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A Systematic Review of the Prevalence and History of Eating Disorders in College Students: A Comparison of Western and Nonwestern Countries

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Abstract

College students are one of the more vulnerable population groups when it comes to mental health issues, and approximately one in four students have a diagnosable mental health concern; eating disorders. Students, especially females, have an increase focus on their body image and are willing to go to extreme measures to change their bodies' shapes and sizes through unhealthy diet, purging, binging, or similar actions. In the past, eating disorders have been primarily a Western disease, but research has shown an increasing prevalence among Nonwestern countries with rates as high as some Western countries. The objectives of this study were to compare the prevalence rates of eating disorders among college students in Western and Nonwestern countries. Secondly, to examine the history of eating disorders to determine trends that might be influencing the prevalence rates in both Western and Nonwestern countries. Eating disorders that were examined are anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), and other specified feeding and eating disorders (OSFED). This research is important to determine 1) whether or not Nonwestern college students are being affected by eating disorders, 2) if the prevalence rates of eating disorders in college students in Western and Nonwestern countries are increasing, and 3) what trends in the past have been occurring that might have influenced the prevalence of eating disorders. It is concluded that the prevalence rates of specific eating disorders have been rising in both Western and Nonwestern countries while others remain stable or declined.

Background & Context

College is a very exciting, yet stressful, time in a person's life. For most students, it is the first time living away from home, and they have much more newfound freedom and responsibility, which can be difficult to manage at times. One aspect which students have more control than while in high school is within dining habits. Students can now choose when, where, what, and how much or how little they want to consume, which can make college a risk factor for developing eating disorders. However, there are many factors, such as time, convenience, cost, taste, health, physical and social environment, and weight control, which influence food choices of college students (1). These factors tend to worsen eating habits during a person's college years (2). A longitudinal study was conducted to determine whether disordered eating habits increased during the transition from high school to college. This study discovered that although disordered eating habits were already present before the transition to college, it is common for young women to have poor self-image, dieting behaviors, and eating disorder symptoms both before and during college (3).

Furthermore, college students are one of the population groups at a high risk to develop mental health issues, which includes eating disorders. Research has shown a rise in mental health issues in college students these past few years (4), most likely as a result from students becoming more and more stressed due to coursework, identity shifts, finances, competition between other students, future jobs, poor time management, and overwhelming schedules. However, due to the negative perceptions college students have toward mental illnesses (5), students might not seek the help they need, especially if they do not realize they have a problem, such as most individuals with eating disorders. Hoyt and Ross (6) claim that college populations are at a higher risk for eating disorders because of "age-related, developmental, and environmental

factors." Even more so, students, especially females, are at risk to developing eating disorders (7) due to negative body image (8) and the pressure to have a slender figure (9). Therefore, because females tend to have a more negative body image and more pressure to have a slender figure than males, they tend to have higher prevalence rates of eating disorders. In fact, one study found that although eating disorder prevalence rates are relatively uncommon, they are more common among adolescent girls and young women, including college aged students (10). Another study found that men are more likely to overeat than women, but women are more inclined to lose control while eating, similar to binge eating. The same study also stated that women are much more likely to report body checking and avoidance, binge eating, fasting, and vomiting (11)

The National Eating Disorder Association (NEDA) reported that in the United States alone, 20 million women and 10 million males will have an eating disorders at some point in their lifetime (12). Of these statistics, many of these are college students. One study from the 1980s reports that the rates of eating disorders on college campuses were as high as 20% (13). Moreover, it is not just western college students that are affected by these issues. Nonwestern college students face their own challenges while pursuing higher education. These students also struggle with mental illnesses such as depression and anxiety, which can affect their eating habits. Many studies report prevalence rates of eating disorders that are similar to Western cultures (14, 15, 16). However, the prevalence of eating disorders in college students around the world is hard to determine due to discrepancies with previous studies and sensitivities to the methods and data. For example, there are a variety of data collection methods and resources available, demographic differences in the populations surveyed, variations in specificities of the data, differences in the way results are presented, and alterations in the way specific eating disorders are defined (10). This paper aims to provide insight on the patterns and prevalence of

eating disorders in the college population in Western and Nonwestern countries and shed light on some of the discrepancies in the data.

Understanding Eating Disorders

Before delving into the prevalence rates of eating disorders, it is important to understand which eating disorders were evaluated in this study and how they are defined by the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V), which is the 2013 update to the American Psychiatric Association's (APA) classification and diagnostic tool, and is a universal authority for psychiatric diagnosis in the United States. In general, feeding and eating disorders are characterized by a continual disturbance of eating or eating-related behavior. This typically impairs psychological or physical health, the latter through altered consumption of food. Most diagnoses have a body mass index (BMI) requirement. A BMI is a weight-to-height ratio that is used in anthropometric measurements to indicate a person's health status. Although this measurement is critical to the diagnosis, it is important to note that BMIs do not allow for measurements of bone, muscle, or fat, so it is important to not base the diagnosis solely on a person's BMI, but rather behaviors and beliefs.

The first eating disorder ever to be studied is anorexia nervosa (AN) in 1869 by Richard Morton, although there have been reports of self-starvation throughout history dating back to the early 1200s. Although Morton is the first person credited with the earliest report of AN in medical literature, there were independent reports by Sir William Withey Gull in England and Ernest-Charles Lasègue in France around the same time, which demonstrations the cross culture aspect of eating disorders. Furthermore, Gull was the first person to coin the term “anorexia

nervosa," which allowed physicians and psychologists to differentiate AN from other disorders, such as hysteria, insanity, and tuberculosis (17). The specific diagnostic criteria have changed since the first publication; however, many characteristics of eating disorders are similar. Currently, AN is diagnosed when an individual restricts their energy intake to such a low amount that it leads to a significantly low body weight, which is defined as a weight that is less than minimally normal, in the context of age, sex developmental trajectory, and physical health. Individuals with AN also have an intense fear of weight gain or behave in way that interferes with weight gain, even when these individuals are already at a significantly low weight. Additionally, another diagnostic feature of AN is that individuals have a disturbance in the way their body weight or shape is experienced or when self-evaluating, these individuals might allow excessive influence of their body weight or shape or not recognize the extreme seriousness of their current low body weight. There are two different classifications of AN, the restricting type and the binge-eating purging type. Individuals diagnosed with the latter must have engaged in recurrent episodes of binge eating or purging behavior during the last 3 months. Individuals diagnosed with the former have not engaged in any episodes of binge eating or purging behavior in the last three months. There are 4 different severities of AN; mild with a BMI <17, moderate with a BMI 16-16.99, severe with a BMI 15-15.99, or extreme with a BMI < 15 (18).

The next eating disorder to be diagnosed was bulimia nervosa (BN) in 1985. Prior to 1985, BN was only a symptom of AN and not its own diagnosis (13). However, there was a rise in cases of AN that BN is characterized by repeated episodes of binge eating, which is defined as eating an amount of food that is definitely larger than what a majority of individuals would eat in a similar period of time with similar circumstances within any two hour period. Binge eaters also feel a lack of control, as if they cannot cease to eat or control what or how they are eating, of

their eating during this time frame. Individuals with BN also have recurrent inappropriate compensatory behaviors. These behaviors occur, on average, at least once per week for three months. Similar to AN, individuals with BN place a great amount of worth on their body shape and weight when self-evaluating. Furthermore, there are four classifications of BN; mild with 1-3 episodes of inappropriate compensatory behaviors, moderate with 4-7 inappropriate compensatory behaviors, severe with 8-13 inappropriate compensatory behaviors, and extreme with 14 or > inappropriate compensatory behaviors (18).

The third eating disorder to be discussed is binge eating disorder (BED). BED was not an official diagnosis until the DSM-V was published, which makes finding data problematic. This disorder is similar to bulimia nervosa; however, individuals do not purge or use compensatory behaviors after eating. Therefore, BED is characterized by recurring episodes of binge eating, as previously defined in the above paragraph. These episodes are associated with three or more of the following: rapid eating, eating uncomfortably full amounts of food when not physically hungry, embarrassed by the amount of food one is eating to the point where he or she eats alone, feeling disgusted with oneself, depressed, or guilty, or marked distress in regards to the binge. These behaviors occur at least once per week for three months and are not associated with compensatory behaviors as seen in BN. Again, there are four classifications of BED similar to the previous eating disorders; mild with 1-3 instances of binge eating, moderate with 4-7 instances of binge eating, severe with 8-13 instances of binge eating, or extreme with 14 or > instances of binge eating (18).

Other specified feeding and eating disorders (OSFED), previously Eating Disorders Not Otherwise Specified (EDNOS), is a less severe category of feeding and eating disorders and is also new the DSM-V, similar to BED, although EDNOS was a category of eating disorders in the

DSM-IV. Individuals diagnosed with OSFED have symptoms of a feeding and eating disorder that cause clinically significant distress and social or occupational impairment, or impairment in other areas necessary to function. However, individuals diagnosed with OSFED do not meet the full criteria for any of the disorders in the feeding and eating disorder diagnostic class. Clinicians choose to identify why the criteria is not met and can instead identify the patient with one of five other diagnoses, the first being atypical anorexia. Atypical anorexia meets all the criteria for AN, except the individual's weight is within or above normal range. The next possible diagnosis is bulimia nervosa (of low frequency and/or limited duration), in which all of criteria for BN are met except that binge eating and inappropriate compensatory behaviors occur typically less than once per week and/or for less than three months. Binge eating disorder (of low frequency and/or limited duration) is the third possible diagnosis, which is similar to BED except that the binge occurs typically less than once per week and/or for less than three months. The fourth diagnosis possibility is purging disorder, which is characterized by recurrent purging behavior done to affect the weight or shape of an individual in the absence of binge eating. Lastly, a clinician could diagnose a person with night eating syndrome. This disorder is defined by recurrent instances of night eating, which can be either eating after awakening from sleep or eating an excessive amount of food after the evening meal, with full awareness of the eating behaviors.

There are other feeding and eating disorder classifications that are not examined in this study. For instance, if the individual does not meet the criteria for a feeding or eating disorder or OSFED, they might fall under the category of an unspecified feeding or eating disorder. This diagnosis is used when symptoms of a feeding and eating disorder are present and cause distress or social or occupational impairment, or impairment in other areas necessary to function; however, these symptoms do not meet the full criteria for any of the disorders in the feeding and

eating disorder diagnostic class. Unlike OSFED, clinicians choose to not specify why the criteria are not met. This is typically because there is a lack of information to make a more specific diagnosis. Other feeding and eating disorders not examined were pica, rumination disorder, avoidant/restrictive food intake disorder, all of which are persistent failures to meet nutrition needs as evidenced by one or more of the following significant weight loss, significant nutritional deficiency, dependence on enteral feeding or oral nutritional supplements, and marked interference with psychological functioning (18). Although these are not studied in this paper, they still affect individuals and are important to diagnose and treat.

There are two main risk factors for eating disorders – genetics and the environment –and much debate has taken place over which contributes more to the development of eating disorders. Past research has shown a strong link to genetics and the development of research (19, 20). These studies examine twin and families studies and indicate genetics have a more prominent role in the development of eating disorders than the environment. Sociocultural theories currently dominate the literature on the risk factors for eating disorders; however, these theories suggest that the environment greatly contributes to the development of eating disorders but does not inhibit eating disorders not been tested (20). Furthermore, it is reported that approximately 90-95% of anorexics are young females (13), which can be considered a risk factor for the development of eating disorders. Age is also considered a risk factor for eating disorders – high school and college aged students are at the highest risk to develop eating disorders (6). Outside of genetics, risk factors include the social class, level of industrialization of a country, level of urbanization, and occupation – ballet, athletics, and fashion report the highest rates of eating disorders within their respective industries (21). Rates of eating disorders appear most strongly in societies that value the western ideal of thinness, which some

nonwestern countries have adopted. Therefore, even though eating disorders began as a Western phenomenon, they have quickly spread to Nonwestern cultures. Because of the risk factors listed above, it is speculated that eating disorders are not found in developing countries plagued by famine or starvation (17); however, another possibility as to why there is no data might be because these countries do not have the means or facilities to conduct epidemiological studies (21). Furthermore, eating disorders have many impacts on an individual regardless of the culture, including physical, psychological, social, cultural, societal, and many other influences. These lead to a multitude of problems within the individual besides physical and psychological stresses. The fact that eating disorders have begun to arise in nonwestern countries show that eating disorders are not limited to western countries alone. Some studies report that nonwestern countries have similar rates of eating disorders as seen in western countries (14, 15, 16). This paper aims to shed some light on these claims.

Objective & Methods

This study was meant to examine and compare the prevalence rates of western and nonwestern countries. It is critical for this study to have been conducted because many studies report various prevalence rates on eating disorders and it is important to clarify these results. Furthermore, similar to most research on prevalence, the main significance of this study is to gain an understanding of the widespread presence of eating disorders in a given population at a given point. However, this research will compare the prevalence rates of Western and Nonwestern countries to determine whether or not Nonwestern countries' eating disorder prevalence rates are simulating Western countries rates. Lastly, this study will explore the history of each eating disorder and track the trends, which is important for current and future strategies

of reducing the prevalence of eating disorders on college campuses. The objectives of the study were to 1) Track the prevalence rates of eating disorders in college students in Western and Nonwestern countries for the past 35 years, 2) Compare the prevalence rates of eating disorders in Western countries with Nonwestern countries, and 3) Analyze historical trends in relation to the current trends of eating disorders in college students. This paper aims to answer the following research questions:

1) Are prevalence rates of eating disorders rising or declining?

2) Are college students in Nonwestern countries as affected by eating disorders as college students in Western countries?

3) Is there a specific eating disorder that is more prevalent than others?

4) Can evaluating the history of eating disorders help draw conclusions on trends in its development?

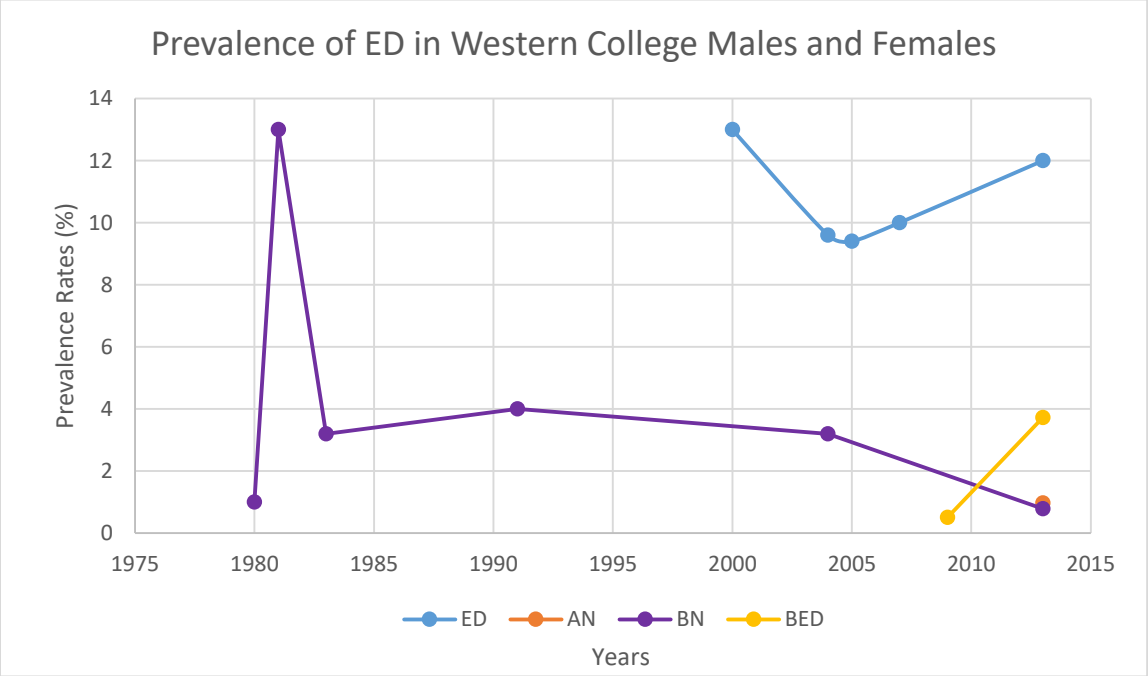
To collect this data on prevalence rates, a quantitative systematic review of all studies since the 1980s that focus on the prevalence rates of eating disorders has been completed. Databases used to find primary sources included Academic Search Complete, Cumulative Index to Nursing and Allied Health Literature, Medline, ProQuest, and PubMed as well as resources from the Northern Illinois University (NIU) library. An Excel file with a master spreadsheet for organizational purposes was created along with individual spreadsheets for each study that was reviewed. Western countries examined in the study include the United States of America, England, Portugal, Hungary, and Iceland; Nonwestern countries include China, Turkey, North Korea, South Korea, and Japan.

Data Analysis

The data shows interesting trends in eating disorders. There were three different types of studies collected: a combination of male and female prevalence rates presented as one rate, prevalence rates of only female eating disorders only, and prevalence rates of only male eating disorders. The study looked at each three different type for both western and nonwestern countries. Furthermore, studies reported on either eating disorders individually, such as AN or BN, or they reported on the prevalence of eating disorders as a whole, taking into consideration a multitude of eating disorders for one prevalence rate. This discrepancy was taken into consideration when calculating the rates of eating disorders; thus, total eating disorders is reported as its own data line on the graph.

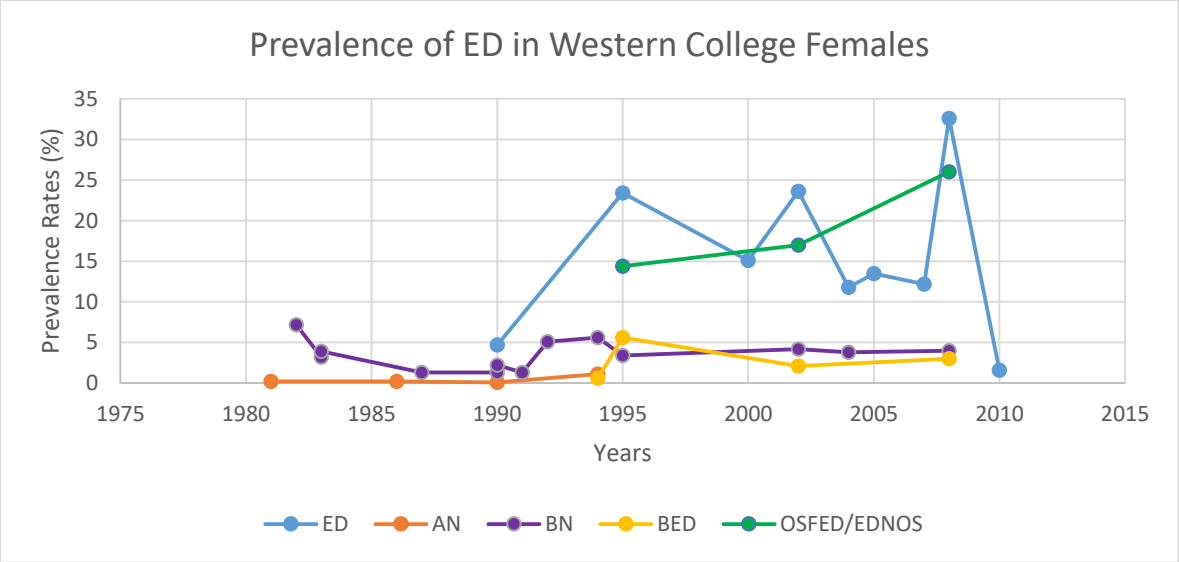
Graph 1.1, as shown below, displays the prevalence of eating disorders in western college males and females. The data reported is only on studies that researched male and female college students as a combined group instead of separating them by gender. It shows a spike in BN during the early 1980s, but then the prevalence rates slowly decrease. The spike is most likely because BN was becoming increasing prevalent and gained its own diagnosis in 1985. Furthermore, it is interesting that there is only one rate of AN reported in males and females. This is difficult to see on the graph due to the rate overlapping with BN; however, there is one rate reported between 2010 and 2015. This may be because AN was considered a disease that only plagued young women for quite some time. However, although the prevalence rates are limited for AN and decreasing for BN, the prevalence rate for total eating disorders is gradually increasing. This could be due to the fact OSFED (formerly known as EDNOS) is also increasing in female and male western populations. However, BED is also increasing in western college

students, which may also play a role in the gradual increase of total eating disorders in the wester college populations.



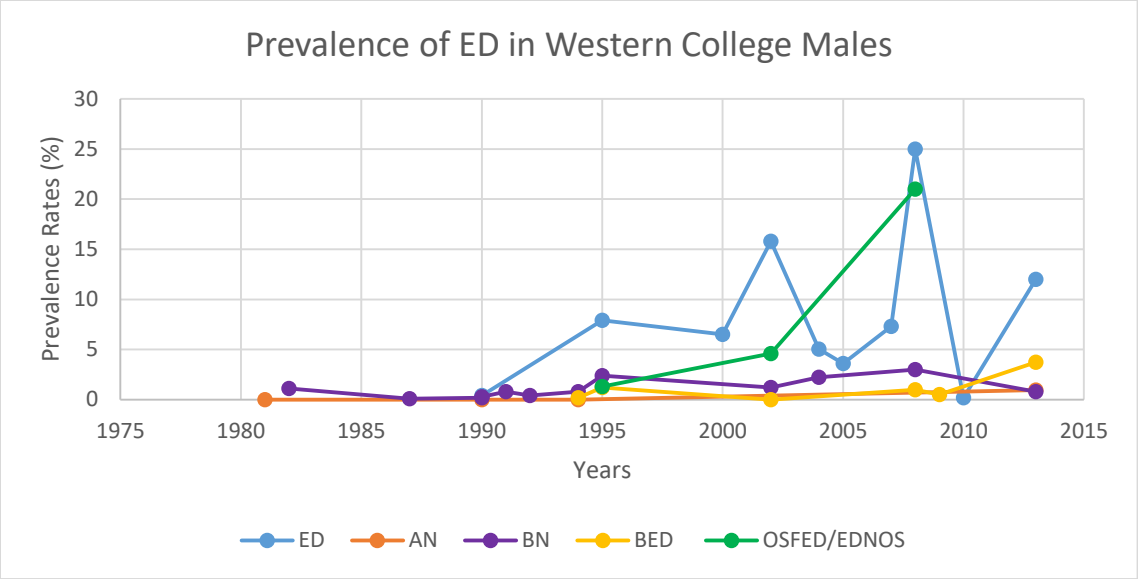
Graph 1.1

The next graph featured is Graph 1.2, as shown below. This graph looks at the prevalence rates of eating disorders in the western female college population alone. This graph depicts AN, BN, and BED to be relatively low and stable over the past 40 years. However, the rate of total eating disorders is much higher, understandably; however, it also dropped drastically near 2010. This could be because of errors within the study itself, or perhaps eating disorders are decreasing. One eating disorder not found to be decreasing is OSFED and previously EDNOS. This disorder may not be decreasing because it has less stringent diagnostic requirements than other eating disorders studied and cases that do not meet the full criteria of AN, BN, or BED would fall into this category. Therefore, it is possible that cases of eating disorders are not decreasing, but possibly becoming less severe.



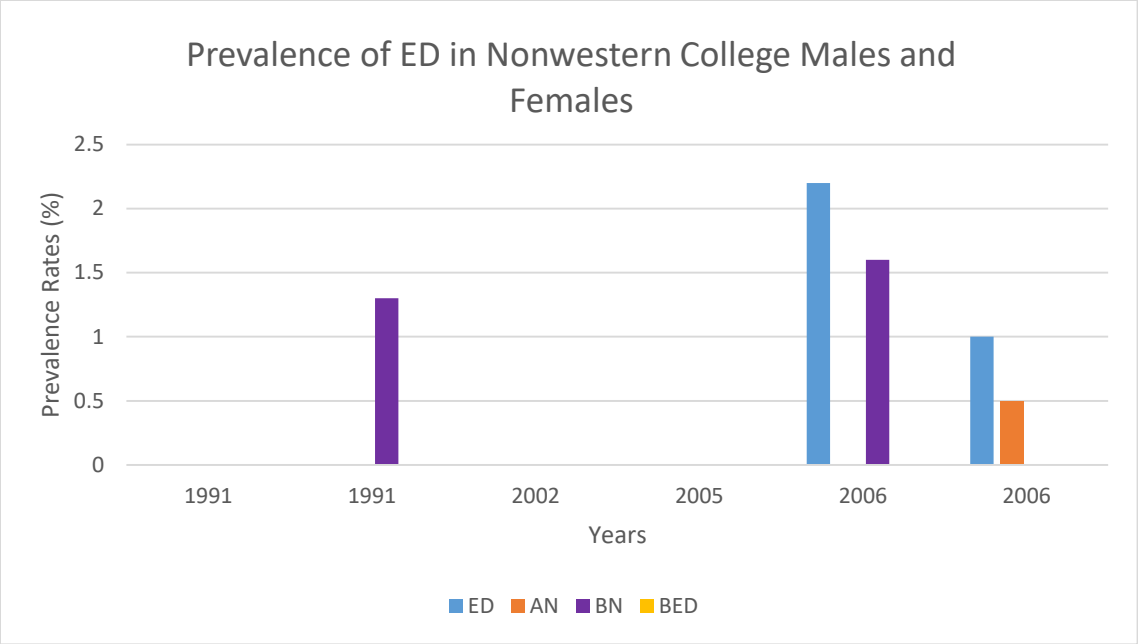
Graph 1.2

Graph 1.3, below, depicts the prevalence rates of eating disorders in western college males. These rates are lower than the rates of western female college students, yet similar trends are seen. AN, BN, and BED are all relatively low and stable while total eating disorders and OSFED/EDNOS are higher. However, while total eating disorders dropped significantly for western college females, the rate increased for males. Furthermore, although the prevalence rate for OSFED/EDNOS is lower for males than females, it increased at a much faster pace for males.



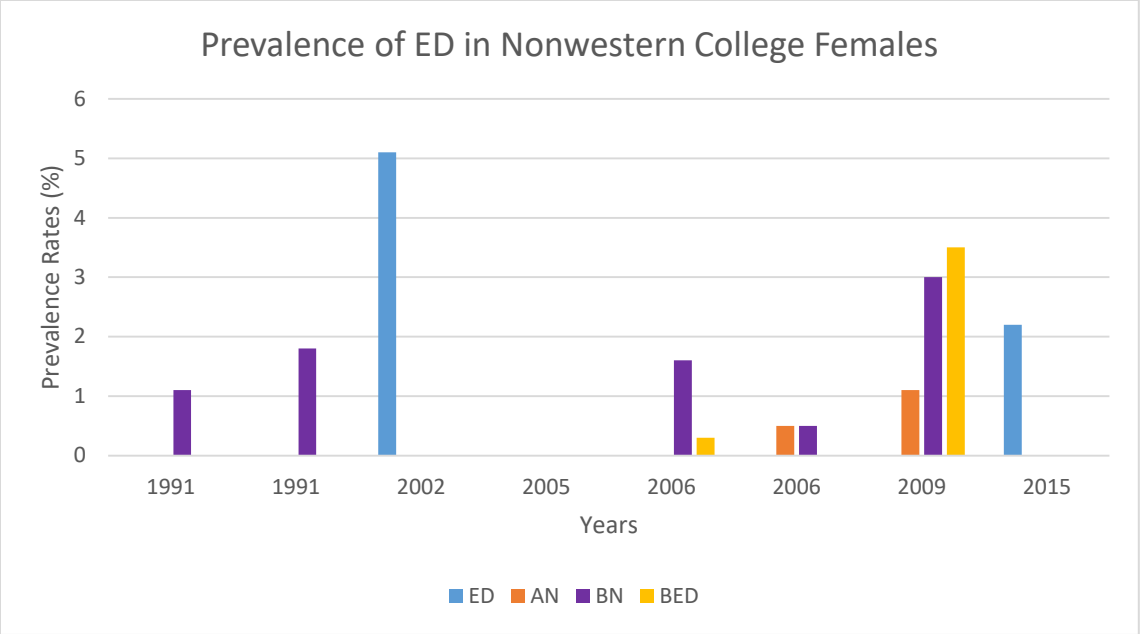
Graph 1.3

Graphs 2.1, 2.2, and 2.3 all depict the prevalence rates of eating disorders in nonwestern college students. These graphs vary in structure when compared to the western college student graphs due to the lack of data found within nonwestern cultures. Graph 2.1, depicted below, shows the prevalence rates of eating disorders in nonwestern males and females as one singular rate. As show below, the rate of total eating disorders in nonwestern countries are much lower than the rates of total eating disorders found in western college students, while the rate of BN in nonwestern college students are only slightly lower than the rates presented in western countries. Furthermore, AN has similar rates in both western and nonwestern college students, although this has not been studied extensively. Additionally, it is possible that eating disorders are in fact on the rise in nonwestern countries because of the low amount of data reported until the twenty-first century.



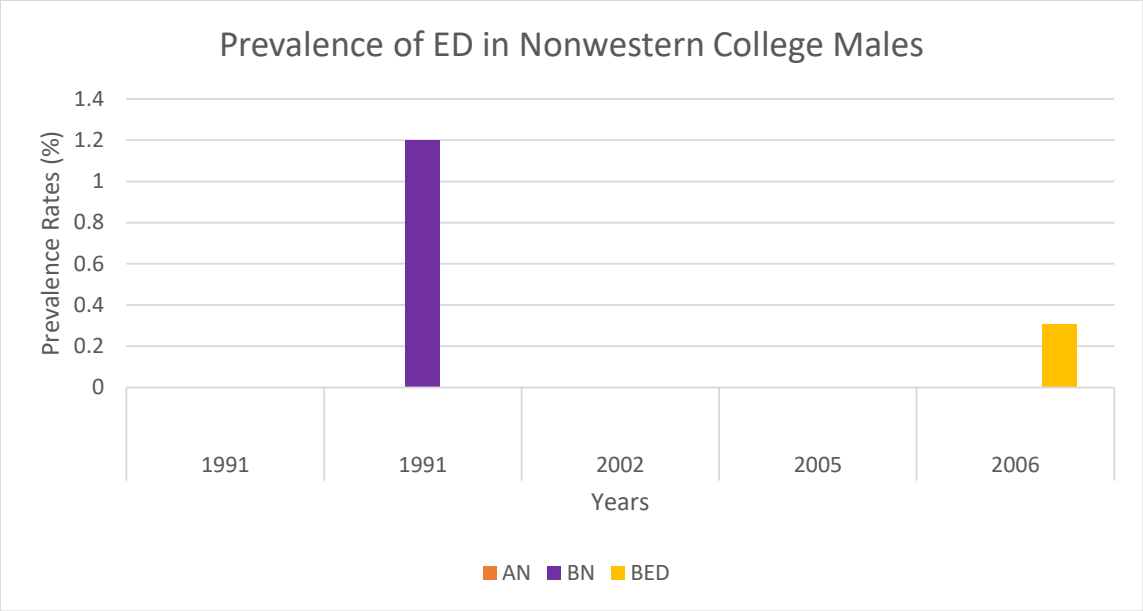
Graph 2.1

Graph 2.2, below, shows the prevalence rates of nonwestern college females. There are similar prevalence rates of AN, BN, and BED in both western and nonwestern college females, although western countries have higher reported rates of total eating disorders and OSFED/EDNOS, which is not seen in nonwestern college students.



Graph 2.2

Lastly, Graph 2.3, shown below, depicts the prevalence rates of eating disorders in nonwestern college males. This data was extremely scarce, as nonwestern college males are not studied as much as nonwestern females. Nevertheless, the rate of BN in 1991 in nonwestern college students is similar to the reported rate of western college students. Additionally, the rate for BED in nonwestern college males, although lower, is still similar to the BED rate found in western male college students. However, due to the lack of studies reported on nonwestern college male eating disorders, no specific conclusions can be drawn from the data.



Graph 2.3

Conclusions

Rates of specific eating disorders - AN, BD, and BED - are similar in both western and nonwestern college students, although western countries have slightly higher reported rates. However, OSFED, former known as EDNOS, is only found in western college students. This finding could contribute to the cause of the prevalence rates for total eating disorders to be higher in western countries than in nonwestern countries. Therefore, nonwestern college students are affected by eating disorders, although slightly less than western college students. In western college students OSFED, formerly known as EDNOS is clearly much more prevalent than other eating disorders, while in nonwestern college students BED and BN appear to be the two most prominent eating disorders. Because of limitations with the current study, it is difficult to accurately conclude if prevalence rates of eating disorders are rising or declining; however, the data presented in this paper suggests that OSFED/EDNOS, BED, and total eating disorder rates

are on the rise in college students from western countries while BN and AN appear relatively stable or declining, while AN, BN, and BED are increasing in nonwestern college students. Lastly, understanding the history of eating disorders proved to be beneficial when drawing conclusions from the data. History provided insight on the development of this disorder and helped link the past trends of the disorder with the present. It is possible to use this knowledge to attempt to predict future trends with eating disorders.

Limitations of the Current Study

The data collected indicates discrepancies in studies collected. The reported rates of eating disorders have varied drastically over the past 40 years. Furthermore, there have been changes in the diagnostic statistics manual that is used to diagnose eating disorders. This could lead to alternations in definitions and diagnostic criteria which would account for the differences in prevalence rates. Moreover, studies used a variety of surveys instead of a standard one to evaluate eating disorders. Methods used in the literature include the SCOFF screen, the Weight Management Questionnaire, Eating Disorder Examination, Eating Attitudes Test, Broad Categories for the Diagnosis of Eating Disorders, Revised Bulimia Test (BULIT-R), Eating Disorders Diagnostic Scale, Eating Disorder Screen for Primary Care, Eating Disorder Inventory, Structured Clinical Interview for DSM-IV, Japanese version of Eating Attitudes Test, Bulimic Investigatory Test - Edinburgh, and multiple surveys developed by researchers to include certain diagnostic criteria. The wide variety of methods used could account for differences in prevalence rates.

Additionally, some studies only look at specific disorders or genders. The research accounts for these studies by evaluating three different components – all female and male rates of eating disorders as reported by studies, solely female rates of eating disorders as reported by studies, and only male rates of eating disorders as reported by studies. Many more studies were reported on females than males and more were reported on females than males and females combined. Females are so widely studied because they are at a higher risk of developing eating disorders than males.

Finally, it was more difficult to find studies that looked at the prevalence rates of eating disorders in college students in Nonwestern countries than Western countries, and the researcher could not find any studies of eating disorders in college students in underdeveloped countries, most likely because of the extremely low prevalence rate due to the presence of famine and starvation in these third world countries or lack of resources to provide epidemiological data.

Suggestions for Future Direction

The results from this systematic review show that rates of total eating disorders vary over the last 40 years, while AN, BN, and BED remain relatively stable. This could be due to the increasing prevalence of OSFED, formerly known as EDNOS. More research should be done on OSFED to determine the prevalence of this disorder on college campuses in both western and nonwestern countries. On the other hand, the changes in rates could be due to the fact that there are many different versions of surveys to determine the presence of eating disorders. It is advised to create one standard survey to be used to determine the rate of eating disorders that is updated each time a new version of the diagnostic statistics manual is released. Additionally, it is

recommended to broaden the data in nonwestern countries to include more countries and to expand to underdeveloped countries as well.

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