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Vocal Health and Bulimia Nervosa: Triangulating the Awareness of Risks Amongst Patients and Professionals

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Vocal Health and Bulimia Nervosa: Triangulating the Awareness of Risks Amongst Patients and Professionals

by

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Dedication

For my son, John David Ramses

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Abstract

Vocal Health and Bulimia Nervosa: Triangulating the Awareness of Risks Amongst Patients and Professionals

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Abstract: The present study was designed to answer the following questions: (a) What is the level of awareness patients with Bulimia Nervosa (BN) and the professionals who work with them regarding the vocal health risks associated with self-induced vomiting? (b) Is the bulimic population at risk for under-referral for assessment and treatment of vocal pathology? (c) How do patients and professionals perceive the role of the Speech-Language Pathologist (SLP) in the treatment of eating disorder-related vocal pathology? Three original surveys were developed to address the research questions. There was one survey for individuals with a history of BN, one for SLPs, and one for other health care professionals involved in the care of bulimic individuals. There were 89 total participants in the present study. Thirty were respondents to the Health Care Providers Survey, 28 were respondents to the SLP Survey, and 31 were respondents to the Patient Survey. Results indicate a general lack of awareness concerning these risks and treatment options to address them on the part of patients and health care professionals and a lack of specific knowledge of how to recognize and treat individuals with BN on

the part of SLPs. Results from all three groups supported the notion that the bulimic population is at risk for under-referral for treatment for voice disorders. Finally, results suggest that SLPs do in fact provide services to persons with BN, but that at present, patients and other health care professionals do not seem to perceive the SLP as having a role in management of care of this population.

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Introduction

Bulimia Nervosa (BN) is an eating disorder characterized by patterns of binge eating followed by pathological compensatory behaviors intended to prevent weight gain which affects approximately 1% of the population (Hoek & Hoeken, 2003). These behaviors are generally driven by irrational fear of weight gain and distorted body image (American Psychiatric Association, 2013). Compensatory behaviors tend to fall under two categories: compulsive exercise and purging behaviors. Purging behaviors may include laxative and/or diuretic abuse, abuse of other medications, or, most commonly, self-induced vomiting (Reba et al., 2005). BN has long been considered to be a risk factor for vocal pathology (Stemple, Glaze, & Klaben, 2000), yet the relationship between self-induced vomiting and vocal pathology has been relatively ignored in research pertaining to both eating disorders and voice disorders (Ferreira et al, 2010). The lack of attention to this relationship may be resulting in a lack of awareness about the risks of self-induced vomiting to vocal health, not only on the part of individuals with BN, but also on the part of professionals including both SLPs and other health care providers. The goal of the present study is to assess the level of awareness of the relationship between voice disorders and BN among patients and professionals.

No diagnostic test specifically indicating presence of BN currently exists (Striegel, Bedrosian, Wang, & Schwartz, 2012). In the absence of designated assessment tools, diagnosis of bulimia nervosa is made on the basis of the presence of the following criteria: recurrent episodes of binge eating;

maladaptive or inappropriate compensatory behaviors to prevent weight gain; and self-evaluation that is disproportionately influenced by self-perceptions of one's own body (American Psychiatric Association, 2013). Furthermore, the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5) states that "to qualify for the diagnosis, the binge eating and inappropriate compensatory behaviors must occur, on average, at least once per week for 3 months."

Individuals with BN or other eating disorders often engage in combinations of the compensatory behaviors described above, but self-induced vomiting occurs as at least one compensatory behavior in more than 90% of individuals with BN (Reba et al, 2005). Self-induced vomiting also occurs in individuals with other eating disorders, such as Anorexia Nervosa and Eating Disorder- Not Otherwise Specified (Reba et al., 2005). In fact, Fairburn and Cooper (1982) reported that 17% of a sample of 620 women who reported self-induced vomiting as a form of weight control did not fit the diagnostic criteria for bulimia. Furthermore, Eddy, Dorer, Franko, Tahilani, Thompson-Brenner, and Herzog (2008) followed 216 women with a diagnosis of either anorexia or bulimia over the course of 7 years and found that women with a diagnosis of anorexia were likely to cross over into the binging-purging eating pattern which characterizes bulimia over time (although the reverse was not found to occur frequently). Therefore, although BN is the most likely diagnosis for individuals with a history of self-induced vomiting, this diagnosis alone does not guarantee that the individual will present with such a history. It also cannot be assumed

that individuals with a diagnosis of eating disorders other than BN do not have a history of self-induced vomiting.

The generally accepted prevalence rate for BN is about 1%, but the prevalence of self-induced vomiting associated with eating disorders is likely significantly higher. Hoek and van Hoeken (2003) report that, while only about 1% of women and 0.1% of men met the DSM-5 criteria for diagnosis of BN, about 5.4% of the population reviewed could be considered "subclinical." That is, some persons will demonstrate some but not all of the diagnostic criteria for BN, or some will demonstrate all of the criteria, but not in the blocks of time specified in the DSM-5. For instance, some individuals may purge significantly more frequently than one time per week, but may not sustain these frequent purging behaviors for longer than 3 months at a time; in this case the diagnostic criteria for BN would not, strictly speaking, be met. When "subclinical" bulimic persons, anorexic persons who engage in purging behavior (Reba et al., 2005), and persons diagnosed with Eating Disorder-Not Otherwise Specified who practice self-induced vomiting are all taken into account, the likelihood that the incidence of self-induced vomiting associated with eating disorders is significantly higher than the 1% rate of formal diagnosis of BN is markedly apparent.

Self-Induced Vomiting as a Risk Factor for Vocal Pathology

The potential for damage to the vocal folds when they come into contact with stomach acid is well-understood and widely documented. Gastroesophageal reflux disease, or GERD and Laryngopharyngeal reflux (LPR) are both

conditions in which contents of the stomach travel back up the esophagus. Both conditions can and frequently do result in vocal pathology, as the tissue of the vocal folds is highly vulnerable to damage resulting from exposure to acidic gastric secretions (Kelchner et al., 2005).

Given the potential for vocal pathology as a result of reflux, the repeated exposure of the vocal folds to stomach acid in self-induced vomiting in individuals with eating disorders would seem to be (at least) as likely as acid reflux to compromise vocal health. In fact, the relationship between self-induced vomiting and vocal pathology has been relatively unexamined in the literature. This paucity of data exists despite the fact that BN is identified as a risk factor for voice disorders in some texts (Rajiah, Matthew, Veetil, & Kumar, 2012). For example, in both *The Voice and Its Disorders*, Sixth Edition (Methieson, 2001) and *Clinical Voice Pathology: Theory and Management*, Third Edition (Stemple et al., 2000), BN is described as an etiologic factor in chronic laryngitis. However, a cursory search of the *Journal of the Voice Disorders* reveals that, in the entire history of the journal, only two articles have been published directly examining BN as a risk factor for vocal pathology. Additionally, the DSM-5 details clinical markers of BN, but does not mention hoarseness, raspiness, changes in pitch, or other vocal complaints as diagnostic markers of BN. These observations suggest a lack of attention to the relationship between BN and dysphonia in the literature on both voice disorders and eating disorders. Yet, this is disconcerting particularly upon consideration of the recent findings that GERD and LPR can

lead to complications including not only voice disorders but also laryngopharyngeal carcinoma (Langevin et al., 2013). If BN can indeed be considered to be as or more significant a risk to vocal health as GERD and LPR, then it is even more critical for patients and professionals to understand this potential relationship between these factors.

One reason which may account for the lack of systematic attention to the relationship between self-induced vomiting and vocal health is that some health care professionals believe that the vocal folds are unlikely to come into direct contact with stomach contents during vomiting (Ferreira, Gama, Santos, & Maia, 2010). Therefore, the perception may be that purging does not pose a significant risk to vocal health. In fact, it has been hypothesized that there is a protective physiological mechanism involving both vestibular fold closure, and according to some physicians, aryepiglottic fold closure which protects the vocal folds from coming into contact with gastric secretions during vomiting (see Ferreira et al., 2010, for a review). Based on this hypothesis, the vocal folds would be protected during vomiting, but vulnerable during reflux, in which case reflux would actually pose the greater risk for vocal pathology. If this were the case, then there would be no expected significant differences in the vocal health of a group of women with BN and a group of age-matched healthy controls; however, Ferreira and colleagues clearly demonstrated significantly higher rates of incidence of vocal pathology in persons with BN versus persons without. Laryngeal differences they reported in participants with BN included vocal fold subepithelial hemorrhage, telangiectasia, polypoid lesions, vocal fold edema,

thickened laryngeal secretions, and laryngeal erythema. Knight (2011) described extensive scarring and asymmetry of the vocal folds associated with purging in actors and singers. Morrison and Moris (1990) described subepithelial vocal fold hemorrhage, mucosal wave tethering, and telangiectasia upon laryngeal examination of three individuals with BN complaining of hoarseness, laryngeal pain, and lowered pitch. Balata, Colares, Petribu, and Mde (2008) describe oral mucosa irritation, laryngeal damage, overproduction of phlegm, pharyngeal irritation, hoarseness, laryngeal spasm, and chronic coughing as possible indicators of BN and state that "purgative manifestations of bulimia nervosa are, in fact, similar to those of gastroesophageal reflux disease," but suggest that clinical evaluation of voice disorders for BN is more urgent than in GERD as BN results in more severe damage.

In addition to the risk of direct damage to the vocal folds, Balata and colleagues also describe clinical signs which can help SLPs and ENTs to identify possible cases of BN, including the characteristic "full moon" face in which salivary gland hypertrophy results in appearance of swollen, rounded cheeks; Russell's sign, which is a lesion typically found on the index finger or index and middle fingers caused by repeated insertion of the fingers into the throat to induce vomiting, which can lead to scarring of the fingers over time as they come into contact with gastric secretions; and dental erosion caused by acidity in the mouth. While dental erosion is also likely to occur in acid reflux, Russell's sign and "full moon" face are not. When observed together, these three clinical markers can be strong positive indicators of BN.

The body of literature describing the relationship between eating disorders and vocal pathology may be somewhat sparse, but the existing data is sufficient to demonstrate that there *is* a relationship. Thus, the medical assumption that the true vocal folds are protected from coming into contact with gastric secretions during vomiting should be considered with caution, given the aforementioned research. An alternative explanation that supports the medical assumption is that the vocal pathologies observed in individuals with BN and other eating disorders are not in fact caused by self-induced vomiting but are the result of other vocally abusive behaviors which happen to occur comorbidly with self-induced vomiting.

To that end, rates of reflux are higher in individuals with BN, and binge eating in and of itself can exacerbate and even potentially cause reflux. In fact, Rothstein (1998) described LPR related vocal pathology in 8 individuals with BN which he asserted was actually caused by purging behaviors. BN also frequently occurs comorbidly with alcohol abuse (Carbaugh & Sias, 2010), another established risk factor for vocal pathology. Furthermore, dehydration is one of the most common symptoms of BN (Balata et al., 2008) and chronic dehydration is known to be a significant contributor to vocal pathology. Dehydration may be significant in individuals who have recently purged and it is also a serious concern specific to laxative abuse.

In general, eating disorders are known to occur more frequently in individuals who work in professions such as acting or singing, and in professions which require one to use one's voice naturally carries increased risk

for vocal abuse or overuse (Knight, 2011). Wong, Hanson, Waring, and Shaw (2000) describe an additional way in which purging may indirectly lead to the development of vocal pathology. They described how lower esophageal irritation caused by reflux can lead to muscular contractions via shared nerve impulses causing involuntary and persistent coughing and throat clearing, even when the larynx is not actually coming into direct contact with stomach acid.

Review of these studies suggest that other lifestyle factors including vocal abuse, vocal overuse, vocal misuse, and poor vocal hygiene are more likely to occur in individuals with BN and that dysphonia in the bulimic individual may be considered as a multi-factorial phenomenon rather than being the result of self-induced vomiting alone. This multifactorial perspective may also partially account for the wide range of types of vocal pathology which have been reportedly related to purging behaviors.

In any case, it is clear that individuals with BN are at increased risk for vocal pathology. Perhaps most concerning is the potential for vocal pathology resulting from purging behaviors to persist. BN does not tend to be a transient condition but rather tends to be chronic (Fairburn, Stice, Cooper, Doll, Norman, & O'Connor, 2003). Thus, any behavior contributing to dysphonia in individuals with BN is likely to continue to occur over a long period of time.

Illness Perception and Patient Reality Distance

BN can be associated with a wide range of medical conditions including esophageal tearing, hypokalemia, hypernatremia, and metabolic alkalosis

(Mehler, 2003; Balata, 2008), and these may be considered to be of greater acute medical significance than vocal pathology. However, there is a likelihood that the patient reality distance relative to the severity of potential complications may be differentially affected. Put more simply, patients with BN may be more motivated to seek treatment for their eating disorder because they perceive the potential functional impact on their lives specific to being unable to speak or sing as being greater than potentially more dire medical complications. This is further supported by research conducted by Amir and Levine-Yundof (2013), who compared listener attitudes toward men and women with dysphonia and found that listeners evaluated female dysphonic speakers more negatively, indicating that the social penalties for women with dysphonia are more severe. These negative social consequences may very well be a strong motivator for some women to seek treatment for dysphonia, if they are aware that therapy exists and they know where to find services.

Clearly, then, there has been a lack of systematic attention to the relationship between BN and voice disorders in academic research. However, researchers are less likely to be coming into direct contact with the population in question than are clinical professionals. Therefore, the level of awareness of clinical professionals regarding these risks is of concern. Lack of awareness of the clinical signs of BN and the risks it may pose to vocal health on the part of SLPs may decrease their ability to effectively serve this population. If self-induced vomiting is contributing to the presence of dysphonia in some individuals and this goes unrecognized by the SLP serving these individuals, a

major contributing cause of the symptomatology will fail to be addressed and treatment will likely be unsuccessful. Lack of awareness of the risks of purging to vocal health on the part of health care professionals involved in management of care of persons with BN may result in failure of these professionals to recognize when vocal pathology is present and to refer patients appropriately for assessment and treatment of their vocal health. Finally, lack of awareness of these risks and the resources available to manage them on the part of persons with BN may be responsible for persistent or chronic pathology in individuals who could potentially experience remediation of these with therapy. The outcomes associated with untreated voice disorders for individuals with BN may include social and functional consequences associated with dysphonia (Amir & Levine-Yundof, 2013) as well as medical complications including development of LPR (Rothstein, 1998) and potentially even eventual development of laryngopharyngeal carcinoma (Langevin et al., 2013). Coordinating awareness of these risks amongst patients and professionals may address one aspect of care management for individuals with BN which appears to have been previously neglected, thereby decreasing the likelihood that this population will continue to be at risk for under-referral for treatment of vocal pathology.

Purpose

To date, no known studies have examined the knowledge of patients and professional about the risks of self-induced vomiting to vocal health. Therefore,

the purpose of this investigation was to gain insight into the level of awareness of patients and professionals concerning these risks. In the present study, a survey-based research design was used to gather information about knowledge concerning the relationship between BN and vocal health from three groups. First, individuals with BN or other eating disorders such as Anorexia Nervosa or Eating Disorder- Not Otherwise Specified who had a history of self-induced vomiting. Second, Speech-Language Pathologists (SLPs) who do and do not specialize in the treatment of voice disorders. Third, health care professionals other than SLPs who have worked in some capacity with individuals with eating disorders, including BN. The main research questions included: What is the level of awareness of each of the three groups specified above regarding the vocal health risks associated with BN and other eating disorders and options for management of care for vocal pathology associated with these risks? Is the bulimic population at risk for under-referral for voice therapy, which could increase the risk of long-term vocal pathology? How do patients and professionals perceive the role of the SLP in the treatment of eating disorder-related vocal pathology?

Method

To gather information about the level of awareness of risks self-induced vomiting may pose to vocal health between patients and professionals, three

distinct surveys were developed. The Patient Survey was designed to gather information from individuals with a history of BN or other eating disorders where self-induced vomiting was part of their eating disordered behavior (such as Eating Disorder-Not Otherwise Specified or Anorexia Nervosa) about their level of awareness of the risks their condition may pose to their vocal health. There were 18 items included in this survey. Next, the SLP Survey was designed to gather information from licensed SLPs who do and do not specialize in the treatment of voice disorders about their basic knowledge of BN and its symptomatology and the potential for purging behaviors to impact the vocal folds. The SLP Survey consists of 14 items. The third and final survey, the Health Care Professionals Survey, was designed to gather information from professionals other than SLPs who have worked in some capacity with individuals with eating disorders including BN in order to assess their awareness of the potential of BN to impact vocal health. This survey included 10 items.

Surveys were created using Qualtrics Survey Software. Approval for completion of this study was obtained by the UT-Austin Institutional Review Board. A requirement across all three surveys was that participants be over the age of 18. The cover letter stated that clicking on the appropriate survey link served as an indicator that the participant met this requirement and indicated consent to participate in the study.

Recruitment

Participants for the present study were recruited through blogs, forums, or email. Participants for S-SLP specifically were also recruited through posting the link to the surveys on the American Speech and Hearing Association (ASHA) SIG3 Listserv for Voice. The purpose of this was to recruit a greater number of SLPs who specialize in treatment of voice disorders, in order that the responses of SLPs who do and do not specialize in voice could be compared. It was anticipated that SLPs specializing in the treatment of voice disorders would be more knowledgeable about the risks of self-induced vomiting to vocal health compared to SLPs who do not specialize in the treatment of voice disorders. The link that was emailed or posted to potential participants redirected the respondent to a cover letter, which described the purpose of the study, detailed eligibility requirements, and provided information about protection of privacy. At the bottom of the cover letter, links to each of the 3 surveys were provided, and the individual was invited to select the appropriate link if they chose to participate. The surveys were further distributed through the snowball effect where some individuals voluntarily passed the survey link on to other potentially interested parties. As detailed in the cover letter, participants were never asked to provide identifying information, such as name or institutional affiliation, and IP addresses gathered by Qualtrics were stripped from survey responses.

Results

There were 90 total participants in the present study: 30 respondents to the Health Care Providers Survey, 28 respondents to the SLP Survey, and 31 responses to the Patient Survey.

Results: Patient Survey

Participant demographics

Thirty participants ranging in age from 18-55 completed the survey for individuals with BN. 43% (*n*=13) were between 18 and 23; 26% (*n*=8) were between 24 and 29; 23% (*n*=7) were between 30 and 35; 3% (*n*=1) were between 36 and 41; 0% (*n*=0) were between 42 and 47; and 3% (*n*=1) were between 48 and 55. 30 of these 31 participants were female.

Eating Disorder History

Age of onset ranged from 9 to 30. 29% (*n*=9) experienced onset between 9 and 13, 45% (*n*=14) between 14 and 18, 22% (*n*=7) between 19 and 23, and 3% (*n*=1) between 24 and 30. Mean age of onset was 16. 50% of participants (*n*=15) had received a diagnosis of BN, 37% indicated that they had never been formally diagnosed but practiced purging on a regular basis, and 13% indicated that they had received an ED diagnosis of a type other than BN but had a history of purging. For those who had been formally diagnosed with an eating disorder, age of diagnosis ranged from 14-47, with 83% (*n*=15) being diagnosed before the age of 30. 35% of participants (*n*=11) indicated that they had struggled with purging for more than 10 years, 16% (*n*=5) indicated that they had struggled with

purging for 5-10 years, 29% (*n*=9) for 2-5 years, and 19% (*n*=6) for 0-2 years. Specific to frequency of self-induced vomiting, 35% (*n*=11) of participants said that they practiced purging more than 10 times per week, 26% (*n*=8) said they self-induced vomiting between 5 and 10 times per week, 26% (*n*=8) said they self-induced vomiting 2-5 times per week, and 13% (*n*=4) said they practiced purging 1-2 times per week. Concerning treatment, 42% (*n*=13) of participants said that they had received inpatient treatment for their ED, 23% (*n*=7) had received outpatient treatment only, and 35% (*n*=11) had never received treatment for ED.

Awareness of Risks to Vocal Health

81% (*n*=25) of individuals who completed the S-BN survey indicated that they had experienced hoarseness or scratchy voice or changes in pitch following self-induced vomiting while 19% (*n*=6) indicated that they had not observed these changes. Of the 25 participants who indicated that they had experienced vocal complaints, 56% (*n*=14) indicated that the complaints typically lasted 1-2 hours following purging, 24% (*n*=6) indicated that they lasted the rest of the day following purging, and 20% (*n*=5) indicated that they felt they had experienced permanent changes to the quality and/or pitch of their voice. 74% (*n*=24) indicated that no health care professional had ever discussed risks of purging behaviors to their voice with them, while 23% (*n*=7) indicated that these risks had been discussed with them. Not a single participant had ever been seen by either an ENT or an SLP for assessment or treatment of dysphonia. 97% of participants (*n*=29) said they had never sought treatment for hoarseness, scratchiness, pitch

changes, or other problems with their voice. 77% (n=24) reported that they were unaware that therapy is available to help with vocal complaints including hoarseness, scratchiness, changes in pitch, discomfort while speaking or singing, or other vocal health complaints. The majority of respondents (61%; n=19) indicated that they work or hope to work in a field where they would be required to speak and/or sing frequently. Finally, 94% of participants (n=29) indicated that they felt they had a general awareness of the health risks associated with BN. Finally, 55% said that risk of damage to their throat voice would either be one of several factors (49%) or the main factor (6%) that might motivate them to seek treatment.

Results: SLP Survey

Thirty Speech-Language Pathologists participated in this survey, although 4 of those completed only the first two questions. The responses of SLPs with special knowledge in voice are provided along with the responses of SLPs who specialize in other areas. Therefore, results of SLPs who do and do not specialize in voice are presented together to facilitate comparison.

SLP Survey: Specialists in Voice Disorders

Of the 26 SLPs who completed the entire survey (with 4 others completing only the first few questions), 16 (57%) selected voice disorders as at least one of their areas of special interest or expertise within the field. Results are presented for voice specialists and other SLPs both separately and together.

1. Please select the answer which best describes your familiarity with the terms "bulimia nervosa" and "purging"

Response	SLP-Voice Disorders	SLP-Other	SLP-Total
"I feel I could give a fairly complete definition of these terms"	81% (n=13)	92% (n=11)	86% (*n*=24)
"I have heard these terms but do not know very much about them"	19% (*n*=3)	8% (*n*=1)	14% (*n*=4)

2. Have you ever had a client who you knew (either through case history or through client self-report) to have a history of BN or purging behaviors?

Response	SLP-Voice Disorders	SLP-Other	SLP-Total
Yes	56% (*n*=9)	17% (*n*=2)	39% (*n*=11)
No	44% (*n*=7)	83% (*n*=10)	61% (*n*=17)

3. Do you routinely ask clients presenting with vocal health complaints whether they have a history of purging behaviors?

Response	SLP-Voice Disorders	SLP-Other	SLP-Total
Yes	0% (*n*=0)	0% (*n*=0)	0% (*n*=0)
No	69% (*n*=11)	83% (*n*=10)	75% (*n*=21)
Sometimes	31% (*n*=5)	17% (*n*=2)	25% (*n*=7)

4. Say you have a client with vocal health complaints who self-discloses to you that they had a history of bulimia. Which of the following most closely describes how this would affect your treatment of that client?

Response	SLP-Voice Disorders	SLP-Other	SLP-Total
"I would feel very confident in my ability to treat this individual"	73% (*n*=11)	17% (*n*=2)	48% (*n*=13)
"I would refer them to another SLP or another health care professional as I would not be confident in my ability to treat this individual"	19% (*n*=3)	50% (*n*=6)	30% (*n*=8)
"The only action I would take would be to refer the individual to a mental health care professional"	0% (*n*=0)	17% (*n*=2)	7% (*n*=2)
Other	13% (*n*=2)	17% (*n*=2)	15% (*n*=4)

5. To the best of your knowledge, which of the following speech, language and swallowing concerns can be associated with eating disorders? Please select all that you think may apply.

Response	SLP-Voice Disorders	SLP-Other	SLP-Total
Dysphagia	81% (*n*=13)	92% (*n*=11)	86% (*n*=24)
Vocal discomfort	100% (*n*=16)	100% (*n*=12)	100% (*n*=28)
Cognitive/Linguistic Deficits	6% (*n*=1)	33% (*n*=4)	18% (*n*=5)
Teleangiesctasia	19% (n=3)	17% (*n*=2)	18% (*n*=5)
Vocal nodules	25% (*n*=4)	58% (*n*=7)	39% (*n*=11)
Tongue lesions	94% (*n*=15)	75% (*n*=9)	86% (*n*=24)
Degeneration of the vocal folds	63% (*n*=10)	75% (*n*=9)	68% (*n*=19)
Granulomas	81% (*n*=13)	58% (*n*=7)	71% (*n*=20)

6. True or false: Patients with a history of bulimia would require an entirely unique treatment for vocal pathology.

Response	SLP-Voice Disorders	SLP-Other	SLP-Total
True	19% (*n*=3)	58% (*n*=7)	36% (*n*=10)
False	81% (*n*=13)	42% (*n*=5)	64% (*n*=18)

7. Which of the following clinical markers of bulimia do you feel you may be able to recognize during assessment?

Response	SLP-Voice Disorders	SLP-Other	SLP-Total
Russell's sign	0% (*n*=0)	8% (*n*=1)	4% (*n*=1)
Tooth enamel erosion	88% (*n*=14)	92% (*n*=11)	89% (*n*=25)
Absent gag reflex	50% (*n*=8)	75% (*n*=9)	61% (*n*=17)
Parotid gland swelling	19% (*n*=3)	17% (*n*=2)	18% (*n*=5)

8. Prior to completion of this survey, had you considered bulimia to be a risk factor for vocal health?

Response	SLP-Voice Disorders	SLP-Other	SLP-Total
Yes	81% (*n*=13)	58% (*n*=7)	71% (*n*=20)
No	19% (*n*=3)	42% (*n*=5)	29% (*n*=8)

9. Have you ever referred a client with vocal pathology for psychiatric evaluation because you knew or suspected that they had engaged in purging behaviors (and were not already receiving treatment for this)?

Response	SLP-Voice Disorders	SLP-Other	SLP-Total
Yes	31% (*n*=5)	8% (*n*=1)	21% (*n*=6)
No	69% (*n*=11)	92% (*n*=11)	79% (*n*=22)

10. Have you ever had a client referred to you for vocal pathology resulting from or associated with BN?

Response	SLP-Voice	SLP-Other	SLP-Total

	Disorders		
Yes	44% (*n*=7)	8% (*n*=1)	29% (*n*=8)
No	56% (*n*=9)	92% (*n*=11)	71% (*n*=20)

11. Have you ever had a client independently seek out assessment or treatment for vocal pathology resulting from bulimia?

Response	SLP-Voice Disorders	SLP-Others	SLP-Total
Yes	20% (*n*=3)	0% (n=0)	11% (*n*=3)
No	80% (*n*=13)	100% (*n*=12)	89% (*n*=24)

Over half of SLPs specializing in voice disorders and 39% of total SLP participants have had previous experience with patients with BN or purging behaviors. None of the SLP respondents reported that they routinely ask about purging behaviors during assessment of individuals presenting with vocal health complaints. SLPs who do and do not specialize in voice disorders did not display significant differences in their knowledge of speech, language, and swallowing deficits which may be associated with eating disorders. More SLPs who were not voice specialists indicated that they could identify Russell's sign, absent gag reflex, and tooth enamel erosion as potential clinical markers of BN. The number of SLPs who do and do not specialize in voice disorders who felt confident that they could identify parotid gland swelling as a clinical marker of BN was comparable (17% vs 19%). Nearly half of SLPs specializing in treatment of voice disorders reported that they had experience with referral of at least 1 client with BN at some point in their career.

Results: Health Care Professionals Survey

Background

Twenty-nine participants completed the survey for health care professionals who work with eating disorders including BN. Of these, 79% (*n*=23) reported that they work in in-patient care facilities, while 21% (*n*=6) work with individuals on both an in-patient and out-patient basis. 50% (*n*=15) of participants work in direct care, as direct care technicians or support staff; 23% (*n*=7) are nurses in inpatient eating disorder treatment facilities, 20% (*n*=6) are counselors or psychotherapists, 3% (*n*=1) is a hospital administrator, and 3% (*n*=1) is a social worker. 53% (*n*=16) have worked with individuals with eating disorders for 1-5 years, 30% (*n*=9) for 5-10 years, 10% (*n*=3) for more than 10 years, and 7% (*n*=2) for less than 1 year.

Vocal Health Questions for Health Care Providers

All of the health care providers who participated in the present study worked in dedicated eating disorder facilities. Of these, 0% said that the facility where they work routinely screens for vocal pathology in bulimic patients, 60% (*n*=18) said that their facility does not provide this service, and 40% (*n*=12) said that they weren't sure whether this is a service their facility provides. Participants were asked to indicate which of a list of vocal health complaints or risk factors they had observed or heard mentioned by their bulimic patients. Results are displayed below:

Vocal Health Complaint	Percentage of Health Care Providers Who Reported Observing the Complaint in Patients With BN
Hoarse voice	65% (*n*=17)
Rough/Scratchy voice	46% (*n*=12)
Pain while speaking or singing	27% (*n*=7)
Lowered pitch of voice	4% (*n*=1)
Frequent throat clearing	58% (*n*=15)
Vocal Exhaustion	15% (*n*=4)

These data show the majority of participants who work or have worked with persons with eating disorders have noted hoarseness or frequent throat clearing in their bulimic patients. No health care provider had referred or recommended referral of a bulimic patient to an ENT for assessment or treatment of any of these complaints. Additionally, 83% (*n*=25) of participants stated that they thought that vocal health complaints were of LEAST concern of all health risks associated with BN (the other 17% selected "dental problems"). In response to the question "In what situations you might recommend that a patient with BN consider seeing an SLP for voice therapy?" 43% (*n*=13) of participants said that, while they were aware that SLPs conduct voice therapy, they were not aware

that patients with BN might benefit from it; 13% (*n*=4) said that they were not aware that SLPs conduct voice therapy at all, and 10% (*n*=3) said that they would rarely or never make this suggestion as vocal complaints are generally not serious enough to warrant therapy. Together, this totals 76% of participants who were either not aware that voice therapy is available to help address vocal complaints associated with BN or who indicated that they would rarely or never recommend it. 17% (*n*=5) said that they would only suggest that a client consider seeking voice therapy if he or she worked in a profession which required him or her to speak publicly or sing, and 17% (*n*=5) said that they would suggest that any patient presenting with vocal complaints such as hoarseness consider seeking assessment or treatment specific to their vocal health. Finally, 60% (*n*=18) of participants said that prior to completion of the survey they had not been aware that self-induced vomiting could be associated with long-term problems with vocal health, and 7% (*n*=2) said that, while they had been aware of the link, they did not consider it to be a serious concern. 33% (*n*=10) indicated that they had been aware of the relationship between BN and dysphonia prior to completion of the survey.

Discussion

To review, the purpose of the present study was to gather information from patients and professionals concerning their level of awareness about a) the relationship between self-induced vomiting and vocal pathology and b) options for managing these risks. We also hoped to gather information indicating

whether the bulimic population may be at risk for under-referral for assessment of dysphonia. Finally, we hoped to examine implications of these findings for the role of the SLP in management of care of individuals with eating disorders related to BN.

Patient Survey Demographics and Eating Disorder History

Only 1 participant in the bulimic group was male. This number is slightly lower than might be expected given the roughly 10:1 ratio of females to males affected by BN reported by DSM-5. This slight under-representation of men may be a result of the recruitment technique for this survey, which largely consisted of posting the link on blogs and forums for individuals recovering from BN, and as men are significantly less likely to seek treatment for BN than are women (American Psychiatric Association, 2013), they may also be less likely than women to seek out additional support in the bulimic community through the sorts of blogs and forums where the link was posted.

Age range of participants and mean age of onset were largely consistent with previous reports indicating that peak age of onset is between 16 and 20 years of age (Keski-Rahkonen, Hoek, Linna, Raevuori, Sihvola, Bulik, Rissanen, & Kaprio, 2009), although 29% onset of purging at age 13 or younger is perhaps slightly higher than might be expected, given that the DSM-V states that onset before puberty or after age 40 is rare. The finding that 60% of the bulimic group indicated that they had practiced purging for 5 or more years is consistent with the notion that BN is a persistent condition (Fairburn et al., 2003).

Patient Awareness of Risks and Treatment Options

Although nearly all (94%) of the bulimic group indicated that they felt they had a general awareness of the health risks associated with their condition, about two-thirds of this group indicated that no health care professional had ever discussed risks of purging to vocal health with them, and slightly more than two-thirds of the group reported that they were unaware that voice therapy is available to help with vocal complaints associated with acid reflux and self-induced vomiting. This suggests that even patients who consider themselves to be well-informed of the risks of BN are comparatively uninformed about vocal health risks and treatment options for these risks. The findings that not a single participant had ever been seen by an ENT or an SLP for assessment or treatment of dysphonia, and that all but one said they had never sought treatment for vocal complaints, are particularly significant considering that 81% indicated that had experienced vocal complaints such as hoarseness or roughness following self-induced vomiting, and 20% felt that the changes to quality and/or pitch to their voice were permanent. These data provide support for the claim that persons with BN are at risk for under-referral for assessment and, consequently, treatment of vocal health. They also seem to indicate that at present, patients do not perceive SLPs as having a role in management of their condition.

Motivation to Seek Treatment

The majority of respondents indicated that they work or hope to work in a field where they would be required to speak and/or sing frequently. This supports the notion that many individuals with BN also work in fields where social and functional consequences of dysphonia may be significant. It also supports the hypothesis that individuals with BN are likely to have other behavioral risk factors for vocal pathology, such as vocal misuse, abuse, or overuse. Additionally, more than half of participants indicated that risk of damage to their throat or voice would either be one of several factors or the main factor that might motivate them to seek treatment. This provides support for the idea that empowering individuals with BN with knowledge of vocal health risks, wherein professionals can be involved in the management of these risks, could potentially improve the rate at which these individuals seek out a formal evaluation for their condition.

SLP Survey: Knowledge of BN and Its Clinical Presentation

It was anticipated that SLPs who specialize in the treatment of voice disorders would demonstrate greater knowledge of BN and its clinical presentation compared to SLPs who do not specialize in voice disorders, but this was not found to be the case. On the whole, differences in familiarity with terminology, clinical markers, and speech-language complaints associated with BN were not significant between voice specialists and other SLPs, although voice specialists did have more clinical experience with persons with BN than did other SLPs. The fact that these differences were not observed suggests that the

knowledge that SLPs do have about BN is probably the result of personal experience and general awareness rather than the result of research or education specific to voice care. A strong majority of SLPs (82%) indicated that they were familiar with the terms *bulimia nervosa* and *purging*. The majority of SLPs also indicated that they felt they could recognize tooth enamel erosion and absent gag reflex during assessment, but significantly fewer indicated that they could recognize parotid gland swelling or Russell's sign (a distinctive lesion on the finger resulting from frequent self-induced vomiting). This is significant because tooth enamel erosion and absent gag reflex by themselves are not positive indicators of BN as either or both of these may result from a variety of conditions (and some healthy persons present with absent gag reflex as well). It is only when both of these characteristics are observed in combination with other indicators such as parotid gland swelling and/or Russell's sign that they might be considered to be potentially indicative of a history of purging behaviors. Failure to recognize clinical markers of self-induced vomiting on the part of SLPs may not only lead to misidentification of the cause of vocal pathology in individuals with BN, it may also prevent them from being appropriately referred for psychological evaluation. Only 21% of SLPs indicated that they had referred patients who they knew or suspected to have a history of self-induced vomiting for psychiatric evaluation. Finally, only 11% of SLPs said that they had had a client with a history of purging independently seek out voice therapy, which is consistent with the fact that a strong majority of the bulimic group (77%)

indicated that they were unaware of the existence of therapy to address vocal health complaints.

SLP Survey: Experience with the Bulimic Population

Results from the SLP Survey demonstrate that SLPs do in fact have a role in the treatment of voice disorders resulting from or associated with BN. Over half (56%) of SLPs specializing in the treatment of voice disorders have had at least some experience managing vocal health in bulimic individuals, and just under half (44%) reported that they have had clients referred to them specifically for vocal complaints related to dysphonia. 81% said that they had considered BN to be a risk factor for vocal pathology prior to completion of the survey. Yet, more than half of the SLP respondents indicated that they would not feel confident in their ability to treat an individual presenting with complaints related to purging, and none routinely ask about or screen for purging behaviors in clients with vocal health complaints.

Health Care Professionals Survey

It is significant that all health care professionals who participated in the present study work at dedicated eating disorder facilities, because such facilities would be expected to offer broad-based, coordinated care specific to the needs of individuals with eating disorders. It would not necessarily be expected that, for example, a therapist in a private practice who happens to see a limited number of clients with eating disorders on an outpatient basis would be knowledgeable

about the full range of medical conditions associated with BN or feel it was his or her responsibility to be involved in the management of these conditions; however, health care facilities which are designed specifically to serve the eating disordered population would be expected to manage and coordinate all aspects of care of both mental and physical health of patients. Therefore, the results from this survey should be interpreted as being representative of optimal treatment settings in which patients are most likely to receive any and all services they may require to address deficits associated with eating disorders. Yet, none of the respondents indicated that the facility where they work screens for the presence of vocal pathology in bulimic patients. The finding that not a single participant in this survey had ever referred or recommended referral of a bulimic patient for assessment or treatment of these complaints despite that 65% of participants indicated that they frequently notice or hear hoarseness complained of in bulimic patients strongly suggests a problem of under-referral of patients with BN for voice assessment and, if warranted, therapy. This may be explained by the finding that 53% of participants indicated that they were either not aware that SLPs conduct voice therapy or were not aware that patients with BN might benefit from this type of service. To that end, 60% of participants said that prior to completion of the survey they had not been aware that self-induced vomiting could be associated with long-term problems with vocal health.

Attitudes about Vocal Health

Results from the Health Care Professionals survey suggest that the issue of under-referral of bulimic patients for voice therapy arises not only from a lack of awareness about risks to vocal health and availability of voice therapy but also from an underlying belief that vocal health complaints are insignificant. 83% (n=25) of participants stated that they thought that vocal health complaints were the LEAST concern of all health risks associated with BN. 10% indicated that they did not feel that vocal health complaints were serious enough to warrant therapy. Only 17% said that they would suggest that any patient presenting with vocal complaints such as persistent hoarseness consider seeking assessment or treatment specific to their vocal health. Additionally, 7% of participants said that they were aware of the relationship between BN and dysphonia but did not consider it to be a serious concern.

Limitations of the Present Study

The most significant limitation of the design of the present study is the sample size. The small number of participants may have yielded results which may or may not be representative of the knowledge and perspectives of each group as a whole, and this is a weakness that should be considered in evaluating the results and conclusions. This is particularly true for the Health Care Provider group, because only a few professions (direct care providers, social workers, hospital administrators, and nurses) were represented in this sample, and as such we cannot conclude that results uniformly reflect the perspectives of the wide range of professionals who are involved in the management of care of

persons with BN. A consequence of the anonymous and voluntary nature of the survey is that it was impossible to select representative samples of each of the three target populations. Another weakness was that the surveys were not validated in any systematic way prior to distribution.

Conclusions

The present surveys of patients with BN, SLPs, and other health care professionals explored their level of awareness of bulimic as a risk factor for vocal pathology. Results from the Patient Survey demonstrate a lack of awareness of the risks of self-induced vomiting to vocal health and a lack of awareness regarding the availability of interventions to address associated deficits. Results further suggest that increasing awareness of these risks may help to motivate some individuals with BN to seek treatment for their condition. While most SLPs are broadly aware that there is a link between purging and voice disorders, their knowledge of clinical markers indicating a history of purging and their knowledge of the range of speech, language, and swallowing complaints which may be associated with eating disorders is inconsistent. Furthermore, less than half of SLPs indicated that they would feel confident in their ability to treat dysphonia resulting from purging behaviors. Results from the Health Care Professionals Survey suggest that lack of awareness of risks to vocal health is only part of the reason accounting for lack of attention to vocal

health in dedicated eating disorder treatment facilities; the other part of the problem is that some of them appear not to view vocal health complaints as a serious or legitimate problem which warrants therapy.

Overall, results indicate a general lack of awareness concerning these risks and treatment options to address them on the part of patients and health care professionals and a lack of specific knowledge of how to recognize and treat individuals with BN on the part of SLPs. Results from all three groups supported the notion that the bulimic population is at risk for under-referral for treatment for voice disorders. Finally, results suggest that SLPs do in fact provide services to persons with BN, but that at present, patients and other health care professionals do not seem to perceive the SLP as having a role in management of care of this population.

Appendix A

Cover Letter for Internet Research

You are invited to participate in a survey, entitled "Vocal Health and Bulimia Nervosa: Triangulating the Awareness of Risks Among Patients and Professionals." The study is being conducted by Courtney Byrd, PhD, CCC-SLP and Grace Momberger, BA in the **Department of Communication Sciences and Disorders at The University of Texas at Austin, 1 University Station A1100, Austin, TX, 78712.**

The purpose of this study is to collect data regarding the awareness of the risks to vocal health associated with bulimia nervosa. There are three different groups of people who are eligible to participate in this study: 1) Individuals with a history of Bulimia Nervosa and/or other eating disorders involving self-induced vomiting; 2) Speech-Language Pathologists who do and do not specialize in assessment and treatment of vocal health; 3) Health care professionals (other than speech-language pathologists) who are involved in the management of care of individuals with eating disorders, including Bulimia Nervosa. There is a different survey for each of these three groups. You must be 18 years or older in order to participate in this study. Your participation in the survey will serve to enhance the body of knowledge about vocal health risks associated with Bulimia Nervosa. We estimate that it will take about 10-15 minutes of your time to complete the survey.

The risks of participating in this study are minimal and no greater than those of everyday life. No direct benefits to the participants are anticipated. There will be no costs for participating, nor will you be compensated for your participation. Clicking on the appropriate link below will take you directly to the survey you selected. In addition, clicking on the link and completing the survey will indicate your consent to participate and confirms that you are 18 years of age or older. No identifying information will be requested on the survey and the survey website (Qualtrics) will automatically assign your survey an arbitrary number that cannot be traced back to your email address. Data will be stored on a password-protected computer that will be locked and stored in The University of Texas Speech and Hearing Center.
Your participation in this survey is voluntary. You may decline to answer any question and you have the right to withdraw from participation at any time without penalty. Withdrawal will not affect your relationship with The University of Texas in anyway.

If you have any questions or would like us to email another person for your institution or update your email address, please call **Courtney Byrd** at **(512) 232-**

9426 or send an email to **courtney.byrd@austin.utexas.edu**. You may also request a hard copy of the survey from the contact information above. You are free to contact the investigator at the above address and phone number to discuss the survey. If you do not want to receive any more reminders, you may email me at **courtney.byrd@austin.utexas.edu.** If you have questions about your rights or are dissatisfied at any time with any part of this study, you can contact, anonymously if you wish, the Office of Research Support by phone at (512) 471-8871 or email at orsc@uts.cc.utexas.edu.

To complete the survey, click on the link below which applies to you:

Survey for individuals with Bulimia Nervosa
This survey is intended for individuals who are currently struggling with Bulimia Nervosa of the purging type. If you once struggled with bulimia but are currently in recovery, your input would still be greatly appreciated; please answer questions as you would have before your recovery. If you have received a diagnosis of a different eating disorder, such as Eating Disorder-Not Otherwise Specified (ED-NOS), but have still practiced purging on a regular basis, your participation would also be appreciated.

Survey for Speech-Language Pathologists
This survey is intended for any licensed Speech-Language Pathologist who is willing to participate.

Survey for professionals other than Speech-Language Pathologists who have worked with individuals with bulimia nervosa
This survey is intended for anyone who has worked professionally with individuals struggling with bulimia, including but not limited to: Family doctors, nurse practitioners, psychiatrists, counselors, nurses, psychologists, direct care technicians, nutritionists, hospital administrators, otolargyngologists, and social workers.

This study has been processed by the Office of Research Support and the study number is 2013-10-0082.

Appendix B

Survey for Individuals with Bulimia Nervosa

Q1. What is your present age?

_____

Q2. What is your gender?

A. Female
B. Male

Q3. At what age did you begin purging (self-inducing vomiting after you eat)?

_____

Q4. Have you received a diagnosis of Bulimia Nervosa?

A. Yes
B. I have never been formally diagnosed, but I purge on a regular basis
C. I received a diagnosis of a different eating disorder type, but I have practice or do practice purging.

Q5. If you answered "yes" to question 4, at what age did you receive this diagnosis?

_____

Q6. For how many years have your struggled or did you struggle with bulimia?

A. 0-2 years
B. 2-5 years
C. 5-10 years
D. More than 10 years

Q7. Which of these best represents the number of times you purge (or did purge) per week, on average?

A. 1-2 times per week
B. 2-5 times per week
C. 5-10 times per week

D. More than 10 times per week

Q8. Have you ever received treatment for your condition from any health care or mental health care professional (doctor, nurse, counselor, psychiatrist, social worker, nurse practitioner, etc)?

A. Yes, I have received inpatient treatment for my eating disorder.
B. Yes, I have received outpatient treatment for my eating disorder.
C. No, I have never been treated for my eating disorder.

Q9. Do you or did you often find that your voice is hoarse, scratchy, or lower in pitch than usual after you purge?

A. Yes
B. No

Q10. If you answered "yes" to question 9, please select the answer which best describes how long you feel these symptoms usually last:

A. 1-2 hours following purging
B. The rest of the day following purging
C. The rest of the week following purging
D. My voice is constantly hoarse, scratchy, sore, and/or lower in pitch than it used to be

Q11. Have you ever been informed of the risks of purging behaviors to your voice by any health care professional?

A. Yes
B. No

Q12. Have you ever been advised to have your voice or vocal health assessed by an Ear, Nose and Throat doctor (ENT or otolargyngologist) or by a speech language pathologist?

A. Yes
B. No

Q13. Have you ever sought treatment for hoarseness, scratchiness, pitch changes, or other problems with your voice?

A. Yes
B. No

Q14. Were you aware that therapy is available to help with vocal complaints

including hoarseness, scratchiness, changes in pitch, discomfort while speaking or singing, etc?

A. Yes

B. No

Q15. Do you currently work, have you worked, or do you aspire to work in a field where you would be required to speak or sing frequently (singer, actor/actress, news anchor, businesswoman, lecturing professor, teacher, politician, etc)?

A. Yes
B. No

Q16. If you answered "yes" to Question 15, please indicate how long you have worked in a field which required you to speak and/or sing frequently:

A. Less than 1 year
B. 1-3 years
C. 3-5 years
D. 5-8 years
E. Longer than 8 years

Q17. Do you feel that you have a general awareness of the health risks associated with bulimia?

A. Yes
B. No

Q18. Which of the following might motivate you most to seek help for your condition?

A. Risk of damaging my stomach/GI tract
B. Risk of damaging my throat/voice
C. Risk of damaging my teeth
D. Risks of damaging my heart
E. All of the above motivate me to seek help
F. None of the above motivate me to seek help
G. Other

Appendix C

Survey for Speech-Language Pathologists

Q1. Which would you consider to be your area of special interest or expertise within Speech-Language Pathology? Please select all that apply.

A. Developmental language disorders
B. Acquired cognitive communication disorders
C. Voice disorders
D. Motor speech disorders
E. Swallowing disorders
F. Fluency disorders
G. Alternative and augmentative communication
H. One or more special populations
I. Other

Q2. Please select the answer which best describes your familiarity with the terms b*ulimia nervosa* and *purging*.

A. I feel I could give a fairly complete definition of these terms
B. I have heard these terms but do not know very much about them
C. I am unfamiliar with these terms

Q3. Have you ever had a client who you knew (either through case history or through client self-report) to have a history of Bulimia Nervosa or purging behaviors?

A. Yes
B. No

Q4. Do you routinely ask clients who present with vocal health complaints whether they have a history of purging behaviors?

A. Yes
B. No
C. Sometimes

Q5. About what percentage of Americans with bulimia would you guess are men?

A. 0-% - 10%
B.10% - 15%
C. 15% - 20%

D. 20% - 25%

Q6. About 1 in ____ American women struggle with bulimia (take your best guess).

A. 25
B. 50
C. 75

Q7. Say you have a client with vocal health complaints who self-disclosed to you that they had a history of bulimia. Which of the following most closely describes how this would affect your treatment of that client?

A. I would feel very confident in my ability to proceed with treatment of the vocal health of an individual with a history of this disorder.
B. I would refer them to another SLP or another health care professional because I would not be confident in my ability to treat an individual with this history.
C. The only action I would take would be to refer the client to a mental health care professional.
D. Other

Q8. To the best of your knowledge, which of the following speech, language, and swallowing concerns can be associated with eating disorders? Please circle all that you think may apply.

A. Oropharyngeal dysphagia
B. Vocal discomfort
C. Cognitive/linguistic deficits
D. Teleangiesctasia
E. Vocal nodules
F. Tongue lesions
G. Degeneration of vocal folds
H. Granulomas

Q9. True or false: Patients with a history of bulimia would require an entirely unique treatment for vocal pathology.

A. True
B. False

Q10. Which of the following clinical markers of bulimia do you feel you may be able to recognize during assessment? Please select all that apply.

A. Russell's sign

B. Tooth enamel erosion
C. Absent gag reflex
D. Parotid gland swelling

Q11. Prior to completion of this survey, had you considered bulimia as a risk factor for vocal health?

A. Yes
B. No

Q12. Have you ever referred a client with vocal pathology for psychiatric evaluation because you knew or suspected that they had engaged in purging behaviors and were not receiving treatment for this?

A. Yes
B. No

Q13. Have you ever had a client referred to you for vocal pathology resulting from or associated with bulimia?

A. Yes
B. No

Q14. Have you ever had a client independently seek out assessment or treatment for vocal pathology resulting from bulimia?

A. Yes
B. No

Appendix D

Survey for Other Health Care Professionals

Q1. Please choose the answer which best describes the setting in which you work (or have worked) with individuals with bulimia nervosa.

A. I work in an in-patient treatment facility for individuals with eating
B. I am involved with management of care of individuals seeking treatment for eating disorders on an out-patient basis.
C. I work with individuals with bulimia on both an in-patient and an out-patient basis.
D. Other

Q2. Please indicate the state or province in which you work (or have worked) with bulimic individuals.

_____

Q3. In what capacity have you worked with individuals with bulimia?

A. I am a general practitioner/family doctor
B. I am a nurse practitioner
C. I am a psychiatrist
D. I am a counselor or therapist
E. I am a nurse
F. I am a direct care technician
G. I am a nutritionist
H. I am involved in hospital administration
I. I am an otolaryngologist/ENT
J. I am a social worker
K. Other

Q4. For how many years have you worked with patients with eating disorders, including bulimia nervosa?

A. Less than one year
B. 1-5 years
C. 5-10 years
D. More than 10 years

Q5. ***Note: Question 5 is for individuals who work in dedicated eating disorder treatment facilities only:***

Does the facility you have worked for routinely screen for vocal pathology in bulimic patients?

A. Yes
B. No
C. I'm not sure

Q6. Which, if any, of the following complaints have you noted in or heard mentioned by bulimic patients? Please select all that apply.

A. Hoarse voice
B. Scratchy voice
C. Pain while speaking or singing
D. Lowering pitch of voice
E. Frequent throat clearing
F. Vocal exhaustion

Q7. Have you ever referred a patient, or suggested that a patient be referred, to an Ear, Nose, and Throat doctor (ENT/Otolargyngologist) for assessment or treatment of vocal health?

A. Yes
B. No

Q8. Of the following health risks associated with bulimia nervosa, which would you consider of LEAST concern?

A. Dental problems
B. Stomach/GI problems
C. Vocal health problems
D. Cardiac problems/electrolyte imbalance

Q9. In what situations might you recommend that a patient with bulimia nervosa who routinely induced vomiting consider seeing a speech pathologist for voice therapy?

A. I was not aware that speech language pathologists conduct voice therapy
B. I was aware that speech pathologists conduct voice therapy, but I was not aware that patients with bulimia nervosa might benefit from this
C. I would probably rarely or never recommend this, as vocal complaints are usually not serious enough to warrant therapy
D. I would only suggest that a client consider seeking voice therapy if he or she worked in a profession which required him or her to speak publicly or sing
E. I would suggest that any patient with vocal complaints such as hoarseness or scratchiness consider seeing a speech pathologist

Q10. Prior to completion of this survey, were you aware that self-induced vomiting can lead to long-term problems with vocal health?

A. Yes
B. No
C. Yes, but I do not consider this to be of serious concern

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