due to a notion of inappropriateness (Mo, 1992) was addressed in the data collection of phase two of the study. Good rapport was established with each participant before the individual interview commenced. General questions concerning women's understanding about cervical cancer and cervical screening and their interpretation of personal risk factors for cervical cancer were raised in the first part of the interview. On the basis of women's perceived association between sexual behaviour and the risk of cervical cancer, questions about their perspective on the association between their relationship with their sexual partner and the risk of cervical cancer were asked in a non-judgmental manner to elicit more in-depth information. Importantly, the interviews in this study were carried out in a supportive manner. The participants told about their experiences openly and without hesitation, even when the topic was affecting them emotionally. Indeed, some women revealed that it was the first time that they had been aware of the role of the male partner in the development of cervical cancer, and that they had never discussed this issue with family or friends.

Thirdly, all of the interviews were audio recorded to minimize the possibility of failure to note important data. All interview conversations were transcribed in Chinese by the researcher alone to ensure the consistency and accuracy of the transcription of the data.

Finally, in order to ensure that the coding was as free from bias as possible and could be replicated, threats to the reliability of the qualitative data were also

addressed. All of the interviews were conducted by one researcher to ensure the consistency in questioning techniques. For data analysis, all interviews were conducted in Mandarin and were transcribed. All the transcriptions were conducted by one researcher to address the reliability of the data. At the beginning of data analysis, the researcher and another independent coder, who was experienced in the qualitative study approach and was familiar with the content analysis method, coded and categorized one transcript independently. Then two researchers met and discussed the coding and categories together, came to an agreement on any discrepancies, and made modifications to provide the final consensus for the categories that best described each response.

4.8.6 Pilot Study of Phase Two

A pilot study was conducted prior to the main study to test the feasibility of the interview schedules. The pilot study involved four practice interviews to test whether the interview schedule would work effectively and whether the type of information being anticipated would actually be obtained (Berg, 2007). It was important to ensure that the participants were able to understand the questions in the interview schedule. It was also important to ensure that some questions concerning private issues such as sexual activity and sexual partners were not offensive. The length of time for the interview and whether the participants perceived the time burden to be too great were tested in this pilot study. At the end of each interview of this pilot study, open-ended questions were used to invite these four participants to give any comments or suggestions about the design of the questions and the whole process of the interview.

The four participants consisted of two non-screened women and two screened women. The interviews were audio taped and transcribed. The pilot study provided important experiences for the main study in terms of the data collection method.

After the pilot study, the interview schedule was revised to be more concise and precise. For example, in the interview schedule, the question, “Could you explain any factors that prevent you from attending for cervical screening?” was changed to, “Could you tell me why you did not attend for cervical screening? (Prompt: What factors influence your intention to attend for cervical screening?)” in order to explore factors influencing women’s intention to be screened. The pilot study showed that the interview questions were clear and easily understood and answered. For the interview question regarding women’s relationship with their sexual partner, the participants also felt that it was acceptable and not offensive. Although the interview took around 40 minutes to one hour, the participants did not feel that this was too long.

4.9 Integration of Data from Phases One and Two of the Study

Mixed method data analysis is defined as “the use of quantitative and qualitative analytical techniques, either concurrently or sequentially, at some stage beginning with the data collection process, from which interpretations are made in either a parallel, an integrated, or an iterative manner” (Tashakkori & Teddlie, 2003, p. 353). It is assumed that mixed method data analysis can stem from a variety of research designs (mixed method, qualitative, or quantitative). In other words, mixed method data analyses are not dependent on the particular research design that is employed (Tashakkori & Teddlie, 2003). This design-independent feature of mixed method analysis arises from the fact that epistemology and the method are not synonymous (Onwuegbuzie, 2000a). Rather, the mixed method analysis should stem from the research purpose (Tashakkori & Teddlie, 2003). As noted by Onwuegbuzie and Teddlie (2003), “the point at which the data analysis begins and ends depends on the type of data collected, which depends on the sample size, which in turn depends

on the research design, which in turn depends on the purposes” (p. 351). Thus, in the present study, the integration of qualitative and quantitative findings was based on study objectives.

In this study, quantitative and qualitative data were analyzed separately and then the two sets of results were compared and contrasted in the discussion. The integration of two data sets occurs by analyzing the data separately, by transforming them, or by connecting the analyses in some way (Caracelli & Green, 1993; Tashakkori & Teddlie, 2003). To compare women’s perception of risk of cervical cancer and personal risk factors between screened and non-screened groups, the technique of counting themes was employed in the present study. This technique is a manifestation of what Tashakkori & Teddlie (1998) referred to as “quantitizing” data (p. 126), in which qualitative data are converted into numerical codes that can be represented statistically. As noted by Miles and Huberman (1994), three rationales prevail for counting themes: (a) to identify patterns more easily, (b) to maintain analytical integrity, and (c) to verify a hypothesis. Indeed, obtaining counts of the themes prevented the researchers from “overweighting” or “underweighting” the emergent themes (Sandelowski, 2001, p. 234).

In addition, in this sequential mixed method design, the data collection, data analysis, and data interpretation stages were iterative. In other words, these three elements of the mixed method research process were recursive and thus nonlinear in nature (Onwuegbuzie, 2000b). The integration of quantitative and qualitative data employed different models of data analysis of mixed method design. Firstly, a mutual verification of research results and a potential increase of validity produced by such a verification was regarded as the primary goal of the mixed method design (Denzin, 1978, pp. 301-304). Women’s risk perception of cervical cancer and factors influencing screening behaviour were first examined with the help of quantitative

data. For example, empirical observational statements that could be made on the basis of statistical analysis of these standardized data provided evidence of understanding of women's risk perception of cervical cancer; a great majority of the women perceived a low risk of cervical cancer. These results from the quantitative part of the study were further validated by the analysis of the qualitative data. In extended in-depth interviews, the participants answered questions about the risk of cervical cancer from their perspectives.

Secondly, the complementarity model of a mixed method design is that women's perception of risk of cervical cancer and factors influencing screening behaviour is (at least partly) constructed by both quantitative and qualitative methods, and that different methods highlight different aspects of it or may even constitute different phenomena (Tashakkori & Teddlie, 2003). Thus, the varying perspectives opened up by different methods may supplement each other so as to produce a fuller picture of the study objectives, which would not be the case if only one single method was applied. In such cases, quantitative and qualitative methods serve different purposes and help to illuminate different aspects of the phenomenon under study. Thus, qualitative and quantitative methods help to answer different questions; the results of statistical analyses show the pattern of individuals' screening behaviour (e.g., what kind of women had been screened and what kind of women had not), while the analysis of qualitative data helps to provide information about underlying reasons for these patterns in terms of the participants' understanding of cervical cancer and cervical screening practices.

Finally, in many cases, outcomes of qualitative and quantitative research at first sight contradicted each other, which meant that the statements on the theoretical level fail as explanations for the divergent empirical results from the quantitative and qualitative phases. The purposeful search for divergences was used to find new and

better explanations for the phenomenon under investigation (Tashakkori & Teddlie, 2003). Thus, divergent findings in the study were not considered as an indicator of a poor research design; instead, they were considered as a pointer to new theoretical insights. From this pointer, a better understanding of the phenomenon and more meaningful findings were expected to be achieved.

4.10 Ethical Considerations for Phases One and Two of the Study

Ethical approval was obtained from the Survey and Behaviour Ethics Committee of the Faculty of Medicine at The Chinese University of Hong Kong and the study hospital (Appendix 11). For phase one of this study, all participants were asked to sign a written consent form (Appendix 12a) before the study. The purpose and nature of the study were explained to all participants by the researcher, along with an information sheet (Appendix 13a). The participants were also informed of their right to withdraw at any time without affecting the care they received. Confidentiality was pledged, and all participants were assured that privacy would be maintained throughout the study by the use of a coding system rather than the use of their name. Information sheets that recorded the participants' names, home addresses, telephone numbers, and code numbers were kept in a locked cabinet, and these were only accessible to the researcher herself.

The participants in phase two were informed about the purpose of the study, the length of the interview, and the fact that it would be audio recorded. All participants were given a full explanation of the purpose and procedure of the study and the voluntary nature of their participation by the researcher, along with an information sheet (Appendix 14a). All participants in phase two were informed that all information would be kept confidential and that their names would not be used in any report on the research. The researcher obtained written consent from each

participant (Appendix 15a), and then an appointment was made for the interview.

Another ethical issue encountered by the researcher during phase two of the study was the role conflict between being both the researcher and the clinician. Some participants gave emotional responses during the interviews. Some complained about the attitude of health care practitioners involved in the cervical screening service, and some asked about the progress of cervical cancer prevention. The researcher was sensitive to their feelings, but did not answer their complaints and questions during the interview, as providing such emotional support to participants during the interview could be a threat to the reliability and validity of the study. However, the researcher showed support to these participants and answered their questions about cervical cancer and screening after completion of the interview.

CHAPTER FIVE

FINDINGS OF PHASE ONE OF THE STUDY

5.1 Introduction

This chapter presents the results of phase one of the study, in which the main objective was to provide a baseline assessment of Chinese women's socio-demographic information, knowledge and perception of cervical cancer and screening, and perception of risk of cervical cancer, and the relationship between these factors and cervical screening behaviour, and most importantly to guide the purposive sampling phase two of the study.

The results of phase one of the study consist of three sections. The first section describes the recruitment of participants and background information, including socio-demographic information, sexual history, and perceptions related to body health and health-related behaviour. The second section describes women's knowledge about cervical cancer and screening, Protection Motivation Theory measures, and factors associated with women's cervical screening behaviour. The last section presents the results of the women's willingness to participate in phase two of the study and compares socio-demographic information and sexual history between the women who were willing to be interviewed and those who were not. Then the findings of phase one of the study are interpreted and factors influencing women's cervical screening behaviour are discussed. Finally, a summary of the results and implications for phase two of the study are given.

5.2 Recruitment of Participants

Between 10 September and 20 November 2007, a convenience sample of 184

Chinese women aged between 25 and 50 years, who had or had not taken part in cervical screening within the previous three years, was recruited. After excluding two women with extensive missing information or missing information on cervical screening behaviour, six women who were unsure of their screening status, three women who reported that they had had no sexual experience, and six women who had been screened over three years previously, the final sample size was 167 women, with 79 non-screened women (47.3%) and 88 screened women (52.7%).

5.3 Socio-demographic Information and Sexual History of Participants

The age range of the women was from 25 to 50 years ($M=34.35$, $SD=7.04$). The socio-demographic information shown in Table 3 demonstrates that 77.3% of the sample had received a secondary or post-secondary level of education. In addition, the majority of the women were in paid employment (95.2%; 92.5% in full-time employment), were married (94.0%), had a child (79.0%), had not had a hysterectomy (97.6%), and had no relatives with cancer (77.9%). There were 34 women (20.4%) who did not know or were not sure of the household income; 90% of the participants who knew had a monthly household income of less than 5,000 RMB and 38% had a monthly household income less than 2,000 RMB. A substantial proportion (81.5%) of the participants reported that they had sexual intercourse for the first time after the age of 20, and 79.8% reported only having one sexual partner.

There were no significant differences between the two groups in age, educational level, full-time working status, household income, cancer in relatives, age at first sexual intercourse, or number of sexual partners. The screened group had a higher proportion of married women ($p=0.033$) and women who had a child ($p=0.038$) than the non-screened group.

Table 3: Background Characteristics of the Study Sample (n=167).

	All (n=167)	Non-screened (n=79)	Screened (n=88)	p-value
Background Characteristics				
Age (yrs)				
25 – 35	94 (56.3%)	47 (59.5%)	47 (53.4%)	0.429
36 – 50	73 (43.7%)	32 (40.5%)	41 (46.6%)	
Education Level				
Junior secondary or below	38 (22.8%)	23 (29.1%)	15 (17.0%)	0.085
Secondary graduate	88 (52.7%)	35 (44.3%)	53 (60.2%)	
College or above	41 (24.6%)	21 (26.6%)	20 (22.7%)	
Currently in Paid Employment				
No	8 (4.8%)	4 (5.1%)	4 (4.5%)	0.797
Yes	159 (95.2%)	75 (94.9%)	84 (95.5%)	
Monthly Household Income (RMB)				
<2,000	52 (31.1%)	25 (31.6%)	27 (30.7%)	0.492
2,000 – 2,999	33 (19.8%)	13 (16.5%)	20 (22.7%)	
3,000 – 4,999	34 (20.4%)	14 (17.7%)	20 (22.7%)	
5,000 or above	14 (8.4%)	9 (11.4%)	5 (5.7%)	
Unsure	34 (20.4%)	18 (22.8%)	16 (18.2%)	
Marital Status				
Single / divorced / widowed	10 (6.0%)	8 (10.1%)	2 (2.3%)	0.033
Married	157 (94.0%)	71 (89.9%)	86 (97.7%)	
Children				
No	35 (21.0%)	22 (27.8%)	13 (14.8%)	0.038
Yes	132 (79.0%)	57 (72.2%)	75 (85.2%)	
Hysterectomy				
No	163 (97.6%)	77 (97.5%)	86 (97.7%)	0.729 [†]
Yes	3 (1.8%)	1 (1.3%)	2 (2.3%)	
Don't know / unsure	1 (0.6%)	1 (1.3%)	0 (0.0%)	
Cancer in Relatives				
No	130 (77.8%)	58 (73.4%)	72 (81.8%)	0.192
Yes	37 (22.2%)	21 (26.6%)	16 (18.2%)	
Age at First Sexual Intercourse				
20 yrs or below	21 (12.6%)	13 (16.5%)	8 (9.1%)	0.096 [†]
21 – 30 yrs	136 (81.4%)	59 (74.7%)	77 (87.5%)	
Not willing to disclose	10 (6.0%)	7 (8.9%)	3 (3.4%)	
Number of Sexual Partners				
1 only	134 (80.2%)	60 (75.9%)	74 (84.1%)	0.317
2 – 3	14 (8.4%)	7 (8.9%)	7 (8.0%)	
Not willing to disclose	19 (11.4%)	12 (15.2%)	7 (8.0%)	
Willing to Join Phase II of the Study				
No	55 (32.9%)	29 (36.7%)	26 (29.5%)	0.325
Yes	112 (67.1%)	50 (63.3%)	62 (70.5%)	

Data are presented as frequency (%).

P values marked with [†] were compared using an exact Chi-square test; all others were done using a Pearson Chi-square test.

5.4 Women's Participation Pattern of Cervical Screening

The data obtained from 88 screened women were analyzed. Seventy-nine women (89.8%) reported that their screening was part of a free programme providing physical examinations for women. Participants reported various prompt sources for choosing to take part in screening: 58 women (65.9%) were prompted by routine

health examinations, and others were prompted by the community health centre, their doctor, concern about their health, a media campaign, friends, and remembering themselves (in decreasing order of frequency). The majority of the participants (56.8%) had their most recent cervical screening in hospital. Others had attended women's health centres (27.3%), community health centres (14.8%), and private clinics (1.1%) for cervical screening. Among the women who had been screened (n=88), a substantial proportion (77.3%) received free cervical screening services, and the other 20 women paid from 5 to 230 RMB for their screening; two women could not remember how much they had paid for it. Women's participation pattern of cervical screening is shown in Table 4.

Table 4: Screened Women's Participation Pattern of Cervical Screening (n=88).

	Frequency (%)
Taking Part in an Organized Programme	
No	9 (10.2)
Yes	79 (89.8)
Prompting Factors	
Routine health examination	58 (65.9)
Community health centre	26 (29.5)
Doctor	22 (25.0)
Concern about my health	21 (23.9)
Media campaign	13 (14.8)
Friends	7 (8.0)
Remembered myself	6 (6.8)
Venue of Cervical Screening	
Hospital	50 (56.8)
Women's health centre	24 (27.3)
Community health centre	13 (14.8)
Private clinic	1 (1.1)

5.5 Reasons for Women Not Being Screened

An open-ended question asked non-screened women their reasons for not attending for cervical screening. Data obtained from 79 non-screened women were analyzed. Content analysis was undertaken to understand the reported barriers, and this is shown in Table 5. Similar barriers were clustered and the frequencies were

calculated. The reasons that were most frequently cited were “I’m healthy” followed by “Not necessary to take a test”, and “No discomfort”.

Table 5: Reasons for Non-screened Women Not Taking Part in Screening (n=79).

Reasons	Frequency
I’m healthy	11
Not necessary to take a test	10
No discomfort	10
No time	8
Not suggested by the doctor	8
No symptoms	7
Don’t know this test	4
No awareness of the test	2
Fear of pain	2
Other reasons	17

5.6 Perceptions Related to Body Health & Health-related Behaviours

The majority (96.4%) of participants perceived themselves as healthy (60.5%) or average (35.9%), with no significant difference between the two groups. More participants in the screened group than in the non-screened group perceived that eating a balanced diet and visiting a doctor regularly were important to their health ($p=.044$). A high proportion (50.9%) of the participants had undergone a mammogram, but only 27.5% had had a clinical breast examination. A statistically significant difference between the two groups was identified in regard to mammograms, clinical breast examinations, and blood cholesterol tests, with screened women more likely to undergo mammograms, clinical breast examinations, and measurements of blood cholesterol levels. This phenomenon is mainly due to the fact that cervical screening, mammograms, clinical breast examinations, and blood cholesterol tests are currently routine practices included by most organized programmes of physical examination for women in mainland China.

Table 6: Perceptions Related to Body Health & Health-related Behaviours of the Screened and Non-screened Women.

	All (n=167)	Non-screened (n=79)	Screened (n=88)	p-value
Perceptions Related to Body Health				
Perceived Overall Health of the participant				
Not healthy	6 (3.6%)	4 (5.1%)	2 (2.3%)	0.511 †
Average	60 (35.9%)	26 (32.9%)	34 (38.6%)	
Healthy	101 (60.5%)	49 (62.0%)	52 (59.1%)	
Perceived the Following Types of Lifestyle as Important to Health				
Regular exercise	86 (51.5%)	47 (59.5%)	39 (44.3%)	0.050
Balanced diet	126 (75.4%)	54 (68.4%)	72 (81.8%)	0.044
Visiting Chinese herbatist regularly	9 (5.4%)	5 (6.3%)	4 (4.5%)	0.737 †
Visiting doctor regularly	35 (21.0%)	12 (15.2%)	23 (26.1%)	0.083
Health-related Activity Undertaken				
Mammogram	85 (50.9)	21 (26.6%)	64 (72.7%)	0.000
Clinical breast examination	46 (27.5%)	9 (11.4%)	37 (42.0%)	0.000
Blood cholesterol measurement	14 (8.4)	3 (3.8%)	11 (12.5%)	0.043
Blood pressure measurement	96 (57.5)	44 (55.7%)	52 (59.1%)	0.754
Contraception (e.g., condom or pills)	75 (44.9)	40 (50.6%)	35 (39.8%)	0.165

Data are presented as frequency (%).

P values marked with † were compared using an exact Chi-square test; all others were done using a Pearson Chi-square test.

5.7 Women's Knowledge about Cervical Cancer and Screening

Prior to the questions about cervical cancer and screening, the women were asked if they had ever heard of cervical screening, and if they had not, information about cervical screening was given. Approximately half of the sample (90 women, 53.9%) had heard of cervical screening. A strongly significant difference was identified in awareness of cervical screening between non-screened women and screened women ($p=.000$), with 67% of screened women being aware of it, compared to 39.2% of non-screened women. Interestingly, 33% of screened women (29 women) answered "No or not sure" for this question, but after being given information about cervical screening, they realised that they had been screened.

Possible total knowledge scores ranged from 0 (low knowledge) to 21 (high knowledge). The mean total knowledge score for all participants (screened and non-screened) was 10.50 (SD=4.0), with a range from 0 to 19. There was a

statistically significant difference in the total knowledge score ($p=0.000$) between younger women (25-35 years old) and older women (36-50 years old), with younger women having higher knowledge levels compared with older women. Women with a higher level of education had a higher level of knowledge about cervical cancer and screening ($p=0.002$). A significant relationship between knowledge level and income was also demonstrated: women who had a monthly household income above 2,000 RMB were more likely to have a high level of knowledge about cervical cancer and screening ($p=0.000$). There was no statistical difference in knowledge levels between women who had an occupation and those who did not, between married and unmarried women, between women who had a child and those who did not, and between women who had relatives with cancer and those who did not.

5.7.1 Women's Knowledge about Cervical Screening

Possible scores for the subscale of cervical screening knowledge ranged from 0 (low knowledge) to 11 (high knowledge). A significant difference was identified in women's knowledge about cervical screening between the screened group and the non-screened group, with screened group had more correct responses to these 11 items ($p=.007$). As shown in Table 7, there was also a statistically significant difference in the score of five individual items, with screened women more likely to answer these items correctly.

Table 7 demonstrates that 75% of all participants (screened and non-screened women) believed that "Healthy women need to have regular cervical screening". Again, 68% of all participants believed that "If a woman has only had one sexual partner, she does not need to have cervical screening", and 67% that "Cervical screening can detect abnormal cell changes in the cervix before cancer" and "Cervical cancer can be cured if detected early". Importantly, 73% of all participants

believed that having cervical screening every three years is not enough, and 68% did not know women should have cervical screening soon after the first sexual intercourse.

Table 7: Knowledge about Cervical Screening.

	All (n=167)	Non-screened (n=79)	Screened (n=88)	p-value
<u>Knowledge about Cervical Screening</u>				
1. I'm too old, therefore no need for cervical screening (N)	111 (66.5%)	46 (58.2%)	65 (73.9%)	0.033
2. Cervical screening has to be done routinely to be effective (Y)	100 (59.9%)	41 (51.9%)	59 (67.0%)	0.046
3. Cervical screening is not necessary once a woman has reached the menopause (N)	105 (62.9%)	47 (59.5%)	58 (65.9%)	0.392
4. Cervical screening can detect abnormal cell changes in the cervix before cancer (Y)	112 (67.1%)	50 (63.3%)	62 (70.5%)	0.325
5. Healthy women need to have regular cervical screening (Y)	125 (74.9%)	50 (63.3%)	75 (85.2%)	0.001
6. Women should have cervical screening soon after the first sexual intercourse (Y)	54 (32.3%)	16 (20.3%)	38 (43.2%)	0.002
7. Having cervical screening every three years is often enough (Y)	44 (26.3%)	24 (30.4%)	20 (22.7%)	0.262
8. If I hadn't had sex for ages, I wouldn't need cervical screening (N)	98 (58.7%)	42 (53.2%)	56 (63.6%)	0.170
9. Once cervical screening is normal, there is no need to go for further screening (N)	89 (53.3%)	43 (54.4%)	46 (52.3%)	0.780
10. Cervical cancer can be cured if detected early (Y)	112 (67.1%)	50 (63.3%)	62 (70.5%)	0.325
11. If a woman has only had one sexual partner, she does not need to have cervical screening (N)	113 (67.7%)	45 (57.0%)	68 (77.3%)	0.005
<u>Number of Correct Responses to Eleven Items on Knowledge Related to Cervical Screening</u>				
0 – 3 (Low)	22 (13.2%)	17 (21.5%)	5 (5.7%)	0.007
4 – 8 (Middle)	109 (65.3%)	49 (62.0%)	60 (68.2%)	
9 – 11 (High)	36 (21.6%)	13 (16.5%)	23 (26.1%)	

Data are presented as frequency (%).

P values marked with † were compared using an exact Chi-square test; all others were done using a Pearson Chi-square test.

5.7.2 Women's Knowledge about Risk Factors for Cervical Cancer

Possible scores for the subscale of risk factors ranged from 0 (low knowledge) to 10 (high knowledge). As shown in Table 8, although there was no statistically significant difference between screened and non-screened women on correct

responses to risk factors items ($p=.228$), there was a statistically significant difference in the score of the individual items, “smoking” and “postmenopausal”, with non-screened women more likely to answer these questions correctly ($p=.002$, and $p=.020$, respectively). Table 8 demonstrates that 68% of all participants (screened and non-screened women) were aware of the risk factor of “Having had a previous abnormal cervical smear”. Again, 67% of them were aware of the risk factor of “Having many different sexual partners”, and 55% of the risk factor of “Sexually transmitted disease”. However, 84% of all participants did not know the risk factors associated with having sex without using a condom. Again, 73% of all participants did not recognise the oral contraceptive pill as a risk factor and 56% did not know HPV infection as a risk factor.

Table 8: Knowledge about Risk Factors for Cervical Cancer.

	All (n=167)	Non-screened (n=79)	Screened (n=88)	p-value
<u>Knowledge about Risk Factors for Cervical Cancer</u>				
<u>Agreeing that the following are risk factors for cervical cancer</u>				
1. Multiple sexual partners	111 (66.5%)	56 (70.9%)	55 (62.5%)	0.252
2. Postmenopausal	49 (29.3%)	30 (38.0%)	19 (21.6%)	0.020
3. Sexually transmitted disease	92 (55.1%)	43 (54.4%)	49 (55.7%)	0.871
4. Smoking	54 (32.3%)	35 (44.3%)	19 (21.6%)	0.002
5. Having sex at an early age	72 (43.1%)	34 (43.0%)	38 (43.2%)	0.985
6. On ‘the Pill’	45 (26.9%)	23 (29.1%)	22 (25.0%)	0.550
7. Had a previous abnormal cervical smear	113 (67.7%)	51 (64.6%)	62 (70.5%)	0.416
8. Having sex without using a condom	27 (16.2%)	16 (20.3%)	11 (12.5%)	0.174
9. Age 45 years or above	56 (33.5%)	29 (36.7%)	27 (30.7%)	0.410
10. Human papillomavirus (HPV) infection	72 (43.1%)	33 (41.8%)	39 (44.3%)	0.740
<u>Number of Correct Responses to the Ten Items on Risk Factors for Cervical Cancer</u>				
0 – 2 (low)	47 (28.1%)	19 (24.1%)	28 (31.8%)	0.228
4 – 7 (middle)	103 (61.7%)	49 (62.0%)	54 (61.4%)	
8 – 10 (high)	17 (10.2%)	11 (13.9%)	6 (6.8%)	

Data are presented as frequency (%). P values marked with † were compared using an exact Chi-square test; all others were done using a Pearson Chi-square test.

5.8 Protection Motivation Theory Measures

The PMT measures in the present study consisted of seven domains, including

perceived vulnerability (two items), perceived severity (one item), fear arousal (one item), response efficacy (four items), response cost (four items), self-efficacy (six items), and protection motivation (one item). As shown in Table 9, the median of rating on perceived risk was 2, with an interquartile range between 1 and 2, which demonstrated that most women perceived their risk of cervical cancer as significantly below average. Also, the median response efficacy score was 4.0, indicating that the women perceived screening to be effective in preventing the occurrence of cervical cancer.

The domain of protection motivation assessed the intention to take part in cervical screening by the question, “Would you be willing to have a test in the future?” It is of importance that the majority of women (85%, 142 women) stated they were willing to have a test. A statistically significant difference was identified between non-screened women (77.2%) and screened women (92%) in their willingness to have a test ($p=.009$). However, there were no significant differences in the remaining six subscale scores of PMT measures between the two groups.

Table 9. Comparison of Seven Domains of PMT Measures Between Screened and Non-screened Women.

	All (n=167)	Non-screened (n=79)	Screened (n=88)	p-value
PMT				
Perceived Risk †	2.0 (1.0 – 2.0)	2.0 (1.0 – 2.0)	2.0 (1.0 – 2.0)	0.596 ^a
Perceived Severity †	3.0 (2.0 – 4.0)	3.0 (2.0 – 4.0)	3.0 (2.0 – 4.0)	0.777 ^a
Fear Arousal †	2.0 (1.0 – 4.0)	2.0 (1.0 – 3.0)	2.0 (1.0 – 4.0)	0.056 ^a
Response Efficacy †	4.0 (3.3 – 4.8)	4.0 (3.3 – 5.0)	4.0 (3.1 – 4.5)	0.261 ^a
Self-efficacy †	1.7 (1.0 – 2.8)	1.8 (1.0 – 3.0)	1.7 (1.0 – 2.5)	0.392 ^a
Response Cost †	2.0 (1.3 – 3.0)	2.0 (1.5 – 3.0)	2.0 (1.3 – 3.0)	0.461 ^a
Protection Motivation	Yes (85%) No (15%)	Yes (36.5%) No (10.8%)	Yes (48.5%) No (4.2%)	0.009 ^b

Data marked with † are presented as Median (interquartile range).

^a Mann-Whitney test; ^b Chi-square test .

5.8.1 Perceived Risk

The frequency of women’s responses to the items of perceived comparative risk and perceived absolute risk are presented in Table 10. Most women did not consider themselves at risk of cervical cancer. There were no women who considered themselves at “very high” risk of cervical cancer and no women considered themselves at “much higher” risk compared to an average women of the same age. Only one screened participant considered her personal risk of cervical cancer as “moderately high”. Again, only three non-screened women and two screened women perceived themselves at “moderately higher” risk compared to an average women of the same age. A substantial proportion (83.2%) of the women considered themselves at “moderately low” or “very low” risk of cervical cancer, and 69.5% considered themselves to be at a “moderately lower” or “much lower” risk compared to an average woman of the same age. No statistically significant difference was identified in women’s rating of risk perception of cervical cancer items between the non-screened and screened groups.

Table 10. Comparison of Group Frequencies of Women's Responses to Perceived Risk Items.

	<u>Non-screened</u> Frequency (%)	<u>Screened</u> Frequency (%)	<u>Total</u> Frequency (%)	p-value
Perceived Comparative Risk				
Much lower (1)	35 (21.0)	41 (24.6)	76 (45.5)	
Moderately lower (2)	18 (10.8)	22 (13.2)	40 (24.0)	
About the same (3)	23 (13.8)	23 (13.8)	46 (27.5)	
Moderately higher (4)	3 (1.8)	2 (1.2)	5 (3.0)	.559 [†]
Perceived Absolute Risk				
Very low (1)	43 (25.7)	35 (21.0)	78 (46.7)	
Moderately low (2)	24 (14.4)	37 (22.2)	61 (36.5)	
Neither high nor low (3)	12 (7.2)	15 (9.0)	27 (16.2)	
Moderately high (4)	0 (0.0)	1 (0.6)	1 (0.6)	.106 [†]

Data are presented as frequency (%).

P values marked with [†] were compared using an exact Chi-square test.

5.8.2 Perceived Severity

With regard to perceived severity assessed by the question, "What proportion of women with a diagnosis of cervical cancer die from it?", 44.3% of non-screened women (n=35) and 33% of screened women (n=29) thought that no women who developed cervical cancer died from it. In contrast, 35.5% of non-screened women (n=28) and 26.2% of screened women (n=23) thought that almost all women who developed cervical cancer died from it.

5.8.3 Fear Arousal

The results show that 67.1% of non-screened women (n=53) and 53.5% of screened women (n=47) expressed that they were not worrying about a diagnosis of cervical cancer at all.

5.8.4 Response Efficacy and Response Cost

Two domains, response efficacy and response cost, concerned women's perception of cervical screening practices. Interestingly, 72.2% of non-screened

women (n=57) and 64.8% of screened women (n=57) disagreed with the statement, “the test will be embarrassing”. Again, 78.5% of non-screened women (n=62) and 81.8% of screened women (n=72) disagreed with the statement, “the test will be humiliating”. Furthermore, 58.2% of non-screened women (n=46) and 63.7% of screened women (n=56) disagreed with the statement, “the test will make me anxious”; and 51.9% of non-screened women (n=41) and 59.1% of screened women (n=52) disagreed with the statement, “health professionals appeared to have little concern for the patient”. However, 68.3% of non-screened women (n=54) and 53.4% of screened women (n=47) agreed with the statement, “they will find early cell change”; and 68.4% of non-screened women (n=54) and 60.2% of screened women (n=53) agreed with the statement, “they will find another health problem”. Again, 68.3% of non-screened women (n=54) and 64.8% of screened women (n=57) agreed with the statement, “this test will give me peace of mind”, and 69.6% of non-screened women (n=55) and 69.4% of screened women (n=61) believed that “any problem found will be curable”. Using a Chi-square test, no significant differences were identified between non-screened and screened women in the score of individual items of these two domains.

5.8.5 Self-efficacy

With regard to the variable of self-efficacy, women were asked to select what kind of practical difficulties applied to themselves and for each obstacle applied, they were asked to answer how likely it was that the obstacle would prevent them from attending for screening. It was found that 156 participants (93.4%) thought that financial cost was likely to prevent them from attending for screening, 146 participants (87.4%) cited difficulty with transport, 142 participants (85%) said that the distance to the clinic was a problem, 139 participants (83.2%) described barriers

to do with employment, and 139 participants (83.2%) said that they had dependent relatives to care for. Using a Chi-square test, no significant differences were identified between non-screened and screened women in the score of individual items of the self-efficacy domain.

5.8.6 Protection Motivation

The majority of women (85%, 142 women) stated they were willing to have a screening in the future, including 61 non-screened women and 81 screened women.

5.8.7 Factors Associated with Perceived Risk

The women's perceived absolute risk was strongly and positively associated with the knowledge score for the cervical screening item ($r=0.228$, $P=0.003$), and the total knowledge score ($r=0.206$, $P=0.008$). This indicated that women who had more knowledge about cervical screening were likely to have a higher perception of the risk of cervical cancer. No significant association was identified between the perceived risk and the socio-demographic variables and sexual history of the participants.

5.9 Factors Associated with Women's Screening Behaviour

Univariate analysis identified 11 variables with $p<0.25$. These variables were selected as candidate variables for the multivariate stepwise logistical regression and are listed in Table 11. Of these, in the multivariate analysis, having children (odds ratio, $OR=2.57$, 95% CI [1.12 – 5.88], $p=0.026$), a perception that visiting a doctor regularly is important to health ($OR=2.66$, 95% CI [1.13 – 6.26], $p=0.025$), a average level of knowledge about cervical screening ($OR=4.84$, 95% CI [1.58 – 14.89], $p=0.006$), and a high level of knowledge about cervical screening ($OR=9.66$,

95% CI [2.61 – 35.68], $p=0.001$) were significantly associated with having been screened in the previous three years. Only one PMT variable, namely fear arousal, was selected as a candidate variable for the multivariate stepwise logistical regression. The multivariate analysis demonstrated that the PMT variables were not significantly associated with a woman having been screened in the previous three years.

Table 11: Factors Associated with Having Attended for Cervical Screening in the Previous Three Years.

Candidate Variables	Ever had Cervical Screening in the Past 3 Years		OR _U	p-value	OR _A (95% CI)	p-value
	No (n=79)	Yes (n=88)				
Education Level						
Junior secondary or below [#]	23 (29.1%)	15 (17.0%)	1		NS	
Secondary graduate	35 (44.3%)	53 (60.2%)	2.32	0.034		
College or above	21 (26.6%)	20 (22.7%)	1.46	0.406		
Marital Status						
Single / divorced / widowed [#]	8 (10.1%)	2 (2.3%)	1		NS	
Married	71 (89.9%)	86 (97.7%)	4.85	0.050		
Children						
No [#]	22 (27.8%)	13 (14.8%)	1		1	
Yes	57 (72.2%)	75 (85.2%)	2.23	0.041	2.57 (1.12 – 5.88)	0.026
Cancer in Relatives						
No [#]	58 (73.4%)	72 (81.8%)	1		NS	
Yes	21 (26.6%)	16 (18.2%)	0.61	0.194		
Age at First Sexual Intercourse						
20 yrs or below [#]	13 (16.5%)	8 (9.1%)	1		NS	
21 – 30 yrs	59 (74.7%)	77 (87.5%)	2.12	0.118		
Not willing to disclose	7 (8.9%)	3 (3.4%)	0.70	0.660		
Perceived that Regular Exercise is Important to Health						
No [#]	32 (40.5%)	49 (55.7%)	1		NS	
Yes	47 (59.5%)	39 (44.3%)	0.54	0.051		
Perceived that Balanced Diet is Important to Health						
No [#]	25 (31.6%)	16 (18.2%)	1		NS	
Yes	54 (68.4%)	72 (81.8%)	2.08	0.046		
Perceived that visiting doctor regularly is important to health						
No [#]	67 (84.8%)	65 (73.9%)	1		1	
Yes	12 (15.2%)	23 (26.1%)	1.98	0.086	2.66 (1.13 – 6.26)	0.025
Number of Correct Responses to the Eleven Items on Knowledge Related to Cervical Screening						
0 – 3 (low) [#]	17 (21.5%)	5 (5.7%)	1		1	
4 – 8 (middle)	49 (62.0%)	60 (68.2%)	4.16	0.009	4.84 (1.58 – 14.89)	0.006
9 – 11 (high)	13 (16.5%)	23 (26.1%)	6.02	0.004	9.66 (2.61 – 35.68)	0.001
Number of Correct Responses to the Ten Items on Risk Factors for Cervical Cancer						
0 – 2 (low) [#]	19 (24.1%)	28 (31.8%)	1		NS	
4 – 7 (middle)	49 (62.0%)	54 (61.4%)	0.75	0.415		
8 – 10 (high)	11 (13.9%)	6 (6.8%)	0.37	0.091		
PMT – Fear Arousal Subscale Score^ψ						
1 – 2 [#]	53 (67.1%)	47 (53.4%)	1		NS	
3	8 (10.1%)	14 (15.9%)	1.97	0.162		
4 – 5	18 (22.8%)	27 (30.7%)	1.69	0.149		

[#] Reference group of the categorical variable that was analyzed by creating dummy variables;

^ψ The ordinal variable PMT fear arousal subscale score was categorized into three levels to represent low (1 – 2), middle (3), and high (4 – 5) scores;

OR_U: univariate odds ratio;

OR_A: odds ratio adjusted for other significant factors obtained from stepwise logistical regression analysis using variables with p-value <0.25 in the univariate analysis as candidate variables;

NS: not statistically significant in multivariate analysis.

5.10 Women's Willingness to Take Part in Phase Two of the Study

As shown in Table 12, 112 women were willing to participate in phase two of the study, including 50 non-screened and 62 screened women. Data obtained from these 112 women were analyzed. No significant difference was demonstrated between the screened group and the non-screened group in their willingness to be interviewed. There was no statistical difference between women who were willing to be interviewed and those who were not in terms of age, educational status, monthly household income, marital status, whether or not they had children, age at first intercourse, or number of sexual partners. However, women with a relative who had developed cancer were more likely to be willing to proceed to phase two of the study ($p=.017$)

Table 12: Background Information of Women Who Were or Were Not Willing to Be Interviewed.

	All (n=167)	Not willing to be interviewed (n=55)	Willing to be interviewed (n=112)	p-value
<u>Background characteristics</u>				
Screening Status				
Screened	88 (52.7%)	26 (47.3%)	62 (55.4%)	0.410
Non-screened	79 (47.3%)	29 (52.7%)	50 (44.6%)	
Age (yrs)				
25 – 35	94 (56.3%)	29 (52.7%)	65 (58.0%)	0.619
36 – 50	73 (43.7%)	26 (47.3%)	47 (42.0%)	
Education Level				
Junior secondary or below	38 (22.8%)	8 (14.5%)	30 (26.8%)	0.151
Secondary graduate	88 (52.7%)	32 (58.2%)	56 (50.0%)	
College or above	41 (24.6%)	15 (27.3%)	26 (23.2%)	
Full-time Employment				
No	20 (12.0%)	9 (16.4%)	11 (9.8%)	0.441
Yes	147 (88.0%)	46 (83.6%)	101 (90.2%)	
Monthly Household Income (RMB)				
<2,000	52 (31.1%)	18 (32.7%)	34 (30.4%)	0.751 [†]
2,000 – 2,999	33 (19.8%)	10 (18.2%)	23 (20.5%)	
3,000 – 4,999	34 (20.4%)	13 (23.6%)	21 (18.8%)	
5,000 or above	14 (8.4%)	3 (5.5%)	11 (9.8%)	
Unsure	34 (20.4%)	11 (20.0%)	23 (20.5%)	
Marital Status				
Single / divorced / widowed	10 (6.0%)	4 (7.3%)	6 (5.4%)	0.731 [†]
Married	157 (94.0%)	51 (92.7%)	106 (94.6%)	
Children				
No	35 (21.0%)	9 (16.4%)	26 (23.2%)	0.419
Yes	132 (79.0%)	46 (83.6%)	86 (76.8%)	
Cancer in Relatives				
No	130 (77.8%)	49 (89.1%)	81 (72.3%)	0.017
Yes	37 (22.2%)	6 (10.9%)	31 (27.7%)	
Age at First Sexual Intercourse				
20 yrs or below	21 (12.6%)	8 (14.5%)	13 (11.6%)	0.458 [†]
21 – 30 yrs	136 (81.4%)	43 (78.2%)	93 (83.0%)	
Not willing to disclose	10 (6.0%)	4 (7.3%)	6 (5.4%)	
Number of Sexual Partners				
1 only	134 (80.2%)	41 (74.5%)	93 (83.0%)	0.432
2 – 3	14 (8.4%)	6 (10.9%)	8 (7.1%)	
Not willing to disclose	19 (11.4%)	8 (14.5%)	11 (9.8%)	

Data are presented as frequency (%).

P values marked with [†] were compared using an exact Chi-square test, all others were done using a Pearson Chi-square test.

5.11 Purposive Sampling for Phase Two of the Study

Purposive sampling for phase two was based on women's responses to the measurement of absolute risk perception. The absolute risk perceptions of the 112

women who were willing to be interviewed are shown in Table 13 according to their screening status. Twenty-five non-screened women and 21 screened women who perceived a very low risk of cervical cancer met the inclusion criteria for the present study and were sampled as the low risk perception group. Only one screened woman who perceived a moderately high risk of cervical cancer met the inclusion criteria and was sampled as the high risk perception group. Due to the deficiency of the high risk perception sample, nine non-screened women and eleven screened women who perceived neither a high nor a low risk of cervical cancer were sampled as substitutes for the high risk perception group.

Table 13: Comparison of Group Frequencies of Women's Responses to Perceived Absolute Risk Item (n=112).

	<u>Non-screened</u> Frequency (%)	<u>Screened</u> Frequency (%)	<u>Total</u> Frequency (%)	p-value
PAR[#]				
Very low	25 (50.0)	21 (33.9)	46 (41.1)	0.189 [†]
Moderately low	16 (32.0)	29 (46.8)	45 (40.2)	
Neither high nor low	9 (18.0)	11 (17.7)	20 (17.8)	
Moderately high	0 (0.0)	1 (1.6)	1 (0.9)	

Data are presented as frequency (%).

P values marked with [†] were compared using an exact Chi-square test.

Perceived absolute risk.

5.12 Interpretation of Findings

The inferences drawn from the findings from phase one highlight some important issues that contribute to an understanding of cervical screening behaviour among this population group, as well as providing important implications for phase two of the study. Important issues were addressed as follows: (1) women's participation pattern of cervical screening; (2) PMT (Protection Motivation Theory) variables; (3) possible factors influencing their behaviour; and (4) implications for phase two of the study.

5.12.1 Women's participation pattern of Cervical Screening

The majority of women who had ever been screened for cervical cancer attended as part of an organized programme for routine health examination for women. Importantly, the screening services provided by the programme were free of charge. This is consistent with the finding that participants were prompted to attend for screening by routine health examinations and community health centres. Hospitals and women's health centres were the most popular venues for the women's most recent cervical screening. In contrast to the primary care system present in many Western countries, organized health examination programmes, including screening services, are mainly carried out at designated hospitals and maternal and child health centres in mainland China. The important role of organized and free health examination programmes in facilitating cervical screening is has been shown in phase one of the study.

China's economic reform, launched in the late 1970s, has led to a radical transition from a planned economy to a market one, with inevitably profound impact on the health care system in both positive and negative ways (Gao, Tang, Tolhurst, & Rao, 2001). The health service in China is transforming from a solely government financed system to a government subsidized one, following the change to a market economy in recent years. In contrast to the primary care system present in many Western countries, primary care is mainly carried out at "Street Block" clinics serving the people living within a few blocks of streets in urban areas, and at factory clinics serving the employed workers (Woo, Kwok, Sze, & Yuan, 2002). The Chinese government paid special attention to women's health, particularly to women of child-bearing age. Women receive gynaecological health care through the National Family Planning Programme at designated health facilities. A cervical screening service is a part of these programmes. Recruitment for physical examination

programmes has been achieved primarily through occupational and community organized campaigns.

The present study found that even with access to a free organized programme, some women failed to take part in screening due to knowledge deficit, the belief that cervical screening was unnecessary, or cultural beliefs associated with cervical screening. These factors are elaborated in the later section on significant factors influencing women's cervical screening behaviour. Indeed, the UK cervical screening programme has been successful in securing the participation of a high proportion of targeted women, and has seen a fall in mortality rates of those suffering from cervical cancer (NHS cervical screening programme, 2009). However, despite the availability of a free or low-cost cervical screening programme for all women, research from the UK and the US also suggests that intrinsic factors such as knowledge, awareness of the importance of cervical screening, beliefs about cervical cancer, and perceptions of risk influence women's uptake of cervical screening (Ackerson & Gretebeck, 2007; Sabates & Feinstein, 2006). Similar findings were also demonstrated among the Chinese populations in Hong Kong and Taiwan, where either free or low-cost screening was available (Hou, 2002; Holroyd et al., 2004).

5.12.2 Protection Motivation Theory (PMT) Variables

5.12.2.1 Risk Appraisal (Perceived Risk, Perceived Severity, & Fear Arousal)

The risk appraisal variables consisted of perceived risk, perceived severity, and fear arousal. The vast majority of women perceived a low personal risk of cervical cancer, which is consistent with some previous studies (Eiser & Cole, 2002; Kavanagh & Broom, 1998). Underestimation of personal risk in the present study may be partly explained by an "optimistic bias", which has been demonstrated in a variety of populations (Fontaine & Smith, 1995), in particular in Chinese populations

(Facione et al., 2000). Women's low rating of personal risk of cervical cancer might also be related to a lack of factual information about the nature of this disease and its risk factors (Marteau et al., 2002; Seow et al., 1995). Indeed, findings from knowledge about risk factors for cervical cancer indicated that the awareness of risk factors of cervical cancer amongst women in the present study remains low. Recent developments of risk perception research reflect a general movement to acknowledge the significance of social and cultural factors in understanding risk (Taylor-Gooby & Zinn, 2006). These factors will be discussed in section 5.11.3.3.

Indeed, about 60% of women expressed that they were not worried about a diagnosis of cervical cancer at all, and nearly 40% of them thought that no women developing cervical cancer died from it. Phase one of the study indicates that cervical cancer did not appear to be a major health concern for the participants. However, these findings were inconsistent with other previous studies among Western populations, in which most women knew that cervical cancer is a serious disease (Austin, Ahmad, McNally, & Steward, 2002). A survey on the severity of cervical cancer in Canada found that 57% of women were afraid of developing cervical cancer at some time in their life, and 93% thought that cervical cancer has serious consequences (Sauvageau, Duval, Gilca, Lavoie, & Ouakki, 2007).

It was anticipated that individuals who perceived themselves to be at higher risk would be more likely to attend for screening. However, no evidence was found of such a relationship in the current study. Other studies supported the assertion that women's perceptions of risk of cervical cancer were an intrinsic promoter for screening behaviour, and that women who perceive themselves at low risk are less inclined to attend for cervical screening (Denny-Smith et al., 2006; Marteau et al., 2002; Orbell & Sheeran, 1998). Orbell and Sheeran's (1998) longitudinal study supported the proposition that PMT variables such as perceived risk and fear arousal

were successful predictors of women's actual screening participation.

However, because of the cross-sectional design and retrospective report of the present study, it is not possible to infer causal relationships between women's screening uptake and their risk perception of cervical cancer. Current findings may be due to the fact that screened women may perceive a lower risk after they have taken the preventive action recommended and received a negative result of screening (Orbell & Sheeran, 1998). Another explanation might be that the existing system for women's physical examinations in mainland China undermines other factors related to screening participation, such as perceived risk and perceived severity, which were highlighted in most of the theoretical models for preventive behaviour and empirical evidence (Boonpongmanee & Jittanoon, 2007; Ho et al., 2005; Hou & Lessick, 2002; Taylor et al., 2004). Finally, a previous study suggested that quantitative measurement strategies for people's risk perceptions do not adequately capture individual's complex feelings and perceptions about their cancer risk (Hay et al., 2005).

5.12.2.2 Coping Appraisal (Response Cost, Self-efficacy, & Response Efficacy)

The coping appraisal variables consisted of response efficacy, response cost, and self-efficacy. The current findings suggested that no construct of coping appraisal was associated with women's previous participation in cervical screening or their motivation to take a test. The majority of participants did not perceive cervical screening as embarrassing or humiliating, suggesting that perceived embarrassment or humiliation associated with a test was not a factor inhibiting women's screening participation. This finding is not consistent with the theoretical assumptions of the PMT model, which propose that when individuals believe that they are capable of performing the recommended behaviour, that the recommended behaviour will

reduce the risk of disease, and that performing the behaviour has more benefits than costs, then they are presumed to be able to cope with the threat of the disease (Rogers, 1975). This finding is also inconsistent with empirical evidence (Orbell and Sheeran, 1998) which supported the suggestion that response efficacy and self-efficacy were predictors for women's motivation to be screened and response efficacy was a successful predictor of women's actual cervical screening participation. Another reason for this finding may be that the existing system for women's physical examinations undermines coping appraisal factors influencing women's cervical screening behaviour.

Previous data also suggested that embarrassment and modesty associated with cervical screening were important factors influencing women's utilization of screening services (Holroyd et al., 2004; Moreira et al., 2006; Seow et al., 1995). Data available from various populations suggested that women in both screened and non-screened groups described embarrassment and pain associated with attendance for cervical screening (Holroyd et al., 2004; Moreira, 2006). It is suggested that those who had ever had a smear were less likely to want to return if they perceived the test to be uncomfortable or embarrassing (Seow et al., 1995). Many of the women in the present study had received free cervical screening as part of an organized physical examination programme for women. These programmes enable them to take part in cervical screening with friends and colleagues. Indeed, support from family and friends was perceived as a motivator to take part in cervical screening (Abdullah & Leung, 2001). It is possible that women feel more comfortable and less embarrassed about having a thorough health examination rather than just having a Pap smear.

5.12.2.3 Protection Motivations to Take Part in Cervical Screening

The majority of women thought that they would have a smear test in the near

future and screened women were more willing to do this than non-screened women. Women's absolute risk perception was positively associated with their motivation to take part in cervical screening in the future, but the correlation coefficient was rather low. This finding is consistent with previous studies and preliminarily supports an association between risk perception and the motivation to undertake cervical screening (Denny-Smith et al., 2006; Marteau et al., 2002; Orbell & Sheeran, 1998; Walsh, 2006).

The fact that 61 non-screened women (77%) were willing to have a smear test but did not do so suggests an inconsistency between protection motivation and actual uptake. Indeed, Orbell & Sheeran (1998) also suggested that the association between motivation to have a test and actual action was far from perfect. Women might or might not act on their positive motivation to have a test. Orbell & Sheeran (1998) proposed that instead of simply determining whether motivation is significantly related to behaviour, discerning different patterns of association was important to understand women's cognitive processes governing motivation and subsequent actual uptake.

The current findings support an association between protection motivation and previous screening participation; findings suggest that women's previous experiences of cervical screening have a positive influence on their intention to undertake preventive health behaviour in the future. The literature suggests that women with previous screening experiences were more likely to pursue certain positive health-related behaviours, including repeated cervical screening, due to their personal health beliefs and practice (Abdullah & Leung, 2001). Since effective protection against the onset of invasive cervical cancer requires that a woman undergo repeated testing during her lifetime, an understanding of factors influencing secondary and subsequent attendance may be important to inform health education and service

delivery.

5.12.3 Other Significant Factors Influencing Women's Cervical Screening Behaviour

Other possible factors influencing women's cervical screening participation, including marriage, childbirth, knowledge about cervical cancer and screening, and cultural factors are discussed in this section.

5.12.3.1 Marriage and Childbirth

The participation pattern identified a relationship with marital status and having or not having a child, with married women or women with a child more likely to have a smear test; this concurred with findings among Chinese women in Hong Kong and Taiwan (Hou & Lessick, 2002; Twinn et al., 2002). The present findings indicated that women associated cervical screening participation with marriage, childbirth, and sexuality. A previous study found that both screened and non-screened Chinese women viewed risk factors for cervical cancer as being linked to promiscuity and marriage (Holroyd et al., 2004). Chinese women shared the same belief, that they would get a smear test after they were married, which means after they started to engage in sexual activities (Hou, 2002). Thus, a visit to a gynaecologist by an unmarried woman might be counter to the cultural belief that only married women should have a pelvic examination. Holroyd et al. (2004), in a study of the social-cultural influences on cervical screening in Chinese women, found that although some described screening as a means of self-protection, frequently screening was not self-initiated but generally prompted by marriage and childbirth.

Indeed, married women are more likely to be receiving family planning or

obstetric services, which provide an opportunity for cervical cancer screening (Taylor et al., 2004). The current cervical screening service provided by the National Family Planning Programme targets married women in mainland China. Indeed, unmarried young women are not recommended to have the gynaecological examination. This practice reflects important Chinese values with respect to modesty and sexuality. There is an assumption within the Chinese cultural context that women will start to engage in sexual activity only after they are married (Mo, 1992). However, evidence suggests that Chinese women are becoming more tolerant of various sexual behaviours (So & Cheung, 2005). Indeed, Liu et al. (1997), in a nationwide survey of 20,000 men and women in mainland China between 1989 and 1990, found that 66% of the 372 college student participants had their first sexual intercourse between the ages of 17 and 22. In Hong Kong, a more Westernized and cosmopolitan city, the younger population also holds accepting attitudes toward premarital sex. A survey conducted by the Family Planning Association of Hong Kong (FPAHK, 1997) demonstrated that the mean age of females at first premarital sex decreased from 19.3 years in a similar study in 1991 to 18.2 years in 1996. Evidence from those studies indicated that unmarried women who have had sexual intercourse may be excluded from existing cervical screening services in mainland China because of ineligibility and a lack of social assertiveness with respect to seeking screening.

Apart from marital status and having or not having a child, other socio-economic variables (such as age, family income, and educational level), which were found to have a significant association with participation in cervical screening in studies among Chinese women in Hong Kong and among other populations (Abdullah & Leung, 2001; Ackerson & Gretebeck, 2007; Boonpongmanee & Jittanoon, 2007), were not found to be significant in the present study. Indeed, previous studies frequently cited the cost of health care as the dominant concern

among women (Lyttle & Stadelman, 2006; Austin et al., 2002). It should be noted that among this sample, the current system of free physical examinations for women may minimize the effect of socio-economic barriers and facilitate women's utilization of cervical screening services. This may be why socio-economic factors yield no significant effect on cervical screening uptake.

5.12.3.2 Knowledge about Cervical Cancer and Screening

The participation pattern identified a close relationship with knowledge about cervical screening. Screened women demonstrated a higher level of knowledge than non-screened women of the need for screening if they were postmenopausal, were currently healthy, were sexually active, or only had one sexual partner. Some non-screened women's barriers of "Don't know the test", "Not suggested by the doctor", and "No awareness of the test" indicated the women's lack of information about cervical screening services and reliance on a physician's recommendation to prompt screening (Austin et al., 2002). The significance of knowledge about the screening procedure to women's attendance for screening was highlighted in the literature (Fernandez-Esquer et al., 2000). Lack of knowledge of the importance of cervical screening seems to be an important barrier to the utilization of screening services among non-screened Chinese women, as was the case in other overseas studies (Fylan, 1998; Twinn et al., 2006). Indeed, because of the retrospective report of the present study, it is possible that women with previous screening experience were more likely to get information about cervical screening. But it should be noted that effective protection against the onset of invasive cervical cancer requires that a woman undergo repeated testing during her lifetime. Therefore, improving women's knowledge about cervical cancer and screening, particularly the preventive nature of the screening procedure, may empower women to attend for preventive healthcare

and continue with the cervical screening schedule.

However, the awareness and knowledge of risk factors of cervical cancer amongst both screened and non-screened women remains low. Women's lack of information about the risk factors of cervical cancer may partly explain their low risk perception of cervical cancer in the present study. Poor knowledge of the risk factors of cervical cancer was also demonstrated in previous studies among Western populations and Chinese populations in Hong Kong and Taiwan (Fylan, 1998; Hou, 2002; Twinn et al., 2002). In particular, awareness of the role of HPV in the aetiology of cervical cancer was very low in the present study, which is also consistent with previous studies in the UK and US (Friedman & Sheppard, 2006; Waller et al., 2004).

5.12.3.3 Cultural Factors

Phase one of the study found that perception of positive health-related behaviours, such as the perception that a balanced diet is important to health, was associated with previous screening experience. This association was consistent with a study which reported that Chinese people in Hong Kong with previous screening experience were more likely to follow certain positive health-related behaviours, including a low-fat diet and breast self-examination (Abdullah & Leung, 2001). Phase one indicates that women with previous screening experience were more likely to come for screening due to their cultural family obligations and personal health beliefs and practices, and at the same time, they tended to adopt a healthier lifestyle.

Among 79 non-screened women, 71 married women had never had a cervical screening despite the free screening services available for married women under the existing system in mainland China. Of these 71 married women, 67 were currently in paid employment and had access to free health care which included cervical screening. Reasons reported by non-screened women for not being screened, such as

“I’m healthy”, “Not necessary to take a test”, and “No discomfort (symptom)”, reflected a reliance on signs and symptoms related to the disease to prompt participation. The focus on crisis rather than prevention in health matters also served as a barrier to screening behaviour within an Asian cultural context. Indeed, in most Asian cultures, visits to a physician do not occur until there is actual symptomatology (Tang, Solomon, Yeh, & Worden, 1999). Chinese women tend to wait for symptoms to appear, and they apparently associate participation in health care with sickness rather than the prevention of cervical cancer (Holroyd et al., 2004; Lee, Lee, et al., 2002). The comments of non-screened women in the present study, such as, “I don’t have this disease”, also reflected women’s avoidance of the linkage between the disease and themselves, given that Chinese women associated cervical cancer risk with sexual activity and sexual promiscuity (Holroyd et al., 2004). Such evidence highlights the complex nature of women’s barriers to screening and the importance of the in-depth examination in phase two in comprehending the underlying barriers to screening even when there is access to free screening services.

Recent developments reflect a general movement to acknowledge the significance of social and cultural factors in understanding risk (Taylor-Gooby & Zinn, 2006). Chinese women have specific cultural understandings about sexually-related issues which demonstrate values with respect to modesty and sexuality, and the association of screening procedures with immodesty and sexually inappropriate behaviour (Mo, 1992; Holroyd et al., 2004). Moreover, due to the sensitive nature of sexuality, communication regarding sexual behaviour, which is an important personal risk factor for cervical cancer, is lacking in the Chinese culture (Hou et al., 2002). It is suggested that the variety of women’s perceptions of risk of cancer, which is demonstrated as either over- or under-estimation of cancer risk in different findings, may be partly due to cultural differences (Hopwood, 2000). It

should be noted that in Chinese populations, a low estimated personal risk for cervical cancer may indicate that women were not prepared to cite their perceived greatest risk, and this may be related to the Chinese cultural reluctance to discuss sexual matters openly, due to a notion of inappropriateness (Tang et al., 1999).

5.13 Summary of the Chapter

Phase one of the study provided an important starting point from which to understand factors affecting women's participation pattern of cervical screening and risk perception of cervical cancer in mainland China. The current system of free physical examinations for women in mainland China is a major motivator for women's utilization of cervical screening services. It should be noted that the existing system undermines other factors highlighted in most previous models or studies. Unmarried women who have ever had sex are not included in the free examination programme, but they should have cervical screening to maximize the effectiveness of the screening programme amongst the public. Although the association between risk perception and cervical screening participation was not supported by findings in phase one, other possible factors affecting women's screening uptake have been studied. The findings highlight the significance of currently being married and having a child, health behaviour beliefs, and knowledge about cervical screening for this population of women in determining whether women attend for cervical screening. The phenomenon of cervical screening being prompted by marriage and childbirth, and the association between previous screening experience and health behaviour perceptions provide important clues to understanding women's screening behaviour within the Chinese cultural context.

5.14 Implications for Phase Two of the Study

Most importantly, phase one of the study was used to guide the purposive sampling for phase two of the study. On the basis of results from phase one, the typology of the high risk perception group and the low risk perception group was developed. The subsamples of participants purposively selected (i.e., some who perceived a high risk and some who perceived a low risk) were interviewed. In this way, results from the quantitative analysis (phase one) were connected to the qualitative data collection and analysis (phase two), primarily by aiding in the identification and selection of individuals to participate in the interviews. In addition, findings from phase one provided important baseline information for women involved in phase two, including socio-demographic characteristics and knowledge and perception of cervical cancer and screening, which were integrated with the in-depth exploration of phase two and finally contributed to the development of a model to understand Chinese women's screening behaviour.

The complexity of screening behaviour is highlighted by the findings of phase one, and indicates the need for further explanation in phase two of the study. The results of phase one of the study still leave numerous questions to be clarified, including the women's own interpretations of the risk of cervical cancer and personal risk factors, and underlying factors influencing women's cervical screening behaviour under the existing system for women's physical examinations in mainland China. These questions directed the further examination of phase two. In phase two of the study, a qualitative method was employed to provide in-depth exploration of the following issues:

- Why non-screened women do not take part in screening even when they have access to screening services.
- How non-screened women and screened women see the risk of cervical cancer.

- How risk perception impacts on women's screening behaviour under the existing system for women's physical examinations in mainland China.
- How personal risk factors are interpreted by women.
- How women's knowledge and perception of personal risk factors impacts on their screening behaviour.
- How Chinese women perceive the association between their relationship with their sexual partners and perceived risk of cervical cancer and screening behaviour.

CHAPTER SIX

FINDINGS OF PHASE TWO OF THE STUDY

6.1 Introduction

The primary aim of phase two was to explore in-depth information on how Chinese women perceive cervical cancer risk and which factors influence their cervical screening behaviour, contributing to a conceptual model to understand women's cervical screening behaviour.

This chapter first presents the socio-demographic characteristics and sexual history of those participants who were interviewed. Next, the findings on the two themes that emerged from the qualitative data are reported: perception of cervical cancer and the cervical screening system, and the institutional and health care practitioner system. Under the theme of perception of cervical cancer and the cervical screening system, five categories were identified: (1) perceived influence of suffering from cervical cancer; (2) perception of cervical screening; (3) lack of understanding about cervical cancer and screening; (4) perceived risk of cervical cancer; and (5) factors related to the cultural belief system. Under the theme of the institutional and health provider system, two categories were identified: (6) the organized physical examination programme; and (7) the role of the health care practitioner in cervical screening utilization. Finally, similarities and differences in the findings identified between the non-screened women and the screened women are explained to contribute to a greater understanding of women's cervical screening behaviour.

6.2 Socio-demographic Characteristics of the Participants

A purposive sample of 27 women who met the inclusion criteria was selected from the sample of phase one, with 11 non-screened women (40.7%) and 16 screened women (59.3%). There were no statistically significant differences in the socio-demographic data and sexual history of the women in the two phases of the study.

The interval between cervical screenings ranged from four months to three years. The mean age of the participants was 32.3 years, and the ages ranged from 25 to 46 years. The educational level of participants ranged from primary to undergraduate level, with the majority (16 women) having secondary education. Five women (18.5%) did not know or were not sure of their household income; 82% of those who did know had a monthly household income of more than 2,000 RMB (equal to 293 US dollars). The majority of the women were in paid employment (96.3%; 96.2% in full-time employment), were married (88.9%), had a child (77.8%), and had no family history of cancer (88.2%). A substantial proportion (81.5%) of the participants reported that they had sexual intercourse for the first time after the age of 20, and 74.1% reported having only one sexual partner. Using Chi-square tests, a statistically significant difference between the two groups (screened and non-screened) was identified in regard to childbirth, with all of the screened women, compared with five out of eleven non-screened women, having a child. However, there were no statistical differences between screened and non-screened women on other socio-demographic variables and sexual history. The socio-demographic characteristics and sexual history of the participants are shown in Table 14.

Table 14: Socio-demographic Characteristics and Sexual History of the Participants (n=27).

	All (n=167)	Non-screened (n=11)	Screened (n=16)	p-value
Background Characteristics				
Age (yrs)				
25 – 35	19 (70.4)	9 (81.8%)	10 (62.5%)	0.405 [†]
36 – 50	8 (29.6)	2 (18.2%)	6 (37.5%)	
Education Level				
Junior secondary or below	2 (7.4%)	1 (9.1%)	1 (9.1%)	0.575 [†]
Secondary graduate	16 (59.3%)	7 (63.6%)	9 (56.3%)	
College or above	9 (33.3%)	3 (27.3%)	6 (37.5%)	
Currently in Paid Employment				
No	1 (3.7%)	0 (0.0%)	1 (6.3%)	1.000 [†]
Yes	26 (96.3%)	11 (100.0%)	15 (93.8%)	
Monthly Household Income (RMB)				
<2,000	4 (14.8%)	2 (18.2%)	2 (12.5%)	0.899 [†]
2,000 – 2,999	11 (40.7%)	5 (45.5%)	6 (37.5%)	
3,000 – 4,999	4 (14.8%)	0 (0.0%)	4 (25.0%)	
5,000 or above	3 (11.1%)	1 (9.1%)	2 (12.5%)	
Unsure	5 (18.5%)	3 (27.3%)	2 (12.5%)	
Marital Status				
Single / divorced / widowed	3 (11.1%)	3 (27.3%)	0 (0.0%)	0.056 [†]
Married	24 (88.9%)	8 (72.7%)	16 (100.0%)	
Children				
None	6 (22.2%)	6 (54.5%)	0 (0.0%)	0.002
One or more	21 (77.8%)	5 (45.5%)	16 (100.0%)	
Hysterectomy				
No	27 (100.0%)	11 (100.0%)	16 (100.0%)	
Cancer in Relatives				
No	23 (85.2%)	9 (81.8%)	14 (87.5%)	1.000 [†]
Yes	4 (14.8%)	2 (18.2%)	2 (12.5%)	
Age at First Sexual Intercourse				
20 yrs or below	5 (18.5%)	3 (27.3%)	2 (12.5%)	0.370 [†]
21 – 30 yrs	22 (81.5%)	8 (72.7%)	14 (87.5%)	
Number of Sexual Partners				
1 only	20 (74.1%)	8 (72.7%)	12 (75.0%)	0.287 [†]
2 – 3	3 (11.1%)	2 (18.2%)	1 (6.3%)	
Not willing to disclose	4 (14.8%)	1 (9.1%)	3 (18.8%)	

Data are presented as frequency (%).

P values marked with [†] were compared using an exact Chi-square test, all others were done using a Pearson Chi-square test.

As extracted from the phase one data, the mean total knowledge score for all 27 participants (screened and non-screened women) was 10.22 (SD=3.60), with a range from 4 to 19. As shown in Table 15, no significant differences were identified in women's knowledge about cervical screening and risk factors associated with cervical cancer between screened participants and non-screened participants. There were also no significant differences between the two groups in scores for the seven domains of PMT measures.

Table 15: Comparison of Knowledge Scores and Seven Domains of PMT Measures between Screened and Non-screened Women.

	All (n=27)	Non-screened (n=11)	Screened (n=16)	p-value
<u>Knowledge about Cervical Screening</u>				
0 – 3 (low)	4 (14.8%)	3 (27.3%)	1 (6.2%)	0.239 ^b
4 – 8 (average)	18 (66.7%)	7 (63.6%)	11 (68.8%)	
9 – 11 (high)	5 (18.5%)	1 (9.1%)	4 (25.0%)	
<u>Knowledge about Risk Factors of Cervical Cancer</u>				
0 – 3 (low)	13 (48.1%)	5 (45.5%)	8 (50.0%)	0.646 ^b
4 – 7 (average)	13 (48.1%)	6 (54.5%)	7 (43.8%)	
8 – 10 (high)	1 (3.7%)	0 (0.0%)	1 (6.2%)	
<u>PMT</u>				
Perceived Risk †	2.0 (1.0 – 2.5)	1.0 (1.0 – 3.0)	2.0 (1.0 – 2.0)	0.400 ^a
Perceived Severity †	2.0 (2.0 – 4.0)	2.0 (2.0 – 5.0)	3.0 (2.0 – 4.0)	0.532 ^a
Fear Arousal †	2.0 (1.0 – 5.0)	2.0 (1.0 – 5.0)	2.5 (1.0 – 5.0)	0.938 ^a
Response Efficacy †	3.5 (3.0 – 4.2)	3.7 (3.5 – 4.0)	3.4 (2.7 – 4.3)	0.439 ^a
Self-efficacy †	1.7 (1.3 – 3.0)	1.7 (1.1 – 3.0)	1.8 (1.5 – 3.0)	0.519 ^a
Response Cost †	2.0 (1.7 – 2.5)	2.0 (1.7 – 2.3)	2.0 (1.3 – 2.7)	0.599 ^a
Protection Motivation	Yes (85.2%) No (14.8%)	Yes (81.8%) No (18.2%)	Yes (87.5%) No (12.5%)	1.000 ^b

Data marked with † are presented as Median (interquartile range), all others are presented as frequency (%).

^a Mann-Whitney test;

^b Chi-square test.

6.3 Categories Identified from Content Analysis

Using content analysis, two themes described as perception of cervical cancer and the cervical screening system, and the institutional and health provider system were identified. The theme of perception of cervical cancer and the cervical screening system encompasses a range of women's perceptions of cervical cancer and screening, perception of risk of cervical cancer, and cultural beliefs associated with cervical cancer risk and screening participation. Five categories emerged from the interview data under this theme. The theme of the institutional and health provider system includes women's perception of the delivery of screening services as a part of organized health examination programmes, and the role of health providers in women's cervical screening behaviour. Two categories emerged from the interview

data under this theme. The themes that emerged revealed similarities and differences between the non-screened women and the screened women. The major categories and subcategories are shown in Table 16.

Table 16: Categories and Subcategories from the Data Analysis

Theme I: Perception of Cervical Cancer & Cervical Screening System	
Category	Subcategory
Perceived Influence of Suffering from Cervical Cancer	Perception of cervical cancer as a deadly disease Jeopardizing sexual and marital relationships Physical and psychological suffering Financial burden on the family
Perception of Cervical Screening	Perceived benefit of cervical screening Inconsistent knowledge about cervical screening Embarrassment and physical discomfort Cervical screening is unnecessary
Lack of Understanding about Cervical Cancer and Screening	Feelings of uncertainty Misinformation about cervical screening Limited information about cervical cancer
Perception of Risk Associated with Cervical Cancer	Understanding of risk factors Perceived risk related to sexual partner Perceived personal risk of cervical cancer Personal connection to cervical cancer risk Emotional response associated with cervical cancer risk
Factors Related to the Cultural Belief System	The social and cultural meaning of the womb Moral obligations associated with cervical screening Procrastinating about screening participation Social pressure associated with cervical cancer Notions about factors related to feminine health
Theme II: Institutional & Health Care Practitioner System	
Category	Subcategory
Organized Health Examination Programmes	The role of organized programmes in facilitating screening Perceived structural barriers associated with organized programmes Lack of programmes for unmarried women Recommendations for an educational campaign
The Role of Health Care Practitioners in Cervical Screening Utilization	Negative perceptions of health care practitioners Communication with health care practitioners Preferences within the screening service

6.4 Theme I: Perception of Cervical Cancer & Cervical Screening System

The first theme reflected women's perception of risk of cervical cancer and cervical screening, as well as their cultural beliefs associated with cervical cancer and cervical screening participation. Five categories were identified from the analysis of the data under this theme: (1) perceived influence of suffering from cervical cancer; (2) perception of cervical screening; (3) lack of understanding about cervical cancer and screening; (4) perception of risk associated with cervical cancer; and (5) factors related to the cultural belief system.

6.4.1 Perceived Influence of Suffering from Cervical Cancer

The first category that emerged from the data under the theme I was the perceived influence of suffering from cervical cancer. Four subcategories were identified from the analysis of the data: (1) perception of cervical cancer as a deadly disease; (2) influence on the sexual and marital relationships; (3) physical and psychological suffering; and (4) financial burden on the family.

6.4.1.1 Perception of Cervical Cancer as a Deadly Disease

The majority of participants (n=20) perceived cervical cancer as a deadly disease with absolutely no cure, even when detected in the early stages. Women's descriptions of their perception of cervical cancer were influenced by their personal information source. They related the experiences of their family members or friends who had cervical cancer and had died from the disease. These personal experiences influenced their beliefs and opinions about the survivability of cervical cancer. On the other hand, some participants (n=7) expressed an optimistic view pertaining to the women who had cervical cancer, given that there are advanced treatments

available for cervical cancer nowadays. They were aware that early detection and treatment saved lives. The three most commonly-identified treatment options for cervical cancer were hysterectomy, chemotherapy, and radiotherapy.

However, some women also described the treatment available as a painful process; they were reluctant to undergo treatment, and willing to choose death with dignity:

I mean that different people respond and behave differently after contracting cervical cancer. For example, some people choose to have the operation, and after the operation, to get radiotherapy and chemotherapy. I suppose those doing so had no dignity and most of them died. But I suppose what Mei Yanfang (a deceased movie star in Hong Kong) had done... I don't mean that many would recommend it. But I am disposed to agree with Mei Yanfang. If a later stage of cervical cancer was detected, I would decline to have the operation, radiotherapy, and chemotherapy. I think the final consequences are the same. I don't care about the limited time, I think what she did is comparatively acceptable to me. (P(15)20)

6.4.1.2 Jeopardizing Sexual and Marital Relationships

Many of the participants (n=16) described changes in their sexual activity as the most important consequence of cervical cancer. Hysterectomy was considered a major cause that disabled their sexual function and therefore jeopardized the relationship with their spouse. Infertility was reported to be associated with all types of treatment, especially by women who had not had a child. One screened woman described the influence on sexual and marital relationships by saying,

It definitely influences family life. It influences family life, daily life, and the marital relationship. Yes, you wouldn't have sex with your husband, you need to respond to the treatment, and it's said that there is vaginal bleeding. (P(4)186; 190; 198)

6.4.1.3 Physical and Psychological Suffering

The third subcategory identified is physical and psychological suffering. Some of the participants (n=19) described the diagnosis of cervical cancer as devastating, psychologically as well as physically. Most of the participants described the high levels of anxiety, depression, and other emotional symptoms related to the diagnosis of cervical cancer. A few were able to list signs and symptoms of cervical cancer, such as vaginal bleeding and foul smelling discharge. Cervical cancer was identified as a disease that often incurred tremendous stress, emotions, and physical suffering on both the patient and her family members.

The disease itself is excruciating. If it has advanced to the later stage, metastasis happens, especially in the aspect of women's health. The family members who were looking after her were also very distressed. If it really happened, it would be sheer torture, you can't imagine, both body and spirit. (P(1)180; 188; 192)

6.4.1.4 Financial Burden on the Family

The high cost of medical care for women suffering from cervical cancer was another dominant concern among these women (n=19). They complained of the high medical expenses in general and the cost associated with the treatment of cervical cancer. A 29-year-old woman described her feelings by saying,

It [cervical cancer] would definitely affect the family financially and psychologically. If the woman was getting worse or in the late stages of cervical cancer, the financial burden would be more serious. (P(12)62)

6.4.2 Perception of Cervical Screening

The second category identified was the perception of cervical screening. Four

subcategories emerged from the data: (1) perceived benefit of cervical screening; (2) inconsistent knowledge about cervical screening; (3) embarrassment and physical discomfort; and (4) cervical screening is unnecessary.

6.4.2.1 Perceived Benefit of Cervical Screening

Both screened (n=11) and non-screened (n=5) participants described benefits of cervical screening pertaining to the benefits of searching for understanding, giving them peace of mind, and detection of cervical cancer. Some of the participants believed that the examinations could detect cancer in the early stage so that treatment could be effective. A few viewed cervical screening as a way of searching for understanding about their bodies that women could not have without having cervical screening. They believed that participation in cervical screening could give them peace of mind when the results were negative. Among women who did not know what the primary purpose of cervical screening was, this was the main perceived value of screening. One woman, 37 years old, described how she felt reassured by cervical screening:

After you had a test you would relax, at least. At least I suppose there is nothing wrong with my body. Before that I felt anxious about the test I was going to take, and could not set my heart at rest. I was just worrying that I might also have this disease. The disease does not choose certain people. Right, right, after taking the test, the result was negative. Anyway, I got peace of mind. (P(24)118)

6.4.2.2 Inconsistent Knowledge about Cervical Screening

Women demonstrated limited knowledge about the screening procedure and the recommended frequency of screening. Knowledge about the recommended frequency of tests was consistent with the frequency of the organized programme

available. Most women cited one year as the recommended frequency of testing. In fact, they believed that “*unmarried women and women who had no boyfriend*” did not need to have this test. Furthermore, it emerged that “*unmarried women and women who had no boyfriend*” in this context was used as a synonym for women who had had no sexual experiences. A few participants were also aware of how the test was performed. They described the test as taking something from the vagina and sending this for testing.

This test is to scrape something from the vagina...it just gets something like secretions, just something on the glass slide and it gets sent somewhere. (P(1)56; 58)

6.4.2.3 Embarrassment and Physical Discomfort

Some of the participants described their experience of cervical screening and stated that physical discomfort and embarrassment were associated with cervical screening practice. All of the screened participants considered the procedure to be only mildly uncomfortable. However, three non-screened women considered the test to be painful, saying, “*It is said that the test is painful*”. Only one screened woman, who had a child, expressed her feelings of discomfort, the coldness of the speculum, and the practitioner’s clumsiness when inserting it during the procedure, even though it was performed by a female physician.

When the gripping tongs were inserted, I felt very nervous. I didn't feel good about this utensil. I always think that it is so big, and so cold, it makes me feel...it is not made of rubber; it is made of plastic material. It feels hard. I felt very nervous when I glanced at it even though it was not inserted. I definitely rejected it. (P(15)44)

Some of the participants (n=7) also expressed embarrassment about having the gynaecological examination in relation to cervical screening. A young non-screened woman described her feelings as follows:

I feel quite shy about this aspect. Just like before, at the beginning we were not married, and we were using the contraceptive pill; sometimes it was discovered by other people and I felt very embarrassed. Then I suppose sometimes my husband is also afraid of embarrassment if I go to have the test, which is another reason.
(P(6)38; 44)

6.4.2.4 Cervical Screening is Unnecessary

Comments referring to cervical screening as unnecessary were often given spontaneously by many of the non-screened participants (n=8) as their primary explanation for their decision to decline screening. A few screened participants (n=4) stated that they would not take a test if there was not an organized programme available for them to do so, as they considered cervical screening to be unnecessary. The most common explanation for the test being perceived as unnecessary was that they were feeling healthy and, in particular, that they had no “women’s disease” or abnormal symptoms. These participants also stated with confidence that if they did develop any symptoms or feel any discomfort they would seek medical advice and/or reconsider having the test. One non-screened woman, 37 years old, expressed her perspective by saying,

But I have no discomfort; so I suppose I’m fine. I have nothing abnormal, and no itch. I think I’m healthy, so it’s not necessary to have a test. (P(20)10; 60; 62)

6.4.3 Lack of Understanding about Cervical Cancer and Screening

A third category was the lack of understanding about cervical cancer and screening. Three subcategories that emerged from this category were (1) feelings of uncertainty; (2) misinformation about cervical screening; and (3) limited information about cervical cancer.

6.4.3.1 Feelings of Uncertainty

Importantly, three screened participants had taken part in an organized health examination programme and had been screened, but they had not known about their screening status until they were told that they were screened after checking the medical records. As part of an organized programme, cervical screening could be carried out during a general health check, when the focus was on contraceptives or pregnancy. Some women further explained that on such occasions they were not given sufficient information or even informed that the smear had been taken.

We shouldn't have taken it. Anyway, you don't know whether you have or haven't taken it. Actually, the doctor didn't tell me what kind of tests he had taken. I'm not sure if I have had this test or not; anyway, he didn't tell me. (P(7)42; 46; 48)

6.4.3.2 Misinformation about Cervical Screening

Generally, participants (n=19) lacked factual and accurate information about cervical screening. Some of the participants erroneously thought that the main purpose of the test was to screen for sexually transmitted infections and other reproductive health problems, including cervicitis, vaginitis, and cervical erosions. The main misconception was that the screening primarily was a diagnostic test to detect existing cervical cancer. Most women failed to realize that the smear is a cervical screening procedure. Few understood the concept of precancerous changes and that early detection of such abnormalities could be treated easily and effectively. One woman identified cervical screening as a diagnostic test to confirm cervical cancer by saying the following:

The smear is to examine if you have cancer cells, to find out if you have cervical cancer. What I know is that this prevention test is just to check if you have cancer or not. (P(10)16; 20)

6.4.3.3 Limited Information about Cervical Cancer

Although some of the women had previously had cervical screening, many demonstrated a lack of knowledge about cervical cancer owing to limited information. They were unable to name or describe a test for cervical screening, and in fact most had no idea what the smear procedure tested for and where the smear was taken from, despite saying that they knew about it. Some of the participants were not aware of the risk of cervical cancer because of their limited understanding about this disease. Information about cervical cancer was considered as almost invisible in Chinese society. Comparisons were made by several women to other preventive programmes, for example, against lung cancer and screening for breast cancer. One participant thought that the cause of cervical cancer was inexplicable. In their search for understanding about the cause of cervical cancer, the women created their own explanations of a balance between cancer cells and normal cells in the body, and described the fatalistic notion of attributing the causes to uncontrollable and unpredictable factors.

A cleaning lady, 34 years old, who claimed that she had never had a gynaecological examination, had no awareness of the risk of cervical cancer:

So I know nothing about that. Anyway, I have not thought of the risk at all, I don't know anything about that since I come from the countryside, not the urban area, I had not had secondary education, I really don't know that. (P(9)32; 170)

6.4.4 Perception of Risk Associated with Cervical Cancer

The fourth category that emerged from the data is women's perceived risk of cervical cancer. The five subcategories that emerged from this category were (1) understanding risk factors; (2) perceived risk associated with sexual partner; (3) perceived personal risk of cervical cancer; (4) personal connection to cervical cancer

risk; and (5) emotional response associated with cervical cancer risk.

6.4.4.1 Understanding Risk Factors

The first subcategory relates to women's understanding about the risk factors. All participants (n=27) perceived sexual relations to constitute an important category of risk for cervical cancer. Specific risk behaviour frequently cited by women included having unfaithful sexual partners, having too much sex even with one partner, having sexual intercourse during menstruation, early age of onset of sexual activity, having an abortion, and taking the contraceptive pill. Women perceived that once they engaged in sexual relationships with their partner, they would be likely to have an infection, a minor or serious infection. The concept of infection was paramount in their thinking about the risk of cervical cancer. Many of the participants further explained the concept that sexual risk factors and carelessness contribute to the possibility of infection, and subsequent untreated infection would contribute to the risk of cervical cancer. One screened woman explained the concept by saying,

It is mainly the aspect of hygiene, and this is associated with sexual activity. If hygiene is not good, you are likely to get an infection. If the infection gets worse, it will develop into cancer. Cervicitis and cervical erosions can advance to a certain level, maybe moderate or serious; at the very beginning it might be a precancerous lesion. (P(11)198; 216; 222)

The concept that the human papillomavirus (HPV) was a precursor to cervical cancer was not part of their knowledge about risk factors of cervical cancer. Most of the participants clearly believed that infections and sexually transmitted diseases (STDs) caused cervical cancer. However, none of them had heard of HPV or knew about its link with cervical cancer. Some of them had misinformation about HPV.

Carelessness was cited by many of the participants as a risk for cervical cancer, largely in relation to not getting medical check-ups, not getting treatment for “women’s diseases”, and not going to the doctor when experiencing discomfort. One screened woman described her awareness of the importance of health examinations in this way:

Anyway, lots of people just suppose they have no discomfort. At first they don't notice it. Then maybe they have no time, or sometimes they assume there is nothing wrong with them; they just delay and further delay the health check-up; later, once they have had the check-up, it [the cancer] is at a later stage. (P(10)100)

When the participants were asked about cervical cancer, they often referred to their knowledge of cancer in general. A variety of risk factors of cervical cancer were mentioned by the participants, including environment, dietary factors, smoking, psychological risk factors, lifestyle behaviour, and hereditary factors. Women were concerned about their basic health and took very general preventive measures, such as eating a balanced diet, maintaining a healthy lifestyle, and avoiding environmental harm.

If someone has a bad lifestyle, takes little exercise, has multiple sexual partners, and pays no attention to their personal hygiene, they definitely have a high risk of cervical cancer. (P(14)16)

6.4.4.2 Perceived Risk Associated with Sexual Partner

Although the participants perceived sexual activity as an important risk factor of cervical cancer, and had a certain amount of knowledge about the nature of cervical cancer as a sexually transmitted disease, participants with a faithful sexual partner did not perceive themselves to be at risk of cervical cancer (n=21). Some of the participants who were married did not perceive themselves to be at risk because they

believed that neither they nor their spouses were involved in promiscuous sexual behaviour. Other participants (n=6) stated that it was the first time they were aware of the role of the male partner in the development of cervical cancer after the discussion of sexual risk factors. Therefore, they were unaware of the role of sexual partners in women's risk of cervical cancer.

Actually, I think if you do not have multiple sexual partners, just have one faithful sexual partner, the risk would be low. (P(23)198)

6.4.4.3 Perceived Personal Risk of Cervical Cancer

Generally, the participants gave a relatively low rating of their personal risk of cervical cancer (n=26). A low perceived risk was sometimes based on inferences from women's own risk-taking or precautionary behaviour from their own perspective. Some participants perceived quite a low risk of cervical cancer for themselves because they did not have any symptoms or any family history of cervical cancer. Women with a family history of cervical cancer or any other cancer felt at increased risk. However, these women also believed that the increased risk could be offset, as they had no physical signs or symptoms indicating a problem or crisis at that point. This woman with a family history of cancer justified her perceived personal risk by saying,

It [the family history] had some relationship with the risk. Previously, the doctor also said that. That means I don't have an advantage on this point. But I am 29 years old, nearly 30 years old, and at present I have no symptoms. In addition, I also have a ten-month-old child and he is quite healthy; moreover, I have been with my husband for about two years. I think it is quite alright; anyway, at the moment, I have no signs, so I believe that it should be quite okay. (P(2)128)

Only one participant (n=1) perceived a relatively higher risk compared with

other women of her age, as she had received an abnormal smear result and had been recommended to have cytological surveillance as well as referral for colposcopy; in the long run, it was confirmed to be an infection rather than cervical intraepithelial neoplasia (CIN). This young woman, 30 years old, described how she rated her risk of cervical cancer based on her previous experience:

Compared with my classmates, I ought to say that the risk is just so-so. But if I have ever been suspected of having it, it is more likely. Yes, maybe a bit higher. For me, it would be 50 percent (laughing). I mean, I've had this experience. So the context of disease is there, it's not [cancer] currently. But it is probable [cancer] in the future.

(P(1)370; 372, 464; 468)

6.4.4.4 Personal Connection to Cervical Cancer Risk

The fourth subcategory is personal connection to cervical cancer risk. Some of the participants (n=8) described a personal connection to a cancer experience through friends or family members and related information obtained from mass media as motivators to participation: the participants themselves did not want themselves or their family to go through the physical or emotional pain experienced by their friend or relative. Women reported that they felt strongly that the purpose of participating in cervical screening is to find a negative result from the test.

The TV programme reported that even some young women had cancer, cervical cancer or another type of cancer; after knowing that I felt panicked...So I intend to have a check-up. Anyway, as a woman, I've witnessed friends of mine; some of them had the operation to remove the womb because of cervical cancer...some of my friends divorced their partners because of this disease. So I believe you at least need to do something good for yourself rather than for others. First of all I need to immediately go to have a check-up to see if I have this kind of disease. (P(24)84)

6.4.4.5 Emotional Response Associated with Cervical Cancer Risk

Some of the women (n=15) described the negative emotional response associated with cervical cancer risk. Participants described their fear pertaining to cancer and death, test results, and pain from the test. Some of the participants expressed their fear of cervical cancer and death, and fear appeared to be the main driving force behind their decision to have a smear test. Some of the participants expressed their anxiety and fear over screening results, which served as a powerful barrier to screening participation; this might also encourage an overreaction among women, thus increasing the frequency of the test. Many participants felt that a three-year interval between smear tests was too long and that they should be available every year or even every six months. One screened woman described how she feared the diagnosis of cervical cancer after she had received a positive smear result:

At that time (laughing), for sure it was terrible... But I just thought that you can never tell. It's possible that it was true. I really wasn't sure about the diagnosis. If the report from the Cancer Hospital confirmed that it was cancer, what would I say...(laughing)? At that time I was suddenly depressed. I read some books about cancer and also investigated what types of cervical cancer there are. I also checked which type was more curable and which type was less curable. And I couldn't be sure what I could do or how to face the reality, and what about my future life if it was true, and what about the treatment? (P(1)118, 120, 122)

6.4.5 Factors Related to Cultural Belief System

The findings revealed some factors related to the cultural belief system, and these factors have a significant impact on participants' perception of the risk of cervical cancer and cervical screening participation. This category can be described

by five subcategories: (1) the social and cultural meaning of the womb; (2) moral obligations associated with cervical screening; (3) procrastinating about screening participation; (4) social pressure associated with cervical cancer; and (5) notions about factors related to women's health.

6.4.5.1 The Social and Cultural Meaning of the Womb

The first subcategory is the social and cultural meaning of the womb for women. The invasive nature of the disease is structurally equivalent to the mythical fear of being devoured. Some of the participants (n=7) described the womb as a secret and precious part of a woman's body. For many of the participants, the womb was not simply an organ, but a symbol of femininity. Participants believed that cervical cancer would always lead to the removal of the womb, and even the ovaries. Therefore they saw cervical cancer as threatening not only their lives, but also their womanhood. Because cervical cancer was seen as a "woman-killer", participants were doubly fearful of the disease. Typical comments were:

The most secret and most precious organ [the womb], makes you different from others, very distinctively gives you your feminine characteristics; the only organ that does that is your womb, and your ovaries. If you had cancer and it was necessary to remove the womb, maybe you would lose both of them; you would have no distinctive traits of a woman any more. (P(15)130)

The findings revealed that for the participants, the womb is inevitably linked with sexuality; removal of the womb disabled their sexual and fertility functions, which lowered their opinion of themselves further. A non-screened woman, 29 years old, described her feelings by saying,

If the womb is removed, it would affect the sexual life and feelings between the couple. In addition, the womb is a characteristic organ only for the female. A woman

without this organ would be terribly hurt. Just as in breast cancer, if the breast is removed, it would affect her appearance and sense of self as well. Some women would have a low opinion of themselves. (P(12)60)

6.4.5.2 Moral Obligations Associated with Cervical Screening

With the question “why have you decided to have a smear test?” some of the participants’ responses (n=11) revolved around the notion of moral obligations associated with cervical screening participation. The feeling of normalcy associated with regularly having a smear test was reflected in the way in which the participants often referred to having a smear test as a “normal”, even “natural” thing for women to do; as “a thing women ought to do”. Some of the participants mentioned that women have to accept cervical screening simply because they ought to do so. They referred to having a smear test as a “correct” form of behaviour: as the right, correct, or proper thing for women to do. The feelings of moral obligation were also reflected in women’s perception of the necessity of having a smear test, associated with their perception of the high prevalence of “women’s diseases”.

I said that it was better to have a check. It is good for your health. ...And it is so normal. Anyway, for your own health, just for your own health, not only for the child, but also for the family, you ought to have a check. You ought to take care of yourself. (P(7)340; 348; 236)

Women explained that the reason for having smear tests drew on women’s obligation to attend, to look after and respect their own bodies. Some of the participants told the researcher about women they knew who had not attended for smear tests and how they had adopted the role of trying to persuade them to have one; women who did not attend for smear tests were sometimes referred to as “irresponsible”. One screened women, 39 years old, persuaded her sister-in-law to

take a test by saying,

Later I asked her (her sister-in-law) to go with me. It's no problem and there was no need to be shy. That's what I think. As it's good for your health, it won't do you any harm. (P(7)340)

6.4.5.3 Procrastinating about Screening Participation

Procrastination in relation to cervical screening is a phenomenon that emerged from both screened and non-screened participants (n=14). Procrastination was identified as a cultural tendency to wait for symptoms, marriage, or having a child before having cervical screening. These thoughts had made some participants act irrationally and consciously delay their participation in cervical screening. A few participants also explained that they delayed in taking a test because of a reluctance to find something wrong. Women in the under 30 age group tended to talk about smear tests as something that they'd grown up expecting to have to have when they were older, married, or had a child. This is illustrated by the following comments expressed by a 25-year-old non-screened woman:

I think that it seems unnecessary. Cervical screening is mainly to check if you have cervical cancer, right? Then I think I am young, and such a situation may not arise. I don't have this disease. Women in their 30s and 40s [need screening]. (P(5)16; 22; 30)

6.4.5.4 Social Pressure Associated with Cervical Cancer

The fourth subcategory is the social pressure associated with cervical cancer. Given the close link the participants perceived between sexuality and cervical cancer, some of the participants (n=5) believed that cervical cancer is a particularly shameful disease when compared to other types of cancer because it can imply that the victim

has been guilty of immoral behaviour. Furthermore, it was apparent that the word “immoral” in this context was used as a synonym for “promiscuous”. Some participants expressed concerns about appearing inappropriate if they were to have a smear test. This feeling is captured in the comments of a participant who was a young non-screened woman:

There is a notion of inappropriateness. This woman [a cancer patient] is viewed as not good; for us, we think it is alright. They are viewed as dirty or disreputable. Now actually this disease is quite common. Leaving aside uterine cancer, something like vaginitis or women's infections, especially in the countryside, would provoke animated discussion among people. A woman may feel under pressure because of the uterine cancer and cervical cancer. (P(19)102; 104; 106; 112)

6.4.5.5 Notions about Factors Related to Women's Health

Participants (n=7) also described their traditional notions about factors related to women's health in general, which were presented as a factor in the development of cervical cancer. Participants also believed that failure to maintain feminine hygiene was a factor in the development of cervical cancer. This referred to keeping the vaginal area clean, proper hygiene especially during menstruation, asking the sexual partner to wash his genital area before sexual intercourse, and poor post-partum care. A younger woman, 29 years old, explained how to follow traditional norms after childbirth:

Then during some particular periods, such as during pregnancy and after giving birth to a baby, or during the menopause and menses, more attention should be paid. After giving birth to a baby, women's resistance to disease is weak, and they are more likely to have an infection. Then they need rest for a long period because of their weakness. (P(12)156; 158)

6.5 Theme II: Institutional & Health Care Practitioner System

In addition to the perceptions that influence women's risk perception and cervical screening, participants also made comments on the important role of the institutional and health care practitioner system in their utilization of cervical screening services. The second broad theme, the institutional and health provider system, is introduced. Two categories are reported under this theme, namely organized health examination programmes and the role of health providers in cervical screening utilization.

6.5.1 Organized Health Examination Programmes

The sixth category that emerged from the data was organized health examination programmes, which is related to how women perceive the delivery of screening services as part of organized health examination programmes. There were four subcategories: (1) the role of organized programmes in facilitating screening; (2) perceived structural barriers associated with organized programmes; (3) lack of programmes for unmarried women; and (4) recommendations for an educational campaign.

6.5.1.1 The Role of Organized Programmes in Facilitating Screening

Eleven out of 12 informants who had been screened had their most recent cervical smear as part of a physical examination programme for women organized by the workplace or community. Women's perception about cervical screening was frequently linked to organizational aspects. Most of the participants (n=22) stated that the motivation prompted by the organized programme was related to the fact that it was free of charge or discounted, and that it enabled them to take part in screening with friends and colleagues. Most of the participants who had previously had cervical

screening had not actively requested their first test for cervical cancer screening. Most of them had received it in conjunction with the organized health examination programme for women. The test was offered as part of the programme, and some of the participants assumed that they would never have made an appointment themselves.

To help me to have a test, obviously if they organize the health examination programme yearly, I definitely will have a test. I mean, in the organized programme, all of us go to have it together, there is no need to queue up and wait for it. The organized programme makes you have the test and I think it is quite convenient. (P(4)234; 242)

6.5.1.2 Perceived Structural Barriers Associated with the Organized Programmes

Structural barriers refer to the organization and delivery of the screening service as well as accessibility. The most frequently cited structural barrier to screening attendance by participants was having no time to have the test because of their busy schedule (n=8). Some of the participants were too busy to have a test and unsure about who to contact, despite the availability of free or low-cost cervical screening for women in the community. Other structural factors described included the difficulty of navigating the health care system, transportation only being available at designated times, long waiting times inside the clinic, and a slow turnaround time for results.

The second is the complicated procedure. The most important point is the complicated procedure. For the aspect of time, you can try to find the time; the point is that going to the hospital is too complicated. (P(4)50)

6.5.1.3 Lack of Programmes for Unmarried Women

A few single participants (n=3) described the difficulties of the ineligibility of unmarried women and students for the organized programmes. Other married participants also mentioned that the current programmes targeted married women, and unmarried women were not recommended to have the gynaecological examination. One non-screened woman, 30 years old, described difficulty in accessing the screening service as she was unmarried and was a full-time postgraduate student. Therefore, she did not qualify for the organized health examination programme offering free screening only to married women.

I was not married when I was working. The hospital I worked at had organized such a physical check-up. But unmarried women are not eligible for this kind of physical check-up. When I studied in this school, there was also no organized check-up programme here for unmarried women. (P(12)2)

6.5.1.4 Recommendations for an Educational Campaign

Many of the participants (n=10) acknowledged the important role of educational campaigns focused on increasing knowledge to motivate them to get a test. A few participants appreciated the educational campaign as part of an organized programme, which enhanced their motivation to participate. The involvement of the general practice in personally inviting the target group along with more information concerning cervical cancer and screening was perceived to increase the effectiveness of mass screening. The participants suggested that popularized information about cervical screening should be presented to the target women in the community and in rural areas.

At first, to publicize the programme, promote a sense of health. If they have no sense of health, they definitely would not have the test, right? For someone without medical

knowledge, popularization should be enhanced. Not only the TV, but also newspapers and the community should do this. (P(14)46;78)

6.5.2 The Role of Health Care Practitioners in Cervical Screening Utilization

The seventh category that emerged from the data is the role of health care practitioners in cervical screening utilization. Three subcategories emerged from the analysis: (1) negative perceptions of health care practitioners; (2) communication with health care practitioners; and (3) preferences within the screening service.

6.5.2.1 Negative Perceptions of Health Care Practitioners

Some of the participants (n=9) discussed barriers associated with the screening provider. These negative perceptions related to health providers included discourteous and disrespectful manners, doubt about the reliability of tests, and lack of comfort from the health provider. One participant described her unpleasant experience of going to the doctor and having a check-up related to “women’s diseases” at the hospital, and the physician’s manner making her feel so ashamed and humiliated that this was the last time she went for a screening test. This participant also expressed an absence of confidence in and distrust of the health providers for their exaggeration of her illness when the result was positive. The reliability of screening was questioned and feelings of being deceived were described by some of the participants.

He suspected you of having multiple sexual partners. It seemed that he looked at you with this kind of suspicion. I could just feel it. I can't describe it clearly. His manner of speaking gave this kind of implication. It looked like he viewed you as not being very clean, or at least that you were negligent of hygiene. You could not communicate with him. (P(1)296; 298)

Many of the participants perceived that the health provider did not understand women's feelings, which was identified as a factor important to women in influencing their experience of the procedure and their subsequent level of satisfaction.

They were not very good or considerate. I had this kind of experience. They said something like it was very serious. They just said something was not good. He did not understand that you were so stressed because of the seriousness of the disease. He could not understand your feelings. (P(1)294)

6.5.2.2 Communication with Health Care Practitioners

Some of the women (n=8) described their communication with health providers as being deficient in information provision; the rushed atmosphere of offices and an uncaring approach to communication by health providers were also mentioned. Indeed, communication between the women and health providers was clearly lacking. The deficient information given by health providers was emphasized by the participants in many illustrations. Some of the participants reported and complained that the screening provider rarely informed them about the procedures related to cervical screening. Many of the participants complained that the health provider gave insufficient time to answering and explaining questions. The rushed atmosphere of offices and uncaring attitude of health care practitioners contributed to the difficulty women experienced in talking with doctors, asking their questions, and receiving meaningful answers.

They did not tell me things. I asked the doctor if I had an infection. He said it was a general infection. I also asked what I could do and something about vaginitis. But he didn't tell me anything. I think it's not good. They ought to make it clear what to do if you have something wrong. (P(7)284; 286)

6.5.2.3 Preferences within the Screening Service

Some participants (n=8) described their preferences in regard to the cervical screening service, including an older, female physician, privacy during pelvic examinations, and a caring approach by health professionals. Older health providers were perceived as more professional and experienced. Women's preference for a female doctor was frequently described in terms of the embarrassment experienced by women when a male doctor performed the procedure. Many of the women appreciated the caring nature of health professionals, which was highlighted as a strategy in overcoming women's fear of the procedure as well as minimizing their pain and discomfort. A 25-year-old young woman who had not been screened described how a physician's comfort could give her confidence and motivate her to have a test.

For me, sometimes the psychological comfort, for somebody like me who fears pain... if the doctor could comfort me a little, say something like "don't worry", then this overcomes the barrier of fear, which is quite important. (P(6)228)

One participant expressed her preference that privacy during a pelvic examination should be guaranteed by the health provider.

I feel that the department of gynaecology should be a place where privacy is relatively more addressed. It ought to do that just like foreign countries. The waiting room should be quite large; every patient should be seen in a single room to get the examinations and treatments, in order to make them feel comfortable. (P(15)34)

6.6 Comparison between Screened and Non-screened Women

The analysis of the data also involved a comparison of the similarities and differences in the two themes between the screened and the non-screened women. The analysis showed that there were differences in both of the themes.

6.6.1 Theme I: Perception of Cervical Cancer & Cervical Screening System

The analysis showed that among the five categories, screened women and non-screened women were similar in the category of *perceived influence of suffering from cervical cancer*. However, there were great differences between the perceptions of the two groups in the four categories, *perception of cervical screening*, *lack of understanding about cervical cancer and screening*, *perception of risk associated with cervical cancer*, and *factors related to the cultural belief system*. Although screened women and non-screened women shared many perceptions and cultural beliefs, some notable differences existed between the groups. Fear of embarrassment and pain, and cultural barriers such as procrastination and social pressure associated with cervical cancer were themes that surfaced among non-screened women. Factors discussed more often among screened women were the benefits of being screened, personal connections to cervical cancer risk, and a notion of moral obligation to participate in screening.

Perception of cervical screening seemed to differentiate the screened from the non-screened women. Screened women were more likely to be aware of the importance of cervical screening to women's health, to feel comfortable discussing cervical screening, and to have a more positive outcome expectation regarding early detection. Screened women did not say that feeling embarrassed had prevented or would prevent them from being screened. By contrast, non-screened women were more likely to believe that cervical screening was unnecessary if they had no symptoms, to describe the pain and embarrassment during the test as a factor influencing their motivation to be screened, and to have only a vague notion of the benefits of being screened.

Screened women unanimously agreed that taking part in cervical screening was extremely important, and that the examinations could detect cancer in the early

stages so that treatment could be effective. However, only six out of eleven non-screened women had even a vague notion about the importance of having screening, and made superficial comments such as, “It is to make sure of something” and “It is helpful”. They could not confidently identify the role of cervical screening in the early detection of precancerous changes before the advance to cervical cancer. Women who were aware of cervical cancer, who knew of other women who had suffered from this disease, or who believed that cervical cancer could have a serious effect on women, believed that participation in cervical screening could provide them with “peace of mind”. Screened women described returning for the test regularly to get the confirmation that they were healthy. Non-screened women were willing to participate in screening in future to gain feelings of confidence and security.

Both screened and non-screened women made comments about embarrassment and pain associated with cervical screening. However, embarrassment was discussed as a significant barrier for screening only among non-screened women. They typically described the embarrassment as excessive, whereas screened women did not. Although two screened women described embarrassment or shyness during gynaecological examinations in relation to cervical screening, embarrassment was not cited by the majority of the screened participants as a major barrier to actually getting tested. Most of them drew on their own explanations to refute the concerns of personal privacy or embarrassment, positing that some young women lack modesty, while women should not feel embarrassment because of the normalcy of cervical screening. In fact, most of the screened women considered the smear test to be only mildly uncomfortable or painless. However, two non-screened women perceived the procedure to be painful, saying, “It is said that the test is painful”, although they did not have factual information about cervical cancer screening.

Eight non-screened women, compared with four screened women, considered

cervical screening to be unnecessary because they felt healthy and, in particular, because they had no gynaecological symptoms or diseases. Some of them were aware of the benefits of cervical screening, but argued that as long as the body did not show signs of any disease, they felt healthy. They felt that the absence of symptoms could spare them visits for health care.

Screened women and non-screened women also demonstrated a difference in the category of *lack of understanding about cervical cancer and screening*. Overall, participants generally lacked knowledge about cervical screening. Half of the screened women, compared with all of the non-screened women, demonstrated *misinformation about cervical screening*. Women cited friends and colleagues as their sources of information about cervical cancer and screening. As a result, several women shared misconceptions related to cervical cancer and screening. The main misconception was that cervical screening is a diagnostic test to detect existing cervical cancer and other reproductive health problems. Many of the women described cervical screening as a measure to detect cervical cancer. They believed that getting regular cervical smears would help them to stay healthy by enabling them to detect and treat cervical cancer early, but they failed to realize the important concept of precancerous changes.

Screened women and non-screened women demonstrated a difference in the category of *perception of risk associated with cervical cancer*. Generally, all women gave a relatively low rating of their personal risk of cervical cancer except for one screened woman, who perceived her personal risk of cervical cancer as slightly higher. Women who were screened believed that if they had practised precautionary behaviour, the risk would be low. When the women who were not screened justified their reduced risk perception, two of them cited their intention to practise precautionary behaviour some time in the future, before their risk became significant.

Some women included their family history of gynaecological cancer, or other kind of cancer, and the absence of symptoms when estimating their low personal risk of getting cervical cancer.

With regard to *understanding of risk factors*, none of the participants knew what HPV was or accurately stated the association between HPV and cervical cancer. Only one screened woman had a vague notion that HPV is a viral infection and a sexually transmitted disease. Seven screened women, compared with one non-screened woman, cited carelessness in relation to not getting a health examination as a risk factor of cervical cancer. There were similar understandings of sexual risk factors and general risk factors associated with cervical cancer among screened and non-screened women. Fourteen screened women and seven non-screened women perceived that their sexual partner would not affect their risk of cervical cancer. Some of them associated the sexual behaviour of their partners with gynaecological problems such as infection, but they refuted the association between their sexual partner and the risk of cervical cancer because neither they nor their spouses were perceived as being involved in promiscuous sexual behaviour.

Six screened women compared with two non-screened women described a personal connection to an experience of cancer through friends or family members and related information obtained from mass media as motivators to participation. A *personal connection to cervical cancer risk* rather than *perceived personal risk of cervical cancer* served as a principal driver to women's motivation to take a screening test. Women expressed their desire to find a negative result from the test and stated that they hoped to prevent cervical cancer in the future. When asked what the term "cervical cancer" brought to mind, many of the participants expressed fear and panic as their predominant feelings, and they linked cervical cancer with the fear of death. Ten screened women described their fear of cancer and death, and five

non-screened women described their fear pertaining to cancer and death, as well as their anxiety and fear over screening results and pain from the test.

Screened women and non-screened women demonstrated a difference in the category of *factors related to the cultural belief system*. The findings in this study indicated that there were similar perceptions of *the social and cultural meaning of the womb* and *notions about factors related to women's health* among both groups. However, the category of *moral obligations associated with cervical screening* was more often expressed by screened women than non-screened women. By contrast, *procrastinating about screening participation* and *social pressure associated with cervical cancer* were more often demonstrated among non-screened women than screened women.

Eight screened women, compared with three non-screened women, explained a notion of *moral obligation associated with cervical screening*. The extent to which a woman feels morally obliged to take up the offer of cervical screening may motivate her to attend appointments in order to avoid feelings of guilt or regret. These findings may explain why women comply with cervical screening in spite of distress or discomfort associated with the procedure. Some of the screened women, in fact, stated that they responded to screening invitations not because they considered that they might be at risk of disease, but because they felt it was "right" to attend for a preventive health check.

A central theme that emerged from the non-screened participants was delaying or putting off cervical screening. *Procrastinating about screening participation* was more frequently cited as a barrier to screening participation by non-screened women than by screened women, with only three screened women describing procrastination, whereas all of the non-screened women cited procrastination. Procrastination as a result of reliance on signs and symptoms related to cervical cancer was well

exemplified amongst non-screened participants. Non-screened women said they had not been screened because they simply kept putting it off. Procrastination served as a psychological manifestation of women's view that *cervical screening is unnecessary* and a lack of motivation to see screening participation as worth the time and effort taken away from other daily activities. Procrastination could also have been the result of an emotional coping response to cervical cancer risk, whereby women did not want to deal with this subject because of fear related to the test result. A few women explicitly expressed unwillingness to know the results of the test.

The majority of screened women did not have any comments on *the social pressure associated with cervical cancer*. Only one of them expressed her fear of gossip from others in the context that she experienced stigmatization by health care providers when having her most recent screening test. However, four non-screened women commented on the social pressure associated with cervical cancer in detail. This perception had a significant impact on participants' explanations of the risk factors of cervical cancer and perception of their personal risk of contracting cervical cancer.

6.6.2 Theme II: Institutional & Health Care Practitioner System

The analysis showed that of these two categories, screened and non-screened women were similar in the category of *the role of health care practitioners in screening utilization*. However, there were great differences between the perceptions of the two groups in the category of *organized health examination programmes*. The important role of organized programmes was discussed more often among screened women. The factor discussed significantly more among non-screened women was structural barriers associated with organized programmes.

Screened women and non-screened women demonstrated differences in the

category of *organized health examination programmes*. The factor more often discussed among screened women was the important role of organized programmes; all of the screened women and six of the non-screened women stated that they would be motivated to schedule a cervical screening if friends and colleagues would go with them to an appointment arranged through an organized programme. According to the participants, the best motivator for screening was women sharing in educational campaigns focused on increasing knowledge, in conjunction with the fact that organized programmes are free. They stated that this type of organized programme would help them overcome their fear, increase cervical cancer awareness and knowledge, and increase the use of cervical screening services as part of an organized health examination programme. They suggested that the campaign's message should be consistent and serious.

Structural barriers were more pronounced among non-screened women who were confused about what was needed to obtain a cervical screening. Three screened women, compared with five non-screened women, commented on structural barriers associated with organized programmes. Non-screened women more frequently stated that a lack of time constituted a personal issue that posed a barrier to screening even when there was a free organized programme available for them, particularly for working women. Participants also talked about problems of qualifying for an organized programme offering a free screening service. One non-screened woman suggested that a lack of access to the cervical screening service for unmarried women and full-time students who had ever had a sexual experience created an important barrier to screening.

6.7 Interpretation of the Phase Two Findings

The integration of themes I and II indicates that a broad set of perception and

cultural components, as well as institution and health provider factors, are involved in the decision to undergo cervical screening. Importantly, the categories under these two themes interact with each other. The theme of the institution and health care practitioner system provides contextual factors influencing women's perception of cervical cancer and the cervical screening system. Provision of cervical screening services by the institutional and health care practitioner system directly influences women's perception of cervical cancer screening. Insufficient information provided by the institutional and health care practitioner system appeared to contribute to women's lack of understanding of cervical cancer and screening and importantly influence their perception of the risk of cervical cancer and subsequent cervical screening behaviour.

6.7.1 Perception of Cervical Cancer and the Cervical Screening System

The theme of perception reflected women's perception of risk of cervical cancer and cervical screening, as well as their cultural beliefs associated with cervical cancer and cervical screening participation. Participants believed that cervical cancer has serious consequences for women, but they did not perceive themselves to be at risk of cervical cancer. In addition, participants' lack of understanding about cervical cancer and screening interacts with their understanding of risk associated with cervical cancer and perception of cervical screening. Furthermore, Chinese cultural beliefs associated with cervical cancer importantly influence women's understanding of risk of cervical cancer and perception of cervical screening.

6.7.1.1 Perceived Influence of Suffering from Cervical Cancer

Participants described cervical cancer in terms of its influence on women's lives. This concurred with other studies in which participants described cervical cancer as a

deadly disease (Wong, Wong, Low, Khoo, & Shuib, 2009). This perception is most likely to be related to personal experiences and lack of knowledge about early detection and treatment. They described high levels of anxiety, depression, and other emotional symptoms related to the diagnosis of cervical cancer. Participants drew attention to the fact that suffering from cervical cancer would disable their sexual function and therefore jeopardize their marital relationship. Although a few participants were aware of the availability of treatment and the good chance of survival, most of them mistakenly believed that hysterectomy is the only treatment for all cervical cancer.

Women's high level of perceived severity of cervical cancer triggers high fear arousal, which together produce a high level of expressed motivation to be screened. However, screened women and non-screened women did not demonstrate a difference in their perceived severity of cervical cancer, which indicated that high perceived severity failed to guide the actual screening uptake, although it guided the expressed motivation to be screened. This finding agrees strongly with those of Hoque, Ibekwe, & Ntuli-Ngcobo (2009), who reported that although most women know that cervical cancer is a serious type of cancer, when perceived severity and cervical screening were compared between screened and non-screened women, no significant association between perceived severity and cervical screening was found. This differs from the hypothesis of theoretical models including the HBM and the PMT and empirical study that supports perceived severity as a major factor determining a women's likelihood to take part in cervical screening (Burak & Meyer, 1997; Rogers, 1975; Rosenstock et al., 1988).

6.7.1.2 Perception of Cervical Screening

Screened women were aware of the importance of cervical screening in the

early detection of precancerous changes before advancement to cervical cancer, and they claimed to obtain peace of mind through participating in cervical screening. By contrast, perceived barriers such as fear of embarrassment or pain were not cited by the majority of screened women. They refuted the concerns about personal privacy and embarrassment, and proposed that women would not feel embarrassment because of the normalcy and necessity of being screened. However, non-screened women described their perceptual barrier that screening is unnecessary if they have no symptoms, and fear of embarrassment or pain were cited as actual barriers to being screened. On the other hand, the benefits of cervical screening were not adequately comprehended by most of the non-screened women.

Women's perception of cervical screening served as an important factor influencing their cervical screening behaviour. Findings appeared to suggest that screened women emphasized the benefits of cervical screening, while non-screened women emphasized the barriers associated with cervical screening. This finding suggests that fear of embarrassment constitutes an important barrier to screening for non-screened women even though they have access to free screening services, and comprehending the value of cervical screening is a crucial factor in women attending for cervical screening.

The literature suggests that the most influential factors are women's beliefs in the value of cervical screening (Boonpongmanee & Jittanoon, 2007; Hislop et al., 2003; Ho et al., 2005; Orbell & Sheeran, 1998; Taylor et al., 2004). When an individual believes that the recommended behaviour will reduce the risk of disease and performing the behaviour has more rewards than costs, then he or she is presumed to comply with the behaviour (Orbell & Sheeran, 1998). Lack of understanding of the preventive nature of screening is demonstrated particularly among non-screened Chinese women (Holroyd et al., 2004; Lee et al., 2002). As

discussed previously in Chapter 5, perceived barriers such as fear of embarrassment or pain have also been highlighted as important factors related to screening participation (Boonpongmanee & Jittanoon, 2007; Ho et al., 2005). Physical examination of intimate body parts by a non-family member, combined with modesty about the body in general, has been found to be a barrier for Chinese women attending for health care (Hou & Lessick, 2002; Seow et al., 1995).

6.7.1.3 Lack of Understanding about Cervical Cancer and Screening

Overall, all of the participants generally lacked factual information about cervical cancer and screening. Even screened women were uncertain about their screening status, and their explanation indicated insufficient information from the health care provider. Narratives from participants showed that they erroneously considered screening primarily as a diagnostic test. The adverse effects of the widespread misconception about cervical screening demonstrated in the present study appeared to reinforce women's false perceptions that in the context of cervical cancer, symptoms are necessary for screening to be worthwhile. It appeared that the diffusion of accurate information about cervical cancer among this population is limited. Findings suggested that an educational campaign may be an important omission from the existing system for women's free cervical screening.

A positive test result from cervical screening may reflect a suspicion of cancer. The definitive diagnosis can only be established through histological examination of a tissue biopsy (Ansink, 2007). The lack of correct and current knowledge of screening benefits limits women to choices of health-seeking behaviour based upon incorrect or insufficient information (Kagawa-Singer, 1995). It is suggested that young women need to receive information early in life to allay fears and foster positive health behaviours in regard to prevention and screening (Steven et al., 2004).

Fitch et al. (1998) found that women had a desire for more information about cervical cancer and strategies for prevention. However, they were unaware of how to access reliable information, an issue which cervical screening promotion efforts must target.

6.7.1.4 Perception of Risk Associated with Cervical Cancer

Participants commonly perceived their risk of cervical cancer to be lower than average if they had not experienced symptoms of gynaecological problems, or they and their partner were not perceived to be involved in promiscuous sexual behaviour. They concluded that although cervical cancer would be a serious problem, it was remote from their lives. Perceived personal risk in itself was shown to be an insufficient motivator for screening behaviour in the present study. Importantly, a personal connection to cervical cancer risk rather than the perceived personal risk of cervical cancer served as a principal driver of women's motivation to undertake screening. Women described a personal connection to a cancer experience through friends or family members as an important motivator to be screened, but they denied perceiving a high personal risk of cervical cancer.

Participants perceived sexual relations to constitute an important category of risk for cervical cancer, with specific sexual risk factors described by women. In their search for understanding about the cause of cervical cancer, women created their own explanations of personal risk factors associated with cervical cancer. Their concept was that a variety of sexual risk factors contribute to infection, which is paramount in their thinking about the risk of cervical cancer. Specifically, the gynaecological infection was named as a "women's disease" by most of the women, and was described as cervicitis, cervical erosion, or another infection. Women believed that untreated "women's disease" could lead to cervical cancer.

This finding agrees strongly with another study among Latina women (McMullin et al., 2005) that women perceived that engaging in specific sexual activities introduced infection through physical trauma to the womb, contact with an infected partner, or lack of hygiene. If the infection was not treated, then cervical cancer was a possibility. Among these Western and Chinese women populations, concepts about the aetiology of cervical cancer were consistent with the biomedical model, except that they did not include HPV as the connection between infection and the development of cervical cancer. Although they clearly believed that infections caused cervical cancer, none of them knew about HPV infection and its link to cervical cancer. Indeed, awareness of the role of HPV in the aetiology of cervical cancer is also very low in other qualitative studies (Ackerson et al., 2008; McMullin et al., 2005).

6.7.1.5 Factors Related to the Cultural Belief System

The findings revealed that some factors related to the Chinese cultural belief system have a significant impact on participants' perception of the risk of cervical cancer and cervical screening participation. Participants commented on the social and cultural meaning of the womb, which influence women's perception of the effect of cervical cancer on women. In their opinion, the womb is inevitably linked with sexuality; removal of the womb disables their sexual and fertility functions, which lowers their opinion of themselves. This perspective reinforces women's perception of the influence of suffering from cervical cancer and makes women doubly fearful of the risk of cervical cancer.

The way that some participants view cervical cancer is constructed within the social and cultural context of the belief that cervical cancer is a shameful disease. It followed from this belief that undergoing cervical screening held implications for

modesty and moral behaviour. Frazer et al. (2006) argued that the recognition of HPV and sexual lifestyle as risk factors for cervical cancer has far-reaching consequences for prevention strategies and for counselling women. Highlighting the association with sexual behaviour may lead to stigma and guilt in patients who develop cancer. Feelings of anxiety and stigma were also observed in women with normal cytology who tested positive for HPV (McCaffery et al., 2004). Previous findings revealed an STD-associated stigma which could serve as a powerful barrier to HPV-related information seeking, screening, and treatment behaviours (Friedman & Sheppard, 2006).

Many participants demonstrated a tendency to put off cervical screening in the context of their beliefs that cervical screening is unnecessary. For most non-screened women, the use of preventive health care services was an uncommon activity and one of low priority. The lack of importance given to cervical screening is a central theme that health promotion efforts must target. Previous studies (Holroyd et al., 2004; Lee et al., 2002) have found a cultural tendency to wait for symptoms to appear amongst non-screened Chinese women, who appeared to associate participation in health care with sickness rather than the prevention of cervical cancer.

Many participants also commented on notions related to feminine hygiene that reflected Chinese cultural beliefs, and a few women also mentioned routine health care visits, including cervical screening, as part of their traditional notion of women's health. Importantly, findings from phase two revealed a notion of moral obligation associated with participation in cervical screening. The extent to which a woman feels morally obliged to take up the offer of cervical screening may motivate her to attend appointments in order to avoid feelings of guilt or regret. Given that many women consider the cervical screening test to be at least mildly unpleasant, it seems

reasonable to suggest that what distinguishes women who take up cervical screening invitations from those who do not is a sense of personal obligation (Orbell, 1996).

6.7.2 Institutional & Health Care Practitioner System

In addition to the perceptions that influence women's risk perception and cervical screening behaviour, participants also made comments on the important role of organized programmes in facilitating their utilization of cervical screening services. However, they had not received any information, counselling, or advice about cervical cancer and screening from these programmes or from health care practitioners involved in the programmes. Their discussions also showed that interactions with health care practitioners and educational campaigns played an important role in their attending for their initial screening.

6.7.2.1 Organized Health Examination Programmes

Organized health examination programmes provide the context in which women perceive the risk of cervical cancer, perceive cervical screening practices, interact with health care practitioners, and do or do not take part in cervical screening. Participants reported taking part in cervical screening because it was part of an organized programme, and some of them assumed that they would never have made an appointment themselves. Organized programmes enable women to take part in cervical screening with friends and colleagues, which facilitates family and friend support. Indeed, it is suggested that relatives or friends were the most popular source of information for screening services, and "family and friend support" was one of the primary reasons for choosing cervical screening services (Abdullah & Leung, 2001; Seow, Huang, & Straughan, 2000).

In the present study, women also addressed many barriers under the current

system of organized programmes. Importantly, none of the participants reported receiving information, counselling, or advice from these programmes about cervical cancer and screening. Some omissions were echoed: some assumed but could not confirm that these examinations were done to test for cervical cancer or other gynaecological problems. It seems that cervical cancer screening is not the main focus of these programmes, and no relevant health education was provided for the women involved in the programmes. Therefore, it is not surprising that cervical cancer does not emerge as a primary issue during the discussion of organized programmes. Secondly, a few women also mentioned other factors discouraging them from getting cervical screening, such as time constraints, navigating the health care system, long waiting times inside the clinic, and slow turnaround times for results, which is consistent with previous studies (Hou & Lessick, 2002; Kelaher et al., 1999; Twinn et al., 2002)

Lastly, and perhaps most importantly, the current organized health examination programmes target married women, and women who have not been married are not recommended to have the gynaecological examinations. In fact, the guidelines for cervical screening from the UK and Hong Kong (NHS Cancer Screening Programme, 2007; Hong Kong Cancer Registry, 2007) recommended that women between the ages of 25 and 64 who have ever had sex are eligible for a cervical screening test. Unmarried women who have ever been sexually active are not included in the free examination programme, which constituted an important barrier for unmarried young women to using cervical screening services because of ineligibility and a lack of social assertiveness in respect to seeking screening.

6.7.2.2 The Role of the Health Care Practitioner in Cervical Screening Utilization

The negative perceptions of health care practitioners were seen as a barrier to

Chinese women's participation in cervical screening. There was a lack of faith in the health service, ranging from a slightly negative view to total distrust. In the present study, the caring nature of the practitioner was highlighted as a strategy in overcoming women's fear and embarrassment about the procedure, as well as minimizing their pain and discomfort. Again, all of the discussions with screened participants showed that interactions with a physician or a nurse played an important role in prompting their initial screening.

Evidence documented the important role of health care practitioners in facilitating women's utilization of cervical screening services (Fitch et al., 1998; Twinn & Cheng, 2000). Physician recommendation is one of the most important cues to cancer screening, and physicians play a key role in informing women of the benefits of screening (Austin, McNally, & Stewart, 2002). There appears to be a need to improve health education by health care practitioners, as women in the present study reported that many women had never been informed of the existence and importance of cervical screening by health professionals. They also said that they would agree to undertake a screening if this was recommended by the physicians. First of all, current findings suggest that health care practitioners should be educated about the important role they play as motivators. In addition, health care practitioners need to do their part in promoting cervical screening. They should focus on educating women about cervical cancer risks, prevention and early detection to enhance uptake of screening practices.

6.8 Summary

The integration of themes I and II contributes to the understanding of women's risk perception of cervical cancer and cervical screening behaviour. Phase one of the study left a series of questions to be further explored, which has been listed in the

chapter on phase one of the study. In-depth exploration of phase two of the study has addressed these questions as follows:

- *Why are non-screened women not taking part in screening even though they have access to screening services?*

The underlying reason may be that women consider cervical screening to be unnecessary and lack motivation to see screening participation as worth the time and effort taken away from other daily activities, and they consider cervical screening embarrassed.

- *How do non-screened women and screened women see the risk of cervical cancer?*

Both non-screened women and screened women believed that although cervical cancer would be a serious problem, it was remote from their lives.

- *How does risk perception impact on women's screening behaviour under the existing system for women's physical examinations in mainland China?*

Perceived personal risk in itself is shown in the present study to be an insufficient factor determining women's screening behaviour. Importantly, personal connections to cervical cancer risk, rather than perceived personal risk of cervical cancer, served as a principal driver to women's motivation to take part in screening. A high level of perceived severity also produces a high level of motivation to take part in screening. In the context of cervical cancer risk, women respond to screening invitations not because they consider that they might be at risk of disease, but because they feel it is "right" to attend for a preventive health check.

- *How are personal risk factors interpreted by women?*

Women perceived sexual relations to constitute an important category of risk for cervical cancer. The concept is that a variety of sexual risk factors contribute to infection, and untreated infections could lead to cervical cancer. HPV infection was not a part of their knowledge about personal risk factors for cervical cancer.

- *How do women's knowledge and perception of personal risk factors impact on screening behaviour?*

The perception of a close association between sexual relations and cervical cancer risk may result in a social stigma associated with cervical cancer, which would prevent women from attending screening. Women's beliefs about personal risk factors provide a good basis for promoting primary prevention strategies. However, women did not consider a lack of cervical screening as an important risk factor for cervical cancer.

- *How do Chinese women perceive the association between their relationship with their sexual partner and their perceived risk of cervical cancer and screening behaviour?*

Although all participants perceived sexual activity as an important risk factor of cervical cancer, participants with a faithful sexual partner did not perceive themselves to be at risk of cervical cancer. Most of them seem not to be aware of the role of the male partner in the development of cervical cancer.

CHAPTER SEVEN

DISCUSSION

7.1 Introduction

The purpose of this chapter is to integrate and discuss the findings from both the quantitative and qualitative phases of the study. However, prior to undertaking this integration, information on the experience of using the mixed method is provided. The findings from phase one (quantitative) of the study focus on a baseline assessment of the knowledge of Chinese women about cervical cancer and screening, their perception of the risk of cervical cancer, and the relationship between these factors and their screening behaviour. The findings from phase two of the study (qualitative) focus on the perception of Chinese women of the risk of cervical cancer and cervical screening practice and are used to examine which of these factors contribute to their cervical screening behaviour.

In the first place, the socio-demographic information and sexual history of the participants are discussed, with particular reference to significant variables in the women's participation in cervical screening. The pattern of women's participation in cervical screening is described. Then, in line with the research objectives that constitute the framework for the discussion, women's perception of cervical cancer screening, perception of the risk of cervical cancer and personal risk factors, and the factors influencing women's screening behaviour are discussed. The findings of this study are compared with those of previous studies, both national and international. This chapter is structured as follows:

Section 7.2 Analysis of the experience of using the mixed method in this study.

Section 7.3 Socio-demographic background and sexual history of the subjects.

Section 7.4 Women's participation pattern of cervical screening.

Section 7.5 Women's knowledge and perception of cervical cancer screening

Section 7.6 Women's knowledge and perception of risk and personal risk factors in relation to cervical cancer

Section 7.9 Factors associated with cervical screening behaviour.

7.2 Analysis of the Experience of Using the Mixed Method in the Study

When the mixed method is used, the inquiry designs and analyses usually incorporate both coordinated-parallel and integrated-crossover strands, though sometimes the different methods are used separately and at other times more interactively (Greene et al., 2001). In other words, using the mixed method is much more complex and dynamic than using either of these theoretical constructs alone. The strategies adopted for analysis in this mixed method inquiry followed Marquart et al. (2000) by using "parallel tracks", where each data set is analyzed separately and comparisons and connections between them are made at the stage of drawing up conclusions and inferences.

In this study, there were several instances where the findings from the two data sets together offered a more comprehensive and enriched understanding of the study objectives than either data set alone. As discussed previously in the chapter four on methodology, the integration of the research methods and results posed a variety of methodological and theoretical challenges. When the qualitative and quantitative methods were combined to answer a specific research question, all three of the outcomes suggested by Tashakkori & Teddlie (2003, p. 466) were encountered in the present study, as described below.

7.2.1 “Qualitative and quantitative results converged; in this case, these results lead to the same conclusion.”

There are many examples in the present study of convergence between the outcomes of the qualitative and quantitative findings. Women’s perception of the risk of cervical cancer and its relationship with cervical screening behaviour is a typical example. The statistical analysis of the quantitative data revealed a tendency for women to underestimate their personal risk of cervical cancer and no relationship between the risk perception and the previous screening uptake. These findings from the quantitative part of the study were further validated by the analysis of the qualitative data, in which the participants discussed issues affecting their subjective interpretation of their personal risk of cervical cancer. The qualitative data demonstrated that the participants commonly perceived that their risk of cervical cancer would be lower than average if they had not experienced symptoms of gynaecological problems, or they and their partner were not involved in promiscuous sexual behaviour. Neither did the qualitative data provide any support for a relationship between risk perception and screening behaviour. The concurrence or convergence of the qualitative and quantitative findings is regarded as an indicator of their validity and reinforces the trustworthiness of the findings (Erzberger & Kelle, 2003 in Tashakkori & Teddlie, 2003). A mutual verification of the research results, and a potential increase in their validity as a result of this verification, were achieved by the mixed method design of the study (Denzin, 1978).

7.2.2 “Qualitative and quantitative results were divergent or contradictory.”

An example of a diverging outcome is provided by the embarrassment women associated with cervical screening. The outcomes of the qualitative and quantitative data on this point diverge from each other. Statistical analysis of the quantitative data

demonstrated that the majority of the participants did not perceive cervical screening as being either embarrassing or humiliating, suggesting that this was not a factor inhibiting women's uptake of screening. However, the findings from phase two provided a rather different insight into the women's perception of cervical screening. Although some participants who had already experienced screening agreed that the procedure might be embarrassing, in general they did not perceive embarrassment as a major factor in their decision-making. However, women who had not experienced screening generally appeared to be uncomfortable when discussing it, indicating that the embarrassment associated with cervical screening was in fact a barrier to participation for them

Since the quantitative and qualitative phases produced different reactions about the women's feelings of embarrassment associated with cervical screening, a purposeful search for the reasons for such a divergence might suggest new and better explanations for this phenomenon (Tashakkori & Teddlie, 2003). Indeed, the lower feelings of embarrassment expressed in phase one may be explained by the particular participation pattern for cervical screening for this sample. In their case, cervical screening was part of an organized programme and the screening was viewed as a service that society offered to all women. The women's normative belief that society wanted them to be screened may have motivated them to discount feelings of embarrassment and humiliation as a barrier to their attendance for cervical screening. Tacken, et al. (2006) also suggests that women's normative beliefs that their General Practitioners wanted them to be screened would motivate them to agree to a test.

Difficulties with the quantitative measurement of embarrassment and concern regarding cervical screening may also have been responsible for the failure to capture women's true feelings in the questionnaire survey in phase one. Holloway et al. (2003) found that findings resulting from the use of Likert-type scales for anxiety,

concerns and fears regarding cervical screening were more equivocal and it was possible that this measurement type could not capture women's true feelings about cervical screening. In the present study the use of a qualitative research method in phase two was useful because it provided a broader understanding about Chinese women's perception of cervical screening from their personal perspective and the trustworthiness of the data was enhanced by allowing the women to reflect on and tell their stories during the interviews. Indeed, during the interviews some of the participants did not directly cite embarrassment as a barrier to be screening, but did disclose their feelings of embarrassment when they were allowed to tell their own story about cervical cancer and screening.

The present study suggests that using quantitative strategies to reveal whether women do or do not see embarrassment as a barrier are not likely to elicit the women's true feelings. The pattern of how the women expressed their feelings concerning the embarrassment associated with cervical screening may provide some indication of which would be the best way to measure and address this important barrier to screening among this population.

7.2.3 "Qualitative and quantitative results related to different objectives or phenomena but were complementary to each other and thus can be used to supplement each other."

An example of a complementary outcome is provided by women's understanding of the personal risk factors for cervical cancer. In phase one 66% of the women knew about the risk factor of multiple sexual partners and 55% knew that sexually transmitted disease was a risk factor. However, awareness of the role of HPV in the etiology of cervical cancer was very low. In fact, the quantitative analysis did not capture the full range of the women's understanding of their personal risk

factors. The interviews in phase two provided new and deeper insights into the women's understandings of their personal risk factors for cervical cancer and how these factors contributed to the risk of cervical cancer.

Importantly, the women interviewed in phase two believed that a variety of sexual risk factors contributed to the possibility of a gynaecological infection, and that an untreated infection could increase the risk of subsequently developing cervical cancer. Similar to the results in phase one, they did not know much about HPV, but they did believe that sexual behaviour could have an important influence on the level of risk of cervical cancer, for example, multiple sexual partners and beginning sexual intercourse at an early age. In this study the women's perceptions of their personal risk factors for cervical cancer were consistent with the biomedical models with the exception of HPV which they did not recognise as being connected with the disease.

With respect to the legitimacy of the findings of this study, such as their validity, credibility and trustworthiness, the mixed method analysis offers a more comprehensive means of legitimating the findings than does either the qualitative or quantitative data analysis alone. In this study, the qualitative data from phase two clearly confirmed the trends in the quantitative analysis by finding a lack of information about HPV and its linkage with cervical cancer. This finding was validated by the integration of the data from the quantitative and qualitative research. Furthermore, the goal of reaching an enriched and elaborated understanding of women's understanding of their personal risk factors was revealed by using the complementary data sets to measure different facets (Greene, Caracelli & Graham, 1989). More importantly, the ability of qualitative data to "get more out of the data" generates more meaningful information, thereby enhancing the quality of the data interpretation (Tashakkori & Teddlie, 2003). If no qualitative inquiry is undertaken to

access the women's perception of their personal risk factors, the result is likely to be that the information is neither comprehensive nor all inclusive. The integration of both the quantitative and the qualitative data leads to more meaningful findings arising from the women's lay explanations of their personal risk factors for cervical cancer.

Whatever the outcome of the analysis of the data produced by the mixed methods design, the use of the mixed method in this study did result in a more comprehensive and enriched understanding about the complex nature of Chinese women's screening behaviour than either data set alone could have produced, and crucially contributed to the objectives of this study.

7.3 Socio-demographic Background and Sexual History of the Subjects.

A substantial proportion of the participants in the sample for the two phases of the study had a monthly household income of more than 2000 RMB (equal to 293 US dollars), within the normal range of income for people in Changsha city. A high proportion of the women (95.2%) were currently employed outside the home (compared with the 61% of Taiwan Chinese women in the study by Hou & Luh, 2005). These women may have access to free occupational health care that included a cervical screening service under the current system of women's physical examinations in mainland China. However, 45% of them had not been screened during the past three years. This finding suggests that despite the availability of a free or low-cost cervical screening programme for married women, intrinsic factors, such as salient beliefs about cervical cancer and perceptions of the risk of cervical cancer, may have a greater influence on women's uptake of cervical screening than socio-demographic factors (Acherson & Gretebeck, 2007; Fylan, 1998; Kim et al.,

1999).

The participation pattern revealed a relationship with marital status and having or not having a child. Married women or women with a child were more likely to have a test, and this concurred with findings in the Hong Kong and Taiwan Chinese populations (Hou & Lessick, 2002; Twinn, et al. 2002). These findings may be largely explained by the fact that currently the organized health examination programmes target married women, and unmarried young women are not encouraged to have gynaecological examinations. The belief of Chinese women that they would have a test after they were married, in effect after they started to engage in sexual activities, (Hou, 2002) may also have contributed to this difference.

Interestingly, even the married participants in the present study appeared reluctant to disclose the number of their sexual partners and their age at their first intercourse. This may suggest that the women's reluctance to discuss sexual matters openly arose from notions of modesty and the fact that it was inappropriate in the Chinese culture to talk about such matters (Hou & Lessick, 2002). In Chinese society, women have been found to be uncomfortable about discussing their body (Holroyd et al., 2002). Differences between Asian and Caucasian women with respect to the cultural barriers to screening have been found, the Asian women being less comfortable about communicating with their mothers about screening and sexuality issues and being less open about their sexuality (Tang et al., 1999). Since Chinese women may have specific cultural understandings about sex-related issues; the accuracy of the information about their sexual behaviour in the present study is questionable.

7.4 Women's Participation Pattern of Cervical Screening

The first objective of the present study was to identify the pattern of

participation of Chinese women in cervical screening. The findings from phase one and phase two consistently demonstrated that the majority of the screened women had received free screening services as a part of an organized health examination programme. As discussed previously in chapter five, the availability of an organized programme seems to be a major motivator for women to attend cervical screening.

The particular pattern of participation in cervical screening found in the present study would have a profound influence on the understanding of the other study objectives in several ways. Firstly, since most women take part in cervical screening only as one component in an organized programme that addresses their general and gynaecological health, their perception of the risk of cervical cancer and cervical screening practice would be different from that of women in other societies where programmes specific to cervical screening are available for women. Secondly the participation pattern highlights the role of the current system of organized health assessment programmes in increasing the uptake of screening. As has been the case in other countries, the organized programmes in mainland China have dramatically extended the participation in cervical screening. However, thirdly, the fact that programmes for gynaecological examinations that include cervical screening are not accessible to unmarried women constitutes an important barrier to screening for many vulnerable women. Fourthly, similar to the situation in other countries where either free or low-cost screening is available, intrinsic factors, such as knowledge about cervical cancer, awareness of the importance of cervical screening, health behaviour and cultural beliefs and perceptions of risk influence women's uptake of cervical screening (Ackerson & Gretebeck, 2007; Sabates & Feinstein, 2006).

Moreover, the pattern of participation may also partly explain differences between the findings from the present study and those from studies conducted among Chinese women in Hong Kong and Taiwan. Although Chinese women in these three

locations share many cultural beliefs, it should be noted that there are also many cross-district differences between Chinese women in Hong Kong and Taiwan, and those in mainland China, such as their socio-economic status and their health care systems. In particular, the practice that unmarried women in China are not encouraged to undertake gynaecological examinations is different from the practice in Hong Kong and Taiwan. Therefore, the findings generated by the present study show that the behaviour of Chinese women with respect to cervical screening is different from that of women in Hong Kong and Taiwan.

7.5 Women's Knowledge and Perception of Cervical Cancer Screening

The statistical analysis in phase one indicated that women's knowledge about cervical screening was significantly associated with their screening behaviour. Screened women were more likely to be aware of the preventive nature of cervical screening than non-screened women. The in-depth exploration in phase two indicated that women's perception of cervical screening is a process during which the perceived benefits are weighed against the perceived cost and that this influenced the process of change in the women's screening behaviour. When women believe in the benefits of cervical screening, such as obtaining an understanding of the disease, gaining peace of mind, and the opportunity for early detection of cervical cancer, they recognise that cervical screening has more benefits than costs, and are more likely to participate. These findings concur with other empirical and theoretical evidence (Hodgkins, & Orbell, 1998; Maddux, & Rogers 1983; Rogers, 1975). This study also indicates that Chinese women in general lack correct and current information about the benefits of screening, suggesting that an educational campaign may be an important element that is missing from the existing system of free cervical

screening.

The integration of the quantitative and qualitative findings indicated that, compared with women's perception of the risk of cervical cancer, their perception of cervical screening was more strongly and consistently associated with their screening behaviour. This finding concurs with Milne et al.'s (2000) meta-analytic review of the PMT model that suggests that the coping-appraisal variables proved to be more strongly and consistently associated with intention than were the threat-appraisal variables. This study suggests that comprehending the value of cervical screening is a crucial factor in leading women to take part, and this is consistent with previous studies (Boonpongmanee & Jittanoon, 2007; Hislop et al., 2003). In this study, the central theme is that the main barrier that discourages non-screened women from taking a test is their belief that cervical screening is unnecessary. This belief results mainly from a lack of understanding of the importance of cervical cancer screening for women's health. Gao et al., (2008) also found that Chinese women who thought cervical screening was necessary for asymptomatic women were much more likely to have been screened recently.

As discussed in section 7.2.2, although the quantitative and qualitative findings diverged with respect to the feelings of embarrassment that women associated with cervical screening, the integration of both findings indicates that the perceived costs of screening, such as embarrassment, constitute an important barrier to screening for non-screened women even when they have access to free screening services. This study suggests that culturally based concepts of modesty contribute significantly to women's reluctance to seek cervical screening when they have no symptomatic concerns about their body. Data available from various populations suggests that the embarrassment and concern about modesty associated with cervical screening are important factors influencing women's utilization of screening services (Holroyd et

al., 2004; Moreira et al., 2006; Seow et al., 1995). Women who had previously had a smear test were less likely to want to repeat it if they had perceived the test to be uncomfortable or embarrassing (Seow et al., 1995).

7.6 Women's Knowledge and Perception of Risk and Personal risk Factors in Relation to Cervical Cancer

7.6.1 Perceived Influence of Suffering from Cervical Cancer

In phase one, the women had an average or low level of perception of the severity of cervical cancer and the perceived severity was not associated with the women's previous screening history or their expressed motivation to take a screening in the future. In phase two, the qualitative findings provided in-depth information about the women's perceptions of the impacts that developing cervical cancer would have on them. They expressed great concern that their sexual functions might be diminished, jeopardizing the marital relationship with their spouses as a result of a hysterectomy, which was the only treatment for cervical cancer of which they had any knowledge. Some women drew upon their vivid experiences of watching family members or people close to them die of cervical cancer, which had taught them about the great impact that suffering from cervical cancer could have.

This finding reflects the significance of sexuality for these women, and reinforces the argument that culture significantly influences the way that women view the disease and assess its impact. One of the strengths of this study is to examine the meanings that women attach to cervical cancer within the context of Chinese culture, since this has a significant impact on how Chinese women perceive cervical cancer screening. Firstly, the risk was perceived as potentially harming the sexual relationship with a partner and making marital life difficult, some women

even going so far as to be reluctant to undergo treatment, and preferring to choose death with dignity. In China sexual relations are regarded as an indispensable activity to achieve harmony with the universe, through the unity of interaction of two opposing forces: yin a yang (Zhang, Li, Li, & Beck, 1999). Married couples now tend to pay more attention to the quality of their marriage, rather than merely to its stability (Pan, 1995). The quality of an individual's sex life is currently valued to a greater extent than before ((Liu, 1992; Zhang et al, 1999). In the present study, it was apparent that because cervical cancer was perceived as severely affecting a woman's sexual function and seen as a "woman-killer" the participants were doubly fearful of the disease and motivated to take a screening.

7.6.2 Perceived Level of Personal Risk of Cervical Cancer

Quantitative and qualitative data have consistently demonstrated a tendency to under-estimate the personal risk of cervical cancer. Women generally lack information about the risk of cervical cancer and any perceived risk was significantly offset by worries about other gynaecological problems and other cancers. As discussed previously, the fact that Chinese women generally perceive themselves to be at a lower risk of developing cancers as compared to Caucasian women may also indicate that the women were not prepared to share information about their perceived level of risk (Hoeman et al., 1996; Wang et al., 2008).

Indeed, this study reveals a discrepancy between the perception of the severity of cervical cancer and the perception of the personal risk of cervical cancer. The women interviewed in phase two did have a clear perception of the severity of cervical cancer, but at the same time a very low perception of their personal risk of the disease. Indeed, the literature highlights that the perceived risk and the perceived severity should combine to affect an individual's choices (Weinstein, 2000). It is

obvious that the effects of these variables cannot be independent, and if either the risk or the severity is perceived to be zero, no one would be motivated to act. The discrepancy between these two variables may be partly explained by women intentionally distancing the risk of cervical cancer from themselves because of the severe impact of the disease and its associations with sexual activity.

The integration of the quantitative and qualitative findings in this study does not support a relationship between the perceived personal risk and cervical screening behaviour. Indeed, a number of empirical studies also suggest that it is questionable whether a high risk-appraisal is a sufficient condition for behaviour modification (Ho et al. 2005; Byrd et al., 2004; Eaker et al., 2001; Kahn et al. 2001; Orbell, 1996). Milne et al.'s (2000) meta-analytic review showed that threat appraisal (e.g. perceived risk and perceived severity) is a poor predictor of health-related behaviour. High risk perception does not always predict desirable, preventive behaviour, but in fact can also predict undesirable behaviour such as an avoidance response, involving a denial of the threat or actively avoiding information concerning the disease (Rippetoe & Rogers, 1987; Seydel et al., 1990).

However, one should not conclude from the above that risk perception is an unimportant factor in the take up of cervical screening. It is impossible to consider women's screening behaviour outside the context of the risk of cervical cancer. Without the notion of a certain severity or risk, a woman would not necessarily proceed to seek possibilities for reducing or removing the threat (Rogers, & Prentice-Dunn, 1997; Seydel et al., 1990). As Schwarzer (1992, p. 235) stated, "A minimum level of threat or concern must exist before people start contemplating the benefits of possible actions and ruminate their competence to actually perform them". Such evidence suggests that a perception of a low personal risk of cervical cancer may also be persuasive and may explain why in the present study women who

perceived a low personal risk had nevertheless agreed to attend cervical screening or were willing to do so in the future.

7.6.3 Personal Connection to Cervical Cancer Risk

The interviews in phase two provide data supporting that personal connection to cervical cancer risk rather than a perceived personal risk of cervical cancer is a principal driver for women's motivation to take a screening. Women did not want themselves and their family to have to go through the physical and emotional pain experienced by their friends or relatives. This finding corresponds well with the literature showing that a family history of cancer and the illness of a friend or relative (Abdullah & Leung, 2001; Liang et al., 2004; Seow, Huang, & Straughan, 2000; Taylor et al. 2002) can serve as motivations for participation in cervical screening.

As discussed above in this study, in the context of Chinese culture, women may not explicitly claim that they are at high risk of cervical cancer. They may intentionally or subconsciously distance themselves from the risk of cervical cancer because of the severe impact of the disease and cultural beliefs that "cervical cancer is a shameful disease". Previous studies also suggest that many Chinese women have such taboos and believed that talking about health related problems could in fact cause those problems to happen (Mo, 1992; Kagawa-Singer, 1997). If women were aware of a personal connection to the risk, which would also make them aware of the reality of the risk, and would promptly motivate them to be screened. The present study suggests that women's awareness of the risk rather than perceived personal risk of cervical cancer would be a potential motivating factor for cervical screening and could be used as a target to promote participation in the screening.

7.6.4 Emotional Response Associated with Cervical Cancer Risk

In phase one of the study, about 70% of the participants said that they were not at all worried about a diagnosis of cervical cancer. However, this result was not consistent with the findings from phase two. When asked in the interview what reaction the term cervical cancer provoked, all of the participants identified fear and anxiety as their predominant feelings. The emotional expressions seemed to be related to the level of fear that they felt about the possibility of developing cervical cancer and the severe impact it would have. For some women, fear appeared to be an important driving force behind their decision to take smear tests. Other women expressed their anxiety and fear about receiving an abnormal result, and this served as a potential barrier to participation.

The present study indicates that fear and anxiety associated with cervical cancer risk may influence cervical screening behaviour either positively or negatively, which is consistent with the previous literature. Prior research has found that emotional factors, such as worry and fear, can influence women's behavioural responses to cancer screening and regulate screening behaviour in different ethnic groups (Consedine, Magai, Krivoshekova, Ryzewicz & Neugut, 2004; Consedine, Magai & Neugut, 2004). It has been demonstrated that women who worried about developing cancer were more likely to undergo timely cancer screening than women who were not worried (Cohen, Fouladi, & Babaian, 2003; Diefenbach, Miller, & Daly, 1999; Schwartz, Taylor & Willard, 2003; Wang et al., 2006). However, Rippetoe & Rogers (1987) discovered that fear can have a detrimental effect on the attitude to prevention by inducing maladaptive coping, specifically defensive avoidance. A fear of "finding something wrong" has also been cited as a key obstacle to screening among both Hispanic and Black women (Austin et al., 2002; Friedman, Webb, Weinberg, Lane & Cooper, 1995). A feeling that "it is better not to know" has

also been reported as a barrier among several European populations (Aro, de Koning, Absetz & Schreck, 2001). The study of Hou & Lessick (2002) similarly showed that fear of the screening result constituted a primary reason for Chinese women not to engage in cervical screening.

7.6.5 Knowledge and Perception of Personal Risk Factors

As discussed in section 7.2.3, interestingly, in spite of the acknowledgement of the role of sexual relations, a lack of information about HPV and its link with cervical cancer was demonstrated among participants in both phase one and two. Phase two further revealed a lay belief about the personal risk factors of cervical cancer. Indeed, this lay belief reflected an emphasis on primary prevention rather than secondary prevention. Paying special attention to gynaecological health according to Chinese cultural beliefs, such as modesty about sexual activity, is a norm for some of the women interviewed. Previous studies suggests that traditional Chinese women believe that cancer cannot be cured and that the best way to prevent cancer is to use natural approaches such as maintaining balanced diets and using traditional herbs (Liang et al., 2004; Simpson, 2003). As a result, many Chinese women believe that secondary prevention, such as cancer screening, is not essential to avert cancer mortality, so these women are less interested in using a screening service (Liang et al., 2004).

Moreover, although the women perceived that sexual relations constituted an important category of risk for cervical cancer, they refuted the association between their sexual partner and the risk of cervical cancer. This finding is in parallel with the findings of other studies (Twinn et al., 2006; Fernandez-Esquer et al., 2000), which indicated that women do not acknowledge the “male factor” in the development of cervical cancer. As discussed in chapter one, the male role in the development of

cervical cancer in his sexual partner is well documented. The low awareness of the male role in cervical cancer prevention, as shown in the present study, may result from traditional patriarchal Chinese beliefs in which women play a submissive and passive role in sexuality (Tang, Wong, & Lee, 2001). Male sexual priority in Chinese society portrays women as victims of the man's sexual instincts that he cannot control or resist, and multiple sexual partners are thus more acceptable for men than for women. Inequalities in power between the genders on issues of control, authority and coercion within heterosexual relationships often result in men's controlling both sexual and reproductive decision making, such as when and how a woman will have sexual relations (Tang et al., 2001). Indeed, the women's notions of modesty about cervical screening included a concern about maintaining the male expectations of correct female behaviour and further reflected the attitudes of the male sexual partners (Holroyd et al., 2002).

There was a high degree of overlap between the participants' knowledge about known cancer risk factors and the personal salience of these risk factors. A low perceived risk sometimes was based on inferences from the women's knowledge about risk factors and their own risk-taking or precautionary behaviour from their own perspective. For example, participants who believed that family history was an important indicator of risk justified their very low perception of their own risk of cervical cancer by the fact that they did not have any symptoms and had no family history of cervical cancer. Women who perceived promiscuity as being one of the major factors causing cervical cancer perceived themselves to be at a very low risk because they had been faithful to their husband. Inadequate knowledge of the risk factors of cervical cancer, as shown in this study, may give women a false sense of security about their risk of cervical cancer. Indeed some women did not take a cervical screening because they had no family history of cervical cancer. Ackerson et

al., (2008) suggest that some women believe that they are not vulnerable to cervical cancer because they do not understand their personal risk factors. Lack of understanding of the personal risk factors and exposure to factors that contribute to cervical cancer cell changes puts these women at higher risk from non-attendance for cervical screening (Behbakht, Lynch, Teal, Degeest, & Massad, 2004; Carter, Park, Moadel, Clearly, & Morgan, 2002; Nelson, Geiger, & Mangione, 2002)

7.7 Factors Associated with Cervical Screening Behaviour

This study assessed women's cervical screening behaviour, including previous screening experience during the previous 3 years, and their expressed motivation to have a screening in the future. The integration of the quantitative and qualitative findings highlighted the complex nature of women's cervical screening behaviour. For example, the interview data indicated that a high level of perception of the severity of the disease produced and a high level of declared intention to attend for screening; but no association was found between the perception of the severity of the disease and the previous screening experience, suggesting that the perceived severity is nevertheless an insufficient motivation for the women to actually take the test. In addition, 77% of non-screened women said they were willing to have a smear test but did not in fact do so, suggesting an inconsistency between the expressed motivation and the actual screening uptake. In view of a similar inconsistency between expressed motivation and actual screening uptake suggested by a previous longitudinal study (Orbell & Sheeran, 1998), it should be noted that future and longer term screening patterns and the processes by which an expressed motivation is or is not translated into successful performance of screening behaviour are not confirmed by the present study.

The inferences drawn from the findings from phase one and phase two highlight

some important issues that contribute to an understanding of cervical screening behaviour among this population group. These inferences provide the focus for the discussion of the findings and include the following points: perception of cervical screening, perception of the risk of cervical cancer, perception of personal risk factors, institutional and health care practitioners, and health beliefs and cultural factors related to cervical cancer and screening. The first three factors have been discussed previously in sections 7.5 and 7.6. Institutional and health care practitioners factors and health beliefs and cultural factors are discussed below.

7.7.1 The Institutional and Health Care Practitioner System

7.7.1.1 Women's Perception of Organized Programme

The findings from phases one and two consistently demonstrate that an organized programme of physical examination is a major motivator for women's utilization of a cervical screening service. Women described their perception of the delivery of a screening service as being part of an organized health examination programme and their perception of cervical screening and health care practitioners was frequently linked to those organizational aspects. Most of the women who had been screened had not specifically requested the test and they had undergone the cervical screening because it was "part of an organized programme". This finding concurs with previous studies that demonstrated that a free or low-cost cervical screening programme in many countries had been successful in securing participation of a high proportion of the target women (Gao et al., 2008; Lee et al., 2002).

Social influence constitutes an important factor influencing an individual's behaviour, which can manifest itself in several ways (De Vries, Backbier, Kok & Dijkstra, 1995). Some evidence was found for the importance of direct social support

or pressure for participation in a screening. Women who are encouraged to participate in a screening by their spouses, family, friends or physician are more likely to attend for screening (Abdullah, & Leung, 2001; Hoeman et al., 1996; Seow et al., 2000). In addition to direct support, the knowledge that other women participate in the screening might also encourage a woman to attend the screening (modeling) (De Vries et al., 1995; Byrd et al., 2003). This makes sense as social norms influence many behaviours. If friends are being screened, the women will have greater access to information about the test from those friends. Physician recommendation is one of the most important cues to cervical cancer screening (Austin et al., 2002). Importantly, in the present study, it is shown that an organized programme that enables women to take cervical screening together with friends and colleagues and to have access to a physician's counselling, will integrate the different social support resources, including family, friends and professional support, and so encourage women to attend for screening.

In spite of the crucial role that organized programmes have played in facilitating screening attendance, several issues associated with such programmes emerged from the interviews in phase two, which contribute to an understanding of the complexity of women's cervical screening behaviour. First, the main focus of these organized programmes is women's general health and gynaecological health, and not cervical cancer screening only. Information about this type of cancer was considered to be almost invisible in the society as well as in the organized programme. One reason that was mentioned to account for this absence of information was that since cervical cancer also involved sexuality, this made it a subject of taboo and as such more embarrassing to deal with. Second, as discussed previously in chapters five and six, unmarried women, whether they have or have not had sexual intercourse, may be excluded from cervical screening services under the current system of organized

health examination programmes in mainland China because they are considered ineligible and because of a lack of social assertiveness about the right to have screening.

In conclusion, organized health programmes provide a good basis for integrating cervical cancer screening into broader checks on women's health and can utilise different networks of social support to facilitate the utilization of the screening service by more women. However, education about cervical cancer and the advantages of screening must be made more generally available. Most importantly, appropriate policy changes are needed to ensure that unmarried women have access to routine cervical screening without encountering issues of eligibility or moral judgment.

7.7.1.2 Women's Perception of Health Care Practitioner

In phase one, barriers mentioned by some women included "Not suggested by the doctor", "Don't know the test", and "No awareness of the test", indicating the women's reliance on a physician's recommendation to prompt them to participate in screening. The findings from phase two indicate that negative perceptions of the health care practitioners involved in the screening service and in general had a detrimental influence on the women's perception of the value of cervical cancer screening and the subsequent screening uptake. Given that the organized programmes did not put any emphasis on cervical cancer screening and that information about this disease was virtually invisible in society in general, it is not surprising that the health care practitioners in the present study did not take the initiative or responsibility of informing women of the benefits of screening and of promoting participation. Inadequate information provision, a lack of faith in the health service and the non-caring attitude of health practitioners all contribute to the

women's negative perception of health care practitioners and their subsequent failure to attend screening.

As emphasized in chapters five and six, the literature highlights the important role of health care practitioners in stimulating women's utilization of cervical screening services (Austin et al., 2002; Fitch, et al., 1998; Twinn, & Cheng, 2000). Encouragement from a health care practitioner may help Chinese women to adapt themselves to modern forms of care by putting greater emphasis on the value of preventive care, and this ultimately could motivate the women to comply with screening guidelines (Wang et al., 2006). This indicates that much more could be done by health care practitioners if they are to promote participation in cervical screening in this population.

7.7.2 Health Beliefs and Cultural Factors

The integration of the quantitative and qualitative findings suggests that health beliefs and cultural factors, such as beliefs about health behaviour, cultural and family obligations, and the social role of women, have a great impact on how women perceive the risk of cervical cancer and on their cervical screening behaviour. The present study indicates that participants are most likely to participate in screening for reasons of their cultural family obligations and personal health beliefs and practices. Women who have a child are more likely to take a test, and this is consistent with the findings for the Hong Kong Chinese population (Twinn et al., 2002). Chinese culture is deeply influenced by Confucianism, which requires all members to exercise tolerance in order to preserve family harmony (Matsudaira, 2003). The cultural norms for the gender roles in Chinese society dictate the support women will give to early cancer detection behaviour (Mo, 1992, Kagawa-Singer 1995). Within this context, the woman has the gender role of being a good wife and taking care of the

family. Women with young children seek to stay healthy so that they can continue to be available for their children. Thus making personal health decisions is influenced by both personal values and social roles (Holroyd et al., 2004).

Abundant data from phase two supports the idea that women respond to screening invitations not because they consider they might be at risk of the disease, but because they feel it is “right” to attend a preventive health check. Norman and Conner (1993) also have drawn attention to the possibility that public compliance with screening norms does not necessarily denote beliefs or attitudes consistent with a decision to try to reduce the risk of a disease. Compliance with a cervical screening schedule is best viewed not as a response to a disease threat, but as behaviour that is consistent with a person’s values or behavioural standards (Orbell, 1996). Lechner, de Vries & Offermans, (1997, p474) showed that women taking a smear test may feel they are fulfilling a moral obligation: “by participating in the screening you show responsibility toward yourself and others”. It is suggested that a sense of personal moral obligation about whether one “ought to” take up a preventive health service may be an important omission from the existing theoretical accounts of preventive health related behaviour (Orbell, 1996).

7.8 Summary

The findings from the two phases of this study have indicated that women’s cervical screening behaviour can be profoundly affected by their perception of cervical screening, their perceived risk of cervical cancer, their perception of personal risk factors, health beliefs and cultural factors, and the institutional and health care practitioners. The findings demonstrate that higher levels of perception of the severity of the disease and a personal connection to or experience of its effects may contribute to the women’s expressed intention to undertake a screening.

However, even more important factors would be health beliefs and cultural factors, the accessibility of screening, and the perception of the value and nature of cervical screening itself, including weighing up its costs and benefits, which could lead to an increase in the actual screening uptake. The findings also emphasize that women's screening behaviour is complex in nature and it can be influenced by contextual, risk appraisal, coping appraisal, and health belief components. The conclusions derived from the discussion of these findings identify the critical components that contribute to the development of the model and to provide an explanation of women's cervical screening behaviour. This is discussed in the next chapter.

CHAPTER EIGHT

A MODEL TO UNDERSTAND CERVICAL SCREENING BEHAVIOUR OF CHINESE WOMEN

8.1 Introduction

This chapter focuses on the development of a new model to understand the cervical screening behaviour of Chinese women. It is constructed on the basis of an integration of the findings of the two phases of the study. The model consists of four interacting components: risk appraisal, coping appraisal, health beliefs and cultural factors, and institutional factors. The different factors within each of these components are discussed and an attempt is made to explain the interaction of their relationships to gain an understanding of women's cervical screening behaviour.

The model is shown in Figure 1. Each component in this model crucially contributes to an understanding of the complex nature of Chinese women's cervical screening behaviour at different levels. The institutional components provide the contextual factors within which women perceive the risk of cervical cancer and the practice of cervical screening, and which can influence the extent to which they are influenced by their health beliefs and cultural factors, and in particular influence whether they had or had not experienced cervical screening. The institutional components have a significant influence on the pattern of women's participation in cervical screening and the factor of an organized health programme provides a major motivator for women to use a cervical screening service. Although risk appraisal was considered to be a less important factor in determining screening behaviour, it did provide the premise factor that induces women to seek coping strategies to reduce or remove the risk. Among the coping appraisal components, weighing the

benefits of screening against the costs of screening appeared to have a significant effect on the women's motivation to have a screening, either positively or negatively. The health beliefs component appeared to play an important role in motivating women to obtain a screening. Women combine their cultural beliefs about health and cancer, their beliefs about health behaviour, and the social role of women to construct their risk appraisal and coping appraisal processes, which subsequently affect their cervical screening behaviour, either positively or negatively. These findings indicate that the interaction of these components contributes to the complex nature of screening behaviour, and has a major influence on Chinese women's cervical screening attendance. This chapter ends by a comparison of PMT model and new model proposed by the present study.

Chinese Women's Cervical Screening Behaviour

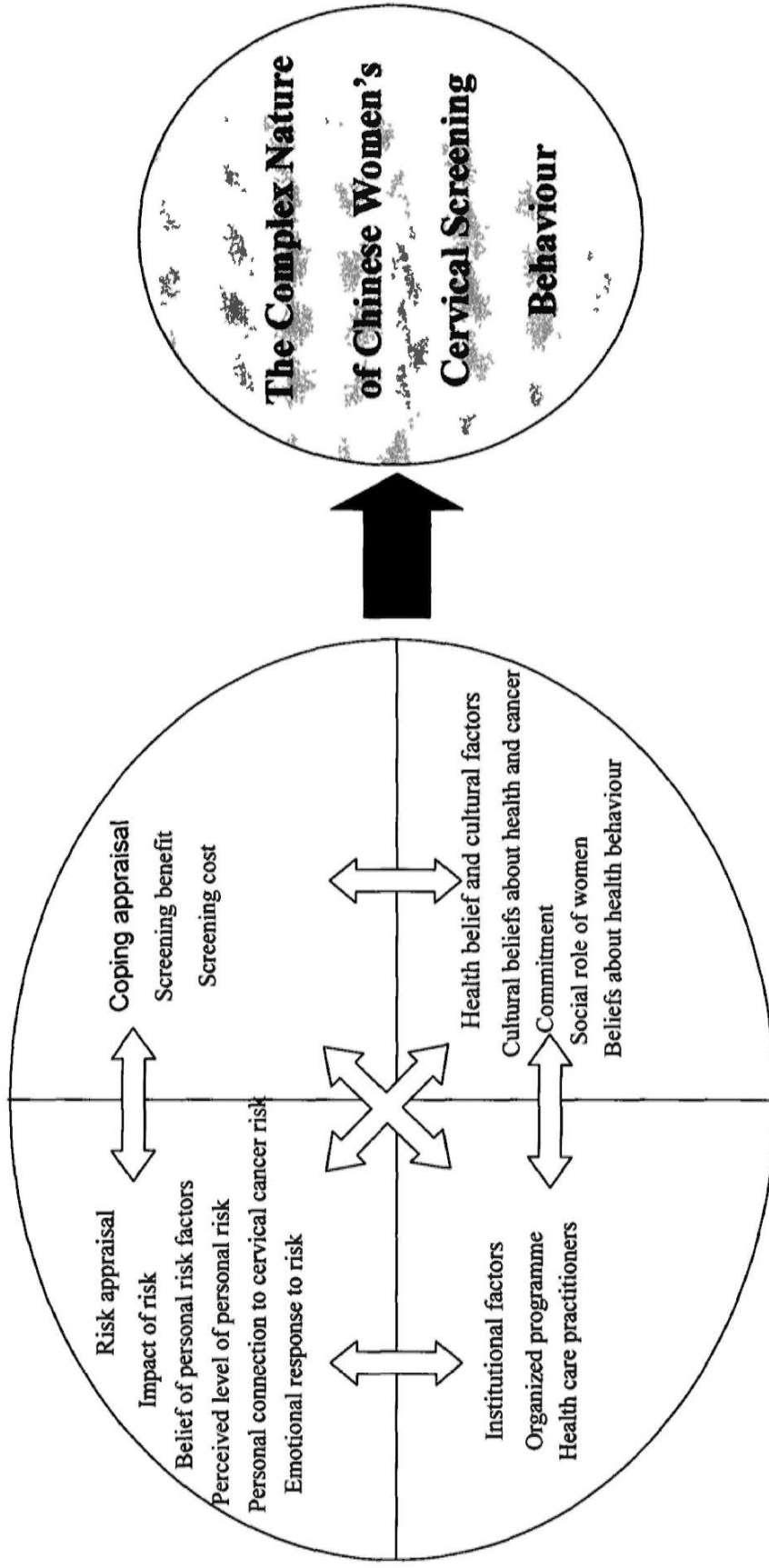


Figure 1: A Model to Understand Chinese Women's Cervical Screening Behaviour

8.2 Risk Appraisal

The discussion in chapter seven indicates that the risk appraisal components are multidimensional constructs for the participants. Within the Chinese cultural context, risk appraisal components described women's perception of the risk of cervical cancer, including multidimensional constructs of their understanding of the impact of the risk, beliefs about their personal risk factors, their personal connection to the risk, fears associated with the risk, and their perceived level of personal risk. This study did not support perceived level of personal risk as a prominent or determining factor for women's cervical screening behaviour, but a personal connection to cervical cancer risk and the perceived impact of the disease contribute significantly to a woman's expressed motivation to have a screening in the future.

8.2.1 Impact of Cervical Cancer

A perception of the impact of suffering from cervical cancer plays a more important role in motivating women to take preventive action than it does in the case of other types of cancer. The women's perception of the impact of the disease trigger a strong sense of fear, and these emotions result in a high level of motivation to be screened. It seems from this study that the perceived impact of witnessing the suffering of a cervical cancer victim is a more important factor in motivating women to be screened than is their own perceived personal risk.

In this study, the strong impact of witnessing the suffering resulting from cervical cancer is linked to the limited amount of information currently available and to misconceptions about the disease. The women were still not aware of the availability of treatments other than a hysterectomy, and that with early diagnosis and treatment there was a good chance of survival. Knowledge about, and comparisons with, people who had contracted cervical cancer elevated their awareness by prompting

them to think about the severe impact of the disease and prompted them to take a screening, if only in the hope of a negative result which would then give them peace of mind. But the fact that regular cervical screening and the treatment of precancerous lesions remains a key strategy for preventing cervical cancer was not emphasized by all women.

8.2.2 Beliefs about Personal Risk Factors

The discussion in chapter seven highlights women's lay beliefs about the personal risk factors of cervical cancer, i.e. primary prevention is more important than secondary prevention. Interestingly, the concept shared by women is consistent with the medical model of risk factors for cervical cancer. But they have little knowledge of HPV infection and its association with cervical cancer so they do not include it among their personal risk factors. Indeed, women's lay beliefs serve as a framework within which the women organize their personal risk factors together with their notions about women's health in general. They use their lay beliefs in a meaningful way to develop their own preventive strategies reflecting their own perspective.

Importantly, women's beliefs concerning their personal risk factors do affect their motivation to engage in cervical cancer prevention activities, whether positively or negatively. Firstly, given that women believe that once they begin a sexual relationship with their partner, they may be at risk of an infection, whether minor or serious, they were motivated to have a screening because they believed that an untreated infection could lead to cervical cancer. Secondly, women's beliefs about their personal risk factors lead them to adopt a conservative attitude towards sexual activity, for example that practicing chastity, loyalty and conformity would tend to lower their risk of developing cervical cancer. Therefore the women in the present study felt that primary prevention of cervical cancer by those means is better than

secondary prevention, such as cervical screening. Their awareness of the association between sexual risk factors and the cervical cancer risk may motivate women to engage in primary prevention, including modification of their sexual behaviour. Secondary prevention, i.e. cervical screening, is not emphasized in their lay beliefs, since the women do not perceive that failure to have a regular cervical screening is an important risk factor for cervical cancer. Thus the women's lay beliefs may lead to a lower uptake of cervical screening and thus increase their risk of cervical cancer.

8.2.3 Perceived Level of Personal Risk of Cervical Cancer

The way women in the present study viewed their cervical cancer risk is constructed within a social and culture context where it was felt that "cervical cancer is a shameful and deadly disease". It follows from this belief that a perception of a high risk of cervical cancer carried within it held implications about a person's modesty and moral behaviour. Therefore most women were reluctant to explicitly claim that they considered themselves to have a high risk of cervical cancer. This study shows that the reason given for undergoing cervical screening by those women who had done so is not that they explicitly perceived themselves to be at risk of cervical cancer, but that they believed that cervical cancer would have a severe impact on their family and themselves and they did not want to impose such physical or emotional suffering on themselves or their family. Thus this study suggests that the women's estimation of their own risk of developing cervical cancer is not as directly related to their screening behaviour as it would be for many Western women (McMullin et al., 2005).

8.2.4 Personal Connection to Cervical Cancer Risk

As discussed previously, women identified their experience of watching a friend

or family member suffer from cervical cancer as an important motivator for them to have a screening. Women may subconsciously or intentionally distance the cervical cancer risk from themselves, and they saw their risk of developing the disease as low. But the women understood that this did not mean that there was no chance of them developing cervical cancer. Therefore a personal connection to the experience of cancer in a family member, friend or a famous person served to make the impact of cervical cancer real and tangible, and helped to shape the women's motivation to undertake a screening in the future. Frazer et al. (2006) argued that if we are to succeed in lowering cervical cancer rates, ethical, cultural, social and religious issues will need to be addressed. This study suggests that health education campaigns to promote screening participation may not be effective in raising women's perceptions of the risk of cervical cancer. The study suggests that within the Chinese cultural context, creating a personal connection to the reality of cervical cancer together with the severe impact that this would have on others would be more persuasive.

8.2.5 Emotional Response to Cervical Cancer Risk

The discussions about cervical cancer risk prompted a range of emotions of fear and anxiety, nevertheless apparently influenced positively or negatively on women's screening behaviour. Participants expressed fear and panic as the predominant feelings, and all of them linked cervical cancer with the fear of death. The emotional response aroused by cervical cancer risk appeared to motivate women to have a test if women had a positive attitude to management of the risk. However, for other women, thinking about the risk of cancer forced them to consider their own mortality, and they sought to avoid the negative feelings triggered by this process of risk consideration. The psychological manifestation of such emotional distress could turn into behaviours such as intentionally putting off participation in cervical screening. Inevitably, an

invitation to participate in a screening programme for cancer raises the question of whether one's health may be compromised by an as yet undetected disease. This fear of uncertainty will often intensify during the period when a screened person is waiting for the test result (Verweij, 1999).

8.3 Coping Appraisal

As discussed in chapter seven, the present study suggests that women's perception of the procedure of cervical screening played a more important role in determining cervical screening behaviour than did risk perception variables. Women's appraisal of cervical screening involved weighing the benefits and costs of screening against each other. This study suggests that screened women emphasized the benefits of the screening, while unscreened women emphasized the costs associated with it. Women's perception of cervical screening seems to differentiate between women who are more inclined to take a cervical screening from those who are not inclined to do so.

8.3.1 Screening Benefits

The discussion in chapter seven highlights that some women who had been screened stated that cervical screening is necessary to prevent cervical cancer because it could result in early detection and early treatment. Importantly, the women who were aware of the benefits of screening were more likely to come for screening because of their personal health beliefs and practices and cultural family obligations. By contrast, the women who were not aware of the importance of screening were more likely to put off their screening uptake. However, on the whole, the nature and importance of cervical screening were not comprehended by all women. The narrative from some women showed that they erroneously considered cervical screening primarily as a being only a diagnostic test. They did not know that regular cervical

cancer screening was a key strategy for early detection and could lead to the diagnosis and treatment of cervical lesions before they progressed to develop into cervical cancer. A need for the dissemination of much more information about preventive strategies and the benefits of cervical screening is identified in this study.

8.3.2 Screening Costs

As discussed in chapter seven, the present study indicates that fear of embarrassment or pain associated with cervical screening constituted an important barrier to undergoing a test for women who had never been screened. Firstly, a fear of embarrassment is associated with the cervical screening procedure, and the women expressed their dislike of a physical examination of their intimate body parts by a physician. In this connection, most of the women expressed a preference for a female physician to perform the procedure. In addition, the notion of embarrassment was also raised with respect to the nature of the cervical cancer risk. Some women believed that taking part in cervical screening would send the wrong signals about their modesty and moral behaviour. If they had been sexually virtuous they did not see themselves at risk of cervical cancer and they were afraid of creating a wrong impression by being screened.

This study suggests that women may put off screening if the costs they anticipated outweighed any obvious benefits. If they anticipated that the procedure would be painful, embarrassing, and unreliable or bring unwelcome news, women would be less likely to come forward for screening. As discussed previously, the screened women appeared to manage these feelings and attended regularly for screening, whereas embarrassment appeared to contribute to the denial of need amongst non-screened women. Similar findings have been reported in previous studies (Holroyd et al.; 2002; Boonpingnanee & Jittanoon, 2007).

8.4 Health Beliefs and Cultural Factors

As suggested by the findings from phase one and phase two of the study, in addition to risk appraisal and coping appraisal, women's health and cultural beliefs associated with cervical cancer and screening made an important contribution to women's perception of cervical cancer risk and influenced their cervical screening behaviour. Health beliefs and cultural factors includes cultural beliefs about health and cancer, a sense of commitment to organized programmes and cervical cancer screening, the social role of women, and beliefs about healthy behaviour.

8.4.1 Cultural Beliefs about Health and Cancer

This study confirmed that the cultural context plays a significant role in practices for cervical cancer prevention and has a great impact on the way women view cervical cancer and screening and perceive the risk. Firstly, the study suggests that the culture influences an individual's perceptions of health and illness and accordingly influences the preventive strategies they will take. For instance, the Chinese women in this study find it is unusual to use preventive health services, including cervical screening, if they do not have any symptoms. This is mainly due to the fact that women may not perceive the value, or identify the purposes, of screening services. Culture is fundamental to concepts of the body, health and illness, and plays a vital role in determining preventive behaviour and the making of medical decisions (Bloomfield & Illinois, 1994). In Chinese culture, philosophies such as Confucianism (e.g. moral concerns), and Taoism (e.g. balance of Yin and Yang) are the foundation for many aspects of culture, including concepts of health and illness (Allinson, 1989). In Chinese medicine, health is viewed as a state of harmony between the forces of Yin and Yang within the body and between the body and its environment. Illness, by contrast, is an imbalance or disequilibrium of these powerful forces (Chen, 2001). The

Chinese model for health is structured primarily to attain wellness or to offset illness by methods, usually prescriptive, to maintain a balance among the body humours, a model that is not readily comparable to Western ideas about either prevention or cure.

Secondly, the opinion that “cancer means death” was expressed by many women. Such cultural views about cancer aroused anxiety and, as a consequence, led to behavioural responses such as avoidance or negligence, as well as avoiding information concerning cervical cancer and screening participation. This concurs with a previous study (Agurto, Bishop, Sanchez, Betancourt & Robles, 2004). In Chinese and other Asian cultures, cancer is viewed as an unpreventable and fatal disease (Yu, Hong & Seetoo, 2003). The belief that death is inevitable when cancer has been diagnosed is a barrier to participation in cancer screening, detection and treatment (Powe & Finnie, 2003; Shanker, Selvin & Alberg, 2002; Straugham & Seow, 1998).

Finally, the women’s understanding of the risk of cervical cancer incorporates Chinese cultural understanding of sexuality-related issues. The risk of cervical cancer is perceived to be closely associated with sexual activity. Although this association is not based on any knowledge of HPV infection as a central risk factor for cervical cancer, the stigma associated with sexually transmitted diseases affects the women’s attitude towards the disease including their perception of the risk of cervical cancer. Indeed many women expressed concern that undergoing cervical screening might have implications for their reputations for modesty and moral behaviour. However, other women refuted these concerns about personal privacy or embarrassment and proposed that women should not feel embarrassment because it was a normal and necessary part of the screening procedure. These findings concur with a previous study by Azaiza & Cohen (2006), in which women strongly argued that these stigmatic perceptions were no longer prevalent, even in rural areas, and even if they did exist, most women no longer avoided physicians because they were afraid of

being seen at a clinic.

This study recognises the existence of cultural perceptions concerning the association between sexual behaviour and the risk of cervical cancer, which were identified as barriers to undergoing screening in previous studies (Holroyd et al. 2004; Hubbell et al., 1996; Martinez et al., 1997). More importantly, however, the present study found a variety of beliefs and attitudes, and the dominant view was that the benefit of cervical screening and the personal awareness of the impact of cervical cancer would motivate women to take a test. The present study may reflect an on-going process of change in the attitude of Chinese women to health prevention, which incorporates both traditional and modern prevention strategies.

8.4.2 Commitment

As suggested by the findings from phase two of the study, the moral and social commitment to participate in organized health programmes and cervical screening had had a noticeable effect on women's perception of the benefits of cervical screening and had increased their uptake. Women who participated in routine health examinations tended to view screening as part of the usual health care. A gynaecological examination was seen as part of an organized programme and the test was viewed as something beneficial that was offered to women by society. This reinforced their commitment to participation in the organized programme which included cervical screening.

In a view of the fact that perception of a risk of cervical cancer did not emerge as a primary issue associated with cervical screening uptake, the question of promoting the commitment to a cervical cancer programme needs to be raised. In fact women in the study by Steven et al. (2004) stated clearly that scare tactics did not work but were in fact counterproductive because they discouraged women from seeking screening.

It appears that a commitment to increasing participation in cervical screening has become part of a social discourse involving wide social networks. The most appropriate approach would seem to be that of integrating the issue of cervical cancer prevention and early detection into broad women's health programmes, public education and women's social responsibility (Fitch et al., 1998; Austin et al., 2002). Culture-specific information dealing with cervical cancer and screening issues would be provided for women in a way which would take into account their beliefs and practices with respect to health and their cultural family obligations, in the hope of promoting the notion of a commitment to cervical screening.

However, the present study also suggests that any such notion of a commitment to cervical screening is derived mainly from the women's commitment to participation in an organized programme that is designed to maintain and promote general health. This may be due in part to the fact that the emphasis of an organized programme is mainly on general health rather than on cervical cancer prevention. However, it is not enough for women to just come in for a general health check. It is also important that the opportunity is used for the women to receive counselling by a health care practitioner and given trustworthy information about cervical screening. This could increase their commitment to participate in both the organized programme and cervical cancer screening.

8.4.3 Social Role of Women

As discussed in the sections dealing with the impact of the risk, the negative effect of the risk of cervical cancer on their womanhood was shown to cause women to be doubly fearful of the disease, even though it had both negative and positive influences on women's cervical screening behaviour. The cultural meaning of cervical cancer is that it would have a major impact on many Chinese women with respect to

their female role in the family and society. The findings of phase two demonstrated that women who were aware of the potential threat to their womanhood showed a strong willingness to undertake a screening in order to preserve that womanhood. The traditional Chinese values that persist in Chinese society include the expectation that women will take on the major duty of caring for their children and families (Tang, Lee, Tang, Cheung, & Chan, 2002). Women were worried that a diagnosis of cervical cancer may make them unable to carry out their responsibility for taking care of the family and even make them a burden on others in their family. This finding corresponds well with the literature showing that women came for screening because of their cultural family obligations and personal health beliefs and practices (Holroyd et al. 2004).

In addition, as discussed previously in chapter seven, although women clearly perceived the association between sexual relations and the risk of cervical cancer, they did not acknowledge the "male factor" in the development of cervical cancer. This may be of particular relevance to Chinese women with regard to their sexual decision making and safer sex behaviour. Despite rapid social changes and growing westernization, many Chinese societies still maintain their patriarchal traditions, with women being viewed as inferior to men in most social relationships (Chan & Lee, 1995). All of these factors may represent significant barriers for women when negotiating with their male partners about preventive actions against cervical cancer, including participation in cervical screening.

8.4.4 Beliefs about Health Behaviour

The findings from phase one and phase two support the proposition that engaging in healthy behaviour, including having regular health examinations and a commitment to preventive behaviour, will reinforce women's motivation to opt for

cervical screening to a great extent. Some women considered that it was careless behaviour if someone failed to give priority to their health and did not have a cervical screening. Previously screened women were more likely to follow certain positive health-related behaviours and come for screening due to their cultural family obligations and personal health beliefs and practices. Effective protection against the onset of invasive cervical cancer requires that a woman undergo repeated testing during her lifetime, so an understanding of the factors that would influence a woman to return for a second and then subsequent screening may be important elements to be used in the planning and management of health education and service delivery.

Although the explicit aim of cervical screening is to reduce mortality from a specific disease, there is a parallel assumption that it would also result in an improved attitude towards health and health-related behaviour in general. Health beliefs and the corresponding behaviour are important determinants of health, and have been considered to be key components of most models of health promotion. There is evidence to suggest that cervical screening may have a positive impact on a range of health-related behaviours, including diet and exercise, and that it can lead to significant lifestyle changes and play an important part in the "empowerment" of women (Bankhead et al., 2003).

Liang et al. (2004) found that Chinese women paid little attention to approaches to health that involved a healthcare system, such as regular screening, as opposed to self-care, and this was also demonstrated in the present study. The women in the present study tended to avoid visiting doctors or going to hospitals whenever possible, unless they felt they were sick. It has been proposed that an invitation for screening could awaken curiosity about the disease and its causes. The resulting health awareness may encourage people to make health-enhancing changes to their lifestyle that could have a positive effect on their screening behaviour (Bankhead et al., 2003).

It is also important that regular screening behaviour is incorporated into the women's general health awareness to promote their attendance and overall health.

8.5 Institutional Factors

The integration of the material from the quantitative and qualitative phases of this study contributed to the identification of the importance of the role of institutional factors in determining women's cervical screening behaviour. The institutional factors provide the context within which women perceive the risk of cervical cancer, observe the practice of cervical screening, interact with health care practitioners, and take or do not take a smear test. These factors include organized programmes and health care practitioners.

8.5.1 Organized Programme

The discussion in chapter seven highlights the important role of an organized programme in motivating women to attend for cervical screening. Given the perception and belief barriers that prevent women from attending such a screening, it is fortunate that at least some of them were motivated enough by the organized health programme as a whole to overcome the otherwise decisive barriers to taking a test. The discussion in chapter seven also highlights some important issues related to the organized programme. First, the study suggests that more information about the value of cervical screening and health education about cervical cancer prevention needs to be incorporated in the organized programme using a community outreach strategy, since important barriers to being screened include a lack of understanding of the importance of cervical screening and awareness of the availability of these services.

Secondly, as discussed in a previous chapter, currently China does not have a systematic screening programme for cervical cancer; but it has a comprehensive

programme of health examination that is physically and financially accessible for the majority of married women in urban societies. However, these programmes target married women only and women who have never been married are not recommended to have the gynaecological examination. This means that unmarried women, even if they have been sexually active, fail to have a screening because they are ineligible and because there is a lack of social assertiveness with respect to seeking screening.

8.5.2 Health Care Practitioner

As discussed in chapter seven, the information and counselling provided by health care practitioners were perceived as inappropriate or inadequate as contributions to improving the women's understanding of the importance of screening. A few women reported discourteous and disrespectful manners on the part of health care practitioners. The provision of information related to cervical cancer and the caring nature of health care practitioners were perceived as ways to minimize the stigma associated with sexually transmitted diseases and encourage the acceptance of a cervical screening service. Importantly the present study highlights the fundamental role of health care practitioners in promoting participation. Health care practitioners are in a unique position to help women to understand the value of cervical screening, and enhance their motivation to attend for a test. Encouragement from health care practitioner may help Chinese women to adapt to modern forms of care by placing more value on prevention, and this could motivate them to comply with screening guidelines (Wang et al., 2006).

8.6 Comparison between the PMT Model and the Present Model

The Protection Motivation Theory (PMT) (Rogers, 1975, 1983) originally posited two processes (threat appraisal and coping appraisal) that underlie the

adoption of protective behaviour by people when they are faced with a threat or hazard. Subsequent empirical and theoretical research on PMT led to an expansion of the components to cover coping appraisal and threat appraisal and improved its ability to predict and explain health preventive behaviour (Prentice-Dunn & Rogers, 1986; Rogers & Prentice-Dunn, 1997). A comprehensive literature now exists, that illustrates how people respond to threats in a variety of ways. The PMT also permits the prediction of a “maladaptive coping response” as shown by the seminal work of Rippetoe & Rogers, (1987). This refers to a situation where the threat is high but the coping appraisal is low, and a person might adopt an avoidance response, by denying the threat or actively avoiding information concerning, for example, a disease. Rogers & Prentice-Dunn (1997) suggest that one of the major frontiers for future research will be to find different facets of the PMT components that have theoretical and practical importance.

The model developed from the findings of the present study takes into account the role of risk appraisal and coping appraisal in understanding cervical screening behaviour. However one of the strengths of this study is to examine women’s cervical screening behaviour within their social and cultural contexts in light of the importance of the socio-cultural context for understanding women’s risk perceptions as suggested by a previous study (Cutter, 1993). Within the Chinese cultural context, the particular pattern of participation in cervical screening generated factors influencing women’s screening behaviour that were different from those in the PMT. It is suggested that the risk appraisal factor is insufficient for determining cervical screening behaviour. Coping appraisal was more strongly and consistently associated with screening behaviour than risk appraisal. In addition to coping appraisal and risk appraisal, the present study suggests that other factors are more significant for Chinese women, such as institutional factors and health and cultural beliefs about cervical cancer and

screening.

The development of the current model acknowledges the significance of the social and cultural factors in determining the pattern of cervical screening behaviour among this population. The institutional components contribute to the unique participation pattern for cervical screening among the women in this sample and the existence of organized health programmes is an important motivator for women to participate in cervical screening at the initial stage. An organized programme and the recommendations of health care practitioners were equally influential on the women's perceptions of the cervical screening procedure and their motivation to undertake a screening. Both factors played an important role by recommending participation and providing information on the value and importance of cervical screening. The importance of the Chinese cultural context was reflected in the way that the women were affected by their notions of health behaviour and their cultural beliefs about cervical cancer risk and cervical screening participation. In the component of health beliefs and cultural factors, the women understood the risk of cervical cancer in the context of their understanding of health and cancer, and the association between sexual behaviour and the risk. A commitment to regular health examinations played an important role in increasing the women's motivation to obtain a screening by incorporating screening attendance into the women's personal value and health beliefs. The social role of women appeared to motivate them to have a screening in order to ensure that they would continue to be available for their family. But the women's submissive and passive role in sexuality compromised their motivation to actively seek a screening.

The risk appraisal components included multidimensional constructs. Women's perception of their personal risk of cervical cancer did not seem to be relevant to their screening behaviour. A personal experience of the consequences and impact of this

disease on other people appeared to directly motivate women to have a screening. The coping appraisal involved a process whereby the women perceived cervical screening in the context of the risks associated with cervical cancer, and then weighed up the benefits of screening against the costs.

Compared with PMT and other models, the present model identifies more culturally-relevant factors that influence the cervical screening behaviour of Chinese women and contributes new knowledge that will increase the understanding of cervical screening behaviour within a specific social and cultural context.

8.7 Summary

The purpose of the model is to understand cervical screening behaviour and inform future interventional studies. The model attempts to understand how the interaction of a number of components contributes to the complex nature of women's cervical screening behaviour. That behaviour was influenced by the interrelationships between the women's health beliefs and cultural factors, by a risk appraisal and a coping appraisal, and by institutional components. Indeed women's motivation to undergo cervical screening depends on the balance between the positive and negative influences of the factors in the components. Women's screening behaviour was largely influenced by their health behaviour and cultural factors, the coping appraisal and institutional components, and partly influenced by the risk appraisal components.

Among the institutional components, the importance of organized programmes was demonstrated, with most of the women being motivated by the existence of such programmes to have a screening. Health care practitioners are in a unique position to inform women of the benefits and importance of cervical screening and to increase women's motivation to take up cervical screening. The risk appraisal components appeared to be a function of elements of the factors related to an understanding of the

risk and personal risk factors. Avoidance of the “impact of the risk” was a moderate driver for women’s motivation to undergo a screening. In the component of health beliefs and cultural factors, the women’s beliefs about health behaviour, cultural family obligations, and the social role of women shaped their sense of commitment to health examination and cervical screening. The notion of commitment significantly reinforced the motivation of Chinese women to be screened.

The interaction between the four components in the model reveals the complex nature of women’s cervical screening behaviour and demonstrates the importance of the coping appraisal components in determining screening behaviour. Of the four components, coping appraisal was shown to have a continuing influence on the women’s previous level of screening uptake and their expressed motivation to be screened in the future. If a woman is registered with one of the organized women’s health programmes, she will have better access to and be more likely to benefit from regular cervical screening. She can then incorporate her health and cultural beliefs into the process of undertaking a risk appraisal and a coping appraisal. Risk appraisal provides the promise factor that induces women to seek coping strategies to reduce or remove the perceived risk. Coping appraisal is a process during which the screening benefits are weighed against the screening costs and it interacts with the other three components. This appraisal process consequently determines the women’s screening behaviour by differentiating those women who are more inclined to take a cervical screening (*We ought to have a screening*) from those who are not inclined to do so (*It is not necessary to have a screening*).

CHAPTER NINE

CONCLUSION

9.1 Introduction

In this chapter, the limitations of the present study are presented. Then the implications of the findings of this study for nursing practice are elaborated, Recommendations for future studies are also outlined and discussed. The chapter ends by drawing conclusions about the two phases of the study.

The strengths of this study lie in the use of a mixed method design, employing both quantitative and qualitative methods of data collection, which has generated a more insightful and comprehensive understanding of the study objectives than either the quantitative or qualitative method could have done alone. An additional strength of this study is to explore risk perception and cervical screening behavior among an understudied population – Chinese women living in mainland China based on a well sophisticated PMT model. A further and major strength is that the study builds a new model that is contemporary and culturally-relevant to Chinese women.

9.2 Limitations

Even though the use of mixed method design, which has “uncover some unique variance which otherwise may have been neglected by a single method” (Jick, 1979, p. 603), it must be acknowledged that this study does have several limitations that could affect the outcomes and generalisation of the results. These concern mainly the sample selection, the study design, the instrument used in phase one, as well as issues arising from the use of interviews.

The first limitation relates to the selection of the sample. The unrepresentative

nature of the non-probability sampling method in phase one of the study inevitably imposes limitations on the findings. The women in this study were recruited from the community in an urban area. Therefore, the results from this study may not be generalisable to all women living in China, and in particular to those living in rural areas. In addition, the study setting was limited to two drugstores and two supermarkets. Consequently, specific external factors such as the socio-economic characteristics and vocational or educational background of the participants might have exerted an influence on the perceptions of the respondents. The women in this study were also specially invited to participate in, and did not have to pay for, their screening. This may not apply to Chinese women in other cities or regions of mainland China where the social characteristics and health care systems are different. In addition, women from different settings may have their own specific ways of perceiving and coping with the risk of cervical cancer and these may influence their attitude to screening. These potential differences in concept and in the processes of risk perception that determine women's screening behaviour might not have been fully reflected in the results of this study. However, the strengths of this study lie in the purposeful sampling in phase two and the inclusion of both screened and non-screened women. This permitted the exploration of the women's perception of the risk of cervical cancer as a determinant of their screening behaviour from a wider perspective than would have been possible using only the quantitative data from phase one. But it should be noted that a greater variation in the interview data could have been achieved if the sample had also involved women with other background characteristics, for example women with more diverse occupations or women from other settings. Therefore, in a future study, the researcher should select samples from diverse groups of women from different backgrounds, and compare the results to identify any variations in the concept of risk perception and screening behaviour

between those groups.

The second limitation is that, because of the cross-sectional design, it is not possible to infer a causal relationship between the women's pattern of participation in screening and their perception of the risk of cervical cancer and screening practices. Although the first screening may have occurred long before the measurement of the determinant, it is difficult to get an insight into the causality of the relationship between past behaviour and the determinants. This relationship may take one of two directions. The determinants of the women who had been screened previously were probably already positive before they participated in screening for the first time, since otherwise they would not have participated. On the other hand, the experiences that women had when participating in their first screening round would have influenced, reinforced or weakened the other determinants of their future screening behaviour. A longitudinal study is needed to examine future and longer term screening patterns and their association with risk perception. Given the low percentage of unmarried women who undergo screening, the unequal numbers of married subjects and unmarried subjects may exert an influence on the exploration of the role of marital status in screening behaviour.

The third limitation is the psychometric property of the Chinese version of PMT measures. Although the overall CVI of the Chinese version of PMT measures is satisfactory, indicating that it had good internal consistency; one individual item (item 9 "Health professionals appeared to have very little concern for the patient") had only a fair content validity (CVI=.064). In part this may be explained by the fact that 4 out of the 6 panel members who evaluated the content validity were from Hong Kong and as such they had relatively little concern about the role of the health professional in relation to attendance for cervical screening. There was no report on the concurrent validity of the Chinese version of PMT measures because no other instrument is

available against which the same attributes can be measured.

Finally, although the interview is the most important and the predominant method for qualitative data collection, it does have some limitations. The first issue is related to interviewer bias. An ethical issue encountered by the researcher during the study was a role conflict arising from the researcher being also a clinician. As a nursing specialist, the researcher had actually advised some of the participants on health issues, and this might have influenced the openness and the truthfulness of their responses. It must be borne in mind that the women's attitudes may well have been exaggerated by their reactions to the researcher and to the interview situation. The participants may have interpreted the role of the interviewer, as a researcher on women and cervical screening, within the discourses which dictate that having a smear test is the correct, proper and normal thing to do. Therefore, they may have felt obliged to emphasize how "good" they had been by having regular smear tests. To minimize such a bias, the participants were told that they could talk freely about their experiences, and that there were no right or wrong answers to the questions. They were assured of the confidentiality of their data that would be used only for this research, and it was also made clear that involvement in the study would not affect them in any other way. In addition, Fonteyn, Kuipers, and Grobe (1993) have suggested that what people said about how they did things might be different from how they actually performed. This pointed to a possible weakness of the interview method with respect to the validity of the data, since it might only reflect the women's self-reporting of their concept of the risk perception of cervical cancer, rather than reflecting how they put that concept into practice in determining their screening behaviour.

9.3 Implications for Nursing Practice

Despite the potential limitations of the present study, the findings have important implications for nursing practice. The development of a model from this study has contributed to the following implications for nursing practice: (1) the importance of women's understanding of the nature and value of cervical screening; (2) the role of cultural beliefs among Chinese women and their influence on screening behaviour; (3) the role of institutional and health care practitioners as a factor in promoting women's attendance for cervical screening; (4) the role of the perception of the risk of cervical cancer in relation to cervical screening behaviour.

Firstly, the findings from this mixed methods research demonstrated that the lack of knowledge of the women about the value, and the preventive nature, of cervical screening was likely to influence the cervical screening behaviour of Chinese women. These findings highlight that the poor dissemination of knowledge, information and communications about cervical screening by healthcare providers were factors that may have contributed to the women's negative preconceptions and subsequent non-attendance for cervical screening. This suggests that information must be provided at the primary health care level. Consistent and appropriate information about the importance of cervical screening and the risk factors associated with cervical cancer need to be provided to Chinese women. The widespread misconceptions in this respect need to be corrected by extensive public education, with a new emphasis on the crucial fact that cervical screening is targeted primarily at detecting precursor lesions that occur early in the course of the disease, and that timely treatment of these would impede progress towards invasive cervical cancer.

Secondly, overcoming the barriers perceived by the women, that are associated with their perception and belief system, is not only a matter of providing better or more relevant information but also of devising screening promotion strategies that

take into account the broader cultural frameworks. This research has identified some possible factors related to the health and cultural beliefs of Chinese women that affect their screening uptake. Particularly relevant cultural factors for the population in mainland China include health beliefs, family obligations and modesty. A woman's decision to attend for cervical screening is not based on a single reason but on several integrated reasons. Women who were aware of the benefits of screening were more likely to come for screening due to their personal health beliefs and practices and their cultural family obligations. Biomedical knowledge is socially/culturally created and supported by Chinese women, but from a different cultural tradition.

Therefore, in order to encourage screening, health educators should address such cultural factors when organising the provision of cervical cancer-related public education. Our results suggest that, while providing accurate information is important, it is equally important to ensure that women's cultural understandings and beliefs and their socially-constructed meaning of disease are taken into consideration. The backgrounds and cultural values of Chinese women should be recognised and no attempt should be made to devalue them. Health care practitioners working with Chinese women should ensure that the information they provide is culturally sensitive, particularly by acknowledging the normative beliefs of this population group. To be effective any strategy to promote changes in screening behaviour must be carried out in ways that are consistent with the values of the participants. For example, an educational programme should acknowledge that a balanced diet and observing traditional notions about women's health are essential for maintaining health, but that regular cervical screening is also a part of that self-care, by helping to detect any hidden problem in the cervix.

In addition, understanding the nature of culture-based barriers to the uptake of cervical cancer screening is the first step towards discovering ways of making

screening tests more acceptable to Chinese women. A main cultural barrier to a first cervical screening identified in the study is concern about modesty. This barrier is potentially modifiable through the education of both the women and the practitioners and should be addressed in campaigns to persuade women to undergo cervical screening. It is important to understand the psycho-social consequences of participation in cervical screening, and the provision of cervical cancer related information would be one way of minimizing the STD stigma associated with it. This could be done through integrating education about cervical cancer prevention and early detection into broader health programmes for women, into public education and into activities related to women's social responsibility. This would serve to maximizing a woman's sense of social responsibility, thereby diminishing any personal associations with immodest behaviour.

Thirdly, another important implication for nursing practice highlighted by this mixed methods research is the importance of institutional factors in promoting cervical screening participation. This research also sheds light on some specific social factors in transitional economies which impede women's access to a cervical screening service. Women who are unmarried but who have had sex are not included in the free examination programme, but they should be included to maximize the effectiveness of the screening programme in the population. Continued efforts are needed to bring about appropriate policy changes to ensure that unmarried women can benefit from routine cervical screening without encountering issues of eligibility and moral judgment. A concerted response to this problem is needed and action should be taken to meet the reproductive health needs of unmarried and young women. This includes the provision of appropriate information about cervical cancer screening, and the provision of user-friendly screening services, targeting particularly the younger women. Furthermore, the government of China should develop appropriate policies

that enable relevant institutions (such as schools and health facilities), communities, and the public to play a role in the improvement of reproductive health by changing the perceptions of sexual activity before marriage, increasing the awareness of reproductive health in general and cervical cancer prevention in particular among young women. In this way an environment can be created in which the reproductive health needs of these women can be met without encountering issues of access or moral judgment.

Health policies have not identified cervical cancer a specific priority because the cervical screening service is offered primarily within the context of family planning and general health services. The intersection between the individual and the social and health care system reinforces the poor performance record for the uptake of cervical screening. Cooperation between the organized programmes and health care providers is weak, as is their cooperation with the health care practitioners involved in cervical screening services. This results in a lack of the synergy between the material and human resources that is needed to improve both the coverage of and the adherence to cervical screening. Health policy-makers from mainland China should pay special attention to this problem, and need to develop strategies to help mitigate the effects. Most of the identified structural barriers associated with the institutional and health care practitioner system could be removed if health service delivery, including structural aspects, was enhanced.

This research suggests that health care practitioners involved in the programmes for cervical cancer and screening should take a more active role in promoting women's participation in screening. An important component of an effective programme is its ability to ensure that its health professionals understand women's views and behaviour with respect to disease prevention, and apply this understanding to increase the coverage of the screening and ensure adherence to a screening

schedule. This study showed that women are not fully aware of, but would like to understand better, the purpose of screening, and the importance of early diagnosis of a cervical cancer. There is a need for a more participatory and empowering exchange in the encounter between the health care professionals and the women. Encouragement given by health care professionals within the context of continuing care, and a relationship of trust built up over time, is most likely to be effective.

Overall, an understanding of the factors that increase the motivation of women to attend for cervical screening, which include “perceived benefits of screening”, “commitment”, and “health beliefs and cultural factors” will assist health care practitioners to be more culturally sensitive in screening promotion. Furthermore, practitioners should be aware of the influence of Chinese culture, and in particular the stigma attached to STD, when providing information about cervical cancer and HPV infection. Public health programmes and health care practitioners need to communicate freely with each other about the population that they serve, and this would contribute to increasing participation in screening. Strategies that could be used by nurses and allied health care professionals to promote the attendance of Chinese women for cervical screening could include enlisting the conjoined efforts of public health programmes and health care practitioners to create a more comfortable atmosphere for women.

Finally, no association between the perceived personal risk of cervical cancer and cervical screening participation was detected in the present study. Although there is some evidence that risk estimates are subject to bias, there is less evidence that these biases result in inappropriate risk decisions or that people wait for accurate risk estimates before they make decisions. Hence, interventions designed to increase the accuracy of risk perceptions may not lead to the desired behavioural outcome. Although this mixed method research does not recommend interventions to raise

women's risk perception, risk appears to initiate a chain of events leading to seeking coping strategies to reduce or remove the risk, then to an intention to change, and, ultimately, to participation. This study also revealed that women had only limited knowledge about the risk of cervical cancer, including the meaning of precursors, and the causes and symptoms of cervical cancer. Therefore, efforts to educate women regarding the risk of cervical cancer should have an impact upon their participation in screening. Additionally, the women's frequent denials of feeling at a "high risk" and reluctance to "think about it" suggest the need for a cautious interpretation of survey or instrument-based assessments of personal risk perceptions. This may be particularly salient for quantitative measures of risk perception where a non-response, denial or underestimation of risk may be a proxy for a particular conceptual model of explanation that was not sufficiently operationalized by that instrument. To mitigate the possible detrimental effect of affective conditions such as worry, anxiety and psychological distress associated with cervical cancer risk, educational efforts should focus on creating messages that emphasize that effective treatment is available and that there is a good chance of survival. They should also stress that hysterectomy is not the only treatment for cervical cancer.

9.4 Recommendations for Future Study

In view of the findings and limitations in this study, the following recommendations for future studies are proposed to achieve a deeper and broader coverage of Chinese women's cervical screening behaviour.

Firstly, future studies are needed to address the limitations mentioned above, and extend the research and clinical practice with respect to cervical cancer risk perception and screening behaviour. To overcome the limitations of a cross-sectional design, a longitudinal study is suggested to examine the future and longer term

screening patterns and their association with risk appraisal, coping appraisal, health beliefs and cultural factors as well as institutional components. To gain further insight into the interactions of behaviour and the determinants it is essential to obtain longitudinal data on screening behaviour and the determinants over several rounds of the screening programme. Moreover, it is also of great importance to study further whether the determinants identified in this study, such as the coping appraisal and health beliefs and cultural factors, are also of relevance in other communities or settings.

Secondly, extension of this study is warranted to explicate the effects of the different types of factors in the model that influence women's cervical screening behaviour. The model proposed suggests that women could be motivated to engage in cervical screening by different factors including their perceptions of cervical screening, their health beliefs and cultural factors and institutional factors. For example, future research should examine the effectiveness of the predictive value of cultural barriers and facilitator to screening relative to the frequently mentioned barriers of cost and access. This information would enable prevention programmes to be tailored specifically for Chinese women and to respond to specific types of screening behaviour. The development of the model highlighted the complexity of the different components that affect women's cervical screening behaviour. This complexity leads to the question of which kind of motivational climate would be most favourable for inducing women to attend for cervical screening. Large scale and rigorous study is required to explore this concept.

Thirdly, an appropriate interventional study could be expected to evaluate whether the determinants identified in this study could or could not increase cervical screening attendance and long-term adherence, thereby reducing the incidence of the disease and mortality rates among Chinese women. Our results suggest that

interventions should be devised that are directed at increasing cervical cancer awareness and emphasizing the nature and value of cervical screening based on an understanding of the Chinese-specific social and cultural context of cervical screening practice. The development of such interventions would benefit from longitudinal descriptive data on changes in the different determinants in relation to the measurement of screening participation.

Fourthly, few of the participants discussed the implications of the “male factor” in the transmission of HPV infection and the subsequent development of cervical cancer. The connection between the management of HPV infection in a woman and the involvement of the male partner in her health care is seldom discussed. Clearly, the involvement of the male partner in the prevention and treatment of HPV infection among women is an issue that would need further exploration. Further research is needed into how beliefs about the male – female sexual transmission of cervical cancer influence the use of cervical screening, since this would be necessary in order to develop effective and culturally sensitive programmes to increase cervical cancer screening among Chinese women.

Fifthly, given the inconsistency demonstrated in the present study between the expressed motivation of the women and their actual take up of screening, longitudinal studies and in-depth exploration are needed to provide insight into the processes by which an expressed motivation is or is not translated into actual behaviour. Further research is needed to examine whether the determinants of expressed motivation identified in this study could successfully predict actual screening uptake among this population of women. Finally, this study importantly identified a significant relationship between health beliefs and perceptions of health behaviour and cervical screening participation. It would be valuable to explore the impact of cervical screening on a fuller range of behaviours and beliefs.

9.5 Conclusion

This study has achieved aim to understand Chinese women's risk perception of cervical cancer and their cervical screening behaviour within Chinese culture context. This study is the first of its kind to adopt a sequential quantitative – qualitative mixed methodology to explore cervical screening behaviour among women in mainland China. A major strength of the current study is the integration of the quantitative and qualitative findings to achieve a more comprehensive and enriched understanding of the study objectives than either data set could have done alone. All research objectives were achieved. The findings of this study provide evidence of the complex factors that influence the cervical screening behaviour of women, and this could contribute to the development of programmes to promote cervical screening among this population.

This study provides information about the factors influencing the cervical screening behaviour of Chinese women. Its main conclusions show that cervical screening behaviours are likely to be influenced by multiple institutional and cultural factors, and the perceptions of the participants. It is argued that the complexity of the relations between the perceived risk and behaviour require that care be taken in the formulation of the questions relating to risk, the choice of study design and the interpretation of the findings. The present study also identified the culturally relevant factors that influence Chinese women's cervical screening behaviour and contributes new knowledge to the understanding of cervical screening behaviour within a specific social and cultural context. The study reveals the need for a fundamental and comprehensive change in the theoretical structure of cervical cancer care. This change would explicitly recognize and incorporate the equal validity of the cultural and social components.

The present study is significant in that it contributes to an increased understanding of cervical screening practice among Chinese women in mainland

China, the largest Chinese population. It is useful to consider the implications of the model proposed for interventions to increase participation in cervical screening. The model suggests that such interventions should take into account issues of women's beliefs about cervical screening, institutional factors in general practice and health beliefs and cultural factors. The findings suggest that cancer control interventions targeting Chinese women are more likely to be effective if they are multifaceted. This study highlights some implications for nursing practice, including the importance of the women's perception of the practice of cervical screening. It also highlights cultural beliefs factors, and the need for awareness of the factors influencing the women's motivation to undergo cervical screening, as well as the importance of the relationship and exchange between women and health care practitioners and of promoting women's participation in cervical screening by fostering their commitment to it and by raising their awareness of its benefits.

REFERENCES

- Abdullah, A. S., & Leung, T. Y. (2001). Factors associated with the use of breast and cervical cancer screening services among Chinese women in Hong Kong. *Public health, 115*(3), 212-217.
- Abotchie, P. N., & Shokar, N. K. (2009). Cervical cancer screening among college students in Ghana: Knowledge and health beliefs, *Int J Gynecol Cancer, 19*(3): 412-416.
- Aiken, L. S., West, S. G., Sechrest, L., & Reno, R. R. (1990). Graduate training in statistics, methodology, and measurement in psychology: A survey of PhD programs in North America. *American Psychologist, 45*, 721-734.
- Ajzen, I. (1988). *Attitudes, personality, and behavior*. Milton Keynes, UK: Open University Press.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Ackerson, K., & Gretebeck, K. (2007). Factors influencing cancer screening practices of underserved women. *Journal of American Academy of Nurse Practitioners, 19*, 591-601.
- Ackerson, K., Pohl, J., & Low, L. K. (2008). Personal influencing factors associated with Pap smear testing and cervical cancer. *Policy, Politics, & Nursing Practice, 9*, 50-60.
- Agurto, I., Bishop, A., Sanchez, G., Betancourt, Z., & Robles, S. (2004). Perceived barriers and benefits to cervical cancer screening in Latin America. *Preventive Medicine, 39*, 91-98.
- Allinson, R. E. (1989). *Understanding Chinese mind*. Hong Kong; Oxford University Press.
- American Cancer Society. (2006). Cancer fact and figures 2005. Retrieved January 20, 2007,, from http://www.cancer.org/docroot/STT/content/STT_1x_Cancer_Facts_Figures_2006.asp
- American Society for Colposcopy & Cervical Cancer Pathology. (2006). *Patient education*. Retrieved April 11, 2007, from <http://www.asccp.org/>.
- Andersson-Ellstrom, A., Dillner, J., Hagmar, B., Schiller, J., Sapp, M., & Forssman, L., et al. (1996). Comparison of development of serum antibodies to HPV16 and

- HPV33 and acquisition of cervical HPV DNA among sexually experienced and virginal young girls. A longitudinal cohort study. *Sexually transmitted diseases*, 23(3), 234-238.
- Ansink, A. C. (2007). Cervical cancer in developing countries: how can we reduce the burden? Awareness raising, screening, treatment and palliation. *Trop Doct*, 37: 67-70
- Aro, A. R., de Koning, H. J., Absetz, P., Schreck, M. (2001). Two distinct groups of non-attenders in an organized mammography screening program. *Breast Cancer Res Treat*, 70:145 – 53.
- Austin, L., Ahmad, F., McNally, M. J., Steward, D. (2002). Breast and cervical cancer screening in Hispanic women: a literature review using the Health Belief Model. *Women's Health Issues*, 12:122 – 8.
- Austoker, J. (1994). Cancer prevention in primary care. screening for cervical cancer.erratum appears in BMJ 1994 aug 13;309(6952):452. *BMJ*, 309(6949), 241-248.
- Australian Institute of Health and Welfare. (2006). *Cervical screening in Australia 2003-2004*. Retrieved January 23, 2007, from <http://www.aihw.gov.au/publications/index.cfm/title/10359>
- Azaiza, F., & Cohen, M. (2006). Health beliefs and rates of breast cancer screening among Arab women. *Journal of Women's Health*, 15(5), 520-530.
- Baay, M. F., Verhoeven, V., Peremans, L., Avonts, D., Vermorcken, J. B., (2006). General practitioners' perception of risk factors for cervical cancer development: Consequences for patient education. *Patient Educ. Couns*, 62, 277 – 281.
- Baer, H., Allen, S., & Braun, L. (2000). Knowledge of human papillomavirus infection among young adult men and women: Implications for health education and research. *Journal of community health*, 25(1), 67-78.
- Bankhead, C. R., Brett, J., Bukach, C., Webster, P., Stewart-Brown, S., & Munafo, M., et al. (2003). The impact of screening on future health-promoting behaviours and health beliefs: A systematic review. *Health technology assessment (Winchester, England)*, 7(42), 1-92.
- Behbakht, K., Lynch, A., Teal, S., Degeest, K., & Massad, S. (2004). Social and cultural barriers to Papanicolaou test screening in an urban population. *American College of Obstetricians and Gynecologists*, 104, 1355-1361.
- Behrens, J. T., & Smith, M. L. (1996). Data and data analysis. In D. Berliner & B. Calfee (Eds.), *The handbook of educational psychology* (pp. 945–989). New York: Macmillan.

- Bellaby, P. (1990). "To risk or not to risk? Uses and limitations of Mary Douglas on risk acceptability for understanding health and safety at work and road accidents", *Sociological Review*, 38(3): 465-483.
- Ben-Natan, M., & Adir, O. (2009). Screening for cervical cancer among Israeli Lesbian women. *International Nursing Review*, 56, 433-441.
- Berg, B. L., (2007). *Qualitative research methods for the social sciences (6th ed.)* Boston: Pearson Education.
- Bergstrom, R., Sparen, P., & Adami, H. O. (1999). Trends in cancer of the cervix uteri in Sweden following cytological screening. *British journal of cancer*, 81(1), 159-166.
- Biswas, L. N., Manna, B., Maiti, P. K., & Sengupta, S. (1997). Sexual risk factors for cervical cancer among rural Indian women: A case-control study. *International journal of epidemiology*, 26(3), 491-495.
- Block, L. G., & Keller, P. A. (1998). Beyond protection motivation: An integrative theory of health appeals. *Journal of Applied Social Psychology*, 28(17), 1584-1608
- Bloomfield, R. D., & Illinois, C. (1994). Cultural sensitivity and health care. *J Nat Med Assoc*, 86, 819-820.
- Boonpongmanee, C., & Jittanoon, P. (2007). Predictors of Papanicolaou testing in working women in Bangkok, Thailand. *Cancer nursing*, 30 (5): 384-389.
- Bosch, F. X., Castellsague, X., Munoz, N., de Sanjose, S., Ghaffari, A. M., & Gonzalez, L. C., et al. (1996). Male sexual behavior and human papillomavirus DNA: Key risk factors for cervical cancer in Spain. *Journal of the National Cancer Institute*, 88(15), 1060-1067.
- Bosch, F. X., Lorincz A., Munoz N., Meijer CJLM, Shah KV. (2002). The causal relation between human papillomavirus and cervical cancer. *Journal of clinical pathology*, 55(4), 244-265.
- Bosch, F. X., Manos, M. M., Munoz, N., Sherman, M., Jansen, A. M., & Peto, J., et al. (1995). Prevalence of human papillomavirus in cervical cancer: A worldwide perspective. international biological study on cervical cancer (IBSCC) study group. see comment. *Journal of the National Cancer Institute*, 87(11), 796-802.
- Brewer, J., & Hunter, A. (1989). *Multimethod research: A synthesis of styles*. Newbury Park, NJ: Sage.
- Brink, P. (1991). Issues of reliability and validity. In (Morse, J. M. ed). *Qualitative nursing research: A contemporary dialogue*. Newbury Park, CA: Sage Publications.

- Brinton, L. A., Reeves, W. C., Brenes, M. M., Herrero, R., de Britton, R. C., & Gaitan, E., et al. (1989). Parity as a risk factor for cervical cancer. *American Journal of Epidemiology*, 130(3), 486-496.
- Burak, L. J., & Meyer, M. (1997). Using the health belief model to examine and predict college women's cervical cancer screening beliefs and behavior. *Health Care for Women International*, 18, 251-262.
- Burk, R. D., Ho, G. Y., Beardsley, L., Lempa, M., Peters, M., & Bierman, R. (1996). Sexual behavior and partner characteristics are the predominant risk factors for genital human papillomavirus infection in young women. *Journal of Infectious Diseases*, 174(4), 679-689.
- Byrd, T. L., Peterson, S. K., Chavez, R., & Heckert, A. (2004). Cervical cancer screening beliefs among young Hispanic women. *Preventive medicine*, 38(2), 192-197.
- Caracelli, V. W. & Greene, J. C. (1993). Data analysis strategies for mixed-method evaluation design. *Educational Evaluation & Policy Analysis*, 15, 195-207.
- Castellsague, X., Bosch, F. X., & Munoz, N. (2003). The male role in cervical cancer. *Salud Publica de Mexico*, 45(Suppl 3), S345-53.
- Castellsague, X., Bosch, F. X., Munoz, N., Meijer, C. J., Shah, K. V., & de Sanjose, S., et al. (2002). Male circumcision, penile human papillomavirus infection, and cervical cancer in female partners. *New England Journal of Medicine*, 346(15), 1105-1112.
- Castellsague, X., & Munoz, N. (2003). Chapter 3: Cofactors in human papillomavirus carcinogenesis--role of parity, oral contraceptives, and tobacco smoking. *Journal of the National Cancer Institute, Monographs* (31), 20-28.
- Carter, J., Park, E. R., Moadel, A., Clearly, S. D., & Morgan, C. (2002). Cancer knowledge, attitudes, beliefs, and practices (KABP) of disadvantaged women in the south Bronx. *Journal of Cancer Education*, 17, 142-149.
- Centers for Disease Control and Prevention. (1998). The national breast and cervical cancer early detection program; At-A-Glance, 1998. U.S. Department of Health and Human Services, 1-6.
- Centers for Disease Control and Prevention. (2005). *Healthy People 2010*. Retrieved November 9, 2005, from <http://www.health.gov/healthypeople/document/html/volume1/03cancer.htm>
- Chan, H., & Lee, R. (1995). Hong Kong families: At the cross-roads of modernization and traditionalism. *Journal of Comparative Family Studies*, 26(1): 83-89.
- Chen, Y. C. (2001). Chinese values, health and nursing. *J Adv Nurs*, 36, 270-273.

- Chen, Y. L. (1996). Conformity with nature: A theory of Chinese American elders' health promotion and illness prevention processes. *Advances in Nursing Science*, 19(2), 17-26.
- Chinese Center for Disease Control and Prevention. (2005). Retrieved February 9, 2007, from <http://www.chinacdc.net.cn/n272442/n272530/n272817/n272877/10663.html>
- Cohen, J. (1992). A power primer. *Psychological bulletin*, 112(1), 155-159.
- Cohen L, Fouladi RT, Babaian RJ, et al. (2003). Cancer worry is associated with abnormal prostate-specific antigen levels in men participating in a community screening. *Cancer Epidemiol Biomarkers Prev*. 12(7): 610-617.
- Consedine, N. S., Magai, C, Krivoshekova, Y. S., Ryzewicz, L, Neugut, A. I. (2004). Fear, anxiety, worry, and breast cancer screening behavior: a critical review. *Cancer Epidemiol Biomarkers Prev*. 13(4):501-510.
- Consedine, N. S., Magai, C., Neugut, A. I. (2004). The contribution of emotional characteristics to breast cancer screening among women from six ethnic groups. *Prev Med*. 38(1): 64-77.
- Cuschieri, K. S., Cubie, H. A., Whitley, M. W., Gilkison, G., Arends, M. J., & Graham, C., et al. (2005). Persistent high risk HPV infection associated with development of cervical neoplasia in a prospective population study. *Journal of clinical pathology*, 58(9), 946-950.
- Cutter, S. L. (1993). *Living with risk: The geography of technological hazards*. London: Edward Arnold.
- Cuzick, J., Sasieni, P., & Singer, A. (1996). Risk factors for invasive cervix cancer in young women. *European journal of cancer*, 32(5), 836-841.
- Dell, D. L., Chen, H., Ahmad, F., & Stewart, D. E. (2000). Knowledge about human papillomavirus among adolescents. *Obstetrics & Gynecology*, 96(5 Pt 1), 653-656.
- Denny-Smith, T., Bairan, A., & Page, M. C. (2006). A survey of female nursing students' knowledge, health beliefs, perceptions of risk, and risk behaviors regarding human papillomavirus and cervical cancer. *Journal of the American Academy of Nurse Practitioners*, 18(2), 62-69.
- Denzin, N. K. (1978). *The research act: A theoretical introduction to sociological methods*. New York: McGraw-Hill.

- Department of Health, Hong Kong. (2004). *Topical health report No. 4: Prevention and screening of cervical cancer*. Hong Kong: the Government Logistic Department.
- Department of Health, Hong Kong. (2006). *Statistic on behavioral risk factors-Cervical Screening Public*. Retrieved November 9, 2005, from http://www.chp.gov.hk/data.asp?lang=en&cat=4&dns_sumID=260&id=280&pid=10&ppid=
- Department of Health, Hong Kong. (2007) Family Health Service-cervical screening. Retrieved April 27, 2007, from http://www.dh.gov.hk/english/main/main_fhs/main_fhs.html
- Department of Health, United kingdom. (2000). *Community Health and Prevention: Cancer screening*. Retrieved January 20, 2007, from http://http://www.performance.doh.gov.uk/HPSSS/TBL_B8.HTM
- DeSantis, L., & Ugarriza, D. N. (2000). The concept of theme used in qualitative nursing research. *Western Journal of Nursing Research*, 22(3), 351-372.
- de Vet, H.C.W., & Sturmans, F. (1994). Risk factors for cervical dysplasia: Implications for prevention. *Public Health*, 18(4): 241-249.
- De Vries, H., Backbier, E., Kok, G. J., Dijkstra, M. (1995). The impact of social influences in the context of attitude, self-efficacy, intention, and previous behavior as predictors of smoking onset. *J Appl Soc Psychol*, 25:237-257.
- Diefenbach, M. A., Miller, S. M., Daly, M. B. (1999). Specific worry about breast cancer predicts mammography use in women at risk for breast and ovarian cancer. *Health Psychol*. 18(5):532-536.
- Diefenbach, M. A., Weinstein, N. D. & O'Reilly, J. (1993). Scales for assessing perceptions of health hazard susceptibility. *Health Education Research*, 8, 181-92.
- Dixon, P. N., Bobo, M., & Stevick, R. A. (1984). Response differences and preferences for allcategory-defined and end-defined Likert formats. *Educational and Psychological Measurement*, 44, 61-66.
- Eaker, S., Adami, H. O., & Sparen, P. (2001). Attitudes to screening for cervical cancer: A population-based study in sweden. *Cancer causes & control : CCC*, 12(6), 519-528.
- Eiser, J. R., & Cole, N. (2002). Participation in cervical screening as a function of perceived risk, barriers and need for cognitive closure. *Journal of Health Psychology*, 7(1), 99-105.

- Facione, N. C., Dodd, M. J., Holzemer, W., & Meleis, A. I. (1997). Help-seeking for self-discovered breast symptoms: implications for cancer early detection. *Cancer Practice*, 5, 220–227.
- Facione, N. C., Giancarlo, C., & Chan, L. (2000). Perceived Risk and Help-Seeking Behavior for Breast Cancer: A Chinese-American Perspective. *Cancer Nursing*, 23(4): 258-267.
- Family Planning Association of Hong Kong. (1997). *Knowledge, Attitude and Practice of Family Planning Survey in Hong Kong*. Retrieved November 9, 2005, from <http://www.famplan.org.hk>
- Ferlay, J, Bray, F, Pisani, P, Parkin, DM. (2001). *Globocan 2000: cancer incidence, mortality and prevalence worldwide, Version 1.0. IARC Cancerbase No. 5*. Lyon: IARC Press.
- Fernandez, M. E., Gonzales, A., Tortolero-Luna, G., William, J., Saavedra-Embesi, M., Chan, W., et al. (2009). Effectiveness of Cultivando La Salud: A breast and cervical cancer screening promotion program for low-income Hispanic women. *American Journal of Public Health*, 99(5): 936-943.
- Fernandez-Esquer, M. E., Ross, M. W., & Torres, I. (2000). The importance of psychosocial factors in the prevention of HPV infection and cervical cancer. *International Journal of STD & AIDS*, 11(11), 701-713.
- Ferrera, A., Velema, J. P., Figueroa, M., Bulnes, R., Toro, L. A., & Claros, J. M., et al. (2000). Co-factors related to the causal relationship between human papillomavirus and invasive cervical cancer in honduras. *International journal of epidemiology*, 29(5), 817-825.
- Fitch, M. I., Greenberg, M., Spaner, D., & Taylor, K. (1998). Exploring the barriers to cervical screening in an urban Canadian setting. *Cancer Nursing*, 21(6): 441-449.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior*. New York, NY: John Wiley & Sons.
- Fontaine, K. R, Smith, S. (1995). Optimistic bias in cancer risk perception: a cross-national study. *Psychological Reports*, 77(1): 143-6.
- Fontaine, J., Hankins, C., Mayrand, M. H., Lefevre, J., Money, D., & Gagnon, S., et al. (2005). High levels of HPV-16 DNA are associated with high-grade cervical lesions in women at risk or infected with HIV. *AIDS*, 19(8), 785-794.
- Fonteyn, M., Kuipers, B., & Grobe, S. (1993). A description of think aloud method and protocol analysis. *Quarterly Health Research*, 3 (4), 430-444.
- FRAHK. (1997). Knowledge, attitude and practice study on family planning. Hong Kong: Author.

- Franco, E. L., Villa, L. L., Ruiz, A., & Costa, M. C. (1995). Transmission of cervical human papillomavirus infection by sexual activity: Differences between low and high oncogenic risk types. *Journal of Infectious Diseases*, 172(3), 756-763.
- Frazer, I. H., Cox, J. T., Mayeaux, E. J. J., Franco, E. L., DrPh, Moscicki, A., & Palefsky, J. M. F. R. C. P., et al. (2006). Advances in prevention of cervical cancer and other human papillomavirus-related diseases.[article]. *Pediatric Infectious Disease Journal. Advances in Prevention of Cervical Cancer and Other Human Papillomavirus-Related Diseases, Guest Editor: Ian H.Frazer, MD, 25(2) (Supplement)*, S65-S81.
- French, D. P., Maissi, E., & Marteau, T. M. (2004). Psychological costs of inadequate cervical smear test results. *British Journal of Cancer*, 91, 1887-1892.
- Friedman, A. L., & Sheppard, H. (2006). Exploring the knowledge, attitudes, beliefs, and communication preferences of the general public regarding HPV: Findings from CDC focus group research and implications for practice. *Health education & behavior*, 34(3): 471-486.
- Friedman, L. C., Webb, J. A., Weinberg, A. D., Lane, M, Cooper, H. P. (1995). Breast cancer screening: racial/ethnic differences in behaviors and beliefs. *J Cancer Educ*, 10:213 – 6.
- Fruin, D. J., Pratt, C., & Owen, N. (1991). Protection motivation theory and adolescents' perceptions of exercise. *Journal of Applied Social Psychology*, 22(1): 55-69.
- Fylan, F. (1998). Screening for cervical cancer: A review of women attitudes, knowledge, and behaviour. [Electronic version]. *Brith journal of general practice*, 48, 1509-1514.
- Gao, W., Paterson, J., DeSouza, R., & Lu, T. (2008). Demographic predictors of cervical cancer screening in Chinese women in New Zealand. *The New Zealand Medical Journal*, 121(1277): 8-17.
- Gao, J., Tang, S., Tolhurst, R., & Rao, K. (2001) Changing access to health services in urban China: Implications for equity. *Health Policy & Planning*, 16(3):302-312.
- Gelso, C. J. (1979). Research in counseling: Methodological and professional issues. *The Counseling Psychologist*, 8, 7-36.
- Gergen, K. J. (2001). Psychological science in a postmodern context. *American Psychologist*, 56, 803-813.
- Goldman, L. (1976). A revolution in counseling psychology. *Journal of Counseling Psychology*, 23, 543-552.

- Goldman, R. E. & Risica, P. M. (2004). Perceptions of breast and cervical cancer risk and screening among Dominicans and Puerto Ricans in Rhode Island. *Ethnicity and Disease*, 14(1), 32-42.
- Green, J., de Gonzalez, A. B., Sweetland, S., Beral, V., Chilvers, C., Crossley, B., et al. (2003). Risk factors for adenocarcinoma and squamous cell carcinoma of the cervix in women aged 20–44 years: the UK National Case–Control Study of Cervical Cancer. *British Journal of Cancer*, 89, 2078–2086.
- Greene, J. C., Benjamin, L., & Goodyear, L. (2001). The Merits of Mixing Methods in Evaluation. *Evaluation*, 7(1): 25-44.
- Greene, J. C., & Caracelli, V. J. (Eds.). (1997). *Advances in mixed-method evaluation: The challenges and benefits of integrating diverse paradigms* (New Directions for Evaluation, No. 74). San Francisco: Jossey-Bass.
- Greene, J. C., & Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation design. *Educational Evaluation & Policy Analysis*, 11, 255-274.
- Greening, L. (1997). Adolescents' cognitive appraisals of cigarette smoking: An application of protection motivation theory. *Journal of Applied Social Psychology*, 27(22), 1972-1985.
- Gregg, J. (2000) 'Mixed blessings: cervical cancer screening in Recife, Brazil'. *Medical Anthropology*, 19, 41-63.
- Gurmankin Levy, A., Shea, J., Williams, S. V., Quistberg, A., & Armstrong, K. (2006). Measuring perceptions of breast cancer risk. *Cancer Epidemiology, Biomarkers & Prevention*, 15(10), 1893-1898.
- Hanson, W. E., Creswell, J. W., Clark, V. L. P., Petska, K. S., Creswell, J. D. (2005). Mixed Methods Research Designs in Counseling Psychology. *Journal of Counseling Psychology*, 52(2): 224-235.
- Harper, D. M., Franco, E. L., Wheeler, C., Ferris, D. G., Jenkins, D., & Schuind, A., et al. (2004). Efficacy of a bivalent L1 virus-like particle vaccine in prevention of infection with human papillomavirus types 16 and 18 in young women: A randomised controlled trial. *Lancet*, 364(9447), 1757-1765.
- Hay, J., Shuk, E., Cruz, G., Ostriff, J. (2005). Thinking through cancer risk: Characterizing smokers' process of risk determination. *Qualitative Health Research*, 15(8): 1074-1085.
- Helmes, A. W. (2002). Application of the protection motivation theory to genetic testing for breast cancer risk. *Preventive medicine*, 35(5), 453-462.

- Hiatt, R. A., Pasick, R. J., Stewart, S., Bloom, J., Davis, P., Gardiner, P., et al. (2001). Community-based cancer screening for underserved women: Design and baseline findings from the Breast and Cervical Cancer Intervention Study. *Prev. Med.*, 33: 190-203.
- Hislop, T. G., Teh, C., Lai, A., Labo, T., Tayloe, V. M. (2000). Sociodemographic factors associated with cervical cancer screening in BC Chinese women. *BCMJ*, 42:456-460.
- Hislop, T. G., Deschamps, M., Teh, C., Jackson, C., Tu, S. P., Yasui, Y., et al. (2003). Facilitators and barriers to cervical cancer screening among Chinese Canadian women. *Canadian Journal of Public Health*, 94, 68-73.
- Ho, V., Yamal, J. M., Atkinson, E. N., Basen-Engquist, K., Tortolero-Luna, G., & Follen, M. (2005). Predictors of breast and cervical screening in vietnamese women in harris county, houston, texas. *Cancer nursing*, 28(2), 119-29; quiz 130-1.
- Hodgkins, S., & Orbell, S. (1998). Can protection motivation theory predict behavior? A longitudinal test exploring the role of previous behavior. *Psychology and Health*, 13,237-251.
- Hoeman, S. P., Ku, Y. L., & Ohl, D. R. (1996). Health beliefs and early detection among chinese women. *Western journal of nursing research*, 18(5), 518-533.
- Holloway, R. M., Wilkinson, C., Peters, T. J., Russell, I., Cohen, D., Hale, J., et al. (2003). Cluster-randomised trial of risk communication to enhance informed uptake of cervical screening. *British Journal of General Practice*, 53, 620-625.
- Holroyd, E., Twinn, S., & Adab, P. (2004). Socio-cultural influences on Chinese women's attendance for cervical screening. *Journal of advanced nursing*, 46(1), 42-52.
- Hong Kong Cancer Registry (2007). *Cancer of the Cervix Uteri (2007)*. Retrieved January 7, 2010, from http://www3.ha.org.hk/cancereg/e_cx.pdf
- Hoque, M., Ibekwe, C. M., & Ntuli-Ngcobo, B. (2009). Screening and perceived severity of cervical cancer among women attending Mahalapye district hospital, Botswana. *Asian Pacific Journal of Cancer Prevention*, 10, 1095-1100.
- Hoshmand, L. L. S. T. (1989). Alternate research paradigms: A review and teaching proposal. *The Counseling Psychologist*, 17, 3-79.
- Hosmer, D. W., & Lemeshow, S. (2000). *Applied logistic regression*. (2nd ed.). New York: John Wiley and Sons.

- Hou, S. (2002 April 4-6). Barriers to Pap screening among Chinese women in pre-contemplation stage – A qualitative approach. Paper presented at English Qualitative Health Research Conference, Banff, Alberta, Canada.
- Hou, S., Fernandez, M. E., Baumler, E., & Parcel, G. S. (2002). Effectiveness of an intervention to increase Pap test screening among Chinese women in Taiwan. *Journal of community health, 27*(4), 277-290.
- Hou, S., Fernandez, M. E., Baumler, E., & Parcel, G. S., Chen, P. H. (2003). Correlates of cervical cancer screening among women in Taiwan. *Health Care for Women International, 24*, 384-398.
- Hou, S., & Lessick, M. (2002). Cervical cancer screening among Chinese women: Exploring the benefits and barriers of providing care. [article]. *AWHONN Lifelines, 6*(4), 349-354.
- Hou, S., & Luh, W. (2005). Psychometric properties of the cervical smear belief inventory (CSBI) for Chinese women. *International Journal of Behavior Medicine, 12*, 180-191.
- Howard, G. S. (1983). Toward methodological pluralism. *Journal of Counseling Psychology, 30*, 19–21.
- Hubbell, F. A., Mishra, S. I., Chavez, L. R. & Valdez, R. B. (1996) ‘Beliefs about sexual behavior and other predictors of Pap smear use among Latinas and Anglo women’. *Archives of Internal Medicine, 156*, 2353.
- Huerta, E. E., & Macario, E. (1999). Communicating health risk to ethnic groups: Reaching Hispanics as a case study. *Journal of the National Cancer Institute Monographs, 25*, 23-26.
- Hughes, J. P., Garnett, G. P., & Koutsky, L. (2002). The theoretical population-level impact of a prophylactic human papilloma virus vaccine. *Epidemiology, 13*(6), 631-639.
- Jackson, C. J. Taylor, V. M., Chitnarong, K., Mahloch, J., Fischer, M., Sam, R., et al. (2000). Development of a cervical cancer control intervention program for Cambodian American women. *Journal of Community Health, 25*(5):359-75.
- Jacob, M., Bradley, J., & Barone, M. A. (2005). Human papillomavirus vaccines: What does the future hold for preventing cervical cancer in resource-poor settings through immunization programs? *Sexually transmitted diseases, 32*(10), 635-640.
- Jamieson DJ. Duerr A. Burk R. Klein RS. Paramsothy P. Schuman P. Cu-Uvin S. Shah K. HIV Epidemiology Research Study (HERS) Group. (2002). Characterization of genital human papillomavirus infection in women who have or who are at risk of having HIV infection. *American Journal of Obstetrics & Gynecology, 186*(1), 21-27.

- Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*, 24, 602–611.
- Kagawa-Singer, M. (1995). Socioeconomic and cultural influences on cancer care of women. *Seminar in Oncology Nursing*, 11(2): 109-119. *Ethnicity & Health*, 4(4): 259-276.
- Kagawa-Singer, M. (1997). Addressing issues for early detection and screening in ethnic populations. *Oncology Nursing Forum*, 24, 1705–1711.
- Kahn, J. A., Goodman, E., Slap, G. B., Huang, B., & Emans, S. J. (2001). Intention to return for papanicolaou smears in adolescent girls and young women. *Pediatrics*, 108(2), 333-341.
- Kandula, N. R., Wen, M., Jacobs, E. A., & Lauderdale, D. S. (2006). Low rates of colorectal, cervical, and breast cancer screening in Asian Americans compared with non-Hispanic whites. *Cancer*, 107(1): 184-192.
- Katapodi, M. C., Lee, K. A., Facione, N. C., & Dodd, M. J. (2004). Predictors of perceived breast cancer risk and the relation between perceived risk and breast cancer screening: A meta-analytic review. *Preventive medicine*, 38(4), 388-402.
- Kavanagh, A. M., & Broom, D. H. (1998). Embodied risk: My body, myself? *Social science & medicine*, 46(3), 437-444.
- Kim, S. E., Perez-Stable, E. J., Wong, S., Gregorich, S., Sawaya, G. F., Walsh, J. M. E., et al. (2008). *Arch Intern Med*, 168(7): 728-734.
- Koutsky, L. (1997). Epidemiology of genital human papillomavirus infection. *American Journal of Medicine*, 102(5A), 3-8.
- Koutsky, L. A., Ault, K. A., Wheeler, C. M., Brown, D. R., Barr, E., & Alvarez, F. B., et al. (2002). A controlled trial of a human papillomavirus type 16 vaccine. see comment. *New England Journal of Medicine*, 347(21), 1645-1651.
- Krippendorff, K. (2004). *Content analysis: An introduction to its methodology* (2nd ed.). Thousand Oaks: Sage Publications.
- Kulasingam, S. L., & Myers, E. R. (2003). Potential health and economic impact of adding a human papillomavirus vaccine to screening programs. *JAMA*, 290(6), 781-789.
- Kvale, S. (1996). *Interviews: An introduction to qualitative research interviewing*. Thousand Oaks: Sage Publications.
- Kwok C, Sullivan G, Cant R. (2006). The role of culture in breast health practices among Chinese-Australian women. *Patient Educ Couns*, 64(1-3): 268-276.

- Lam, T. K., McPhee, S. J., Mock, J., Wong, C., Doan, H. T., Nguyen, T., et al. (2003). Encouraging Vietnamese-American women to obtain Pap tests through lay health worker outreach and media education. *Journal of General Internal Medicine*, 18(7): 516-24
- Lechner, L., de Vries, H., & Offermans, N. (1997). Participation in a breast cancer screening program: influence of past behavior and determinants on future screening participation. *Preventive Medicine*. 26(4):473-82.
- Lee, J., Seow, A., Ling, S. L., & Peng, L. H. (2002). Improving adherence to regular Pap smear screening among Asian women: A population-based study in Singapore. *Health Education & Behavior*, 29(2): 207-218.
- Li, J., Li, L. K., Ma, J. F., Wei, L. H., Niyazi, M., Li, C. Q., et al. (2009). Knowledge and attitudes about human papillomavirus (HPV) and HPV vaccines among women living in metropolitan and rural regions of China. *Vaccine*, 27(8):1210-1215.
- Liang, W., Yuan, E. H., Mandelblatt, J. S., & Pasick, R. J. (2004). How Chinese women view health and cancer screening? Results from focus groups and implications for intervention. *Ethnicity and Health*, 9, 283-304.
- Liang J, Qian X, Yang Q, Gao E, Yuan W. (2002). An evaluation of the impact of condom vending machine placed at university campus on university students. *Chinese Journal of Maternal and Child Care*, 17:369-372.
- Liang, W., Wang, J. H., Chen, M. Y., Feng, S., , Lee, M., Schwartz, M. D., et al. (2008). Developing and validating a measure of Chinese cultural views of health and cancer. *Health Educ Behav*, 35(3):361-75.
- Lipkus, I. M., Kuchibhatla, M., McBride, C. M., Bosworth, H. B., Pollak, K. I., Siegler, I. C., et al. (2000). Relationships among breast cancer perceived absolute risk, comparative risk, and worries. *Cancer Epidemiology, Biomarkers & Prevention*, 9(9), 973-975.
- Lipkus, I. M., Samsa, G., & Rimer, B. K. (2001). General performance on a numeracy scale among highly educated samples. *Medical Decision Making*, 21(1), 37-44.
- Liu, D. L. (1992). Sexual behaviour in modern China: a report of the nation-wide 'sex civilization' survey on 20,000 subjects in China. Shanghai: Shanghai Sanlian Publishing House.
- Liu, D., Ng, M. L., Zhou, L. R., & Haeberie, E. J. (1997). *Sexual behaviour in modern China: Report on the nationwide survey of 20,000 men and women*. New York: Continuum.
- Lyttle, N. L., Stadelman, K. (2006). Assessing awareness and knowledge of breast and

- cervical cancer among Appalachian women. *Prev Chronic Dis*, 3(4): A125. [PubMed: 16978500]
- Lytwyn, A., Sellors, J. W. (1997). Sexually Transmitted Human Papillomaviruses: Current Concepts and Control Issues. *The Canadian Journal of Human Sexuality*, 6(2), 113.
- Maddux, J. E., & Rogers, R. W. (1983). Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *Journal of experimental social psychology*, 19(5), 469-479. Eseer Sene.
- Mahlck, C.G., Jonsson, H., & Lenner, P. (1994). Pap smear screening and changes in cervical cancer mortality in Sweden. *International Journal of Gynecology & Obstetrics*, 44(3): 267-272.
- Maione, P. V., & Chenail, R. J. (1999). Qualitative inquiry in psychotherapy: Research on the common factors. In M. A. Hubble, B. L. Duncan, & S. D. Miller (Eds.), *The heart and soul of change: What works in therapy* (pp. 57–88). Washington, DC: American Psychological Association.
- Manhart, L. E., Koutsky, L. A. (2002). Do Condoms Prevent Genital HPV Infection, External Genital Warts, or Cervical Neoplasia?: A Meta-Analysis. *Sexually Transmitted Diseases*, 29(11): 725-735.
- Marlow, L. A. V., Waller, J., & Wardle, J. (2009). The impact of human papillomavirus information on perceived risk of cervical cancer. *Cancer Epidemiol Biomarkers Prev*, 18(2): 373-376.
- Marquart, J. M., Li, S., & Zercher, C. (2000). Conceptual issues and analytic strategies in mixed-method study of preschool inclusion. *Journal of Early Intervention*, 23, 116-132.
- Marshall, C. & Rossman, G. B. (2006). *Designing qualitative research* (4th ed.). Thousands Oaks, Calif.: Sage Publications.
- Marteau, T. M., Hankins, M., & Collins, B. (2002). Perceptions of risk of cervical cancer and attitudes towards cervical screening: A comparison of smokers and non-smokers. *Family practice*, 19(1), 18-22.
- Martinez, R. G., Chavez, L. R. & Hubbell, F. A. (1997) 'Purity and passion: risk and morality in Latina immigrants' and physicians' beliefs about cervical cancer', *Medical Anthropology*, 17, 337-362.
- Matsudaira, T. (2003). Cultural influences on the use of social support by Chinese immigrants in Japan: "Face" as a keyword. *Quality of Health Research*, 13, 343–357.
- McCaffery, K., Waller, J., Forrest, S., Cadman, L., Szarewski, A., & Wardle, J. (2004). Testing positive for human papillomavirus in routine cervical screening: Examination of psychosocial impact.[erratum appears in BJOG. 2004

dec;111(12):1489]. *BJOG: An International Journal of Obstetrics & Gynaecology*, 111(12), 1437-1443.

- McMullin, J. M., Alba, I. D., Chavez, L. R., & Hubbell, F. A. (2005). Influence of beliefs about cervical cancer etiology on Pap smear Use among Latina immigrants. *Ethnicity & Health*, 10(1): 3-18
- McPartland, T. S., Weaver, B. A., Lee, S. K., & Koutsky, L. A. (2005). Men's perceptions and knowledge of human papillomavirus (HPV) infection and cervical cancer. *Journal of American College Health*, 53(5), 225-230.
- Merrill, R. M., & Madanat, H. N. (2002). Cervical cancer risk perception and pap-smear screening. *Health education journal*, 61(3), 231-243.
- Mertens, D. M. (2003). Mixed methods and the politics of human research: The transformative-emancipatory perspective. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 135–164). Thousand Oaks, CA: Sage.
- Miles, M., & Huberman, M. (1994). *Qualitative data analyses: An expanded source-book* (2nd ed.) Thousand Oaks, CA: Sage.
- Milne, S., Sheeran, P., Orbell, S. (2000) Prediction and intervention on health-related behavior: A meta-analytic review of protection motivation theory. *Journal of Applied Social Psychology*, 30, 106-143.
- Ministry of Health of the People's Republic of China. (2009). *Technical solution of cervical cancer screening for Chinese rural women*. Retrieved December 5, 2009, from <http://www.moh.gov.cn/publicfiles/business/htmlfiles/mohfybjysqwss/s3581/200909/43007.htm>
- Mo, B. (1992). Modesty, sexuality, and breast health in chinese-american women. *Western Journal of Medicine*, 157(3), 260-264.
- Moreira, E. D., Jr, Oliveira, B. G., Ferraz, F. M., Costa, S., Costa Filho, J. O., & Karic, G. (2006). Knowledge and attitudes about human papillomavirus, pap smears, and cervical cancer among young women in brazil: Implications for health education and prevention. *International Journal of Gynecological Cancer*, 16(2), 599-603.
- Moreno, V., Bosch, F. X., Munoz, N., Meijer, C. J., Shah, K. V., & Walboomers, J. M., et al. (2002). Effect of oral contraceptives on risk of cervical cancer in women with human papillomavirus infection: The IARC multicentric case-control study.[see comment]. *Lancet*, 359(9312), 1085-1092.
- Morrow, S. L., & Smith, M. L. (2000). Qualitative research for counseling psychology. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (3rd ed., pp. 199–230). New York: Wiley.

- Morse, J. M., (1991). Strategies for sampling. In J. M. Morse (Eds.). *Qualitative nursing research: a contemporary dialogue* (p. 135). Newbury Park: Sage Publications.
- Morse, J. M. (2000). Determining sample size. *Qualitative Health Research*, 10(1), 3-5.
- Morse, J. M., & Field, P. A. (1996). *Nursing research: The application of qualitative approaches (2nd ed.)*. Thousand oaks, CA: Sage Publications.
- Morse, J. M., & L. Richards. 2002. *Readme First for a User's Guide to Qualitative Methods*. Thousand Oaks, CA: Sage Publications.
- Munoz, N., Bosch, F. X., de Sanjose, S., Herrero, R., Castellsague, X., & Shah, K. V., et al. (2003). Epidemiologic classification of human papillomavirus types associated with cervical cancer.[see comment]. *New England Journal of Medicine*, 348(6), 518-527.
- Munoz, N., Castellsague, X., de González, A. B., & Gissmann, L. (2006). Chapter 1: HPV in the etiology of human cancer. *Vaccine*, 24(3): s1-s10.
- Munoz, N., Franceschi, S., Bosetti, C., Moreno, V., Herrero, R., & Smith, J. S., et al. (2002). Role of parity and human papillomavirus in cervical cancer: The IARC multicentric case-control study.[see comment]. *Lancet*, 359(9312), 1093-1101.
- National Cancer Institute. (2005). Cancer trends progress report – 2005 update. January 20, 2007, from <http://www.cancer.gov/newscenter/pressreleases/ProgressReport2005>
- Nelson, K., Geiger, A. M., & Mangione, C. M. (2002). Effect of health beliefs on delays in care for abnormal cervical cytology in a multiethnic population. *Journal of General Internal Medicine*, 17, 709.
- Neuwirth, K., Dunwoody, S., & Griffin, R. J. (2000). Protection motivation and risk communication. *Risk Analysis*, 20, 721-734.
- NHS Cancer Screening Programme. (2009). *NHS Cancer Screening Programme*. Retrieved July 12, 2010, from <http://www.cancerscreening.nhs.uk/cervical/index.html>
- NHSCSP. Human Papillomavirus. (Cited 2007 April 18). Available from: <http://www.cancerscreening.nhs.uk/cervical/hpv.html>.
- Norman, P., Conner, M. (1993) The role of social cognition models in predicting attendance at health checks. *Psychology & Health*, 8(6): 447-462.
- Onwuegbuzie, A. J. (2000a, November). *On becoming a bi-researcher: The importance of combining quantitative and qualitative research methodologies*. Paper presented at the annual meeting of National Academy of Educational researcher, Ponte Vedra, FL.

- Onwuegbuzie, A. J. (2000b, November). *Validity and qualitative research: An oxymoron?* Paper presented at the annual meeting of the Association for the Advancement of Educational Research, Ponte Vedra, FL.
- Onwuegbuzie, A. J., & Teddlie, C. (2003). A framework for analyzing data in mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 351–383). Thousand Oaks, CA: Sage.
- Orbell, S., Crombie, I., Robertson, A., Johnston, G., & Kenicer, M. (1995). Assessing the effectiveness of a screening campaign: Who is missing by 80% cervical screening coverage. *Journal of the Royal Society of Medicine*, 88, 389-394..
- Orbell, S. (1996). Cognition and affect after cervical screening: The role of previous test outcome and personal obligation in future uptake expectations. *Social science & medicine*, 43(8), 1237-1243.
- Orbell, S., & Sheeran, P. (1998). 'Inclined abstainers': A problem for predicting health-related behaviour. *British Journal of Social Psychology*, 37(Pt 2), 151-165.
- Palardy, N., Greening, L., Ott, J., Dolderby, A., & Atchison, J. (1998). Adolescents' health attitudes and adherence to treatment fro insulin-dependent diabetes mellitus. *Development and Behavioral Pediatrics*, 19(1), 31-37.
- Parazzini, F., Chatenoud, L., La Vecchia, C., Negri, E., Franceschi, S., & Bolis, G. (1998). Determinants of risk of invasive cervical cancer in young women. *British journal of cancer*, 77(5), 838-841.
- Parkin, D. M., Bray, F., Ferlay, J., & Pisani, P. (2005). Global cancer statistics, 2002. *CA: a Cancer Journal for Clinicians*, 55(2), 74-108.
- Peto, J., Gilham, C., Fletcher, O., & Matthews, F. E. (2004). The cervical cancer epidemic that screening has prevented in the UK.see comment. *Lancet*, 364(9430), 249-256.
- Polit, D. F., & Beck, C. T. (2008). *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. Lippincott Williams & Wilkins, Philadelphia, PA.
- Polit, D. F., & Hungler, B. P. (1999). *Nursing research: Principles and methods (6th edition)*. Lippincott, New York: Philadelphia.
- Porter, S. (1996). Qualitative analysis. In F. S. Cormack (Ed.), *The research process in nursing* (pp. 330-340). Oxford: Blackwell Publications.
- Plummer, M., Herrero, R., Franceschi, S., Meijer, C. J., Snijders, P., & Bosch, F. X., et al. (2003). Smoking and cervical cancer: Pooled analysis of the IARC multi-centric case--control study. *Cancer Causes & Control*, 14(9), 805-814.

- Ponten, J., Adami, H. O., Bergstrom, R., Dillner, J., Friberg, L. G., & Gustafsson, L., et al. (1995). Strategies for global control of cervical cancer.see comment. *International Journal of Cancer*, 60(1), 1-26.
- Ponterotto, J. G., & Grieger, I. (1999). Merging qualitative and quantitative perspectives in a research identity. In M. Kopala & L. Suzuki (Eds.), *Using qualitative methods in psychology* (pp. 49–62). Thousand Oaks, CA: Sage.
- Portney, L. G., & Watkins, M. P. (2000). *Foundations of clinical research: Application to practice (2nd ed.)*. Upper Saddle River, NJ: Julie Alexander.
- Powe, B. D., Finnie, R. (2003). Cancer fatalism. The state of the science. *Cancer Nurs* 26:454-67.
- Prentice-Dunn, S., & Rogers, R. W. (1986). Protection motivation theory and preventive health: beyond the health belief model. *Health Educ Res*, 1:153–161.
- Prochaska, J. O., & Velicer, W. F. (1997). The transtheoretical model of health behavior change. *American Journal of Health Promotion*, 12(1), 38-48.
- Punch, K. F. (1998). *Introduction to social research: Quantitative and qualitative approaches*. Thousand Oaks, CA: Sage.
- Rajaram, S. S., & Rashidi, A. (1998). Minority women and breast cancer screening: The role of cultural explanatory models. *Preventive Medicine*, 27, 757–764.
- Reichardt, C. S., & Cook, T. D. (1979). Beyond qualitative versus quantitative methods. In T. D. Cook & C. S. Reichardt (Eds.), *Qualitative and quantitative methods in evaluation research* (pp. 7–32). Beverly Hills, CA: Sage.
- Renaud, C., Byers, E. S., & Pan, S. (1997). Sexual and relationship satisfaction in mainland China. *The Journal of Sex Research*, 34(4): 399-410.
- Rippetoe, P. A., Rogers, R. W. (1987). Effects of components of protection-motivation theory on adaptive and maladaptive coping with a health threat. *J Personality Social Psych* 52:596-604.
- Rogers, R. W. (1975). A protection motivation theory of fear appeals and attitude change. *Journal of Psychology: Interdisciplinary and Applied*, 91(1), 93-114. Heref Pubatons.
- Rogers, R. W. & Prentice-Dunn, S. (1997). Protection motivation theory. In D. Gochman (Ed.), *Handbook of health behavior research. Vol. 1: Determinants of health behavior: Personal and social* (pp. 113–132). New York: Plenum.
- Rossmann, G. B., & Wilson, B. L. (1985). Numbers and words: Combing quantitative and qualitative methods in a single large-scale evaluation study. *Evaluation Review*, 9, 627–643.

- Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health education quarterly*, 15(2), 175-183.
- Rothman, A. J., & Kiviniemi, M. T. (1999). Treating people with information: An analysis and review of approaches to communicating health risk information. *Journal of the National Cancer Institute Monographs*, 25, 44-51.
- Rubin, H. J. & Rubin, I. S. (1995). *Qualitative interviewing: the art of hearing data*. Thousand oaks, CA: Sage Publications.
- Sadock, V. A. (2004) Normal Human Sexuality and Sexual Dysfunctions. In Sadock, B. J., & Sadock, V. A. (Eds.), *Kaplan and Sadock's Comprehensive Textbook of Psychiatry* (p. 1902). Philadelphia: Lippincott Williams & Wilkins.
- Safman, R. M. & Sobal, J. (2004). Qualitative sample extensiveness in health education research. *Health Educ Behav*, 31(1), 9-21.
- Sandelowski, M. (2001). Real qualitative researchers don't count: the use of numbers in qualitative research. *Research in Nursing & Health*, 24, 230-240.
- Saslow, D., Castle, P. E., Cox, J. T., Davey, D. D., Einstein, M. H., Ferris, D. G., et al. (2007). American Cancer Society Guideline for human papillomavirus (HPV) vaccine use to prevent cervical cancer and its precursors. *CA: A Cancer Journal for Clinicians*, 57:7-28.
- Saslow, D., Runowicz, C. D., Solomon, D., Moscicki, A. B., Smith, R. A., Eyre, H. J., et al. (2006). American Cancer Society guideline for the early detection of cervical neoplasia and cancer. *A Cancer Journal for Clinicians*, 52(6), 341-362.
- Saules, K. K., Vannest, N. O., Mehringer, A. M., Pomerleau, C. S., Lee, K., Opiari, A. W., Midgley, A. R., et al. (2007). Actual versus perceived risk of cervical cancer among college women smokers. *Journal of American College Health*, 55(4): 207-213.
- Sauvageau, C., Duval, B., Gilca, V., Lavoie, F., Ouakki, M. (2007). Human papilloma virus vaccine and cervical cancerscreening acceptability among adults in Quebec, Canada. *BMC Public Health*, 7: 304. Published online 2007 October 25. doi: 10.1186/1471-2458-7-304.
- Scarinci, I. C., Beech, B. M., Kovach, K. W., & Bailey, T. L. (2003). An examination of sociocultural factors associated with cervical cancer screening among low-income Latina immigrants of reproductive age. *Journal of Immigrant Health*, 5(3): 119-128.
- Schwarzer, R. (1992). Self-efficacy in the adoption and maintenance of health behaviors: Theoretical approaches and a new model, In R. Schwarzer (Eds.), *Self-efficacy: Thought Control of Action* (pp. 217 - 243). Washington, DC: Hemisphere.

- Schwartz, M. D., Taylor, K. L., Willard, K. S. (2003). Prospective association between distress and mammography utilization among women with a family history of breast cancer. *J Behav Med*, 26(2):105–117.
- Schwartz, L. M., Woloshin, S., Black, W. C., & Welch, H. G. (1997). The role of numeracy in understanding the benefit of screening mammography. *Annals of Internal Medicine*, 127, 966-972.
- Seow, A., Huang, J., & Straughan, P. T. (2000). Effects of social support, regular physician and health-related attitudes on cervical cancer screening in an Asian population. *Cancer Causes & Control*, 11(3), 223-230.
- Seow, A., Wong, M. L., Smith, W. C., & Lee, H. P. (1995). Beliefs and attitudes as determinants of cervical cancer screening: A community-based study in Singapore. *Preventive medicine*, 24(2), 134-141.
- Seydel, E., Taal, E., & Wiegman, O. (1990). Risk-appraisal, outcome and self-efficacy expectancies: Cognitive factors in preventive behaviour related to cancer. *Psychology & Health*, 4(2), 99-109. Taylor & Frans.
- Shanker, S., Selvin, E., Alberg, A.J. (2002). Perceptions of cancer in an African-American community: a focus group report. *Ethn Dis*, 12:276-83.
- Shepherd, J., Peersman, G., Weston, R., & Napuli, I. (2000). Cervical cancer and sexual lifestyle: A systematic review of health education interventions targeted at women. *Health education research*, 15(6), 681-694.
- Simpson, P. B. (2003). Family beliefs about diet and traditional Chinese medicine for Hong Kong women with breast cancer. *Oncology Nursing Forum*, 30, 834-840.
- Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. (2002). The affect of heuristic. In T. Gilovich & D. Griffin (Eds.), *Heuristics and biases: The psychology of intuition judgment* (pp. 397-420). New York: Cambridge University Press.
- Smith, J. K. (1983). Quantitative versus qualitative research: An attempt to clarify the issue. *Educational Researcher*, 12, 6–13.
- Smith, P. G., Kinlen, L. J., White, G. C., Adelstein, A. M., & Fox, A. J. (1980). Mortality of wives of men dying with cancer of the penis. *British journal of cancer*, 41(3), 422-428.
- Solomon, D., Schiffman, M., Tarone, R., & ALTS Study, g. (2001). Comparison of three management strategies for patients with atypical squamous cells of undetermined significance: Baseline results from a randomized trial.[see comment]. *Journal of the National Cancer Institute*, 93(4), 293-299.
- Stagg-Elliott, V. (2004) *HPV testing up, but communication gap remains*. Retrieved 25 January, 2007, from Amednews Web site: <http://www.ama-assn.org/amednews/2004/10/11/hlsc1011.htm>

- Stanley, M A., & Maddux, J. E. (1986). Cognitive processes in health enhancement: Investigation of a combined protection motivation and self-efficacy model. *Basic and Applied Social Psychology*, 7, 101-113.
- Steven, D., Fitch, M., Dhaliwal, H., Kirk-Gardner, R., Sevean, P., Jamieson, J., et al. (2004). Knowledge, attitudes, beliefs, and practices regarding breast and cervical cancer screening in selected ethnocultural groups in Northwestern Ontario. *Oncology Nursing Forum*, 31 (2): 305-311.
- Straugham, P. T., Seow, A. (1998). Fatalism reconceptualized: a concept to predict health screening behavior. *J Gend Cult Health*, 3:85-100.
- Swidler, R. (1986) Culture in action: symbols and strategies. *Am Sociol Rev*, 51: 273-286.
- Tacken, M. A. J. B., Braspenning, J. C. C., Hermens, R. P. M. J., Spreeuwenberg, P. M. M., van den Hoogen, H. J. M., de Bakker, D. H., et al. (2006). Uptake of cervical cancer screening in the Netherlands is mainly influenced by women's beliefs about the screening and by the inviting organization. *European Journal of Public Health*, 17(2): 178-185.
- Tang, C. S. K., Lee, A. M., Tang, T., Cheung, F. M., Chan, C. (2002). Role Occupancy, Role Quality, and Psychological Distress in Chinese Women. *Women & Health*, 36(1): 49 - 66
- Tang, T. S., Solomon, L. J., Yeh, C. J., Worden, J. K. (1999). The role of cultural variables in breast self-examination and cervical cancer screening behavior in young Asian women living in the United States. *Journal of Behavioral Medicine*. 22 (5): 419-436.
- Tang C, Wong C, Lee AM. (2001). Gender-related psychosocial and cultural factors associated with condom use among Chinese married women. *AIDS Education and Prevention*, 13: 329–342. [PubMed: 11565592]
- Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Applied Social Research Method, No. 46). Thousand Oaks, CA: Sage.
- Tashakkori, A., & Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage.
- Taylor, V. M., Jackson, J. C., Tu, S. P., Yasui, Y., Schwartz, S. M., & Kuniyuki, A., et al. (2002). Cervical cancer screening among Chinese Americans. *Cancer Detection & Prevention*, 26(2), 139-145.
- Taylor, V. M., Yasui, Y., Burke, N., Nguyen, T., Acorda, E., Thai, H., et al. (2004). Pap testing adherence among Vietnamese American women. *Cancer Epidemiol Biomarkers Prev*, 13(4): 613-619.

- Taylor-Gooby, P., & Zinn, J. O. (2006). Current directions in risk research: New developments in psychology and sociology. *Risk Analysis*, 26(2), 397-411.
- The University of Hong Kong. (2005). *Population health survey report*. Hong Kong: Department of Health, Government of Hong Kong SAR.
- Thomas, D. B., Ray, R. M., Pardthaisong, T., Chutivongse, S., Koetsawang, S., & Silpisornkosol, S., et al. (1996). Prostitution, condom use, and invasive squamous cell cervical cancer in thailand. *American Journal of Epidemiology*, 143(8), 779-786.
- Thomas, R. E., & Keerti, S. V. (Eds.). (2004). *Cervical cancer: From etiology to prevention*. Dordrecht, Boston, London: Kluwer Academic Publishers.
- Thompson, B., Montano, D. E. & Mahloch, J. (1997). Attitudes and beliefs toward mammography among women using an urban public hospital. *Journal of Health Care Poor Underserved*, 8, 186-201.
- Twinn, S., & Cheng, F. (2000). Increasing uptake rates of cervical cancer screening amongst Hong Kong Chinese women: The role of the practitioner. *Journal of advanced nursing*, 32(2), 335-342.
- Twinn, S., Holroyd, E., & Adab, P. (2006). The influence of intrinsic and extrinsic factors on uptake rates for cervical screening: a comparison of Hong Kong Chinese women and practitioners. *Hong Kong Med J*, 12 (Suppl 2): S19-21.
- Twinn, S., Shiu, A. T. Y., & Holroyd, E. (2002). Women's knowledge about cervical cancer and cervical screening practice: A pilot study of Hong Kong Chinese women. *Cancer nursing*, 25(5), 377-384.
- U.S. Department of Health and Human Services. (2000). Office of Public Health Services. *Healthy people 2010*. Washington, DC: Centers for Disease Control and Prevention, National Institutes of Health. Retrieved November 2, 2005, from <http://www.healthypeople.gov/document/tableofcontents.htm>.
- Verhoeven, V., Baay, M., Colliers, A., Verster, A., Van Royen, P., & Avonts, D., et al. (2006). The male factor in cervical carcinogenesis: A questionnaire study of men's awareness in primary care. *Preventive medicine*, 43(5), 389-393.
- Vernon, S. W. (1999). Risk perception and risk communication for cancer screening behaviors: A review. *Journal of the National Cancer Institute, Monographs* (25), 101-119.
- Verweij, M. (1999). Medicalization as a moral problem for preventive medicine. *Bioethics*, 13(2): 89-113.
- Vinten, G. (1995). Open versus closed questions- an open issue? *Manag. Dec.* 33, 27-31.

- Walboomers, J. M., Jacobs, M. V., Manos, M. M., Bosch, F. X., Kummer, J. A., & Shah, K. V., et al. (1999). Human papillomavirus is a necessary cause of invasive cervical cancer worldwide. *Journal of Pathology*, 189(1), 12-19.
- Waller, J., McCaffery, K., & Wardle, J. (2004). Beliefs about the risk factors for cervical cancer in a British population sample. *Preventive medicine*, 38(6), 745-753.
- Wallsten, T. S., Budescu, D. V., Rapoport, A., Zwick, R. & Forsyth, B. (1986). Measuring the vague meaning of probability terms. *Journal of Experimental Psychology*, 115, 348-365.
- Walsh, J. C. (2006). The impact of knowledge, perceived barriers and perceptions of risk on attendance for a routine cervical smear. *European Journal of Contraception & Reproductive Health Care*, 11(4), 291-296.
- Walter, F. M., & Britten, N. (2002). Patients' understanding of risk: A qualitative study of decision-making about the menopause and hormone replacement therapy in general practice. *Family practice*, 19(6), 579-586.
- Wang, J. H., Liang, W., Chen, M. Y., Cullen, J., Feng, S., Yi, B., et al. (2006). Influence of culture and cancer worry on colorectal cancer screening in older Chinese American women. *Ethnicity and Disease*, 16, 404-411.
- Wang, J. H., Liang, W., Schwartz, M. D., Lee, M. M., Kreling, B., Mandelblatt, J. S. (2008). Development and evaluation of a culturally tailored educational video: changing breast cancer-related behaviors in Chinese women. *Health Educ Behav*, 35:806-820.
- Waszak, C., & Sines, M. C. (2003). Mixed methods in psychological research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 557-576). Thousand Oaks, CA: Sage.
- Weinstein, N. D. (1988). The precaution adoption process. *Health Psychology*, 7(4), 355-386. Lawrence Erlbaum Associates.
- Weinstein, N. D. (1999). What does it mean to understand a risk? evaluating risk comprehension. *Journal of the National Cancer Institute, Monographs*, 25, 15-20.
- Weinstein, N. D. (2000). Perceived probability, perceived severity, and health-protective behavior. *Health Psychology*, 19(1), 65-74.
- Wilkinson, C. W. (2001). Violence prevention at work: A business perspective. *Am J Prev Med*, 20:155-160.

- Woloshin, S., Schwartz, L. M., Black, W. C., & Welch, H. G. (1999). Women's perceptions of breast cancer risk: How you ask matters. *Medical Decision Making*, 19(3), 221-229.
- Wong, L. P., Wong, Y. L., Low, W. Y., Khoo, E. M., & Shuib, R. (2009). Knowledge and awareness of cervical cancer and screening among Malaysian women who had never had a Pap smear: a qualitative study. *Singapore Med J*, 50(1):49-53
- Woo, J., Kwok, T., Sze, F. K. H., & Yuan, H. J. (2002). Ageing in China: Health and social consequences and responses. *International Journal of Epidemiology*, 31:772-775.
- World Health Organization. Human papillomavirus infection and cervical cancer.
- Retrieved 9 November, 2005, from
http://www.who.int/vaccine_research/diseases/hpv/en/
- Wurtele, S. K., & Maddux, J. E. (1987). Relative contributions of protection motivation theory components in predicting exercise intentions and behavior. *Health Psychology*, 6, 453-466.
- Yamashiro, G., & Matsuoka, J. K. (1997). Help-seeking among Asian and Pacific Americans: A multiperspective analysis. *Social Work*, 42, 176-186.
- Yu, M. Y., Hong, O. S., Seetoo, A. D. (2003). Uncovering factors contributing to under-utilization of breast cancer screening by Chinese and Korean women living in the United States. *Ethn Dis*. 13:213-219.
- Zhang, Y., Borders, T. F., & Rohrer, J. E. (2007). Correlates of intent to seek unnecessary Pap tests among elderly women. *Women's Health Issues*, 17, 351-359.
- Zhang, K., Li, D., Li, H., Beck, E. J. (1999). Changing sexual attitudes and behaviour in China: implications for the spread of HIV and other sexual transmitted disease. *AIDS Care*, 11(3): 581-589.
- Zunzunegui, M. V., King, M. C., Coria, C. F., & Charlet, J. (1986). Male influences on cervical cancer risk. *American Journal of Epidemiology*, 123(2), 302-307.

APPENDICES

Appendix 1

SAMPLE SEARCH STRATEGY IN THE MEDELINE OVIDSP (1994 to May 2010)

Step	Search term	Number of articles retrieved
1	cervical cancer	18625
2	uterine cervix cancer	350
3	uterine cervix neoplasms	8
4	1 or 2 or 3.	18926
5	Cervical cancer screening	2125
6	Cervical screening	1310
7	5 or 6	3232
8	Perceived risk	1515
9	Risk perception	1165
10	Perceived likelihood	125
11	Perceived susceptibility	372
12	Perceived vulnerability	195
13	8 or 9 or 10 or 11 or 12	3124
14	4 and 7 and 13	14

Appendix 2: Permission Letter for Use of Knowledge Scale

Windows Live Hotmail

Page 1 of 1

Windows Live™

主页 个人资料 联系人 邮件 照片 更多 ▾ MSN ▾

搜索网

Hotmail

新建 | 删除 垃圾邮件 | 标记为 ▾ 转移至 ▾ |

cangu_cs@hotmail... 答复 全部答复 转发 |

收件箱

垃圾邮件

草稿

已发送邮件

已删除邮件

管理文件夹

添加电子邮件帐户

相关网站

今日焦点

联系人

日历

Messenger
保护盾V2

隐私声明

Re: request for questionnair

发件人: □ Prof. Sheila Twinn (sftwinn@cuhk.edu.hk)

发送时间: 2007年3月27日 9:39:44

收件人: 杨谷 (cangu_cs@hotmail.com)

2 个附件

2003 (Eng...doc (109.1 KB), Qnalr 200...doc (68.3 KB)

At 19:18 26/03/2007 +0800, you wrote:

>Dear Can

Thank you for your interest in the questionnaire that we have used to assess Chinese woman's awareness and knowledge of cervical cancer screening. We are very happy for you to use it in your study and I forward to learning the results of your research.

I have attached a softcopy of the English and Chinese version.

Best wishes

Sheila

>Dear Prof. Twinn,

>

>I'm interested in doing a research on cervical cancer and will as
>my knowledge about cervical cancer and cervical screening in my
>shall be very much obliged if you could permit me to use the
>questionnaire, which presented in the
>paper entitled "Women's knowledge about cervical cancer and cer
>screening practice", which was published in the 25th issue of "Ca
>nursing" in 2002.

>I declare that the questionnair will be used for private study an
>research only.

>Thank you very much in advance.

>Best regards,

>(Ms) Can GU

>

>AA *SIAO MSN Explorer: <http://explorer.msn.com/lccn>

Sheila Twinn PhD. RN. RHN
Professor and Head of Graduate Division
The Nethersole School of Nursing
The Chinese University of Hong Kong
Hong Kong
Tel: (852) 2609 8163
Fax: (852) 2603 5269

<http://mail.live.com/mail/Inbox?FolderID=00000000...> 8/9/2009

Appendix 3a

Cover Page of Questionnaire

Women's Awareness of Risk of Cervical Cancer Survey

Code: √√√

Date: _____

My name is _____. I am a nursing student in the faculty of Medicine of the Chinese University and I am doing a woman's health survey. Do you have twenty to thirty minutes to answer a few questions?

We are recruiting Mandarin speaking women aged 25-50 years old.

Do you fit into this category? (**Terminate interview if not**)

Your responses and identity will be kept completely confidential. There are some personal questions, which you have the right to refuse to answer, and you may discontinue the survey at any time. I would ask you a few questions concerning cervical cancer and cervical screening. Do you think you want to participate?

Appendix 3b

Cover Page of Questionnaire

女性對子宮頸癌危險性認識的問卷調查

Code:

日期: _____

我的名字叫做: _____。我是香港中文大學醫學院的學生，我將會做一個有關婦女健康的訪問，請問你可不可以抽出二十到三十分鐘的時間，回答一些問題呢？

今次調查的對像是聽得懂普通話的女性，年齡 25-50 歲。請問你是否屬於這個歲數呢？「如回答“否”可以在此終止訪問」

你所提供的資料將會絕對保密。而我也不會透露你的身份。當中涉及私人問題，你有權拒絕回答，你也都可以在任何時間內終止訪問。我將會問你關於宮頸癌和宮頸塗片檢查的問題。請問你願不願意參加呢？

Appendix 4a

Section One: Women's Participation Pattern of Cervical Screening

Please ✓ the appropriate box

3a. Have you ever heard of cervical screening (measuring Pap smear slide test)?

Yes	∇	
No	∇	If "no" or "unsure", the researcher please inform the interviewee the nature of cervical screening
Unsure	∇	

3b. Where did you get the information?

<u>Cervical screening:</u>
Cervical screening is a way to detect any early changes in the cells of the cervix. An instrument is inserted into the vagina and a slim spatula is used to take a small sample of cells from the cervix. These cells are sent to the laboratory for processing. (See appendix 1)

4a. Have you ever had a cervical screening?

Yes	∇	(Please answer question 4b)
No	∇	If "no" or "don't know", please answer question 9
Don't know	∇	

4b. was your screening part of an organized program of physical examination for women?

Yes	∇
No	∇

If "Yes", please give the name of the screening program. _____

(If the answer in question 4a is "yes", please answer the following questions)

5. When was the last time you had the cervical screening / Pap smear?

Less than one year	∇
One to three years ago	∇
Over three years ago	∇
Over five years ago	∇
Can't remember	∇

6. What prompted you to have a cervical screening / Pap smear?

1. My doctor	∇
2. Media campaign (e.g. MTR, TV, & newspaper etc.) Please specify when you last saw these advertisement (months/years ago)	∇
3. Friends	∇
4. Family member	∇
5. Remembered myself	∇
6. Community health center	∇
7. A reminder from the clinic	∇
8. Concern about my health	∇
9. Routine health examination	∇
10. Unsure / don't know	∇

7. Where did you attend for your last cervical screening?

Community health center	∇
Women Health Center	∇
Private clinic	∇
Hospital	∇
Others (Please specific)	∇

8. How much did you pay for it? _____

Please go to Section two

(If the answer in question 4 is “no”, please answer the following question)

9. Could you tell me your main reason for not attending cervical screening?

Appendix 4b

Section One: Women's Participation Pattern for Cervical Screening

第一部分：參加子宮頸細胞檢查的形式

請在合適方格內加上「✓」

3a. 你有沒有聽過子宮頸細胞檢驗（即“柏氏抹片檢驗”）

有	<input type="checkbox"/>	
無	<input type="checkbox"/>	如果答“無”或“不肯定”， 請調查員將有關什麼是子宮頸細胞檢查的資料 講給受訪者聽。
不肯定	<input type="checkbox"/>	

子宮頸細胞檢驗：

子宮頸細胞檢驗是檢查子宮頸細胞早期變化的測試。檢驗的方法是用一個儀器放進陰道內及用一支小刮棒輕輕掃過子宮頸內細胞取出少量細胞樣本，然後送到化驗室檢驗。

3b. 請問你從哪里得到這些資訊？ _____

4a. 你有沒有做過子宮頸細胞檢驗（即“柏氏抹片檢驗”）？

有	<input type="checkbox"/>	「請回答第 4b 題
沒有	<input type="checkbox"/>	如果回答“沒有”或“不 知道”，請回答第 9 題
不知道	<input type="checkbox"/>	

4b. 你參加的宮頸塗片檢查是不是婦女健康體檢的一部分？

是	<input type="checkbox"/>
否	<input type="checkbox"/>

如果“是”，可否告訴我是什麼健康體檢項目？

如在第 4a 條回答「有做過子宮頸細胞或柏氏抹片檢驗」，請回答下列

問題。

5. 上次做子宮頸細胞檢驗(或柏氏抹片檢驗)是什麼時候呢?

少過一年	<input type="checkbox"/>
一至三年前	<input type="checkbox"/>
超過三年	<input type="checkbox"/>
超過五年	<input type="checkbox"/>
記不起	<input type="checkbox"/>

6. 是什麼驅使你去做子宮頸細胞檢驗(柏氏抹片檢驗)呢?

醫生建議	<input type="checkbox"/>
傳媒宣傳(例如:地鐵廣告、電視、報紙等。)	<input type="checkbox"/>
請問你是什麼時候見過這類傳媒宣傳? _____ (年/月)	
朋友建議	<input type="checkbox"/>
家庭成員建議	<input type="checkbox"/>
是自己記得的	<input type="checkbox"/>
社區健康中心	<input type="checkbox"/>
醫院寄來信件提醒	<input type="checkbox"/>
自己覺得有需要	<input type="checkbox"/>
例行健康檢查	<input type="checkbox"/>
不肯定/不知道	<input type="checkbox"/>

7. 你上一次是在哪里做子宮頸細胞檢驗(柏氏抹片檢驗)?

私人診所	<input type="checkbox"/>
婦女健康診所	<input type="checkbox"/>
社區保健中心	<input type="checkbox"/>
醫院(婦產專科部門)	<input type="checkbox"/>
其他(請注明)	

8. 你做這個檢查花了多少錢? _____

(如果在第4a條回答“沒有”或“不知道”,請回答第9題)

9. 請告訴我你不接受子宮頸細胞檢查的主要原因。

Appendix 5a

Section Two: Women's Perception of Body Health

Please ✓ the appropriate box

1a. Do you consider yourself healthy?

Yes	∇
Average	∇
No	∇(Please answer the following questions)

1b. Have you had any health problem?

If yes, what health problems are of your concern and are worrying you?

2a. What do you do to look after your health?

e.g. (Please ✓ the appropriate box, order of the prompt is not important)

2a.1 Exercise	∇
2a.2 Keep a balanced diet	∇
2a.3 Visit a Chinese herbalist	∇
2a.4 Visit a doctor regularly	∇

2b. Have you ever participated in any of the following activities?

2b.1 Mammogram	∇
2b.2 Clinical breast examination	∇
2b.3 Check blood cholesterol	∇
2b.4 Measuring blood pressure	∇
2b.5 Contraception (e.g. Condom, or pills)	∇

Appendix 5b

Section Two: Women's Perception of Body Health

第二部分: 對身體健康的認識

請在合適方格內加上「√」

1a. 你覺得你健康嗎?

健康	<input type="checkbox"/>
普通	<input type="checkbox"/>
不健康	<input type="checkbox"/> (請回答下麵問題)

1b. 你有什麼健康問題嗎? 有 無

如答“有”，請問你有什麼健康問題困擾你，令你擔心呢?

2a. 你通常做些什麼來保持健康呢?

譬如說：(請在合適的方格內√) (可以不跟據次序提問)

2a1. 做運動	<input type="checkbox"/>
2a2. 保持均衡飲食	<input type="checkbox"/>
2a3. 看中醫	<input type="checkbox"/>
2a4. 看醫生	<input type="checkbox"/>

2b. 你有沒有曾經做以下的事項呢?

2b1. 接受乳房 X 光檢查	<input type="checkbox"/>
2b2. 接受臨床乳房檢驗	<input type="checkbox"/>
2b3. 抽血驗膽固醇	<input type="checkbox"/>
2b4. 量血壓	<input type="checkbox"/>
2b5. 進行避孕 (例如：服食避孕藥、用避孕套)	<input type="checkbox"/>

Appendix 6a

Section Three: Women's Knowledge about Cervical Screening and Cervical Cancer

1. The following statements are related to cervical screening information.
Please state your opinion.

Items	Agree	Disagree	Don't know
1. I'm too old, therefore no need for cervical screening	1	2	3
2. Cervical screening has to be done routinely to be effective	1	2	3
3. Cervical screening is not necessary once a woman has reached the menopause	1	2	3
4. Cervical screening can detect abnormal cell changes in the cervix before cancer	1	2	3
5. Healthy women need to have regular cervical screening	1	2	3
6. Women should have cervical screening soon after the first sexual intercourse	1	2	3
7. Having cervical screening every three years is often enough	1	2	3
8. If I hadn't had sex for ages, I wouldn't need the cervical screening	1	2	3
9. Once cervical screening is normal, there is no need to go for further screening	1	2	3
10. Cervical cancer can be cured if detected early	1	2	3
11. If a woman has only had one sexual partner, she does not need to have cervical screening	1	2	3

2. Which of the following would you consider the risk factors for women having cervical cancer?

Items	Yes	No	Don't know
1. Having many different sexual partners	1	2	3
2. Postmenopausal	1	2	3
3. Sexually transmitted disease	1	2	3
4. Smoking	1	2	3
5. Having sex at an early age	1	2	3
6. On "The Pill"	1	2	3
7. Having had a previous abnormal cervical smear	1	2	3
8. Having sex without using condom	1	2	3
9. Age 45 years and above	1	2	3
10. Human papillomavirus (HPV) infection	1	2	3

Appendix 6b

Section three: Women's Knowledge about Cervical Cancer and Cervical Screening

第三部份: 女性對子宮頸細胞學檢驗或子宮頸癌的認識

1. 下列是一些有關子宮頸細胞檢驗的資料，請指出你的意見

資料內容	同意	不同意	不知道
1. 我年紀太大，所以沒有必要做子宮頸細胞檢驗	1	2	3
2. 子宮頸細胞檢驗要定期做才有效的	1	2	3
3. 當婦女到更年期後便無需做子宮頸細胞檢驗	1	2	3
4. 子宮頸細胞檢驗能檢查出細胞癌前病變或異常的情況	1	2	3
5. 健康的婦女都需要定期的子宮頸細胞檢驗	1	2	3
6. 婦女有第一次性行為之後便需接受子宮頸細胞檢驗	1	2	3
7. 每三年做一次子宮頸細胞檢驗便足夠	1	2	3
8. 如果多年沒有性行為便無需做子宮頸細胞檢驗	1	2	3
9. 只要子宮頸細胞檢驗的結果是正常，便無須再做檢驗	1	2	3
10. 能及早發現子宮頸癌，便能醫好。	1	2	3
11. 如婦女只有一位性伴侶，她便無需接受子宮頸細胞檢驗。	1	2	3

2. 你認為下列有哪些因素會增加婦女患上子宮頸癌的機會？

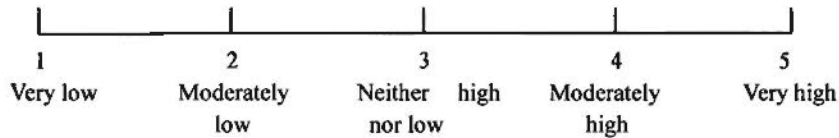
資料內容	是	否	不知道
1. 有多個性伴侶	1	2	3
2. 已經過了更年期	1	2	3
3. 患上性病	1	2	3
4. 吸煙	1	2	3
5. 太年輕便開始有性行為	1	2	3
6. 服用避孕藥	1	2	3
7. 曾出現子宮頸細胞病變或異常的情況	1	2	3
8. 在性交時沒有用避孕套	1	2	3
9. 年齡到達四十五歲或以上	1	2	3
10. HPV 感染	1	2	3

Appendix 7a

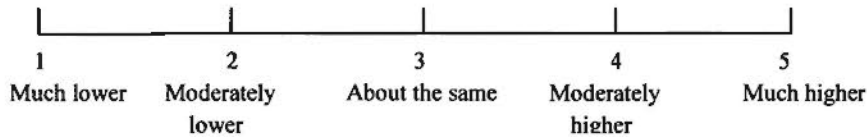
Section Four: Protection Motivation Theory Measures

Perceived risk:

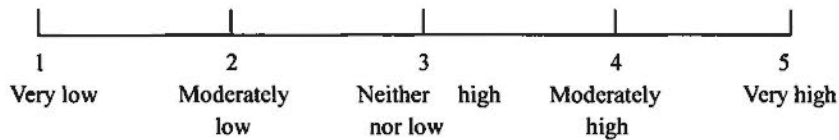
1. Overall, how would you rate your chance of developing cancer in the lifetime?



2. How do you think your chance of developing cervical cancer compared to the average women you age?

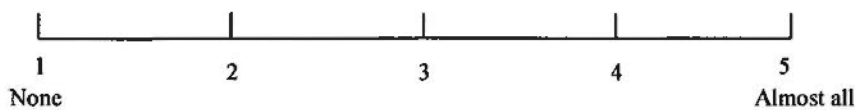


3. Overall, how would you rate your chance of developing cervical cancer in the lifetime?



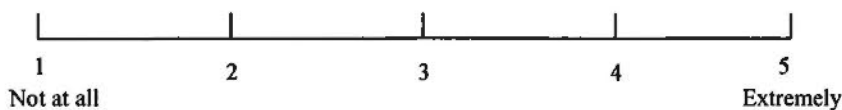
Perceived severity:

4. What is the proportion of women with a diagnosis of cervical cancer that dies from it?



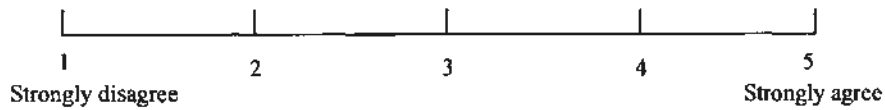
Fear arousal:

5. How worrying would a diagnosis of cervical cancer be for you?

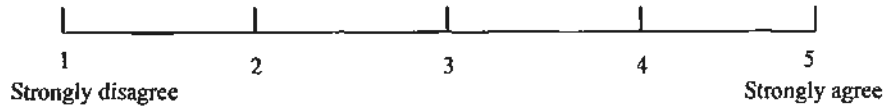


Response cost:

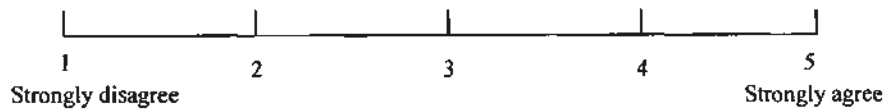
6. The test will be embarrassing.



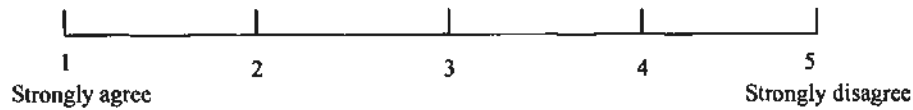
7. The test will be humiliating.



8. The test will make me anxious.

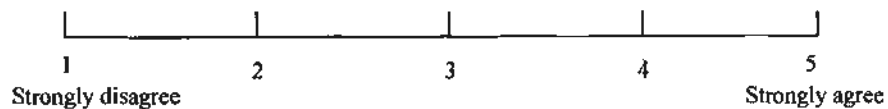


9. Health professionals appeared to have little concern for the patient.

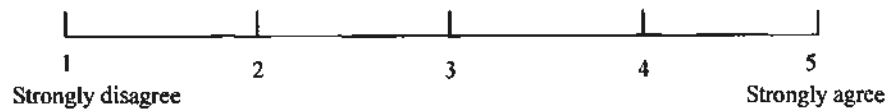


Response efficacy:

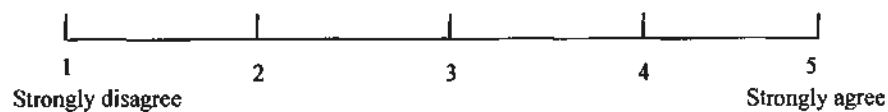
10. They will find early cell changes.



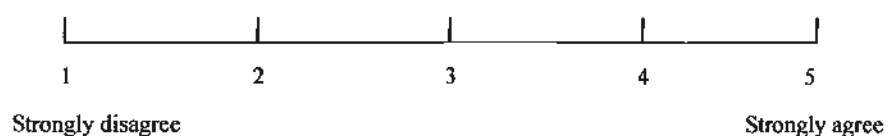
11. They will find another health problem.



12. This test will give me peace of mind.



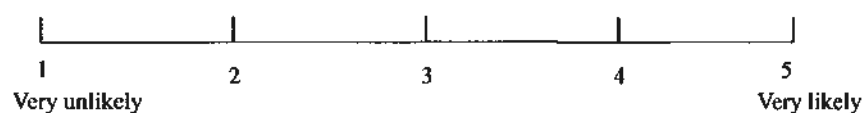
13. Any problem found will be curable.



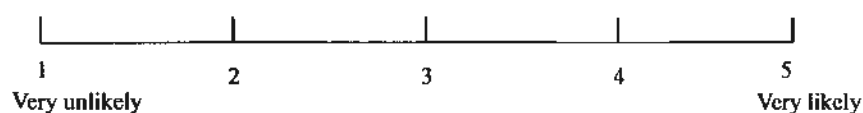
Self-efficacy:

14. Which of six practical difficulties applied to you?

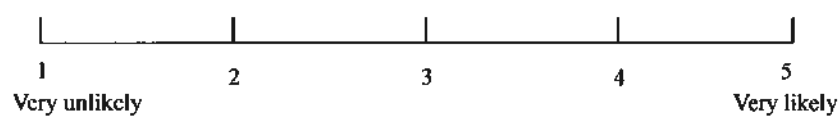
Inconvenience related to employment



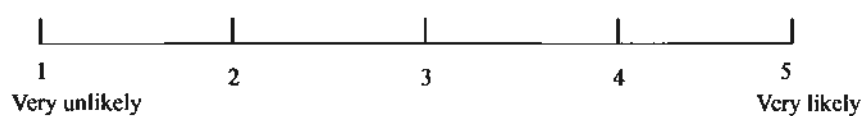
Difficulty with transport



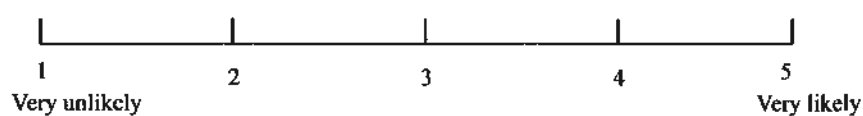
Physical disability



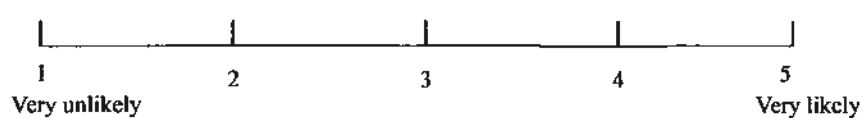
Dependant relative to care for



Distance to clinic



Financial cost



For each obstacle applied, how likely it was that the obstacle would prevent them attending screening?

Protection motivation:

15. Would you be willing to have a test in the future?

Yes

no

Appendix 7b

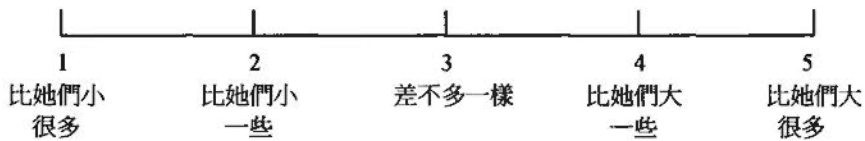
Section Four: Protection Motivation Theory Measures

第四部分：保護性動機理論框架問卷

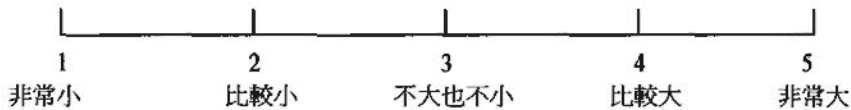
1. 總的來說，您怎麼評價自己患癌症的可能性？



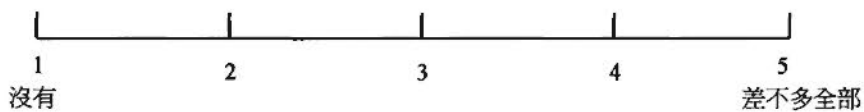
2. 和您同齡的女性相比，您覺得自己患宮頸癌的可能性有多大？



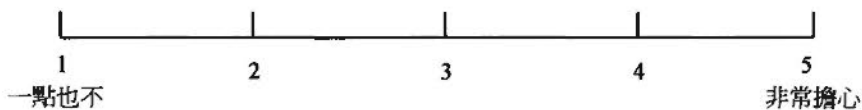
3. 總的來說，您怎麼評價自己患宮頸癌的可能性？



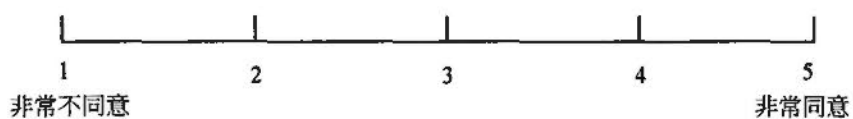
4. 您覺得有多少被診斷為宮頸癌的人會死亡？



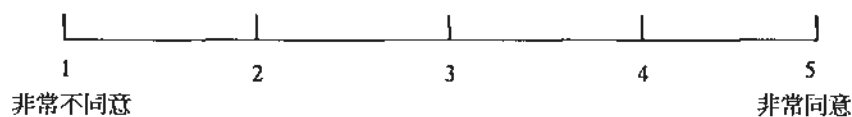
5. 您有多擔心被診斷為宮頸癌？



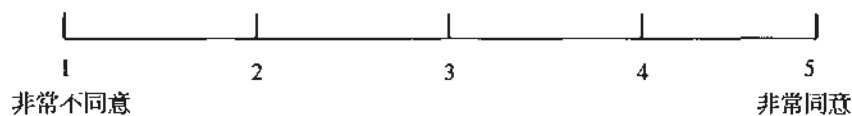
6. 這個檢查會很尷尬



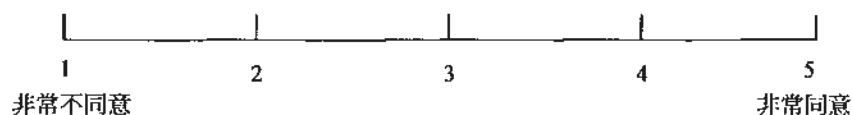
7. 這個檢查會很丟臉



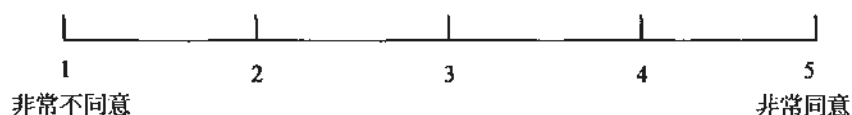
8. 這個檢查會讓我憂慮



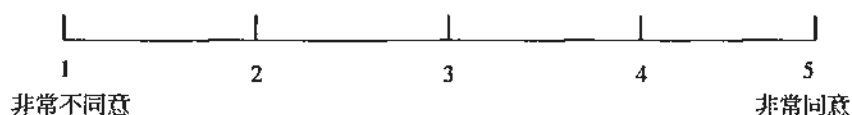
9. 醫護人員的態度讓我覺得很冷漠



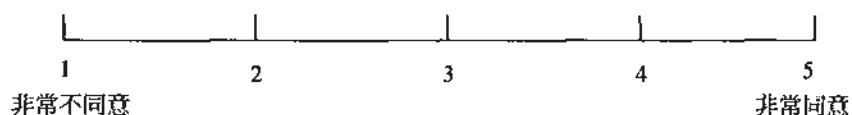
10. 檢查結果會發現早期的細胞改變



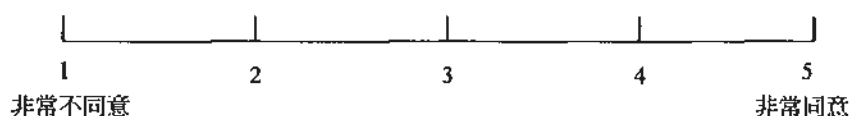
11. 檢查結果會發現其他的健康問題



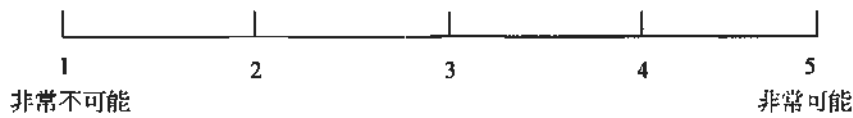
12. 這個檢查會讓我得到心靈的平靜



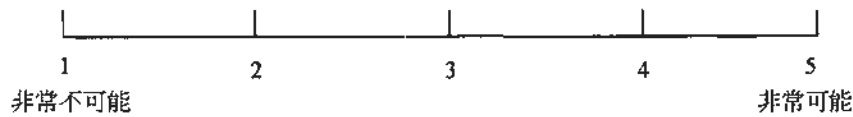
13. 任何發現的問題都是可以治療的



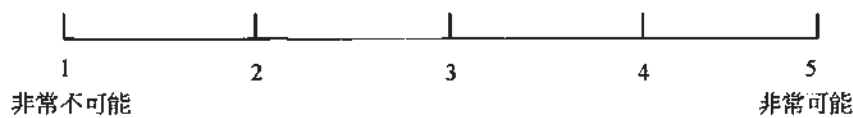
14. 對於參加宮頸刮片檢查，下列六個實際性的困難哪些適用於您？
工作上的不方便



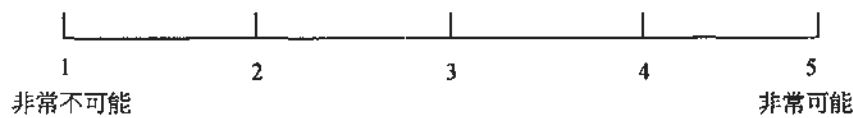
交通不便利



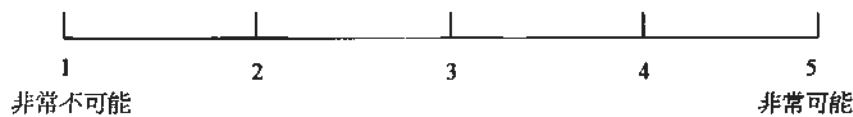
身體殘疾



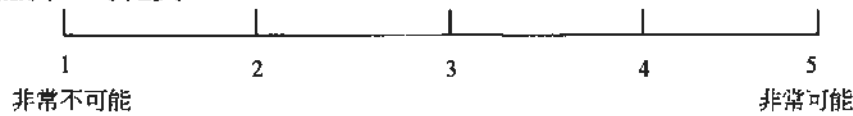
需要照顧家人



到醫院的距離遙遠



經濟上的花費



您有哪些實際困難？這些困難在多大程度上會阻礙您參加該項檢查？

15. 您願意在將來參加一次宮頸塗片檢查嗎？

是 否

Appendix 8a

Section five: Socio-demographic Information, Sexual History & Willingness to Participate in Phase Two

To help our research, may I ask you some information about yourself? All information will be treated confidentially.

1. How old are you? _____

2. What is the highest level of education you completed?

No formal education	∇
Primary to Junior Secondary	∇
Secondary Graduate	∇
Junior college or undergraduate	∇
Postgraduate or above	∇

3a. Are you currently in-paid employed?

Yes	∇(Go to question 3b and 3c)
No	∇(Go to question 4)

3b. Could you tell me your current occupation?

3c. Could you specify whether it is full or part time?

Full-time	∇
Part-time	∇

4. What is your household monthly income?

Under RMB 2,000	∇
RMB 2,000 to RMB 2,999	∇
RMB 3,000 to RMB 4,999	∇
RMB 5,000 to RMB 9,999	∇
Over RMB 10,000	∇
Don't know / Not sure	∇

5. What is your marital status?

Single	∇
Married	∇
Divorced	∇

Cohabitation	∇
Widowed	∇
Other	∇

6. Do you have any children?

Yes	∇	Number of children
No	∇	

The following questions maybe more sensitive and all the data will be treated confidentially. Please let me know if you prefer not to answer any of these questions.

7a. Have you had a hysterectomy?

No	∇
Total hysterectomy	∇
Partial hysterectomy	∇
Don't know / Not sure	∇

7b. Have your relatives had any kind of cancer?

Yes	∇
No	∇

8. Have you ever had experienced with sexual intercourse?

Yes	∇
No	∇ (Go to question 13)
Prefer not to say	∇ (Go to question 13)

9. Could you tell me at what age was your first intercourse?

20 or below	∇
21 - 30	∇
31 - 40	∇
41 or above	∇
Prefer not to say	∇

10. If you don't mind, could you please tell me the total number of sexual partners you have had?

(You only need to say "yes" or "no" after I mentioned the numbers)

Prefer not to say	∇
1 only	∇
2 - 3	∇

4 – 9	∇
More than 10	∇

12. Thank you very much for your participation in today's interview. Would you agree to be contacted again in one or two month's time for a face to face interview, which will last about 30 to 45 minutes?

Yes	∇
No	∇

If yes, what time suit you most?

Please √ one		Please √ one	
Morning	∇	Weekdays (Monday to Friday)	∇
Afternoon	∇	Saturday	∇
Evening	∇	Sunday	∇
Anytime	∇	Prefer to use mobile phone	∇

Name: _____

Telephone No.: _____

Thank you for your participation. (End)

Researcher's comment:

Appendix 8b

Section Five: Socio-demographic Information, Sexual History & Willingness to Participate in Phase Two

第五部分: 個人資訊

為協助我完成這個研究,我可否問一點關於你個人的資料? 所有資料將會絕對保密。

1. 請問你多少歲? _____

2. 你的教育程度是:

無正式教育	<input type="checkbox"/>
小學至初中程度	<input type="checkbox"/>
高中畢業	<input type="checkbox"/>
大專或本科	<input type="checkbox"/>
研究生或以上	<input type="checkbox"/>

3a. 請問你日前有沒有從事有償工作?

有	<input type="checkbox"/> (請回答 3b 和 3c)
無	<input type="checkbox"/> (請回答第 4 題)

3b. 請問你從事什麼工作?

3c. 具體來說,請問你的工作是全職還是兼職?

全職	<input type="checkbox"/>
兼職	<input type="checkbox"/>

3. 你每個月的家庭總收入是多少?

少於 RMB2,000	<input type="checkbox"/>
RMB2,000 - RMB2,999	<input type="checkbox"/>
RMB3,000 - RMB4,999	<input type="checkbox"/>
RMB5,000 - RMB9,999	<input type="checkbox"/>
超過\$10,000	<input type="checkbox"/>
不知道 / 不肯定	<input type="checkbox"/>

5. 你的婚姻狀況?

單身	<input type="checkbox"/>
已婚	<input type="checkbox"/>
離婚	<input type="checkbox"/>

同居	<input type="checkbox"/>
喪偶	<input type="checkbox"/>
其他	<input type="checkbox"/> (請注明_____)

6. 你有沒有子女?

有	<input type="checkbox"/> (子女數目_____)
無	<input type="checkbox"/>

下列有些問題可能比較敏感，但所有資料都會絕對保密，如果你選擇不回答以下任何一條問題，請你隨時講給我聽。

7a. 你有沒有做過子宮切除手術?

無	<input type="checkbox"/>
全宮切除	<input type="checkbox"/>
部份子宮切除	<input type="checkbox"/>
不知道 / 不肯定	<input type="checkbox"/>

7b. 你的直系親屬中有沒有人得過癌症?

有 無

8. 請問你有無性行為的經驗?

有	<input type="checkbox"/>
無	<input type="checkbox"/> (請回答第 13 題)
不想說	<input type="checkbox"/> (請回答第 13 題)

9. 你可不可以說一下，你大約多少歲開始有性行為呢?

20 歲或以下	<input type="checkbox"/>
21 - 30 歲	<input type="checkbox"/>
31 - 40 歲	<input type="checkbox"/>
超過 41 歲	<input type="checkbox"/>
不想說	<input type="checkbox"/>

10. 如果你不介意，你可不可以講給我聽，你一共有幾多個性伴侶?

(你只需要在我講完數目後講“是”或者“不是”)

不想說	<input type="checkbox"/>
只有一個	<input type="checkbox"/>
兩至三個	<input type="checkbox"/>
四至九個	<input type="checkbox"/>
多過十個	<input type="checkbox"/>

11. 非常感謝你接受今次訪問，我會在大概兩三個月後再聯絡你，做一次比較深入的面談（30 到 45 分鐘），請問你同不同意呢？

可以	<input type="checkbox"/>
不可以	<input type="checkbox"/>

如果可以，請問那一個時段最方便你？

早上	<input type="checkbox"/>	平日(星期一至五)	<input type="checkbox"/>
下午	<input type="checkbox"/>	星期六	<input type="checkbox"/>
晚上	<input type="checkbox"/>	星期日	<input type="checkbox"/>
任何時段	<input type="checkbox"/>	其他	

姓名：_____

聯絡電話：_____

非常感謝你的參與。

-完-

調查員意見：_____

Appendix 9a

Interview Schedule (Phase Two)

For Screened Group

About cervical screening

1. Could you tell me what you know about cervical screening?
2. Could you tell me why you attend cervical screening? (Prompt: What factors influence your intention to attend for cervical screening? What would you think of the influences of the messages of the risk of cervical cancer, which you get from health professionals and mass media?)
3. Could you describe the experience of having a cervical screening?
4. Do you intend to attend for cervical screening in the future? (Prompt: whether you attend regularly for cervical screening?)

About perceived risk of cervical cancer

5. Could you describe your feelings when you think about the risk of getting cervical cancer?
6. What do you know about the risk factors associated with developing cervical cancer? (Prompt: What do you know about HPV infection? What do you think of the HPV infection as a risk factor of cervical cancer? To what extent might these risk factors affect you?)
7. Compared to the average women your age what do you think of your chances of developing cervical cancer? (Prompt: How do you come to this estimation?)
8. Considering all of the different factors that may contribute to cervical cancer, including your past and present behavior, what would you say are your chances of getting cervical cancer in your lifetime?
9. In what way would you consider contracting cervical cancer would affect your life?
10. As we know, sexual behaviour is a risk factor for cervical cancer; could you describe the relationship between you and your partner? (Prompt: To what extent, do you think your relationship with your sexual partner would have an influence on the risk of cervical cancer? Do you think your relationship with sexual partner would have an influence on your intention to take a cervical screening?)
11. Is there anything that you would like to add about cervical cancer?

Interview Schedule (Phase Two)

For Non-screened Women

About cervical screening

1. Could you tell me what you know about cervical screening?
2. Could you tell me why you've not attended the cervical screening?
(Prompt: Do you have access to any screening program?)
3. What could be done to help you to attend for cervical screening?
(Prompt: What would you think of the influences of the messages of the risk of cervical cancer, which you get from health professionals and mass media?)
4. Would you be willing to have a test in the future?

About perceived risk of cervical cancer

5. Could you describe your feelings when you think about the risk of getting cervical cancer?
6. What do you know about the risk factors associated with developing cervical cancer? (Prompt: What do you know about HPV infection? What do you think of the HPV infection as a risk factor of cervical cancer? To what extent might these risk factors affect you?)
7. Compared to the average women your age what do you think of your chances of developing cervical cancer? (Prompt: How do you come to this estimation?)
8. Considering all of the different factors that may contribute to cervical cancer, including your past and present behavior, what would you say are your chances of getting cervical cancer in your lifetime?
9. In what way would you consider contracting cervical cancer would affect your life?
10. As we know, sexual behaviour is a risk factor for cervical cancer; could you describe the relationship between you and your partner? (Prompt: To what extent, do you think your relationship with your sexual partner would have an influence on the risk of cervical cancer? Do you think your relationship with sexual partner would have an influence on your intention to take a cervical screening?)
11. Is there anything that you would like to add about cervical cancer?

Appendix 9b

Chinese Version of Interview Schedule

訪談計劃

(Screened Women)

關於宮頸塗片檢查

1. 你能給我說一說關於宮頸塗片檢查你知道些什麼嗎？
2. 你能給我說一說你為什麼要參加宮頸刮片檢查？(Prompt: 你覺得什麼因素可以影響你去做一個宮頸塗片檢查的決定？對於從醫務人員或大眾媒體得到的關於宮頸癌危險性的資訊，你覺得這些資訊對你有什麼樣的影響?)
3. 你能描述一下你參加了宮頸塗片檢查的經歷嗎？
4. 您打算在將來參加一次宮頸塗片檢查嗎？(Prompt: 你有沒有定期的參加宮頸塗片檢查)

關於宮頸癌自覺危險性和個人危險因素的問題

5. 你能形容一下當你想到宮頸癌的危險性時的感覺嗎？
6. 關於與宮頸癌有關的危險因素你知道些什麼？(Prompt: 關於 HPV 感染你知道些什麼？你怎樣看待 HPV 感染作為宮頸癌的一個危險因素？這些危險因素在多大程度上會影響你?)
7. 和你同齡的女性相比，你覺得自己患宮頸癌的可能性有多大？(Prompt: 你是如何得出這個估計的?)
8. 考慮所有與患宮頸癌有關的危險因素，以及你過去和現在的行為方式，你覺得你自己患宮頸癌的危險性有多大？
9. 你是怎樣考慮宮頸癌對你生活的影響的？
10. 廣泛的研究已經證明，性行為或性活動是宮頸癌的一個危險因素，那麼你能形容一下你和你的伴侶的關係嗎？(Prompt: 從多大程度上，你認為你和你伴侶的關係會對你患宮頸癌的危險性有影響？你認為你和你伴侶的關係會對你參加宮頸刮片檢查的打算（想法）有影響嗎?)
11. 關於與宮頸癌有關的事情你還有什麼想補充的嗎？

訪談計劃

(Unscreened Women)

關於宮頸塗片檢查

1. 你能給我說一說關於宮頸塗片檢查你知道些什麼嗎？
2. 你能給我說一說你為什麼沒有參加宮頸刮片檢查？(Prompt: 你能接觸到任何宮頸塗片檢查活動嗎?)
3. 你覺得做什麼事情可以幫助你去參加這個檢查呢？(Prompt: 對於從醫務人員或大眾媒體得到的關於宮頸癌危險性的資訊，你覺得這些資訊對你有什麼樣的影響?)
4. 您打算在將來參加一次宮頸塗片檢查嗎？

關於宮頸癌自覺危險性和個人危險因素的問題

5. 你能形容一下當你想到宮頸癌的危險性時的感覺嗎？
6. 關於與宮頸癌有關的危險因素你知道些什麼？(Prompt: 關於 HPV 感染你知道些什麼？你怎樣看待 HPV 感染作為宮頸癌的一個危險因素？這些危險因素在多大程度上會影響你?)
7. 和你同齡的女性相比，你覺得自己患宮頸癌的可能性有多大？(Prompt: 你是如何得出這個估計的?)
8. 考慮所有與患宮頸癌有關的危險因素，以及你過去和現在的行為方式，你覺得你自己患宮頸癌的危險性有多大？
9. 你是怎樣考慮宮頸癌對你生活的影響的？
10. 廣泛的研究已經證明，性行為或性活動是宮頸癌的一個危險因素，那麼你能形容一下你和你的伴侶的關係嗎？(Prompt: 從多大程度上，你認為你和你伴侶的關係會對你患宮頸癌的危險性有影響？你認為你和你伴侶的關係會對你參加宮頸刮片檢查的打算（想法）有影響嗎?)
11. 關於與宮頸癌有關的事情你還有什麼想補充的嗎？

Appendix 10

The Development of the Category 'Perception of Cervical Screening'

Perception of Cervical Screening

Perceived benefit of cervical screening

- Search for understanding

P(1)36: I am concerning about my health. I suppose there is minor wrong with my body. Everyone has some minor problems.

P(3)38 : I think something wrong could not be discovered by yourself. For some illnesses, having a check is more credible.

P(3)42 : I also want to have an understanding about my health status.

P(3)42 : For women, if you found something wrong with your body in another day, so it will be...so it would be better to have a check.

P(14)98: I said that it can make sure something.

- Obtaining the peace of mind

P(3)192: If nothing wrong found, we can set my heart at rest.

P(24)118: After you had a test you would relax, at least. At least I suppose there is nothing wrong with my body. Before that I felt anxious about the test I was going to take, and could not set my heart at rest. I was just worrying that I might also have this disease. The disease does not choose certain people. Right, right, after taking the test, the result was negative. Anyway, I got peace of mind.

R(8)136: My mum is 50 years old, she has something wrong with her menstruation. I'm worry about if he has cervical cancer. So I have her did a comprehensive health examination including cervical screening. Later the result was negative and I can set my heart at rest.

- For early detection and early treatment

P(3)70: I suppose in case anything found by the test, I would take early treatment if detected early, take some medicine, and listen to the doctor's advice, it would be better.

P(1)6 : It is helpful for the diagnosis of cervical cancer.

P(13)39: It could detected cervical cancer early, if detected early it could be treated early. It could be curable.

P(13)57: I suppose if someone had the physical examination before. If she had had been screened in advance, it (cervical cancer) would not happen to her.

P(14)8: We benefit from it, I suppose if people could do early prevention, and get timely treatment, it would be better.

P(14)16: Some early cancer is treatable, but some people did not get the treatment, as a result, it would be worse.

P(14)16: Just as Chen Xiaoxu, if she had gotten treatment in the early stage, she would not have passed away.

Inconsistent knowledge about cervical screening

- Knowledge about the screening procedure

R(1)8: This test is to get something and put it on a glass slide.

R(1)20: Generally everyone need to take a test.

R(1)22: Except someone unmarried or having no boyfriend. For these persons, it does not need to do so. It's not good to take it for them.

R(3)14 : This test is to get something for the check

P(5)10 : It ought to be something like cytосcopy.

P(12)8: It is mainly related to something about gynecology.

P(16)12: This test is a common gynecologic examination and is to take something using cotton wool, then to do the test.

- Knowledge about the frequency of screening

R(3)314: Commonly every one year or half one year, About one year something, around one year, women need to have a screening.

P(22)4: I suppose every one year women need to have a cervical screening.

Embarrassment and physical discomfort

- Physical discomfort

P(1)58: It seemed that I have no feeling during the process, no pain,

P(13)1: It is Okay. Certainly I felt a bit nervous. And the physician made me relax during the procedure. Then, everything is alright during the process, and it was going on smoothly.

P(15)44: When the gripping tongs were inserted, I felt very nervous. I didn't feel good about this utensil. I always think that it is so big, and so cold, it makes me feel...it is not made of rubber; it is made of plastic material. It feels hard. I felt very nervous when I glanced at it even though it was not inserted. I definitely rejected it.

P(25)40: It is not very painful, just a bit pain.

P(4)94: I have not taken cervical screening because it is said to be very painful. Someone said it is quite painful, so I do not dare to do this test.

- Embarrassment

P(3)52-54 : Actually at the moment of gynecology, sometimes I just feel quite embarrassed. Sometimes I 'm not willing to take a screening since I also feel a bit shy.

P(3)292: Even I feel shy, I had taken the test. Definitely every woman may feel a bit shy.

P(6)38; 44: I feel quite shy about this aspect. Just like before, at the beginning we were not married, and we were using the contraceptive pill; sometimes it was discovered by other people and I felt very embarrassed. Then I suppose sometimes my husband is also afraid of embarrassment if I go to have the test, which is another reason.

P(14)6: Actually it's no problem with this test. Do not need to be shy, it's quite normal.

P(8)122: I don't think it is embarrassed. When I just got married I really do not dare to take it. But later I witnessed an 18-year-old young women sought counseling on test related to STD. I think even so young women could get the test, why I could not? After that I'm willing to see the doctor and take such a test.

P(18)94: I think I have not gotten married and taking this test is quite embarrassed. That is to say if I'm not married and there are many acquaintance and friends, I will feel embarrassed, therefore I'm not willing to take a test.

Cervical screening is unnecessary

- No symptom, I'm healthy, Nothing could not be found

P(3)34 : I think it does not need to be screened. I suppose I do not have this kind of symptom, it's not necessary to have it.

P(3)30: Sometimes I think that there is nothing wrong, and I suppose that this test can't find anything wrong

P(3)32: My body is clean and I having nothing like women's disease.

P(14)84: It is difficult to be accepted by lots of people. Just as my mother, she refuses cervical screening totally. She said that there was no wrong with her. She didn't want

to be screened because she supposed she was alright.

P(20)10; 60; 62: But I have no discomfort; so I suppose I'm fine. I have nothing abnormal, and no itch. I think I'm healthy, so it's not necessary to have a test.

P(5)16 : I think that it appears not necessary.

P(5)20 : I think I am young, such a situation may not arise.

P(5)22, 24: I'm young. Then I have no any discomfort, I do not have this illness.

P(5)166: Commonly if you have no signs, you may not go to have a check.

P(12)4: I believe that I'm in good health, so I did not consider this examination.

Appendix 11: Ethics Approval from the Survey and Behavioural Research Ethics Committee, CUHK

THE CHINESE UNIVERSITY OF HONG KONG

MEMO

To : Ms. Gu Can
The Nethersole School of Nursing (PhD Programme)

From : Secretary
Survey and Behavioural Research Ethics Committee (SBREC)

Tel. : 2609 6238

Date : 10 July 2007

Survey and Behavioural Research Ethics

I write to inform you that the SBREC has granted approval to you for conducting the following research:

Project Title : Chinese women's perception of risk of cervical cancer: the role of personal risk factors in determining screening behavior

Source of Funding : Nil

Reference, if any : Nil

Thank you for your attention.


Sulan Wong

c.c. Panel Secretary concerned
~~Director, Research Administration Office~~

Appendix 12a

Written Consent Form for the Study

Written Consent (Phase One)

Title of study

Women's awareness of risk of cervical cancer survey

Chief investigator

Ms. Can GU, a PhD candidate at the Nethersole School of Nursing, the Chinese University of Hong Kong.

Purpose and background

The purpose of the study is to understand Chinese women's knowledge about cervical cancer and screening, perceived risk for cervical cancer, and cervical screening behaviour.

If I agree to participate, the following things will happen:

I will answer questions about my knowledge and perception of cervical cancer and the risk of cervical cancer; I also will answer some questions about personal information and sexual history.

Benefits

There may be no direct benefits to me from participating in the study.

Risks

There is no additional risk if I participate in the study

Confidential

All information obtained in this study will be considered confidential and used only for research purposes. My identity will be kept confidential in so far as the law allows.

Questions

The research investigator has discussed with me and offer to answer my questions. If I have further questions, I can contact Miss GU who can be reached through telephone at 0731-6650913 or 8927306.

Rights to refuse or withdraw

I understand that to participate or not in the study is voluntary. I also understand that I have the right to withdraw from the study anytime, if I wish to.

Consent

I agree to participant in this study. I have been given a copy of this form and had a chance to read it.

Signature of participant: _____ Signature of investigator: _____

Name of participant: _____ Name of investigator: _____

Date: _____

Appendix 12b

Chinese Version of the Consent Form (Phase One)

書面同意書（第一期研究）

研究名稱

婦女對宮頸癌危險性的認識的研究。

主研究員

谷燦，香港中文大學那打素護理學院學生。

研究的目的與背景

本研究的目的是要瞭解中國女性對對宮頸癌危險因素的看法，她們進行宮頸塗片檢查的情況，和對宮頸癌及宮頸癌危險性的認識。

如果同意參加這個研究，本人會與研究人員合作，並回答問卷上的問題。

利益與風險

我知道我不會因為參與這項研究而取得任何直接利益和承擔額外的風險。

機密處理

所有的研究資料會保密，並只作研究用途。本人的個人資料會基於法律許可的情況下保密。

問題查詢

研究人員已和我解釋研究內容及解答我的問題。如果我還有問題查詢，可通過電話 0731-6650913 或者 8927306 和谷小姐聯繫。

婉拒或退出研究的權利

本人明白我可以自由參與或拒絕這項研究，但不會對我造成任何影響。我也知道我可以隨時退出這個研究。

同意書

本人同意參加這項研究。我已經有這份書面同意書的副本及已讀過裏面的內容。

參與者簽署： _____

研究員簽署： _____

參與者姓名： _____

研究員姓名： _____

日期：

Appendix 13a

Information Sheet (Phase One)

Title of study

Women's awareness of risk of cervical cancer survey

Purpose and background

The purpose of the study is to understand Chinese women's cervical screening behaviour, perceived risk for cervical cancer, and knowledge about cervical cancer and cervical screening.

If you agree to participate, you will answer questions about your knowledge and perception of cervical cancer and the risk of cervical cancer; you also will answer some questions about your sexual history.

Benefits

There may be no direct benefits to you from participating in the study.

Risks

There is no additional risk if you participate in the study

Confidential

All information obtained in this study will be considered confidential and used only for research purposes. Your privacy would be maintained throughout the study by the use of a coding system rather than the use of the name. Your identity will be kept confidential in so far as the law allows. Information sheets that recorded the participants' names, home addresses, telephone numbers and code numbers will be kept in a locked cabinet, and only assessable by the researcher herself. When the study is completed all data records will be destroyed.

Rights to refuse or withdraw

Participating in this study is voluntary. You have the right to withdraw from the study anytime, if you wish to. There are some personal questions, which you have the right to refuse to answer.

Appendix 13b

Chinese Version of Information Sheet (Phase one)

研究簡介（第一階段）

研究名稱

婦女對宮頸癌危險度的認識的研究。

研究的目的與背景

本研究的目的是要瞭解中國女性進行宮頸塗片檢查的情況，對宮頸癌及宮頸癌危險性的認識，以及和宮頸塗片檢查和宮頸癌相關的知識。

如果您同意參加這個研究，您需要與研究人員合作，並回答問卷上的問題，包括有關您的性行為方面的問題。

利益

參與這項研究不會取得任何直接利益。

風險

參與這項研究不會有任何額外的風險。

機密處理

所有的研究資料會保密，並只作研究用途。在整個研究過程中您的隱私會得到很好的保護，我們會使用編碼系統管理資料，而不會使用您的名字。您的個人資料會基於法律許可的情況下保密。記錄著你們的姓名，家庭住址，電話號碼，以及編號的檔會保存在鎖好的抽屜裏，並且只有研究人員本人才可以接觸到這些檔。當研究結束的時候，所有的資料資料將被銷毀。

婉拒或退出研究的權利

參與此次研究是自願的。只要您想，您可以隨時退出這個研究。在研究中有一些關於您個人的問題，您有權拒絕回答。

Appendix 14a

Consent Form (Phase Two)

Title of study

Women's perception of risk of cervical cancer and perception of cervical screening

Chief investigator

Ms. Can GU, a PhD candidate at the Nethersole School of Nursing, the Chinese University of Hong Kong.

Purpose and background

The purpose of the study is to explore Chinese women's perception of risk of cervical cancer and perception of cervical screening.

If I agree to participant, the following things will happen:

I will be face-to-face interviewed by the researcher for about 40 minutes to one hour. During the interview, the researcher will ask me about my perception of risk of cervical cancer and personal risk factors, and perception of cervical screening.

Benefits

There may be no direct benefits to me from participating in the study.

Risks

There is no additional risk if I participate in the study

Confidential

All information obtained in this study will be considered confidential and used only for research purposes. My identity will be kept confidential in so far as the law allows.

Questions

The research investigator has discussed with me and offer to answer my questions. If I have further questions, I can contact her who can be reached through telephone at 6650913 or 8927306.

Rights to refuse or withdraw

I understand that to participate or not in the study is voluntary. I also understand that I have the right to withdraw from the study anytime, if I wish to.

Consent

I agree to participant in this study. I have been given a copy of this form and had a chance to read it.

Signature of participant: _____

Signature of investigator: _____

Name of participant: _____

Name of investigator: _____

Date: _____

Appendix 14b

Chinese Version of the Consent Form (Phase Two)

書面同意書（第二期研究）

研究名稱

婦女對宮頸癌危險度的認識以及對子宮頸細胞檢查的看法的研究。

主研究員

谷燦，香港中文大學那打素護理學院學生。

研究的目的與背景

本研究的目的是要瞭解中國女性對宮頸癌危險性的自我認識。

如果同意參與這項研究，本人需遵守以下程式：

在研究期間我需和研究人員進行面對面的訪談。在訪談過程中，我會回答關於宮頸癌危險度的認識的問題，我還會回答關於子宮頸細胞檢查的問題。

利益與風險

我知道我不會因為參與這項研究而取得任何直接利益和承擔額外的風險。

機密處理

所有的研究資料會保密，並只作研究用途。本人的個人資料會基於法律許可的情況下保密。

問題查詢

研究人員已和我解釋研究內容及解答我的問題。如果我還有問題查詢，可通過電話 0731-6650913 或者 8927306 和谷小姐聯繫。

婉拒或退出研究的權利

本人明白我可以自由參與或拒絕這項研究，但不會對我造成任何影響。我也知道我可以隨時退出這個研究。

同意書

本人同意參加這項研究。我已經有這份書面同意書的副本及已讀過裏面的內容。

參與者簽署： _____

研究員簽署： _____

參與者姓名： _____

研究員姓名： _____

日期： _____

Appendix 15a

Information Sheet (Phase Two)

Title of study

Women's perception of risk of cervical cancer and perception of cervical screening

Purpose and background

The purpose of the study is to explore Chinese women's perception of risk of cervical cancer and perception of cervical screening.

If you agree to participate, you will be face-to-face interviewed by the researcher for about 40 minutes to one hour. During the interview, the researcher will ask you about your perception of risk of cervical cancer and personal risk factors, and perception of cervical screening.

Benefits

There may be no direct benefits to you from participating in the study.

Risks

There is no additional risk if you participate in the study

Confidential

All information obtained in this study will be considered confidential and used only for research purposes. Your names would not be used in any report on the research. Your identity will be kept confidential in so far as the law allows. When the study is completed all data records will be destroyed.

Rights to refuse or withdraw

Participating in this study is voluntary. You have the right to withdraw from the study anytime, if you wish to. There are some personal questions, which you have the right to refuse to answer.

Appendix 15b

Chinese Version of the Information Sheet (Phase Two)

研究簡介（第二階段）

研究名稱

中國婦女宮頸癌自覺危險度的研究。

研究的目的與背景

本研究的目的是要瞭解中國女性對宮頸癌危險性的自我認識。

如果同意參與這項研究，在研究期間您會和研究人員進行面對面的訪談。在訪談過程中，您會被問到關於宮頸癌自覺危險度及其子宮頸細胞檢查的認識的問題。

利益

參與這項研究不會取得任何直接利益。

風險

參與這項研究不會有任何額外的風險。

機密處理

所有的研究資料會保密，並只作研究用途。您的名字不會出現在任何研究報告中。您的個人資料會基於法律許可的情況下保密。當研究結束的時候，所有的資料資料將被銷毀。

婉拒或退出研究的權利

參與此次研究是自願的。只要您想，您可以隨時退出這個研究。在研究中有一些關於您個人的問題，您有權拒絕回答。