

Bulimia nervosa and its relation to voice changes in young adults: A simple review of epidemiology, complications, diagnostic criteria and management

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Background: Bulimia nervosa (BN) is a type of feeding disorder that starts in adolescence and presents a variety of symptoms, recurrent vomiting in the oral cavity that may reach down to the larynx – similarly to gastro-esophageal reflux, causing laryngeal and voice disorder alterations. **Objective:** These studies aimed at surveying the literature and investigate the studies that considered BN a risk factor for voice disorders and its epidemiology, complications, diagnostic criteria, and management. **Materials and Methods:** A review of the literature was done based on a survey of BIOMED CENTRAL and COCHRANE @ OVID databases, which are linked to the IMU ezproxy virtual library (<http://ezp.imu.edu.my/menu>). The keywords “bulimia nervosa”, “teenage complications” and “voice changes” were used. Citations with summaries were chosen to limit the topic, for the period between 2000 and 2010, in English. **Results:** Of the ninety three papers we found, twenty three were used as a basis for this review. Among them, only three discuss BN as an etiology factor associated with voice changes in adult women, and we did not find any paper associating this with bulimic teenagers. **Conclusion:** It is necessary to observe laryngeal and vocal signs and symptoms associated with BN, especially in teenagers whose voices are going through a period of change. The contribution of this type of investigation, which should begin with a clinical history, is essential for minimizing the complications of bulimia nervosa. Thus, adolescents and adults with voice disorders should be investigated in greater detail.

Key words: Bulimia nervosa, teenage complications, voice changes

INTRODUCTION

Bulimia nervosa (BN) is a disorder of eating in which an individual involves in over eating. The individual may eat more amount of food at once and then try to get rid of the food by vomiting, using laxatives, or sometimes by over-exercise.^[1,2] There have been few studies aimed at the adolescent population, possibly because only adults with this condition seek specific therapy for bulimia nervosa. On the other hand, there have been more studies on this subject, probably because of the incidence of this disease. The etiology of this disorder is related to various associated social, psychological and biological factors.^[3] The excessive value given to slim female bodies appears to be linked with an increased occurrence of eating disorders such as

anorexia and nervous bulimia.^[2] Such cultural pressure, the media, and the collective imaginary encourage women in particular to go through sacrifices to attain an idealized body.^[3] Therapy for bulimic patients is multidisciplinary, involving mostly physicians, psychologists and nutrition specialists, given the complex factors that compose this disease.^[4] Best results tend to occur when early interventions are made in adolescence, which avoids the chronic and immutable states of eating disorders.^[5,6] Most of the bulimic patients self-induce vomiting to minimize the anxiety that results from excessive eating (hyperphagia).^[7,8] As a result of vomiting, the mouth may present findings such as xerostomia, oral mucosa irritation, dental sensitivity to temperature changes, radicular caries, among others.^[9,10] Dental surgeons who observe these signs should investigate the presence of bulimia nervosa in their patients. Phlegm and chronic coughing that result from gastro esophageal reflux disease (GERD)-induced laryngeal irritation may result in laryngitis and dysphonia or voice disorders.^[11-13] Another factor is important in adolescence, other than the physiological changes that occur in this age group as a result of hormone discharges, namely the teenager’s voice. This period is named voice change, during which the voice fluctuates and changes

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tone.^[14] Considering bulimia nervosa as a risk factor for voice and laryngeal changes, the purpose of this paper is to investigate voice complications in individuals with bulimia nervosa, based on a review of the literature.

Epidemiological picture of those affected by bulimia nervosa

Many studies show that:

- “Bulimia nervosa affects 1-2% of adolescents and young adult women”.^[15]
- “Approximately 80% of bulimia nervosa patients are females”.^[15]
- “2-3% of adolescents have bulimia nervosa”.^[16]
- “Bulimia nervosa is frequently associated with symptoms of depression and changes in social adjustment”.^[16]
- “The average age of onset for bulimia is 18 years, but it occurs in children as young as 9 and adults into their mid-40s”.^[17]
- “Approximately 50% of bulimia sufferers recover, while 30% show some improvement and 20% continue to be fully bulimic”.^[16]
- “It is estimated that 200,000 to 300,000 Canadian women aged 13 to 40 have anorexia nervosa and twice as many have bulimia”.^[18]
- “Nationwide, 12.3% of high school students had gone without eating for 24 h or more to lose weight or to keep from gaining weight”.^[19]

Warning signs of bulimia nervosa

- Evidence of binge eating, including disappearance of large amounts of food in short periods of time or the existence of wrappers and containers indicating the consumption of large amounts of food.^[20]
- Evidence of purging behaviors, including frequent trips to the bathroom after meals, signs and/or smells of vomiting, presence of wrappers or packages of laxatives or diuretics.^[20]
- Excessive, rigid exercise regimen-despite weather, fatigue, illness, or injury, the need to “burn off” calories taken in.^[20]
- Unusual swelling of the cheeks or jaw area.^[21]
- Calluses on the back of the hands and knuckles from self-induced vomiting.^[21]
- Discoloration or staining of the teeth.^[21]
- Creation of lifestyle schedules or rituals to make time for binge-and-purge sessions.^[22]
- Withdrawal from usual friends and activities.^[22]
- In general, behaviors and attitudes indicating that weight loss, dieting, and control of food are becoming primary concerns.^[22]

MATERIALS AND METHODS

A review of the literature was done based on a survey of

BIOMED CENTRAL and COCHRANE @ OVID databases, which are linked to the IMU ezproxy virtual library (<http://ezp.imu.edu.my/menu>). The keywords “bulimia nervosa”, “teenage complications” and “voice changes” were used. Citations with summaries were chosen to limit the topic, for the period between 2000 and 2010, in English. About thirty papers were selected for this study. Books on the topic of this study and from the Mental Health site (<http://www.mentalhealth.com>) were also used in this investigation. The keyword “voice complications” was added to find papers relating bulimia nervosa and voice disorders. In this case, only five papers not including “teenagers” were found, showing the lack of papers on the interface voice disorders and bulimia.

Bulimia and its complications

Bulimia nervosa is more common than nervous anorexia (NA), but is less easily detected; it may present initially as a major effort by a patient in controlling his or her weight. Its prognosis is better than that of NA, but the complications of bulimia nervosa may result in profound sequelae for patients, and may even be lethal.^[18] The clinical signs of bulimia nervosa are varied and may be severe; these signs include metabolic and hydroelectrolytic alterations, such as dehydration, hypocalcemia, hyponatremia, hypomagnesemia, and metabolic alkalosis, all of which may be found in 50% of cases. These manifestations result from vomiting, fasting and laxatives.^[22] Gastrointestinal and oral complications are common, followed by electrolytic and endocrine alterations. Some patients develop severe conditions that require hospitalization and/or surgery on the organs that are affected most, such as the esophagus, the stomach and the intestines, in which perforation may occur. Chronic patients may also present heart disorders and brain dysfunction.^[23,24] Oral alterations such as tongue lesions, increased parotids and tonsils, and dental erosion are all closely related with gastric acid regurgitation in bulimia nervosa or GERD patients.^[25,26] Self-induced vomiting is a diagnostic criterion for bulimia nervosa. Vomiting may be provoked by hand or by introducing foreign bodies such as a plastic fork, which was reported in a case where these objects were swallowed into the hypopharynx, resulting in airway obstruction and dysphagia.^[24] Clinical manifestations are proportional to the level, quantity and frequency of gastric regurgitation, as well as other conditions such as esophagitis, gastritis, peptic ulcers and duodenal ulcers.^[23,24] Swallowing is a function of the stomatognathic system that may be altered in bulimia nervosa. This disease may affect swallowing during the oropharyngeal phase, and may also interfere with taste, besides causing tissue injury. Taste is altered because gustatory receptors may be found in the palate, which is affected by acid vomiting.^[27,28] Gastric content reflux may be physiological or pathological. The former is short-lived and occurs naturally after a meal.

The latter is defined as reflux at a frequency, duration, intensity of events and quality of esophageal acidity that exceed physiological reflux criteria. These patients are said to have GERD.^[23,24]

Voice and bulimia

One of the physiological changes that adolescents undergo is voice change, which may be rapid, lasting not more than six months, and which is part of the development of secondary sexual characteristics.^[23,24] Voice change, also named transitional dysphonia or altered voice change, is most evident in male adolescents, resulting from increased hormone levels.^[25,26] The pitch of a boy's voice becomes deeper (masculinized) as the adolescent grows into adulthood, becoming an important aspect of personality.^[27,29] Although bulimia nervosa usually initiates in adolescence or early adulthood, studies on bulimia nervosa have investigated mostly adult samples, possibly because medical help tends to be sought at this time.^[28] A study of eight bulimic singers that also had GERD, aged between 24 and 34 years, revealed that they complained of hoarseness, laryngeal pain, voice fatigue, phlegm, lower-pitched voice, recurring voice loss and ardor. Laryngeal findings in this group were posterior edema, posterior commissure hypertrophy, ventricular obliteration, polypoid-type degeneration and teleangiectasia. Another case-report study that also related voice and laryngeal disorders with bulimia nervosa in a 29-year-old singer suggested that the clinical findings in this bulimic patient were similar to those found in GERD patients. The author, therefore, alerted healthcare professionals about the need to take bulimia into account as one of the causes of clinical pictures similar to GERD.^[30] Bulimia nervosa patients may present upper aero digestive tract complaints, requiring otorhinolaryngologists or other specialists to understand this disease for a correct diagnosis and therapy. Bulimia nervosa with voice disorders may require speech therapy in addition to its usual treatment.^[27]

Diagnostic criteria

Bulimia nervosa can be difficult to detect, compared to anorexia nervosa, because bulimics tend to be of average or slightly above or below average weight. Many bulimics may also engage in significantly disordered eating and exercising patterns without meeting the full diagnostic criteria for bulimia nervosa.^[31] The diagnostic criteria utilized by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV TR) published by the American Psychiatric Association includes repetitive episodes of binge eating (a discrete episode of overeating during which the individual feels out of control of consumption) compensated for by excessive or inappropriate measures taken to avoid gaining weight.^[32-34] The diagnosis is made only when the behavior is not a part of the symptom complex of anorexia nervosa and when the behavior reflects an overemphasis on physical mass or appearance.

There are two sub-types of bulimia nervosa:

- Purging type bulimics self-induce vomiting (usually by triggering the gag reflex or ingesting emetics such as syrup of ipecac) to rapidly remove food from the body before it can be digested, or use laxatives, diuretics, or enemas.
- Non-purging type bulimics (approximately 6-8% of cases) exercise or fast excessively after a binge to offset the caloric intake after eating. Purging-type bulimics may also exercise or fast, but as a secondary form of weight control.^[33]

Management

People who suffer from bulimia are less likely to end up in hospitalization and can be treated in outpatients most of the time.^[34]

Pharmacological

Some researchers have hypothesized a relationship to mood disorders and clinical trials have been conducted with tricyclic antidepressants,^[28] MAO inhibitors, mianserin, fluoxetine, lithium carbonate, nomifensine, trazodone, and bupropion. Research groups who have seen a relationship to seizure disorders have attempted treatment with phenytoin, carbamazepine, and valproic acid. Opiate antagonists naloxone and naltrexone, which block cravings for gambling, have also been used.^[32] There has also been some research characterizing bulimia nervosa as an addiction disorder, and limited clinical use of topiramate, which blocks cravings for opiates, cocaine, alcohol and food.^[33,34] Researchers have also reported positive outcomes when bulimics are treated in an addiction-disorders inpatient unit.^[35]

Complementary and alternative therapies

Psychotherapy is a key in treatment of bulimia. Cognitive behavioral therapy, which guides you to replace negative thoughts and behaviors with healthy ones, is one of the treatment methods. Other techniques, such as yoga, tai chi, and meditation, may help you to self-care your body and have a more optimistic body image. A six-weeks clinical trial showed that guided imagery helped people with bulimia reduce bingeing and vomiting, feel more able to comfort them and improved feelings about their bodies and eating habit. More studies are needed to see if guided imagery has long-term actions.^[27-30]

Homeopathy

There are no evidence-based studies that support that homeopathy is used in treatment of bulimia. However, an experienced homeopath will consider case by case and may recommend alternatives to address both your underlying condition and any current clinical manifestations.^[30]

Acupuncture

There are no evidence-based studies that support acupuncture is used in treatment of bulimia. However, an experienced acupuncturist will consider acupuncture therapy to support overall condition. Scientific researchers have found that acupuncture can be helpful in treating addictive behaviors and anxiety which can help people in recovery stage of bulimia.^[31]

Massage

A case control study of teen girls with bulimia who underwent massage therapy showed evidence of improvement. Girls in the massage group showed significant reduction in anxiety after their first massages. Their scores on the Eating Disorder Inventory, helped health professionals to assess psychological and behavioral aspects in eating problems.^[33]

Following up

Since bulimia is usually a long-term disorder, a health professional has to check the individual's weight, exercise habits, and physical and mental health periodically.

DISCUSSION

None of the papers that we reviewed related bulimia with voice disorders in adolescents. Four studies of female adults reported a close relation between bulimia nervosa and voice disorders, suggesting that bulimia nervosa might be a risk factor for the latter outcome.^[30-32] The literature that was reviewed in this study underlines the possible physical and psychological severity of bulimia nervosa, which evidently requires an effort to understand the etiology and pathophysiology of this condition. Vomiting is a regurgitation-type event in which gastric content flows toward the mouth; this causes many symptoms in bulimic individuals, such as dental erosion, altered taste and swallowing disorders.^[33] It is not incongruous to think that acid gastric content might enter and injure the larynx, causing voice problems. By analogy, purgative manifestations in bulimia nervosa are similar to those of GERD, which is a disease in which dysphonia is one of its main symptoms. Voice symptoms are usually associated with organic alterations involving the larynx and affecting phonation, such as edema, polyps and others. Interventions are clearly needed to avoid further laryngeal dysfunction. Voice disorders in conditions such as bulimia nervosa are classified as psychiatric dysphonia, given the significant psychic component in the causes and manifestations of this disease. Voice has significant importance; human beings use voice to deliver their thinking, which in turn are enriched by the expressive voicing abilities.^[34] As the voice of adolescents is susceptible to hormonal influences, and as bulimic disease starts in this age group, voice disorders should not be neglected in teenagers; it should be investigated

regardless of the magnitude of signs and symptoms and clinical findings that deserve priority in bulimic individuals.

CONCLUSIONS

Although still incipiently, the indexed literature suggests that professionals involved in voice studies, such as speech therapists and otorhinolaryngologists, should pay attention to any signs relating voice disorders with bulimia nervosa.^[35] Even though GERD and bulimia nervosa may present similar symptoms, the severity of bulimia requires more care in investigating the etiology of laryngeal and voice diseases. The contribution of this type of investigation, which should begin with a clinical history, is essential for minimizing the complications of bulimia nervosa. Thus, adolescents and adults with voice disorders should be investigated in greater detail.

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