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A PROPOSAL FOR A STUDY OF BULIMIA AMONG WOMEN  
IN THE UNITED STATES AIR FORCE

By

BEVERLY JOANNE BUTLER, B.S.N.

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**A PROPOSAL FOR A STUDY OF BULIMIA AMONG WOMEN  
IN THE UNITED STATES AIR FORCE**

**By**

**BEVERLY JOANNE BUTLER, B.S.N.**

**PROJECT PROPOSAL**

**Presented to the Faculty of The University of Texas**

**Health Science Center at Houston**

**School of Public Health**

**in Partial Fulfillment**

**of the Requirements**

**for the Degree of**

**MASTER OF PUBLIC HEALTH**

**THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER AT HOUSTON  
SCHOOL OF PUBLIC HEALTH  
Houston, Texas  
December 1988**

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Submitted 16 December 1988

A PROPOSAL FOR A STUDY OF BULIMIA AMONG WOMEN  
IN THE UNITED STATES AIR FORCE

Beverly Joanne Butler, B.S.N.  
The University of Texas  
Health Science Center at Houston  
School of Public Health, 1988

Supervising Professor: Jacqueline Shields, Ph.D.

→ The prevalence of bulimia among active-duty United States Air Force (USAF) women has not been documented. However, in the general population, bulimia is believed to be occurring in increasing numbers of persons.

This thesis consists of the development of a proposal for a program to screen active-duty USAF women for bulimia associated with pre-scheduled annual weighing. Prevalence rates will be determined based on age, race, rank, job, alcohol consumption, smoking and eating histories, Weight Management Program (WMP) activity status, weight and height, and overall body image.

The thesis includes a review of the literature, a description of bulimic personality characteristics, a discussion of associated medical complications, hypothesized etiologies, treatment modalities and prognosis, as well as a discussion of the need for such a study. (KT) →

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## INTRODUCTION

### Purpose of Research Proposal

This thesis consists of the development of a proposal for a program to screen active-duty United States Air Force (USAF) women for bulimia between annual mandatory weigh-in months. Prevalence rates will be determined based on age, race, rank, job or Air Force Specialty Code (AFSC), smoking and eating histories, Weight Management Program (WMP) activity status, and weight and height, and overall body image. Recommendations for modifications of the USAF WMP will be made dependent on the significant findings resulting of such a screening.

### Need for Study

Bulimia is believed to be the most common eating disorder in the United States (U.S.) today. An estimated 7.6 million women living in the U.S. have a history of this disorder. About 50 percent of them are currently active bulimics.

Females are especially at significant risk of developing bulimia. There are approximately 607,035 people in the armed services and 1 out of every 10 is a female. Women are presently joining the military in record numbers. The USAF expects that 1 out of every 5 new recruits will be a female (1,2,3,4,5). The prevalence of bulimia among active duty USAF women has not been documented.

The multiple complications and health risks associated with this disease vary from mild to deadly and can seriously impair job performance. Moreover, absence from work, secondary to these complications, can be costly in terms of both lost manpower hours and treatment expenses. Job performance is an extremely important factor in maintenance of an effective military organization and therefore a strong national defense. To assess the potential effect of bulimia on job performance, a survey of the prevalence of bulimia is needed.

## **BACKGROUND**

### **MILITARY FITNESS REGULATIONS**

Strongly imbedded in the U.S. Air Force (USAF) philosophy is the positive attitude towards health promotion

and education. A strong national defense is dependent upon healthy workers, who are therefore more productive and better able to perform their duties. Physical activity is strongly encouraged and reinforced through provision of athletic programs and equipment. Still another example includes the recent conversion of USAF hospitals into smoke-free facilities, thereby providing a healthier environment for all.

Maintenance of a desirable body weight is one aspect of a healthy lifestyle. In 1981, the Department of Defense (DOD) issued a directive mandating that all military branches provide a weight management program (WMP) for their members. This program was designed to meet both the DOD objectives as well as satisfy special USAF needs (6,7).

Fitness programs in the U.S. Air Force and civilian sector similarly include nutritional counseling, exercise and behavior modification. However, the most significant difference observed concerns the method in which an individual becomes involved in the programs. Civilian employers frequently make the program available at little or no cost, encouraging all their employees to participate. The military decides and mandates who their participants will be on the basis of body weight and physical appearance. Personal attitudes toward the military program

are more likely to be negative since individuals are nonvolunteers and are therefore not necessarily motivated to change their behavior (6,8).

The U.S. Air Force WMP is governed by Air Force Regulation (AFR) 35-11. It applies to all USAF personnel and provides commanders with guidance and criteria in handling individuals who are overweight (6).

Weight control programs also exist in the other military branches and administrative guidelines are quite similar. A study performed on 306 overweight Ft. Bliss, Texas, soldiers, examined the Army's program along with this sample's weight loss progress. It was concluded that the Army's present weight control program was effective in meeting Army weight standards (9).

The USAF participant selection process may be necessary due to their unique mission of combat readiness, a state of sustained preparedness to meet whatever tasks arise. To achieve this goal, physical attributes such as stamina, endurance, and agility may be required, in addition to mental keenness, rationality, and clarity. National defense is dependent upon these individuals' ability to display great discipline as they perform required tasks in a timely and effective manner.

The 3 goals of the USAF WMP are promotion of a healthy lifestyle, improvement of military appearance and personal readiness. As stated in the regulation governing this program, "Poor weight management can negatively affect flexibility, mobility, and endurance, and thereby impact Air Force readiness; therefore, weight management is a vital part of our peacetime preparation for combat readiness" (6).

To monitor a military member's physical performance, the USAF administers an annual aerobics test to all of its personnel. Traditionally, this test has consisted of completing a 1.5 mile run or 3 mile walk within an allotted timeframe, however, recent revisions have been made and will soon be implemented. It is strongly recommended that all individuals perform some type of activity on a regular basis, however anecdotal reports indicate that many choose to wait until this annual event to become interested and involved in physical exercise (6,10).

There is general agreement that exercise training should be conducted 3 or 4 times weekly for consistent results. Programs with fewer sessions are less effective in the achievement and maintenance of physical fitness and weight loss. Duration of exercise session varies dependent upon the intensity and type of activity, however most

studies show 30 to 40 minutes of exercises to be effective (7).

Activities on many bases are limitless and frequently include softball, basketball, football, baseball, volleyball, soccer, tennis, raquetball, swimming, weightlifting, organized walks, aerobic and other types of dancing. Instructors and classes may be available, particularly if enough interest is generated. The Recreation, Morale and Welfare department is especially attuned to ensuring that both sufficient and varied activities are available for military members and their families.

In addition to the physical component, the USAF also performs a nonvoluntary semiannual weigh-in of all military personnel. However, members who are 10 percent or more under their maximum allowable weight (MAW) are required to weigh in only annually, as they are not believed to be in imminent danger of non-compliance with USAF weight standards. Moreover, their weight is not believed to place them at risk for developing medical complications commonly associated with being overweight. The semiannual weighing provides the military with an opportunity to closely monitor those individuals who are currently meeting weight standards, but who have borderline weights which could

easily result in noncompliance. Members are officially notified of the mandatory weighing weeks in advance. This lag time often results in use of aggressive and unsafe weight reduction efforts in an attempt to "make weigh-in". It is important to note that not all military personnel require or practice drastic weight reduction methods. Many have instituted behavioral life changes that result in a healthy and sustained weight reduction or maintenance program (6).

An individual's height and weight are measured and compared to the military standard. Those in compliance need only to continue the required annual or semi-annual weigh-ins, while those who do not meet their weight standard are entered into the WMP (6).

The basic protocol for members not found to be in compliance includes a medical evaluation to determine if a situation exists which would preclude an individual's ability to lose weight. Pregnancy or recent surgery are examples for which temporary waivers may be issued. Additional program requirements include quarterly diet counseling and participation in a 90-day exercise program provided no medical deferral is granted (6).

After entering the WMP, the individual is expected to meet a monthly weight loss standard. Satisfactory weight

loss for men is 5 pounds per month while women must lose 3 pounds each month. A review of the literature reveals that a loss of 2 to 3 pounds per week or 8 to 12 pounds per month is considered medically safe, which is well above the standard set by the U.S. Air Force (6,11).

There are several administrative actions that can be rendered once an individual is entered into the WMP and particularly if unsatisfactory progress is being made. These actions place severe limitations on career opportunities and include ineligibility for reassignment, reenlistment, or retraining. Dismissal from the USAF occurs if four unsatisfactory ratings are received (6).

#### MILITARY PERSONNEL RESPONSE TO REGULATIONS

Individuals who become desperate to comply with USAF weight limit regulations learn to circumvent the system without changing their lifestyle. Friends cautiously share weight loss secrets with others once the imminent danger of being discovered and punished have passed. The system, perhaps unknowingly, rewards them for their weight loss by granting their promotion or assignment and thus the vicious cycle begins.

Despite the fact that military members are familiar with this USAF policy on weight management and know in advance when they will be weighed, many still display heightened stress and anxiety related to this event. Anecdotal stories depicting how some individuals attempt to "make their weigh-in" are discouraging to say the least.

Narrations include ingesting over-the-counter laxatives and prescription diuretics, more commonly known as "water pills", in more than the recommended dosages. Ex-Lax, Feenamint, and Correctol are very accessible from drug and grocery stores and are frequently named as the laxatives used. Taking laxatives in excessive dosages is not uncommon despite the potential medical complications which can occur as a result of such behavior. The following is an example of such products, dosages, and side effects:

Feenamint Recommended Dosage: 1 to 2 gum tablets per day

Reported Dosages: 16 or more per day

Excessive Use Side effects: diarrhea, vomiting, fluid and electrolyte losses, osteomalacia, fatty stools, cathartic colon and liver disease.

One anecdotal story told by a military nurse concerned surreptitiously administering a potent intravenous diuretic, Lasix, to a fellow nurse who did not want her

impending assignment cancelled. Although there were no obvious ill effects, there was great potential for a grave outcome.

Another individual became so dizzy and weakened during a shift of duty that she had to seek medical attention and was unable to complete her shift. Her 'hidden' history included ingestion of 6 Hydrochlorthiazide tablets (water pills) one day prior to weigh-in.

As weigh-in approaches, anecdotal stories related to unsafe weight loss strategies increase and this is further confirmed by a 1986 JAMA article which stated, "The pressure to maintain a slender physique may, in psychologically vulnerable individuals, lead to weight control efforts that result in bulimia"(13). Other studies support this belief stating that overweight young women may be particularly prone to severe dieting and therefore at risk of developing bulimia (12,13,14,15).

Bulimia is the most common eating disorder in the United States today. Incidence and prevalence rates among the general population are not accurately known, however it is believed to be fairly common. Recent studies indicate significant increases in both prevalence and incidence over the past few years. An increase in the number of

individuals seeking help with weight and eating problems has also been reported by several physicians (2,3,16,17).

Prevalence among women in the USAF is unknown, however, stringent weight management criteria places these individuals in a high risk category and may very well predispose them to bulimia. Presently, there is no USAF policy governing bulimia screening or reporting despite anecdotal information revealing the unhealthy weight regulating strategies practiced by many. It is necessary and important to determine the prevalence of bulimia in this community in order to assess the need for such a policy.

Since previous studies for bulimia have not been done for the military, a review of the civilian population will be included.

#### LITERATURE REVIEW

#### IMAGES

During the past 20 years, America has become increasingly preoccupied with weight and diet. The pursuit of thinness has been reinforced culturally, and the media has played an extensive role. A random survey of women's

magazines during a one year period revealed that nearly 7 out of 10 issues contained a diet related article. Those that did not, offered low-calorie recipes instead (11).

Additionally, the entertainment world has just recently begun to depict larger women in more positive roles(18). To many Americans, the ideal female image is exemplified by magazine centerfolds, beauty contestants and entertainers. These 'beauties' have become notably slimmer during the past 20 years. However, according to U.S. Census data, the typical female under 30 has become on the average 5 to 6 pounds heavier than her 1960 counterpart (14,19,20,21). The thin woman has only been an ideal for the past 20 years. Prior to that, women were told to eat to "keep up their strength" and thinness was associated with ill health. Also men appeared to be primarily attracted to the more robust type female figure (14,19,20,21).

The fashion industry has further enhanced that 'thin is in' by traditionally catering to the thinner figures. "Virtually anorexic covergirl images" and the use of adolescent models for adult fashions portray this picture of glamour and success to the purchasing public (22,23,24).

Despite ones natural body type, many attempt to mirror the currently accepted 'ideal body', by attempting to

rebuild their body at any cost. Over the years, the female ideal body role model has changed considerably. Women have gone from graceful curves to Twiggy thin. The current body image is recognized as being superbly conditioned and healthy looking (18,24). Dr. Hillel Schwartz (1988), a cultural historian, believes our bodies and perceptions of them are "social constructs". He states that cultural forces such as prosperity, social standing and attitudes toward sexuality play a major role in how women view their bodies (18,22,24).

Eating disorders, "dropped markedly during the era of the full figured Gibson girl in the 1890's, rose when the flat-chested flapper was in vogue in the 20's and fell off again after World War II, when Jane Russell and Betty Grable represented the female ideal" (25). Although cultural change is slow, there is some evidence that the idealization of thinness may be fading, as evidenced by the appearance of such celebrities as Kathleen Turner and Cybil Shepherd. While they are far from overweight, their bodies are comparatively fuller and more feminine than the adolescent boylike body figures favored in the recent past (24).

Men also have ideals to emulate, or risk being labelled unmasculine. However, men have traditionally been

measured by their accomplishments and women by their appearance, which may perhaps help to explain the increased incidence of eating disorders among women (18).

Twenty-five percent of people in the United States are overweight. These figures clearly indicate that Americans have a severe problem with weight control (26,27,28).

The most frequently employed height/weight table currently used is the Metropolitan Life Insurance Company table (7,29). Despite its ubiquitous usage, "most authorities recognize that the recommended body weight of these tables does not provide an accurate assessment of body fat because of the wide range of body build in the general population" (27). In 1983, the Metropolitan Life Insurance Company revised its height/weight tables upward, by as much as 12 pounds over the old tables. This change was a result of recent studies which indicated that health would not be compromised if people were allowed to weigh a little more. However, in 1987, Harvard University reviewed 25 studies on body weight and longevity and found that longevity increases for those individuals who weigh 10 per cent below the United States average weight (30). Many experts prefer the leaner 1959 guidelines and believe the new "fatter" table will

shorten life. Indices to measure or classify body weight are multiple, but so are the controversies that surround their definitions, standards, and accuracy.

Though the expenditures to achieve the perfect body are phenomenal, weight problems remain a significant health problem in North America today. In an effort to achieve the 'ideal body', an estimated \$50 billion per year is expended on fitness and diet products. This preoccupation with weight has presumably contributed to a high prevalence of eating disorders. An eating disorder is defined as a "gross disturbance in eating behavior which jeopardizes a person's physical or psychologic health" (1,13,15,16,19,23,31,32).

As concern with weight management has mounted, so too has public awareness of eating disorders and research activity (19). Although exact numbers are unavailable, there has been an escalation in the number of hospitals, clinics, and treatment centers specializing in these disorders. According to federal statistics, the number of psychiatric units in hospitals climbed 11 percent between 1983 and 1984, from 722 units to 802 units (8). This does not include drug and alcohol rehabilitation hospital units which also rose 44 percent. Some of this increase may be

attributed to the increasing prevalence and treatment of eating disorders (8).

Further evidence of this expanding interest can be seen from the introduction of a new publication entitled the International Journal of Eating Disorders and by the many eating disorder associations located across the United States and Canada. Support groups for 'overeaters' have flourished too, with Weight Watchers, Overeaters Anonymous, Diet Centers, and Take Off Pounds Sensibly (TOPS) being a few of the many that are cited most often. In 1974, TOPS, a nonprofit organization claimed approximately 10,000 chapters and 300,000 members across the US (19,32,33,34,35,36).

There are several theories concerning the increase in prevalence of eating disorders. One such theory maintains that recent revelations of eating disorders among entertainment and sports personalities have aroused public curiosity. This perhaps has opened a few locked doors to these socially unacceptable eating behaviors. Confessions from such celebrities as Cherry Boone, Susan Dey, Jane Fonda, Gilda Radner, and Ally Sheedy have brought these closet illnesses out into the open. Singer Karen Carpenter died at the age of 32 from a heart attack which is believed to have resulted from her eating disorder (11,21,37,38).

Eating disorders among athletes are fairly common. Well known Chicago Bears football player William Perry, "the Refrigerator," also recently underwent treatment for an eating disorder. Athletes are sometimes considered to be 'vocational' bulimics. They begin purging because being slim is important to their livelihood and before they realize it they are addicted. Dancers, jockeys, gymnasts, wrestlers, flight attendants, models, athletes, actors and actresses have all been identified as being vulnerable to this disorder. Perhaps, individuals serving in the armed forces should be included in this high risk population (35,37,39,40,41).

#### ETIOLOGY

The etiology of bulimia is unclear, but several theories have been proposed. The four major theoretical areas cited in the literature include psychodynamic and family, behavioral, sociocultural and biological (3,14,16,39).

Those who believe in the psychodynamic theory support the belief that critical conflicts in early life cause

problems later in life. Familial theory stems from the belief that bulimia occurs because of early family interactions. Some researchers have discovered that mothers of bulimics are often controlling, while fathers are powerful and distant. Both parents seemingly expect their daughter to be perfect. One story told in the literature involves a patient who wanted to be thin, pretty and sexy for her father, but her mother became so jealous that she binged to please her mother and purged to satisfy her father. Behavioral theorists believe that bulimics deal with stress and emotional problems by bingeing and purging, and feel it is a learned behavior. Sociocultural theories indicate that social pressures contribute to bulimia, but many believe that there must be additional factors involved since not all women exposed to identical social pressures develop this disorder. Biological theories are based on noted changes in the endocrine system's ability to control cortisol and thyroid, hypothalamus dysfunction, and depression which has been commonly identified in many bulimics (3,25).

Without a clear etiology, many have accepted the hypothesis that multicausation probably exists. Some hypothesize that bulimia may have a physiological basis

involving an electrical disturbance in the brain similar to epilepsy. Others perceive it to be a response of the hypothalamus to chronic deprivation of certain foods, such as breads, sweets, pasta and potatoes (16).

#### DISEASE DEFINITION AND CLASSIFICATION

Bulimia is one of the four eating disorders defined in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III). The other three are anorexia nervosa, pica, and rumination disorder (1).

Pica is a regular eating of non-nutritive substances such as ice, dirt, paint, or clay. Rumination disorder is a chronic regurgitation of food usually seen in infancy. Both are rare and will not be discussed further (1,42,43).

Although the focus of this paper is on bulimia, it is difficult, if not impossible, to discuss bulimia without making some mention of the closely related and well known anorexia nervosa.

#### ANOREXIA

Anorexia is defined as a "loss of appetite for food

not explainable by local disease" (44). It is a syndrome of deliberate self-starvation found predominately in adolescent and young adult women. At least 90 percent of anorectics are believed to be female (45).

In "Focus on Critical Care", Dr. Worthington-Roberts states, "the major characteristic of anorexia nervosa is a relentless pursuit of thinness leading to life-threatening emaciation, preoccupation with food and body, and a general withdrawal from family and friends" (20).

The incidence of anorexia nervosa in U.S. females aged 12-18 years in 1982 was estimated to be 1 out of every 250 and some researchers speculate that it will increase to 1 in 100 by the end of the decade. Since many mild cases probably go undiagnosed, the true prevalence of anorexia nervosa and its mortality rate are really not known. This disorder has been reported to be rare where there is a genuine shortage of food (12,20,39,46).

Anorexia has been shown to affect females at a rate 10 times more than males. Although the incidence remains rare in males, affecting less than 10 percent of the total cases, the incidence may be rising among this group. Anorexia nervosa encompasses all socioeconomic levels and

has been reported among poor people as well as the wealthy. The most common age of onset is between 13 and 22, although anorexia has been shown to develop in all age groups. Some researchers state that it is increasingly affecting older age groups and the age range is sometimes broadened to include females from ages 11 to 60 (1,20,39,46,47).

The etiology remains unknown despite multiple studies and massive research. Etiological theories include societal pressure for women to be thin, psychological factors involving an impaired sense of personal identity and abnormal perception of body size. Familial and physiologic causes are also suggested. Family members appear over involved with one another and overprotective. A hypothalamic disorder may be a physiologic cause, however evidence supporting this theory is nonconclusive (20,39).

Many of the complications associated with this disorder are related to the enormous weight loss observed. Diagnostic criteria includes weight loss of at least 25 percent of the premorbid body weight. Medical complications are massive and many prove to be life-threatening (see Table 2). In 1982, the mortality rate was reportedly 3 to 5 percent, but some studies have demonstrated death rates four times that level. The morbidity rate for this disorder

has been reported to be between 30 to 65 per cent. Others believe that these numbers indicate an underestimate since no one knows how many die undiagnosed. Starvation, suicide, inadequate potassium intake and stomach perforation from insertion of a nasogastric tube are the more common causes of death (1,12,39,46,48,49).

Prognosis varies, however overall outcomes are seemingly negative. Statistics reveal that 49 per cent are cured of weight problems, 26 percent continue to experience fluctuating weights or become obese, 18 percent remain chronically anorectic, and 7 percent die of anorexia or suicide. Less than half marry or maintain active heterosexual lives while 90 per cent are employed (20,39).

#### **BULIMIA**

Bulimia, the second major eating disorder discussed in the literature came into being secondary to studies performed on anorectics. It was initially described in 1903 by a French psychiatrist, Pierre Janet, as a symptom of the disorder anorexia nervosa. Many researchers discovered that some anorectics also displayed the bulimic characteristics of binging and purging. In fact, half of all anorectics

reportedly engage in bulimic activities resulting in 50 per cent of the bulimic women studied having had a history of anorexia nervosa (1,17,39,50).

There has been much controversy over whether bulimia and anorexia nervosa are separate syndromes or extreme ends of the same disorder. Much of the confusion stems from the fact that researchers have tended to study bulimia in relation to anorexia nervosa and the terminology associated with bulimia reflects this. Some of the labels previously attached to bulimia, as described in the literature, include such terms as "bulimia nervosa", "bulimarexia", "dysorexia", "dietary chaos syndrome" and the most commonly accepted label of the "binge-purge" syndrome (16,17,19,51).

"Bulimia nervosa" was a term coined by Russell (1979) using the criteria of "an irresistible urge to overeat (bulimia nervosa) followed by self-induced vomiting or purging; a morbid fear of becoming fat." He viewed bulimia as a chronic phase of anorexia nervosa (19). In 1987, this term became the official name for bulimia. This was done in an effort to distinguish the disease from the symptom (19,52).

Boskind-Lodahl (1978), believed bulimia to be part of a continuum, with anorexia nervosa on one end and bulimia on

the other and so evolved the term "bulimarexia" (19,20,37,39).

"Dysorexia" appeared earlier in the literature, but was never really adopted by other researchers. Consequently, this term is rarely seen in the literature today. It was created with the understanding that anorexia and bulimia were extremes of the same disorder, however this term was only based on the treatment of six patients (19,26).

The term, "dietary chaos syndrome" was suggested by Palmer (1979) who essentially characterized it by such disordered eating patterns as self-induced vomiting, the chewing of food without swallowing, fasting, laxative abuse, binge-eating, and an idiosyncratic choice of food. However, this descriptive term was also shortlived (19).

Finally, the label "binge-purge syndrome" is frequently used by the popular press and describes the predominant behavioral pattern observed in bulimia. This is the name with which the public is most familiar (19).

The term bulimia comes from the Greek words "bous limos" and is translated into "ox hunger." Bulimia can be a syndrome, symptom, or transient behavior. It is important to make this distinction, because not all women with binge-

purge behaviors have a psychiatric syndrome. A person can go on an occasional eating binge without being classified a bulimic, in the same way that one can drink and not be considered an alcoholic. It is possible that many female military members will not meet the DSM-III criteria for the syndrome bulimia, however many may show an increased risk of the bulimic symptom, especially in correlation with weigh-ins. In some situations, the bingeing and purging are a manifestation or symptom of other primary diseases. Examples include mental illnesses, such as depression, and disorders of anxiety, personality and conversion. Bulimia is also seen in certain neurological diseases which must be ruled out before making a diagnosis of the bulimic syndrome. Regardless of the manifestation, the practice has reportedly reached epidemic proportions (16,25,52,53,54).

#### PREVALENCE

The prevalence of bulimia is unknown, however, it is believed to be very common. It appears to be much more widespread than anorexia and is dramatically increasing. Estimates of bulimia's prevalence vary widely depending on the diagnostic criteria used (14,17,48).

Demographically, the literature review reports similar findings related to the clinical picture of bulimia. It is generally believed that bulimia is more common in women than men. However, females are also more likely to identify themselves as bulimic than males. Females reportedly make up at least 80 per cent of the bulimic population while males comprise less than 5 per cent of the bulimic cases reported in the literature. However, some articles cite higher prevalence rates among males, 10 to 15 percent, and believe it is rising (1,2,37,48,55,56).

Most population surveys have been limited to college campuses where 20 per cent of the women and 5 per cent of the men have been reported to fulfill the DSM-III criteria for bulimia. In 1987, Schotte and Stunkard (57) conducted a study at a large, private university on a sample of 1965 students. They found that although bulimic behaviors were common among college women, clinically significant bulimia was not. Their results revealed 1.3 percent of women and 0.1 percent of men met the DSM-III-R diagnostic criteria. They were dealing with a population presumed to be at highest risk and yet did not find bulimia to be in the epidemic proportions that the literature frequently

reports. They, therefore, concluded that whether or not an epidemic exists is based upon the definition used for bulimia (1,16,19,37,39,53,57).

Amy Mereson (1988) reported that although as many as 25 percent of college age females binge eat and then purge their bodies by vomiting or taking laxatives, most of them are not bulimic. Their behavior is believed to be nothing more than an occasional and short lived experiment. However, Harvard psychiatrist Andrew Brotman, M.D. (1988), says that in as many as 500,000 college age women, the behavior really takes hold and becomes a major disability. "Their lives revolve around it and it interferes with their social and occupational functioning" (58). Some believe that it is this phenomenon that has skyrocketed bulimia into epidemic proportions.

It is possible that college students are not representative of the general population especially when one considers peer influence, preoccupation with body image and possible experimentation. However, studies in the general population are rare. Pope and Hudson (1984) surveyed a nonstudent population of 300 suburban shoppers and found that 10.3 percent of their shoppers met the full DSM-III

criteria for bulimia (3). This study supports the belief that bulimia is increasing in prevalence and is further collaborated by other research efforts (3,13,20).

Although commonly seen in young adults, bulimia should not be confined to this age group. Of 8 studies which included age variables, all reported that most bulimic patients were in their 20's, citing age ranges from 15-51 and with a mean of from 21-25.3 (17). The most frequent age of onset cited is 18. Rarely does bulimia begin after age 30. The oldest individual reported in the literature thus far has been 60 years old. This has been confirmed by nutritionists who report that a tiny minority of elderly nursing home residents do suffer from bulimia (16,17,59).

Only a few studies have included racial demographics (Herzog, 1982; Pyle et al., 1981), however, to date only 2 documented cases could be found in the literature. Under reporting may occur in blacks due to different cultural attitudes toward obesity among the lower socioeconomic classes. Data on racial differences shows, for instance, that black females between the ages of 35 to 55 are almost twice as likely to be overweight as their white counterparts. It has also been shown that those in a lower socioeconomic climate are more likely to be fat than those in higher economic groups (2,17,60).

It is presently estimated that 7.6 million women have a history of bulimia while about 50 percent of those are believed to be active bulimics. Results from a study in England confirmed similar findings. Other countries where bulimia is thought to be common include Sweden, Japan, Europe and Asia. Countries specifically mentioned include Holland, France, Indonesia, Malaysia, Guam, Columbia, Mexico, San Salvador and Puerto Rico, although no quantitative data was given. As previously mentioned, it is not believed to be as common in undeveloped areas, however, no tests have been done to date confirming this. The National Association of Anorexia Nervosa and Associated Disorders, reports that eating disorder cases have even been observed among black African tribes and rural Italian villiagers (J,35,56).

More males are believed to be affected by bulimia than anorexia. However, it is probable that fewer men will admit to a disease that has typically been associated with females. Their reluctance to seek help may indeed result in understated prevalence rates. Those who do suffer from eating disorders are usually involved in pursuits where weight maintenance is critical. Certain professional groups appear to be more vulnerable to developing bulimia and

include such occupations as dancers, jockeys, gymnasts, wrestlers, models, flight attendants, and actors. Since most men are believed to be bulimic because of involvement in sports, bulimia in males may be more episodic than the chronic form seen in females. It is projected that future research may indicate that males comprise greater than 20 percent of the bulimic population (39,40,49,55,61,62).

Between 1981 and 1983, a study by Massachusetts General Hospital in Boston, involving 14 anorectic and 13 bulimic males was conducted. It was the largest recorded study of eating disorders among men ever conducted. Results indicated that there was significantly more homosexuality among male patients with eating disorders than among females. This finding was supported by a UCLA eating disorder clinic. This may in part be due to cultural pressure for a homosexual male to be thin and attractive (62).

Both male and female athletes are in a high risk group for developing bulimia because of the emphasis placed on their weight, abilities and performance. A study conducted at Kent State University in Ohio in 1986 followed 75 female high school athletes and 72 female high school nonathletes. Their study demonstrated that 10.5 percent of

the athletes were bulimic, compared to 1.5 percent of the nonathletes (63). Another study conducted in 1986 by Sports Medicine Brookline on 93 of the nation's top female runners revealed similar findings. Twenty-five percent of these athletes reported a history of uncontrolled eating (63).

According to Herzog (1982), the average duration of bulimic symptoms is 6 years, however they may last much longer. Bulimia has a more chronic course than anorexia and may continue for 20 years resulting in increasingly frequent binge-purge episodes and progressive physical and psychosocial deterioration (37,42).

#### BINGING

Bulimia is operationally defined as recurrent episodes involving rapid consumption of large quantities of high-caloric food within a short time span. Bulimics frequently eat easily consumed simple carbohydrates like cakes, cookies and donuts, though other foods are also ingested. The binge usually lasts less than two hours, but can last all day (2,12,16,17,39,64).

Severity of bingeing varies considerably. Binges may range in frequency from a few times weekly, to occasional

binges which are usually related to stress. However, they may also occur more than 10 times a day (19,20).

Despite bulimia's literal meaning of 'ox hunger', the eating patterns associated with this disorder are far removed from hunger. The average woman requires between 1200 calories to 2100 for an entire day. In comparison, a bulimic may consume from 1000 to more than 55,000 calories in a single binge. However, the average binge is generally between 3000-5000 calories. Patients afflicted with this disorder can eat the equivalent of "5 hamburgers, 2 pizzas, 3 cups of chocolate pudding, 6 helpings of ice cream, half a loaf of bread smeared with butter and jelly and 10 slices of angel food cake" in one sitting, adding up to 25,000 calories for a single binge (1,2,11,16,39,65).

Since a bulimic's stomach can enlarge up to 5 times its' normal size, it takes increasingly large amounts of food to stimulate a feeling of 'fullness'. They may ingest between 5 to 10 pounds of food depending upon what is consumed. One individual reported a 45 pound weight gain over a 2 week period. Because of the massive quantities of food ingested, food bills can be quite expensive. Some victims report having spent \$70 for a single binge while Pope and Hudson (1984) describe patients in their study who

spent more than \$100 a day for food. Grocery bills caused one husband to inventory the food in the house before leaving for work. One female reports that her grocery bill dropped by \$500 a month once she modified her eating behavior. The Nashville Banner recently reported that some students use up a semester meal card in a 1 month period (2,16,37,39,56,59,66,67,68,69).

#### PURGING

It is readily understandable how this enormous intake could generate a desire to purge the body. Purging is accomplished most frequently by self-induced vomiting. It is practiced by 81 to 94 per cent of bulimics and is primarily used to control abdominal distention and to prevent weight gain. In some individuals, it becomes a near reflex. Kelly (1985) reported as many as 20 percent of bulimics being able to vomit at will. The bulimic frequently finds the act unpleasant, but becomes dependent on the feeling of relief derived. Vomiting is addictive and physically harmful. It is this behavior that causes the majority of the medical complications seen with this disorder (14,16,51,70,71,72).

Vomiting can be induced by many methods, some of which include contracting the stomach muscles, insertion of fingers, toothbrushes, or silverware down the throat, or drinking excess water. Application of external pressure to the neck may also be performed. Although emetics are rarely used, some are potentially fatal. Frequency of vomiting varies, but usually depends on the frequency of binges. A bulimic may vomit up to 15-20 times after a single binge to ensure complete emptying while others may self-induce vomiting less than weekly (14,16,19,51).

Other purging behavior patterns commonly seen in bulimia include prolonged fasting (90%), laxative abuse (60%), use of over the counter diet pills (50%), and abuse of diuretics (33%) (73). A minority will exercise compulsively (no numbers were reported), however this behavior is being seen more frequently. These will be discussed further in the medical complications section (48,51).

The "binge-purge-binge-purge cycle" develops often insidiously. Typically, binge eating precedes purging by one year and once purging is begun, eating becomes more chaotic. The individual begins to rely increasingly on this impulsive eating behavior to discharge a wide variety of feelings while also attempting to prevent weight gain (51).

Bulimics fear their ability to voluntarily stop a binge once it begins. Termination of a binge generally occurs because of depleted food supplies, social interruption, induced vomiting, exhaustion or abdominal pain. Sleeping post binge is also common (17,51,53,54)

The binge-purge cycle is both vicious and devastating. It is believed that a binge occurs following an extended period of severe dieting. This behavior increases the impulse to eat restricted foods and ultimately causes the individual to binge excessively. Immediately post binge, the individual may experience some relief, but it is very short lived. The resulting painfully full state brings about panic and intense fear of becoming fat. The individual then purges himself to relieve this painful fullness and sense of panic. The purging is reportedly a type of psychological undoing of the impulsive behavior as well as punishment for it (20).

Most bulimic episodes occur in the afternoon, early evening, or night. Some bulimics, however, experience episodes that interfere with their daily lifestyles which can ultimately compromise job performance (1,16,35).

There are several catalysts which may precipitate a binge. The most frequently mentioned reason states that

binges occur following an extended period of severe dieting. Additionally, psychosocial stress, boredom, loneliness, depression, anger and anxiety can prompt bingeing behavior as well (14,20,39,46,51,74).

#### PROFILE OF A BULIMIC

The typical bulimic is slightly older than the anorectic and is usually between 18 and 29 years of age. She appears to be the ideal student, working woman, and/or spouse. The anorectic frequently rejects the adult female role while the bulimic tries to fulfill her stereotype of the ideal "superwoman". Although they are usually high achievers, low self esteem is observed. Other characteristics commonly observed include an individual who has marked parental dependence, and is socially ambitious (20,25,65).

Their outward appearance is generally unruffled and non-helpful in making a diagnosis. Most have an unrealistic body image despite their weight and shape being within normal limits for their age and height. In fact, most bulimics maintain their weight 10 to 15 percent above or below their "ideal" bodyweight (20,27,38,75).

Although they appear sociable and conforming, it is socially difficult to get close to most bulimics and many have a hard time maintaining interpersonal relationships. Dysfunctional attitudes about eating and body weight consume enormous time and serve to further alienate the bulimic from others. Some would gorge and purge all day long if given an unlimited supply of food and a day alone. In fact, some victims plan their entire day around their eating habits and have been doing so for 10 to 20 years. Removing the phone from the hook, taking the day off from school or work, stocking up on food and laxatives and wearing loose fitting clothes are some of the tactics reportedly used (68).

The bulimic is frequently left with little energy for school, work, or relationships (2,39). Preoccupation with weight and dieting, obsessive fear of weight gain and body-image distortions are also commonly observed among bulimics (13,17). A bulimic's ideal weight is often less than the standard 'healthy' weight for her height (3,51).

Individuals with bulimia are frequently out of touch with their own feelings and have trouble experiencing and expressing emotions. These feelings are often misinterpreted as a need to eat (74).

Most bulimics are acutely aware that their eating behavior is abnormal and display feelings of guilt,

depression, and shame following a binge. Because of the stigma associated with this disorder, they attempt to keep their behavior a secret. Their eating behavior in social settings is appropriate and acceptable which make their eating habits appear unremarkable to family and friends. This makes detection of this disorder extremely difficult (2,19,51,77).

#### DIAGNOSIS

Detection is further hampered because of the subtle and frequently missed initial signs and symptoms. The bulimic will typically appear to be physically healthy so physicians and researchers must frequently rely on self-reporting as their major mode for detection. As pointed out by Humphries and Wrobel(1983), bulimia is "not diagnosable by the pound" as is in the case of anorexia (42). Although bulimia develops in individuals of all weights: normal, anorexic and overweight; the greatest prevalence appears to be among the normal weight female population. However, many were heavy before becoming bulimic and now control their weight through purging. Herzog (1982) found that after

bulimics have attempted several diets without success, they become aware of vomiting and laxative use as a means of weight control (3,16,39).

Bulimics rarely seek medical attention for bulimia itself and by the time a bulimic does seek help, anxiety and depression, which are common characteristics seen in bulimia, will have developed. Additionally, 5 percent will have already attempted suicide (1,40,73,77).

Another problem encountered in detecting bulimia pertains to the fact that less than 50 percent seek professional help and frequently not until this behavior becomes intolerable or they become concerned about their physical health. Denial and embarrassment reduce the likelihood of self-reporting (17,20,78).

Many physicians are not adequately trained to identify the subtle clues which may suggest bulimic activity. "Doctor shopping" is not uncommon and is a method of keeping their illness a secret, while it may also satisfy a desperate desire to find someone who can help (40,48).

According to many physicians, there has been an increase in the number of persons seeking help with weight and eating problems. This has resulted in increased recognition of bulimia as a major health problem. Some

psychologists and psychiatrists believe that bulimia is an enormous problem of epidemic proportions and is both underdiagnosed and under reported. Much of what is known about this disorder is from those who seek help (2,68,79).

The National Association Of Anorexia Nervosa and Associated disorders reports that a mere mention of their name in a magazine or on television generates massive quantities of mail. A recent referral in a Dear Abby column produced 15,000 letters (56).

Other reasons attributed to this increased prevalence include the possibilities that more people are admitting their illness, as well as, heightened public awareness which may have "alerted secret bingers" to the fact that they are not alone and can be treated" (3).

Major depression and anxiety have consistently been associated with bulimia by numerous researchers. Although there appears to be a relationship between some psychiatric disorders, namely depression, and eating disorders, the association remains unclear and further research is needed. As many as 75 percent of bulimics experience significant depression. Depressive symptoms appear to increase as weight increases or if there is no opportunity to purge after eating. Pope and Hudson (1984) reported that

47 out of their first 136 bulimic subjects had made at least one major suicide attempt during their lifetime (3) and other studies have supported this observation. Sexual promiscuity has been reported as well (2,3,17,40,42,58,74,80,81,82,83).

Excessive use of alcohol and other drugs have been correlated with bulimia and much of the literature supports this claim. Thirty-three percent of bulimics reportedly have a drug or alcohol problem. Bulimia has frequently been compared to alcoholism, but an alcoholic does not require liquor to live unlike the bulimic requires food (49). Two individuals recovering from alcohol and valium addiction reported that their attempts to overcome bulimia were much more difficult. One hypothesis proposes that bulimia may serve as a "replacement addiction" for individuals who have had a history of alcohol or drug abuse. Another commonly held thought is that bulimics abuse alcohol and drugs to reduce the abdominal pain and guilt associated with their binge-purge behavior. It is important that clinicians be aware that an associated addiction may exist in bulimic patients as it may dictate alternative treatment approaches (2,12,16,49,58,70,74,77,84,85).

Relatives of bulimics frequently have a history of alcohol abuse or depression too. Dr HSU, director of

outpatient and inpatient services for adolescents at Western Psychiatric Institute and Clinic in Oakland theorizes that "people who are depressed or alcoholic have a tendency to run away from stress as do bulimics, only bulimics focus on food" (69).

Bulimics additionally lack impulse control and have been associated with a variety of nonacceptable behaviors other than their bizarre eating habits. Compulsive shoplifting has been reported and the thefts commonly involve food, laxatives, and money (3,12,70).

#### SIGNS AND SYMPTOMS

In 1980, some of the controversy and confusion were removed when the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) published by the American Psychiatric Association (APA) declared bulimia to be a separate psychiatric syndrome. DSM-III is the official manual for diagnoses accepted throughout the mental health community in the United States. This manual further went on to list diagnostic criteria (See table 1). However, these criteria were also found to be controversial and in 1987, a revised edition, the DSM-III-R, was introduced. In an

effort to distinguish the disease from the symptom, "bulimia" became "bulimia nervosa". Additional changes included a minimum binge eating frequency of 2 episodes per week and a display of symptoms for 3 months (16,19,46,52).

#### MEDICAL COMPLICATIONS

Not all bulimics become ill, however the multiple health risks discussed in the literature make this a complex and very dangerous disorder. Additionally, it is not known for sure whether the body can restore itself to a normal status once bulimia is treated. While the chance of death is less than that of an anorexic, lost potassium and other potential medical complications can also be fatal in the bulimic (2,21,35,51,77).

There are numerous complications. Most are associated with purging and the method used, however, bingeing also has associated risks.

Postbinge complications include pancreatitis, which carries a 10 percent mortality rate, and transient elevations in liver enzymes. Acute gastric dilation, although rarely reported, is also potentially fatal, in addition to gastric rupture which has an 80 percent

mortality rate and requires immediate intervention. The stomach loses its elasticity and becomes stretched thereby inhibiting stomach contractions. This results in inadequate digestion. Since the propelling ability of the stomach is reduced, foods remain in the stomach longer causing further stretching of the stomach wall (16,20). The stomach of one bulimic individual reportedly contained eight liters of undigested food and liquid at the time of surgery (1,3,16,20,42).

Many of the medical consequences associated with this disease are secondary to self-induced vomiting which is also, as previously mentioned, the most commonly used purging behavior.

Repeated vomiting can lead to loss of body fluids and electrolyte imbalances. One such imbalance includes hypokalemia, an abnormally low potassium concentration in the blood, which can cause neuromuscular problems, "ranging from weakness to paralysis, irregular heart rhythms, gastrointestinal disorders and kidney disease" (20,35). This can be fatal to the bulimic. One patient in England reportedly developed kidney failure and high blood pressure after eight years of self-induced vomiting and purging. She later required a kidney transplant.

Additional hazards of self-induced vomiting are esophagitis, esophageal tears, or an esophageal rupture which is also a medical emergency (73). Pulmonary hazards include aspiration pneumonitis which can progress into severe respiratory distress syndrome. These pulmonary hazards typically occur in intoxicated or debilitated patients. Swollen, painless salivary glands in the cheeks are an indication of recent bulimic activity and may be helpful in the initial diagnosis of bulimia (1,16,20,39,42,73,77).

Other harmful complaints that are especially associated with stomach acid include chronic sore throats, extensive heartburn and an increased risk of developing esophageal cancer. The hydrochloric acid helps to regulate the body's acid-base balance, but when absent, alklosis results. This can be life threatening if medical intervention is not performed quickly (16,35).

Still others report stomach cramps, ulcers, constipation, generalized malaise and such constant physical problems as tiredness, apathy, and headaches (1,16,20).

The most frequently observed effect of self-induced vomiting is dental pathology. The repeated acidic vomitus washing over the teeth causes irreversible tooth damage.

Normally, the saliva protects the teeth from decay, however, the acid/alkaline imbalance created by the repeated vomiting prevents this mechanism from occurring.

Abscesses, mouth sores, enamel erosion, increased rate of caries development, sensitivity to temperature and gum infections have all been reported in the literature. These changes can result in significant morbidity and unnecessary expense. One victim reported spending between 5 and 6 thousand dollars over a 3 year period for dental work caused by her bulimia (16,86,87).

Although the consequences of vomiting may be more obvious, laxatives can be equally destructive and are believed to be more commonly abused than the emetic Ipecac (42). Ipecac syrup is reportedly rarely used by bulimics, but can result in fatality from myocarditis (1,88).

Laxatives are the second most frequently used method of purging. They are used by 68 percent of bulimics (70). One patient reported that she initially began taking 15 to 20 laxatives per day, but developed a tolerance, and now admits to ingesting at least 100 each day. Still others report taking 300 to 600 laxatives per day. The most frequently abused laxatives are phenolphthaleins, commonly

known as Ex-lax and Correctol. Druggist bills, typically spent on laxatives or emetics, may run as high as \$50 per week (2,16,39,70).

Although most bulimics believe that laxatives prevent calorie absorption, the weight loss which results is more realistically due to dehydration and electrolyte disturbance (1,14,42).

Laxatives do not provide the immediate sense of relief that vomiting does and is therefore, usually relied upon when 1) social circumstances deny the bulimic individual the opportunity to vomit 2) the individual cannot make herself vomit or 3) vomiting is adverse to her (16).

Excessive laxative use can result in severe dehydration and excruciating abdominal pain. The body quickly becomes dependent and dosage increases are required to maintain the same effectiveness. Physiologically, the intestines become abnormally enlarged and become impaired in their ability to absorb protein and fats. Protein malabsorption reduces one's ability to fight infections or build new muscle fiber while fat malabsorption can lead to deficiencies of vitamins A, D, E, and K. This in turn can result in bone destruction, kidney damage, poor skin, hair

loss, poor night vision and blood clotting problems. Use of enemas are rarely mentioned in the literature and are not frequently associated with purging (4,16,39).

There is contrasting data regarding the use of diuretics, or "water pills" as they are more commonly called. Some report that diuretics are used less frequently than vomiting or laxatives and is seldom the sole weight loss method utilized. Others maintain that water pills "may be an important part of the total ritual" (70).

Nevertheless, they are not believed to be a very effective method of losing weight since there is only a fixed amount of fluid, usually two or three pounds, that can be lost this way. One certainty is the potential dangers inherent in diuretic abuse. Consequences include dehydration, hypokalemia and alkalosis. Kidneys may be damaged and once diuretics are stopped, water retention may still occur secondary to dependency (4,14,16,35,70).

It is hypothesized that there are other complications which may develop subsequent to the abnormal eating pattern and enormous amount of carbohydrates ingested during binges. One such belief involves a vitamin and mineral deficiency, especially if bingeing is not supplemented by other balanced meals (4).

Another possibility is development of reactive hypoglycemia or low blood sugar. This may occur from massive ingestion of carbohydrates which would result in a sudden release of insulin, however, since simple sugars are absorbed very quickly, the insulin response may occur at a time when the carbohydrate levels are low. Symptoms would include dizziness, fatigue and depression.

Menstrual irregularities are common, although fertility does not appear to be a problem in normal-weight bulimics (2,51,77).

The occurrence of any of these complications will be even more serious in individuals who already have a medical condition such as kidney disease, heart disease or diabetes (35).

Bulimic diabetes are a particularly challenging group to treat. Some diabetics lack the hormone that regulates the metabolism of carbohydrates. This hormone is called insulin. To prevent high blood sugar and the serious medical complications associated with it, a strict balanced diet must be followed. Bulimia can predispose the diabetic to binge on the very foods that should be avoided (35).

## DIAGNOSIS

Early intervention improves the prognosis, however that requires early recognition. Most patients with bulimia have few, if any signs, and these can be very subtle. Many of the diagnostic clues result from consequences of the binge-purge behavior (48,73,77).

There are 3 signs observable on physical exam that may help with diagnosis. Skin changes over the dorsum of hand caused by stimulation of the gag reflex with the hand may appear in the form of superficial ulcerations, calluses or scarring. The knuckles are frequently involved. This change may be more observable early in the disease course since many patients with bulimia eventually learn to vomit reflexly. The second observable change involves hypertrophy or enlargement of the salivary glands, especially the parotid gland. It is usually bilateral, painless and can be quite apparent. The third and most obvious sign is dental erosion caused by the frequent washing of the teeth enamel by the acidic vomitus. Dentists can play a significant role in detection of this disorder (16,23,33,48,65,73).

If laboratory capabilities exist, additional tests can be done. Bloodwork may be drawn to check the

electrolyte potassium level. Hypokalemia may suggest abuse of laxatives, diuretics or habitual vomiting. The urine can also be screened to detect commonly abused laxatives, urine electrolytes, or for existence of urinary tract infections which are also fairly common in bulimics. Dehydration, which may be another sign of bulimic activity can be monitored by blood and urine lab values as well (23,46,70).

However, there are more subtle clues that should arouse suspicion and these can be practiced by anyone. Observe for expressed marked concern about weight gains, wide fluctuations in weight, frequent visits to the bathroom after meals especially accompanied by flushing or running water to disguise vomiting, vague complaints of feeling "sick" or bloated after a meal or even after ingesting small amounts, inability to keep food down, and ingestion of large quantities of food with no apparent weight gain. If suspicion is aroused, individuals should be questioned about their behavior. However, family members and friends are discouraged from attempting to treat, but instead should be aware that there are treatment resources available for treatment. Punishment and force are useless, as well as judgemental statements which are usually not well received. Abrupt discontinuance of bulimia is unlikely to succeed and treatment may be necessary (2,16,23,33,46).

## PROGNOSIS

The overall prognosis for bulimia is still questionable. The disease is still relatively new and long term studies are nonexistent. Some studies emphasize a poor outcome while others appear more optimistic. However, there is some indication that certain characteristics can enhance the long term prognosis (12,90).

It is crucial that the victim be willing to accept responsibility for getting well. One has to be emotionally ready to change if successful treatment is the goal. It is believed that the earlier the treatment begins and the younger the patient, the better the prognosis. In order to begin treatment early, the disorder must be identified early. Once the eating disorder has been recognized, the bulimic, who is aware of and disturbed by her eating habits, is usually more amenable than the anorectic to treatment. However, bulimics frequently refuse to cooperate. This can usually be related to their overlaying personality disturbances, impulse-control problems and family backgrounds (33,35,51).

A poorer outcome has been associated with a longer

duration of illness. The behavior is more ingrained and the individual is less likely to change (89).

There is controversy related to which group has a better prognosis - anorectics or bulimics. Some feel that bulimia is a more chronic type of disease which may allow the individual to avoid treatment longer. Symptoms become more severe and have a longer duration. Additionally, physical complications may become more frequent and the risk of suicide greater. Others believe that bulimics are easier to treat because they do not tend to deny their problem and are repulsed by their behavior unlike the victim of anorexia (35,51).

The outcome for alcoholic bulimics, as well as those with a history of alcoholism in the family, is also unclear. Some believe that these individuals are more severely disturbed and have a more chronic form of the disease, making treatment more difficult. Others believe that the outcome may be more favorable because these individuals tend to be more motivated for treatment. They can often see the painful comparison between bulimia and alcoholism and appear ready to accept help sooner (84,89).

The field is just too new to make any long term predictions about what will happen with bulimics in the

future, regardless of the treatment modality used. There is evidence that bulimia can go into remission and relapses are commonly seen during times of stress. But this will usually occur during the first 6 months after treatment. Some have gone so far as to compare bulimia to cancer. Victims may stop binge-purging activities totally with treatment, others stop temporarily, and most will at least cut down. "Some can't stop, but there are very few that can't be helped at all" (35). Statistics related to bulimia therapy reveal that 33 percent do very well, 33 percent do moderately well, and 33 percent do poorly (58).

#### TREATMENT

Bulimia therapy is still experimental and the efficacy of various treatment modalities has not yet been established. Consequently, no single therapeutic approach has emerged as the treatment of choice. Partial responsibility lies with the fact that no long-term well designed treatment program studies have been reported (16,28,39,46,90). Inherent in this lack of consensus on which treatment is best is the observation that each approach has achieved successes and failures (46) The

primary treatment methods discussed in the literature include psychotherapy, cognitive behavioral therapy and drug therapy.

It is generally agreed that multiple disciplines should be used for the treatment of bulimia, especially in view of its unclear etiology and extreme complexity. The combined disciplines should include a physician, psychiatrist, psychologist, nutritionist, social worker, and supportive nursing care. Most researchers and physicians also concur that treatment should be done on an outpatient basis unless the medical condition precludes this. Examples of situations which might warrant hospitalization include severe depression or suicidal ideation, acute electrolyte imbalance or dehydration requiring intravenous fluids (1,16,19,20,33).

Psychotherapy treatment includes individual therapy, group therapy, and family therapy. It tends to be the longest therapy and can last from several months to several years. It is also believed to be the most expensive by some. There is currently no evidence to suggest the superiority of any one particular psychodynamic treatment, as no formal studies have been done. However, some believe that group therapy is more effective than individual

sessions because of the support one receives from the group. Physicians frequently recommend their bulimic patients to such self-help groups as Overeaters Anonymous and Alcoholics Anonymous and patients who have participated in such groups reportedly consider them to be very beneficial (35,68,91).

Cognitive behavioral therapy is based on the principle that it is an individual's unpleasant thoughts that create unpleasant feelings and not external events, suggesting that if changes occur in an individual's thought processes, behavioral changes will follow. This type of therapy is aimed at eradicating the symptoms and attempts to identify and modify dysfunctional beliefs and value systems toward food and self. Bulimics are taught alternative ways of thinking about themselves, food, eating and weight. There are no physical side effects associated with this type of treatment, but it does require greater commitment from the patient. It is also believed to be more expensive than treatment with medications and is not always accessible although its usage is growing. On the positive side, there are indications that treatment with cognitive behavioral therapy may actually take less time than drug therapy as well as have a longer impact (16,20,58).

Antidepressant and anticonvulsant medicines have been used with varying results, however, additional studies are needed prior to drawing any realistic conclusions. Some researchers believe that medication should never be the sole treatment as it is not able to eradicate distorted beliefs and attitudes. Others feel that it may be helpful for "more depressed" or the more severe cases. Dilantin, an anticonvulsant, has been used, but study results were not consistent. The first study using this approach found a 90 percent improvement, while a later study reflected only a 42 percent improvement (16,20,33,46).

Use of antidepressant medications have met with better success. More than a dozen studies on antidepressants have come up with almost unanimous results. After 6 weeks of treatment, bingeing and purging reduced by an average of 75 percent and 25 percent stopped all together. It is not clear why antidepressants work, but they have been shown to work equally well in both the depressed and non-depressed bulimic patient. A study performed by Harrison and Hudson (1984) noticed a substantial amount of depression in their patients' familial histories. After administering antidepressants, it was noted that 89 percent had reduced their bingeing behavior and after an 8 month period, the incidence of bulimic episodes was reduced for 90 percent of the population and 35 percent had totally ceased the binge-purge cycle (16,58).

Advantages of drug therapy include absence of known long-term medical dangers, nonaddictive effect, ability to work quickly (usually within 3 to 4 weeks), wide availability since they can be prescribed by any physician, and inexpensive cost of 25 to 50 dollars per month. Negative associations with drug therapy include the fact that there is no way to tell in advance which medications will or will not work, so trial and error is practiced. Additionally, all of the drugs presently in use have some side effects ranging from such benign effects as lethargy, constipation, and dizziness to the more serious monoamine oxidase inhibitors or MAO inhibitors as they are more commonly called. This drug family produces impressive results, but can result in serious medical complications if certain foods and drugs are used containing tyramine or dopamine, which elevates the blood pressure. Such foods as aged cheeses, beer, Chianti wine, pickled herring, chicken livers, and sour cream are off-limits. The side effects associated with taking MAO inhibitors and ingesting one of these foods involves a dramatic increase in blood pressure, stroke and even death. Risks rise if the dose is too high and it is often difficult to regulate this drug in someone who is purging. Moreover, it can be fatal if the patient is suicidally depressed and overdoses on it (16,35,58).

Eating disorder clinics are available and growing in quantity, although exact numbers are unknown. They are especially prominent at universities all over the country and many reportedly have long waiting lists. However, this claim does not agree with a report provided by Drewnowski(1988) which revealed that the number of bulimic women seeking treatment in university health clinics has been reported as low. Another source revealed being denied the opportunity to perform a study of bulimia at a particular university because the school administration was already aware that the problem was severe and feared a scandal (35).

Inpatient treatment facilities are also available. Renfrew is the nations first residential non-hospital treatment center exclusively for anorexia and bulimia. While opening only three years ago in Philadelphia, Pennsylvania with 40 beds, they reportedly have already had over 7000 inquiries. The daily charge in 1985 was \$275 excluding specialist fees, however scholarships for treatment were available then (8,92).

Research has shown that vomiting ceases when food intake is under control making direct treatment for vomiting unnecessary. The literature also suggests that an abrupt discontinuance of bulimic behavior is unlikely to succeed as

there is no such thing as a quick fix. However, with self-referral being fairly common and increased public awareness and research occurring, perhaps future studies will provide a much better understanding of bulimia (2,17,89,93).

Correction of medical complications such as dehydration, electrolyte disturbances, or suicidal ideation should always be the primary concern. Afterwards, focus should be placed on helping the individual to establish some control over eating. There is evidence that cognition plays an important role in the development and maintenance of bulimia. Instruction on nutrition, body weight, and consequences of the binge-purge cycle are provided in an effort to change attitudes about food, body size and self-image. Nutritional counseling is extremely important if a lifetime recovery is desired. It is during this stage that interruption of the binge-purge cycle is attempted. Additionally, dietary assessment of eating patterns is performed and behavior patterns are modified as needed. Supportive care is crucial, although not always easy, since some eating disorder victims are not prepared for the changes that will have to be made (1,16,20,33,39,94).

The final stage deals with maintenance. Recovery takes months, even years and still not all recover. No one

really knows whether bulimics can be cured as the disease is fairly new and long term studies are nonexistent. Modified behavior patterns are continued with therapeutic support and regressive set backs are handled without patient humiliation (58,68).

## MATERIALS & METHODS

### METHODS:

#### Research Design

The prevalence of bulimia among active duty Air Force females is presently unknown. A descriptive prevalence study design will be used to describe the number of cases of bulimia among active duty women in the USAF at stateside bases during a specified 2-month interval. This study will be based on data collected using a self-administered questionnaire. The proposed timetable and personnel/resource requirements for this project are shown in Appendices A, B and C.

Air Force females were selected because of the escalating prevalence of bulimia among females in the general population. Air Force bases located in the U.S. were chosen because of similarities in availability of food, exercise options, and support from families, friends and self-help organizations.

## Study Population

The study population will consist of all women in the USAF on active duty status stationed in the continental United States. As of May 1987, there were 73,071 women in this category. Officers comprised 12,377 of this total and had a mean age of 34. The enlisted ranks included 60,694 women with an average age of 26 (95). Additional demographic data can be obtained from the Air Force Military Personnel Center, Randolph AFB, Texas. All females who have been on active duty status at least one year prior to the study date will be eligible to participate. A sample will be drawn from these women.

## Sample

The study sample will be obtained from ten Air Force bases in the continental U.S. To ensure an adequate sample size and representative sample, one base will be selected from each major command. One hundred women equally divided into enlisted and officer female groups will be randomly selected from each base over a two month period, yielding an approximate sample of 2000 females.

The questionnaires will be mailed prior to the semiannual weighing. Individuals who do not answer a second request to participate will be considered nonvolunteers and will be excluded from the study.

### Study Variables

This is a proposal for a study that will examine the occurrence of bulimia among USAF females. The DSM III-R diagnostic criteria (Table 1) will be utilized to determine whether respondents are bulimic. The variables that will be examined are shown in the questionnaire given in Appendix E. These variables include age (computed from date of birth and date of survey), rank, race (White, Black, Hispanic, Other), job (Air Force Specialty Code), height (inches) and weight (pounds), current Weight Management Program activity status (yes/no), use of alcohol or drugs, and overall body image.

### Data Collection

Data on all AF personnel are maintained at the AF Military Personnel Center (MPC) at Randolph AFB in San

Antonio, Texas. Fortuitously, the Special Actions Unit, who receives monthly weigh-in data from all bases, is also located at MPC. Therefore, MPC will be requested to select the study sample by generating a random computerized listing which satisfies the requirements of the proposed study. The master personnel computer at Randolph AFB will randomly select fifty enlisted females and fifty female officers from each base. This will be accomplished monthly for two months and these individuals will receive the self-administered questionnaire.

The presence or absence of bulimia will be determined by questionnaire responses and will be collected over a two month period. Questionnaires will be mailed to home addresses to ensure privacy and prevent the work setting from impacting responses (Appendix E).

The investigator will assign each subject a numerical code which will be duplicated on every questionnaire. This will assist in the detection of unreturned questionnaires so nonresponders can be recontacted a second time. It will also enable dental records to be reviewed for 'suspicious' indices as well as allow for closer observation of gross weight fluctuations recorded in the medical record. Nonrespondents who do not answer the second request to participate will not be included in the study results.

Requests beyond a second mailing are reportedly nonproductive in terms of significantly increasing response, so further attempts to enlist participation will not be made. Only the investigator will have access to the list of code assignments which will be maintained in a locked file until the proposed study is complete. At that time, the coded list of subjects will be destroyed.

These questionnaires will include an information sheet and a pre-addressed stamped envelope for questionnaire responses (Appendix D). Initial mail out will be done one month prior to an unannounced weigh-in. All individuals will be weighed on three different occasions. These weigh-ins will each be unannounced and will be solely used for this study so individuals will suffer no repercussion. A subsample will be randomly selected to receive a follow-up survey to estimate response variation and will occur with the final weighing.

It will be requested that all participants return their responses as soon as possible prior to the actual weigh-in. Nonrespondents will be contacted by a second questionnaire with a cover letter encouraging their participation.

An information letter will accompany each questionnaire and will explain the study purpose, the

potential risks and health benefits and address the issue of confidentiality of responses (Appendix D). Bulimia is a very sensitive subject so in order to safeguard subjects' privacy, there will be no consent form. Nor will any identifying information such as names, addresses or social security numbers be used on the questionnaires. The lack of the requirement to sign a consent form should greatly reduce the bias and increase truthfulness in participants' responses.

The questionnaire will be personally designed to identify characteristics which have been closely associated with bulimia in previously performed studies. Expertise will be obtained from a physician, nutritionist, behavioral scientist, and health educator.

The questionnaire will be pretested prior to the start of the study and revisions made as necessary.

It is difficult to estimate the response percentage expected because of the nature of the study. However, precautions to maintain confidentiality combined with the physical noninvasiveness of this study should yield a 75 - 100% response rate. This would provide a sample of approximately 1500 - 2000. College and general population studies rarely report problems concerning nonparticipation, however, the dropout rate may be higher among military

personnel because of the need to weigh and fear of not meeting weight standards.

### Data Analysis

The questionnaires will be checked for completeness upon arrival to MPC by the investigator. The completeness of data will be described for each variable so data can be analyzed more effectively and inferences can be made.

The data will be cross-tabulated to determine whether individual characteristics such as occupation have any relation to bulimic behavior. Certain jobs may place increased emphasis on being thin and patterns may emerge. Comparisons can then be made with general population studies. Although bulimia is observed to cross socioeconomic barriers, a comparison between the prevalence of bulimia among enlisted and officer females is warranted.

Individuals who are actually enrolled in the weight control program or have borderline weights may display increased tendencies toward bulimic behavior or other eating disturbances.

The prevalence rates of bulimia will be described by age, rank, race, job, use of alcohol or drugs, Weight

Management Program participation status, height and weight, and overall body image. A 95 percent confidence limit will be computed to describe the prevalence of bulimia among Air Force women.

## DISCUSSION

A descriptive study of the prevalence of bulimia is appropriate at this time for numerous reasons. Most of the studies that have been performed on bulimia have involved college students. Other general population groups have just recently been included, however, these studies are infrequent and to date have not specifically included military personnel who may also be at high risk of developing bulimia. Therefore, the distribution and frequency of this disease in the United States Air Force (USAF) remains undocumented.

Bulimia appears to be very prevalent in the general population and women are at significant risk of developing this disorder. To date, there is no data regarding the prevalence of bulimia among active duty Air Force female personnel, however, the military reports that females, from the general population, are joining the military in record numbers.

Female military members must additionally cope with stressors specifically inherent to the

military and these may further escalate the prevalence of bulimia among this population. Although the WMP may theoretically be effective in prevention of an overweight and unfit Air Force, it may in actuality promote weight control problems. People strive to fit the weight standards in any manner they can, frequently utilizing unsafe and unhealthy weight reduction strategies. The same pounds may repeatedly be lost and gained resulting in a phenomenon commonly referred to as the "yo-yo syndrome." The WMP itself may actually facilitate development of bulimia as a weight loss strategy among more vulnerable individuals. The possibility of this relationship should be examined. If the military insists on maintaining such a weight control program, it must also concurrently recognize and responsibly handle the inherent pressures created by the program.

Researchers and physicians alike agree that "yo-yo" dieting is an extremely unhealthy practice because each time the weight returns, it consists of more fat which becomes more difficult to remove. There are other numerous potential and devastating

complications associated with bulimia nervosa. Moreover, the dramatic correlations between chemical dependency and bulimia are frightening, especially when considered in relation to the military's primary function - defense of the nation and combat readiness.

Alcoholism and drug dependency are considered significantly sufficient problems by the Air Force to establish rehabilitation programs and stated policies. Anti-stress and smoking cessation clinics are available as well. The availability of such programs and clinics implies: 1) they are recognized legitimate health problems and 2) there is available treatment. These programs correlate with the military's desire to maintain healthy and productive workers. It also implies that people can be treated, but may require outside help. To date, there is no organized nutritional education or behavioral modification program which renders consistent assistance to those who may have weight or health problems based upon eating habits. Nor is there any formulated organized screening tool which can aid in the difficult task of detecting those individuals at highest risk to develop bulimia.

The U.S. Air Force has multiple physical activities and facilities available to improve morale and health, as well as aid in weight maintenance. However, nutritional clinics for 'healthy' active duty U.S. Air Force members are practically nonexistent. Most military members never encounter a nutritionist or diet technician unless being entered into the WMP or develop a medical problem requiring dietary counseling. Waiting until an individual begins to experience problems with weight or health is an inefficient and expensive way of dealing with this problem.

The nutritional component of the Air Force's Weight Management Program (WMP) does not correlate with the accepted symbiotic relationship that exercise and nutrition play in weight reduction/maintenance. The Air Force currently suggests quarterly nutritional counseling sessions for individuals enrolled in the WMP while increased emphasis and group support are placed on the activity component. Nutrition and modification of eating behaviors become the primary responsibility of the individual. Perhaps this places too much

accountability on the same individual who was 'not responsible enough' to maintain Air Force weight standards initially.

The study of bulimia among the Air Force population will provide essential information in assessing the relationship of bulimia to the Weight Management Program.

The variables selected for this proposed study have been identified as possible risk factors in studies of other populations and results of this study will be compared to prior study outcomes.

The proposed study has several strengths. A high rate of participation is anticipated since the study population is easily accessible. Additionally, there is minimal inconvenience associated with data collection. Potential benefits from performing this study are numerous and could result in healthier individuals.

Request for authorization to perform the study should be no problem in view of the topic, minimal cost and lack of research previously done in this area. The study is designed to 1) help eliminate administrative separations from the Air

Force secondary to not meeting weight standards, 2) promote health, and 3) reduce illnesses/medical complications associated with unsafe weight loss practices.

There are also potential weaknesses of the study. Questionnaire responses may be inaccurate, especially in view of the nature of the information requested. Questionnaire data are less valid and reliable than data obtained from medical record review because of inherent biases, including the tendency to present oneself in a favorable light. Questions pertaining to eating and dieting behaviors may encourage nonparticipation or inhibit honest responses. However, these obstacles are expected to be reduced through assuring complete confidentiality and pretesting the questionnaire. Use of dental records may further enhance or invalidate specific questionnaire responses depending on findings.

The sampling ratio of officers will be much higher than that of enlisted women, however this data can be used to determine if female officers tend to be thinner than enlisted counterparts. Officers perform as supervisors and serve as role

models for enlisted troops. This often results in higher expectations and more responsibility. Perhaps a future study could place more emphasis on the enlisted females.

It is expected that the syndrome bulimia will be less prevalent than in the civilian sector. This is partly due to the nature of the study, secrecy surrounding the disorder and fear of 'punishment', if confidentiality is breached. Although the syndrome itself may not be as prevalent as reported in the civilian population, it is believed that bulimic behavior will occur quite extensively. The highest prevalence rates are expected to be associated with mandatory weigh-in periods and an increase in other non-healthy weight control strategies are probable as well.

Results will be forwarded to the Air Force Surgeon General, the person in command of all the health care resources in a given area. Recommendations to the WMP will be made based on study results.

## CONCLUSIONS AND RECOMMENDATIONS

The proposed study can be readily accomplished in a cost effective manner. Education does not always breed motivation and positive behavioral changes are not always the end result. However, nutritional education should precede enforcement of weight regulations and should ideally be available to everyone.

The Air Force sustains programs which help individuals to refrain from using cigarettes and other drugs. These programs usually include weekly help sessions, however individuals who experience difficulty in handling food may be seen quarterly at best. It is ironic that less help is available for dealing with substances the body requires daily.

Recognition by the military that some individuals require more assistance with weight control and associated eating disturbances is paramount in bringing individuals with eating disorders into the open. This can be partially

fulfilled by developing a nutritional education/support group. The end result may be less frequent use of unhealthy weight reduction strategies and a healthier military. Physicians in the civilian community frequently refer patients in the civilian community to such programs with some successes reported.

The development of a nutritional/support group or better availability of nutritional counseling may benefit even those without a weight management or eating problem. Nutritional requirements and marketed food options constantly change. Enhanced nutritional awareness would allow individuals to update dietary data and help eradicate outdated, inaccurate information. Individuals should be given an opportunity to use what they have been taught until competence or comfort is exhibited.

Additional recommendations include:

- 1) substitution of scheduled weighings which imply 'do what you must to ensure compliance with weight standards', for nonscheduled weighings which imply 'weight maintenance as a lifestyle';

- 2) enhanced dental feedback regarding 'suspicious' dental exams;
- 3) improved training for health providers in bulimia detection, epidemiology and treatment, including the ability to make proper referrals;
- 4) inclusion of an 'eating disorder' questionnaire with weigh-ins to help identify bulimic behavior early;
- 5) enhanced individualized assessment of what individuals know and identification of specific eating/exercise problems prior to enrollment in a weight management program;
- 6) better use of medical records to detect trends in illnesses and complaints, in addition to gross unexplainable weight fluctuations. An example would include increased and recurrent complaints of gastroenteritis documented in medical records around weigh-ins.

Formulation of a weight control program which solely examines the final outcome of weight loss, without examining the means, may result in overall decreases in health status. Ensuring that

individuals are educationally prepared with current data is one method of minimizing unsafe weight loss practices.





## APPENDIX C

### RESOURCE REQUIREMENTS

#### Office Space

2 desks and chairs

lockable file cabinet

telephone with autovon access

general office supplies (pens, pencils, file folders, etc.)

#### Access to:

copy machine

computer and commercial software

Randolph AFB Military Personnel Center's Computer

Approving authority is the USAF.

No travel is deemed necessary, however, if warranted, Space A travel should be available. Investigator will utilize own office, but will request additional funds to defray cost of office supplies and equipment. Request for installation of another phone line will be made to help provide study participants with better access to investigator. The research facilities of RAFB/MPC will be utilized by the investigator for sample selection, material printing and dissemination, data collection and computer access for data analysis. Proposed study should be completed in 1 year.

#### APPENDIX D. INFORMATION SHEET

You are being asked to participate in a research study that will help the U.S. Air Force to determine what effect, if any, the U.S. Air Force's Weight Management Program and mandatory weigh-ins have on your health, eating patterns and attitudes and exercise habits.

Your name was randomly selected by the master personnel computer at Randolph AFB in San Antonio, Texas.

All stateside bases are being asked to participate. If you decide to take part, you will be asked to fill out a questionnaire that asks you questions about your eating and exercise habits.

There is no risk of harm or inconvenience to you. Your decision to take part in this study is voluntary. You are free to choose not to take part in the study or stop at any time. In no way will your job, employment status or military career be affected by either your participation or nonparticipation in this study.

The questionnaire will take approximately 15 minutes to complete and can be returned to us in the enclosed self-stamped addressed envelope. For this study to be complete, it is very important that you answer each question

as carefully as possible. There are no right or wrong answers. Please select the answer that fits you the best.

All your answers will be kept confidential. Results of the study will be made available to AF officials, however, you will not be identified in any way.

Your participation will help us to determine whether the present mandatory weigh-ins and weight management program are helping us to be healthy or causing unsafe health weight loss practices.

If you have any questions, please feel free to call (Project Officer's Duty Telephone Number). No identifying data will be needed when requesting information.

APPENDIX E. SAMPLE QUESTIONNAIRE

1. Date of birth (month/day/year) \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_
2. Rank (check one)  
Enlisted \_\_\_\_\_  
Officer \_\_\_\_\_ Base \_\_\_\_\_
3. Race (check one)  
White(not Hispanic) \_\_\_\_\_  
Black \_\_\_\_\_  
Hispanic \_\_\_\_\_  
Other(write in race) \_\_\_\_\_
4. Job (AFSC) \_\_\_\_\_
5. Height (inches, \_\_\_\_\_)
6. Weight at last official weigh in  
(pounds) \_\_\_\_\_  
(Verifiable by AF Form 379 - Individual Physical  
Fitness Record)
7. Are you presently enrolled in the Weight Management  
Program?  
\_\_\_\_\_ Yes \_\_\_\_\_ No
8. Have you ever been enrolled in the Weight Management  
Program?  
\_\_\_\_\_ Yes \_\_\_\_\_ No
9. Smoking history:  
\_\_\_\_\_ nonsmoker  
\_\_\_\_\_ smoke less than one-half pack per day  
\_\_\_\_\_ smoke 1 pack per day  
\_\_\_\_\_ smoke more than 1 pack per day
10. Alcohol history:  
\_\_\_\_\_ nondrinker  
\_\_\_\_\_ drink 1 to 2 drinks or less per week  
\_\_\_\_\_ drink more than 2 drinks per week
11. Are you basically satisfied with your size and shape?  
\_\_\_\_\_ yes \_\_\_\_\_ no
12. If you answer no to #11, do you feel that you are:  
\_\_\_\_\_ too fat  
\_\_\_\_\_ too thin

13. If you could be any weight, what would you want to weigh?  
 \_\_\_\_\_ (please record in pounds)
14. For your age, would you consider yourself:  
 \_\_\_\_\_ underweight  
 \_\_\_\_\_ averageweight  
 \_\_\_\_\_ overweight
15. Have you ever attempted any of the following within 1 hour after eating? Check all that apply:  
 \_\_\_\_\_ made yourself vomit  
 \_\_\_\_\_ used laxatives in a dosage higher than recommended or prescribed  
 \_\_\_\_\_ exercised until exhausted  
 \_\_\_\_\_ fasted after "eating too much"
16. Do you usually eat (check one):  
 \_\_\_\_\_ until satisfied  
 \_\_\_\_\_ until stomach full  
 \_\_\_\_\_ until stomach hurts  
 \_\_\_\_\_ until unable to eat more
17. Do you ever fear that you will not be able to stop eating once you start?  
 \_\_\_\_\_ yes \_\_\_\_\_ no
18. Have you ever been treated by a physician for an "eating disorder"?  
 \_\_\_\_\_ yes \_\_\_\_\_ no
19. Please answer the following questions:  
 Do you rapidly (less than 2 hours) eat large amounts (what most people would consider double portions or more of at least 2 food items during one sitting, on a regular basis (more than just occasionally)?  
 \_\_\_\_\_ yes \_\_\_\_\_ no
- Are you afraid that you will be unable to stop eating when you overeat?  
 \_\_\_\_\_ yes \_\_\_\_\_ no
20. Do you regularly make yourself vomit, use laxatives or strictly diet or fast to prevent weight gain?  
 \_\_\_\_\_ yes \_\_\_\_\_ no

21. As USAF weigh-in approaches, do you ever try to lose weight quickly?  
       \_\_\_\_\_yes                  \_\_\_\_\_no
22. Does the current WMP (Weight Management Program) meet your needs as far as helping you to safely reduce or maintain your weight?  
       \_\_\_\_\_yes                  \_\_\_\_\_no
23. If you answered no to #20, please state why?
24. Do you have any constructive suggestions to offer to make the program work more effectively for YOU (Please use the back if more space is needed)
25. What type of exercise do you do (check all that apply):  
       \_\_\_\_\_jogging                  \_\_\_\_\_swimming  
       \_\_\_\_\_walking                  \_\_\_\_\_bicycling  
       \_\_\_\_\_aerobic dance          Others (write-in) \_\_\_\_\_  
       \_\_\_\_\_other dancing
26. How often do you exercise(check one)?  
       \_\_\_\_\_less than weekly  
       \_\_\_\_\_weekly  
       \_\_\_\_\_daily  
       \_\_\_\_\_2 times a week  
       \_\_\_\_\_3 times a week
27. How long do you usually exercise per session(check one)?  
       \_\_\_\_\_less than 20 minutes  
       \_\_\_\_\_20 to 30 minutes  
       \_\_\_\_\_longer than 1 hour

Thank you for the taking the time to complete this questionnaire.

**Table 1. DSM-III-R CRITERIA FOR BULIMIA NERVOSA**

- A. Recurrent episodes of binge-eating (rapid consumption of a large amount of food in a discrete period of time, usually less than two hours).**
  
- B. During the eating binges there is fear of not being able to stop eating.**
  
- C. The individual regularly engages in either self-induced vomiting, use of laxatives, or rigorous dieting or fasting in order to counteract the effects of binge eating.**
  
- D. A minimum average of two binge-eating episodes per week for at least three months.**

**Table 2. PHYSIOLOGIC CHARACTERISTICS AND MEDICAL  
COMPLICATIONS ASSOCIATED WITH ANOREXIA**

- obvious loss of subcutaneous fat
- dry, inelastic skin with a yellowish carotenemic hue
- petechiae
- low body temperature
- bradycardia
- hypotension
- lanugo
- peripheral edema
- amenorrhea
- thin scalp and pubic hair
- constipation
- dehydration
- insomnia
- dental caries and periodontal disease
- hypokalemia
- hypochloremic alkalosis
- low to normal glucose
- leukopenia
- elevated serum carotene levels
- abnormal electrocardiography
- cerebral atrophy
- cardiac arrhythmias
- death

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