

"Transcript for webinar "Signs and Symptoms: Presenting Features of Eating Disorders"

Tuesday, December 6, 2022

la-shell_johnson@med.unc.edu: Good afternoon, everyone. We will now begin our presentation today with Dr. Stephanie Ferrin. A few things to note: Participants will be muted upon entry and videos turned off; for technical assistance, we ask that you please use the chat feature located at the bottom of your screen; you will also receive an email in approximately one month, requesting feedback and impact on today's presentation; for future training opportunities, we ask that you visit www.nceedus.org/training.

la-shell_johnson@med.unc.edu: There will be a moment for question and answers at the end of this presentation. Any unanswered questions will be sent with responses and feedback one week from today via email to all attendees. We will also have this webinar available on-demand on our training center one week from today.

la-shell_johnson@med.unc.edu: I'll now turn things over to Ms. Gail Cormier. Today's presentation is presented by NCEED in conjunction with the National Family Center. Gail, I yield the floor to you.

Gail Cormier, (she, her): Well, thank you. I just wanted to be quick and say good afternoon and welcome to Signs and Symptoms Presenting Features of Eating Disorders. I'm Gail Cormier and the Project Director of the NFSTAC, The Family Center of Excellence.

Gail Cormier, (she, her): I would like to give a warm welcome to our partners today from the National Center of Excellence for Eating Disorders.

Gail Cormier, (she, her): Today's presentation is particularly meaningful to both our centers and to all the families, youth and adult peers in the workforce, and for family members who are supporting loved ones with eating disorders at this time of year can be pretty challenging during the holidays. At the end of the webinar you heard you'll be getting some feedback in a week. But we also ask you, that when you leave today's webinar, you will be redirected from the Zoom to complete a short feedback survey, using the link provided.

Gail Cormier, (she, her): This survey will help NFSTAC continuously improve our webinars, and it also fulfills our funding obligations to provide them with important data required by our contract. So pretty much you're going to fill out 2 surveys, one for us, and then about a week later, one for NCEED and we appreciate your time. Please know you'll be asking coming days to do that.

Gail Cormier, (she, her): I would like to thank SAMHSA for allowing us to share this information with you today and again, thank you so much for joining us.

Gail Cormier, (she, her): It is now, now time to begin this important discussion. I'll let NCEED introduce Dr. Stephanie Ferrin. Dr. Ferrin, thank you so much for leading this discussion. We so appreciate you.

la-shell_johnson@med.unc.edu: Thank you, Gail. Today's speaker is Dr. Stephanie Ferrin, an Adolescent Medicine Specialist and clinical assistant professor at UNC originally from Texas; Dr. Ferrin attended Medical School at Texas Tech University Health Sciences Center before completing a three-year residency and Pediatrics at Oklahoma University Health Sciences Center.

la-shell_johnson@med.unc.edu: She then finished her subspecialty training in Adolescent Medicine at Indiana University School of Medicine along with a Master of Science in Clinical Research. She's committed to providing compassionate care for teens, and specializes in mental health care, complex care, and medical management of reproductive health. She has a clinical focus and expertise in the clinical and medical management of eating disorders, and has provided care for adolescents with the medical with eating disorders at all levels of treatment. Excuse me, including outpatient treatment, partial hospitalization, and inpatient medical stabilization.

la-shell_johnson@med.unc.edu: Dr. Ferrin also has a special interest in providing care for Native American teens and young adults, and has previously worked for the Indian health services on a Navajo nation serving the Diné youth. Dr. Ferrin, I will now turn things over to you.

Stephanie Ferrin: Thank you so much for that warm welcome, and thank you for having me today. So today I'm going to be going over on the presenting features of various eating

disorders that you may encounter. I do not have any financial interests or relationships to discuss or disclose.

Stephanie Ferrin: And the objectives for this talk are going to be that following the presentation, I would hope that you'd be able to do describe the diagnostic criteria for most common eating disorders review their frequently presenting features, identify the risk factors for development of eating disorders, and then also be able to kind of discuss the changing prevalence rates and presentations, especially in light of the recent pandemic.

Stephanie Ferrin: So in the nineteenth and twentieth centuries, medical diseases, such as tuberculosis and syphilis, were often called the great pretenders. As their presenting symptoms were often indistinct and difficult to diagnose.

Stephanie Ferrin: Today Eating disorders have taken up the mantle of being great pretenders, due to the due to the variety of ways they may present, and the ease in which they are often misdiagnosed or simply overlooked. However, eating disorders are a major public health concern where the risk of missing the diagnosis, results in outcomes as poor as either syphilis or tuberculosis.

Stephanie Ferrin: Eating disorders are more common than many may realize, as we will discuss throughout this talk. To put this in perspective, according to the CDC's National Diabetes Statistic Report, about 283,000 Americans, under the age of 20, are estimated to have diagnosed diabetes, which is approximately 0.35% of that population.

Stephanie Ferrin: This is in comparison to .3 of adolescents who are estimated to have bulimia nervosa alone, a single type of eating disorder with estimates of adolescence and young adults, with all eating disorders in total, reaching about 1.5 to 2%, depending upon which reference you're citing. So that's approximately a 5 to 7 times increase in the amount of youth than childhood diabetes.

Stephanie Ferrin: Eating disorders are also more prevalent than other similarly severe but more noticeable mental health disorders, such as schizophrenia. They also have the dubious distinction of having the highest mortality rate among all psychiatric disorders, vying with substance use disorder, with anorexia nervosa often quoted as having a mortality rate of 10%.

This is especially reflected in females age 12 to 25, who have a 6 to 12 times higher expected mortality rate.

Stephanie Ferrin: So now that we have brought into focus, how common and impactful eating disorders are; I'd like to take a moment to discuss the eating disorders, while having distinct diagnostic criteria that we will go over in further detail, are often evolving diagnoses that sit upon a spectrum. The boundaries between eating disorders are porous and there may be migration between different eating disorder subgroups over time as many eating disorders have shared features and are part of an overarching, larger presentation of disordered eating behaviors and often driven by cognitive distortions. Frequently this migration will move from a more restrictive, disordered eating pattern to more expansive.

Stephanie Ferrin: I prefer to use the terms restrictive and expansive eating rather than under eating or overeating. As I feel that it cast a judgment, or value on eating patterns either too little or too much, which may not always be accurate. Similarly, I try to avoid saying "healthy" as that word is thrown around by many, many people in different areas. But health has many different subjective connotations and values that differ by individuals, and even amongst different healthcare provider's viewpoints. And so, what some people may consider healthy may actually not really be healthy.

Stephanie Ferrin: Notice also that the spectrum is not based on weight. While you will often see those that have restrictive eating disorders be at a lower BMI than those with more expansive eating behaviors. This is not always the case, and so it is both easier and much more accurate to classify, based on the disordered eating rather than the weight outcome.

Stephanie Ferrin: Eating disorders, especially anorexia nervosa and bulimia and nervosa, often occur in younger individuals during developmental periods so classically in the fourth stage of psychosocial development, when they are trying to form a personal identity, this can impose a significant burden on the normal, normal development and social functioning of adolescents and young adults resulting in decreased quality of life and physical health that persists into older decades as well.

Stephanie Ferrin: That's not to say that older adults cannot develop an eating disorder, as they certainly can but rather that it's most commonly first presented during those early more formative years.

Stephanie Ferrin: Eating disorders and disordered eating in general, are often behaviors that people develop as ways to manage challenges in various areas of life, such as poor self-esteem, emotional dysregulation, trauma, societal expectations and relationship conflicts to name a few.

Stephanie Ferrin: Society promotes a viewpoint that weight and shape reflects success and being in control in oneself, and that those who have ideal or low weights and body shapes are to be respected and envied. Because there is often a complex interplay of risk factors that contribute to the development of an eating disorder, many theories attempting to explain their development often include contributions from sociocultural and biomedical sources, it is extremely important to remember that when talking about risk factors, these are probabilistic and not deterministic.

Stephanie Ferrin: So, eating disorders are often explained by the use of the biopsychosocial model. The late George Engel created the biopsychosocial model, as he believed that to understand and respond adequately to a patient suffering, and to give them a sense of being understood. Clinicians must attend simultaneously to the biological, psychological, and social dimensions of illness.

Stephanie Ferrin: Philosophically, it is a way of understanding how suffering disease and illness are affected by multiple levels of organization from the societal to the molecular. At the practical level, it is a way of understanding the patient's subjective experience as an essential contributor to accurate diagnosis, health outcomes, and humane care. In the medical management of eating disorders, we often use the biopsychosocial model to help explain the risk factors for development of an eating disorder and to help guide potential treatment options by mitigating those risks when possible.

Stephanie Ferrin: So, let's first examine the biological sphere of influence of risk factors, and then we will look at the others. So from the biological domain, a variety of risk factors have any have been identified that could predispose an individual to the development of an eating disorder.

Stephanie Ferrin: Biological risk factors are currently hypothesized to account from anywhere to 40% to 60% of the risk. That is not to say that an individual is pre-programmed or destined to develop an eating disorder, as it's much more complex than that, and many individuals with similar biologic risk will not go on to develop an eating disorder.

Stephanie Ferrin: When studying eating disorders, we have found that there is an increased prevalence within families, and that those who have a first degree relative with an eating disorder will have an increased risk of developing one themselves. This applies to eating disorders as a whole rather than one specific type of eating disorder, such as anorexia nervosa or bulimia nervosa. So, so, it may look more as though, like grandmother has anorexia nervosa, uncle has binge- eating disorder, and now the patient has bulimia nervosa. It's not uncommon that you can see eating disorders through up to 5 generations within a family tree when you're taking the history.

Stephanie Ferrin: It has also been found in studies that there is a higher concordance rate for the development of an eating disorder in monozygotic or identical twins, as compared to dizygotic or fraternal twins. Particularly in the case of anorexia nervosa. And genetic studies have also found some alterations specifically on chromosome 14 linked to bulimia nervosa and chromosome 1 linked to anorexia nervosa.

Stephanie Ferrin: Furthermore, it appears that there's, if there appears to be a significant association for differences in the serotonin 2A receptor gene and anorexia nervosa.

Stephanie Ferrin: We know that most eating disorders present during adolescence. For anorexia nervosa that is usually in the middle school to high school age group. When I like to think of their development as shifting from more rigid and concrete to abstract. For bulimia nervosa, development is usually in the high school to college age group and similar for binge-eating disorder, although it can present even a little bit older or later in the twenties, and beyond.

Stephanie Ferrin: However eating disorders may present at any age, with many 30 to 40 year olds developing an eating disorder, and many older women suffering from eating disorders, both at the felt in their youth, or that had new late onset.

Stephanie Ferrin: Eating disorders in older patients is often complicated by a failure to even consider eating disorder on the differential diagnosis. The outlier in this group is ARFID or avoidant restrictive food intake disorder, which more commonly presents even younger. So, typically in young childhood for reasons that we will discuss later. Although, just like all the rest, it can present at any age.

Stephanie Ferrin: Eating disorders are more common amongst females than males; and for the purpose of this talk, when I say female or male, I mean those who are cisgender and assigned male or female at birth. However the reports of prevalence vary, depending on the references you are citing, with likely a larger percent of males being affected in the community than amongst those who are referred to tertiary treatment centers where a lot of the data is pooled from. Males are also more likely to go unnoticed and undiagnosed, due to inherent biases amongst the general population and medical community that eating disorders only affect females. Screening criteria also tends to be a more female oriented, and so you may be missing cases through that.

Stephanie Ferrin: Furthermore, the prevalence rate differ. Difference between males and females depends on the type of eating disorder itself. So for anorexia nervosa and bulimia nervosa, there is a much higher amount of females; whereas with binge-eating disorder and ARFID that ratio is less skewed; and finally, those who identify as transgender or gender diverse have a higher rate of eating disorders as compared to the average population.

Stephanie Ferrin: So, while we know that all individuals of the LGBTQ+ community are at an increased risk for the development of eating disorders for those who are transgender or gender diverse, there appears to be increased vulnerability that is very, very complex.

Stephanie Ferrin: It can be difficult to distinguish gender dysphoria, particularly in relationship to secondary sex characteristics, such as breasts and hips or buttocks development. And muscularity in those who are assigned male at birth, multiple studies have found that there is an increase in eating disorders in transgender individuals with incidents rates as high as 15.82% amongst transgender college students.

Stephanie Ferrin: Not only that, but trans males and females report greater dissatisfaction for not only gender identifying body parts, but also body shape and weight as compared to their cisgender cohorts. Contributing factors to the development of eating disorders may include public discrimination, negative attitudes, and even rejection and violence, along with stigmatization and barriers to medical and therapeutic services. Body image distress with their pre-transitional body size and shape, may result in disordered eating behaviors in an attempt to modify their perceived appearance. For some, this may include restricting intake to minimize secondary sex characteristic development, such as breast, or even attempts at delaying or stalling puberty.

Stephanie Ferrin: And I've had young adolescents who have engaged in severe restriction in an attempt to put off puberty, and it can be difficult to determine at what point the disordered eating behaviors truly become an eating disorder.

Stephanie Ferrin: Others may engage in the alternative, and have expansive eating habits. In a larger body habitat, so as to camouflage their appearance. Even after an individual has transitioned, and by that I mean any combination of social, medical hormone therapy, and surgical treatments to the desired physical state that aligns with their gender identity. People may still develop disordered eating behaviors in an attempt to accentuate their idealized body image.

Stephanie Ferrin: Also, they're just as susceptible as any other individual to any other risk factor that predisposes individuals to the development of an eating disorder, combined with the stressors of coping with their gender-related issues. Eating disorders may often present more frequently in individuals with co-morbid or preexisting medical conditions that frequently affect eating behaviors and/or have frequently have weight changes associated with the disease itself or the medication used to treat the disease. Common medical disorders would include malabsorptive states, endocrinopathies and medications that affect weight, both weight gain and weight loss, and poorly explained gastrointestinal complaints, or rather gastrointestinal complaints that are either difficult to diagnose or difficult to manage the symptoms of. Malabsorptive states that may predispose individuals to developing an eating disorder include disorders such as cystic fibrosis, inflammatory bowel disease, and celiac disease.

Stephanie Ferrin: For example, cystic fibrosis has historically been a disease that allows for consuming large volumes of calorically dense foods to help maintain nutritional status with assistance from pancreatic enzyme replacement with the arrival of CFTR modulating drugs, so gene modulators, there's less need for consuming such meals, and there can be associated weight gain which can be distressing, and is now resulting in altered eating behaviors amongst that population.

Stephanie Ferrin: For inflammatory bowel disease, so ulcerative colitis and Crohn's disease, patients may have an onset of symptoms with associated weight loss that they appreciate. I've had a few patients with IBD who have initially altered their eating behavior, due to side effects from their underlying disease symptoms and also had associated weight loss.

Stephanie Ferrin: These disordered eating behaviors persisted, despite interventions and treatment for their IBD, because they had developed disordered cognitions around their change in weight that eventually was recognized as an eating disorder.

Stephanie Ferrin: Another common malabsorptive state that I run into frequently is the presence of celiac disease. Sometimes patients will present with gradual restriction in their food intake, to avoid discomfort with eating gluten- eating gluten-containing food that progresses to restriction of other food types, and eventually into a restrictive eating disorder. It's not to say that celiac disease causes the eating disorder, but to point out that both celiac disease and eating disorders can exist in a patient either sequentially or concurrently.

Stephanie Ferrin: Endocrinopathies can also present with eating disorders again likely, due to weight fluctuations associated with altered hormonal states. Thyroid disease is often brought up by families of patients with eating disorders. But to be honest it's not a very common endocrinopathy, I see associated with eating disorders. You have to be careful when evaluating for thyroid disorders and patients with restrictive eating disorders, such as anorexia nervosa, as they may present with a Euthyroid sick syndrome, which is a condition in which the serum levels of thyroid hormones are low, but they do not. They have non-thyroidal systemic illness, and so they are actually euthyroid.

Stephanie Ferrin: However, weight fluctuations are a common presenting feature of thyroid problems, and it may lead to distress in the individual that then results in the development of an eating disorder in an attempt to control the symptoms they're experiencing. Similarly for Type 2 diabetes, there may be an attempt to correct their diabetes by changing dietary and exercise habits that ultimately result in the development of an eating disorder although their initial intent was actually well-meaning.

Stephanie Ferrin: And where I actually see a lot more frequent concerns with eating disorders in patients with endocrinopathies, are when their medications are diverted in an attempt to control their weight.

Stephanie Ferrin: So, for example, I will see patients with hypothyroidism who over-administer their Levothyroxine in an attempt to lose weight, or frequently I will see Type 1 diabetics who stop taking their insulin so as to encourage weight loss from entering prolonged states of Ketosis.

Stephanie Ferrin: This can be difficult to identify as adherence to insulin regimens may be poor to begin with, but should be considered in a patient that has recurrent hospitalizations for diabetic ketoacidosis, or who appears to be losing weight rapidly after previously following the growth curves, or had been at a stable weight.

Stephanie Ferrin: Patients may also divert medications from other conditions, such as ADHD in an attempt to facilitate their weight loss by suppressing their appetite with their stimulant medications. And finally, medications that result in weight changes such as chronic steroid use and atypical antipsychotics that are notorious not only for weight gain, but metabolic changes may increase the risk of development of an eating disorder, due to stress for both the underlying disorder and the side effects of the medications used to treat it.

Stephanie Ferrin: Finally, disorders with gastrointestinal symptoms that are either difficult to diagnose or difficult to manage, do have a higher rate of associated eating disorders. This may be due to effects of weight loss if the patient avoids eating, to avoid symptoms much like with all ulcerative colitis and celiac disease and whether this is due to the individual appreciating the weight loss, and desiring to engage in behaviors to perpetuate it, or whether the patient enters a nutritionally deficient state which results in depleted neurotransmitters that in turn result in disordered cognitions around weight and body image is hard to determine. But, it is likely a combination of factors.

Stephanie Ferrin: Furthermore, patients with poorly defined abdominal pain syndromes sometimes referred to as functional abdominal pain or visceral hyperalgesia, as well as those with chromatin, chronic vomiting syndrome, are at an increased risk for the development of ARFID or avoidant restrictive food intake disorder, which we'll discuss later.

Stephanie Ferrin: But, I would like to state that I see a very large number of patients who are also followed in the disorders of gut brain interaction clinic here at my home institution of UNC. That likely had an organic cause for their gastrointestinal complaints, but they have since developed a co-morbid eating disorder which can be difficult to separate out from the initial presenting features.

Stephanie Ferrin: So now that we've examined the biological sphere, let's move into the psychological, of which there will be some obvious overlap with the biological. From the

psychological domain a variety of risk factors have been identified that could predispose an individual to developing an eating disorder.

Stephanie Ferrin: One of the most commonly known is the existence of predisposing psychiatric disorders. So when it comes to eating disorders, we know that neurotransmitters or the brain chemistry has a significant role to play. We know that there are disturbances in the neurotransmitters for serotonin, norepinephrine, and dopamine linked to eating disorders especially anorexia, and that these are usually found to be at depressed levels.

Stephanie Ferrin: The neurotransmitters are also often altered in other psychiatric disorders, such as depression, anxiety, and PTSD.

Stephanie Ferrin: We know that anxiety disorders are especially common amongst those with eating disorders, particularly anorexia, as is the presence of pre-existing obsessive compulsive disorder. For OCD it can be difficult to distinguish if the disordered behavior is due to the OCD itself, or distorted cognitions present in eating disorders, as sometimes the rigidity and rituals that around eating and exercise can be found in both.

Stephanie Ferrin: But if there is a fixation on perfect or ideal weight and body shape, this will often be a new feature that can help distinguish an eating disorder. A commonly overlooked or under diagnosed patient population that suffers from eating disorders include those with intellectual disabilities and neurodivergent individuals. Those with intellectual disabilities may perceive achieving weight loss as a desired thinness with increased self-esteem and social acceptance.

Stephanie Ferrin: The intellectual level required to develop a desire for thinness includes individuals with IQs in the category of mild intellectual disability which includes about 85% of individuals with any type of intellectual disability.

Stephanie Ferrin: These are individuals who are slower in all areas of conceptual development and social and daily living skills, but who are able to learn practical life skills that allow them to function in an ordinary life with minimal levels of support.

Stephanie Ferrin: Individuals with autism spectrum disorder often present with rigid eating behaviors and sensory sensitivities that may result in a level of impairment that ultimately develops into a case of ARFID, for which autism spectrum disorder has a higher prevalence amongst those with this disorder.

Stephanie Ferrin: Those with PTSD, or sexual trauma have been identified as having an increased incidence of eating disorders. Oftentimes the traumatic event may serve as the trigger or catalyst for the development of the eating disorder. I have a large number of individuals with the history of abuse, especially those who are sexually assaulted by which they're eating disorder arose as a way to help establish control in their lives and over their bodies after experiencing their control being ripped away from them. We also know that adverse childhood experiences or ACES have a tremendous impact on lifelong health and opportunity, and this also includes the development of eating disorders.

Stephanie Ferrin: So ACES are potentially traumatic events that occur in childhood that can be anything from experiencing violence, abuse, or neglect themselves, to witnessing violence, abuse, or assault in their home or community, having a family member attempt suicide or die by suicide, and then having a parent removed from the family and incarcerated or placed in jail.

Stephanie Ferrin: I also have a number of patients who may not have been the subject of abuse, but did witness violence being perpetrated that resulted in PTSD. I've also had patients who develop PTSD and disordered eating behaviors following public shooting events, including school shooting scenarios. Substance use disorders may or may not be identifiable independent risk factors for the development of eating disorders.

Stephanie Ferrin: However, they are very commonly comorbid disorders, as they likely share some common genetic, environmental, and familial risk factors. Several studies have examined the possible genetic link between eating disorders and substance use disorder. And just like the discussion of the biopsychosocial model for eating disorders discussed before, similar factors often overlap with a substance use disorder. It is proposed that environmental factors specifically childhood cumulative trauma can impact normal development. It is also likely that those with similar traits of impulsivity and emotional dysregulation which we'll discuss in a few minutes are similarly predisposed to the development of an eating disorder.

Stephanie Ferrin: Some of the studies that have been done include a study by Baker and colleagues, finding an association between childhood sexual abuse and the development of comorbid bulimia, nervosa and substance use disorders.

Stephanie Ferrin: Another one done by Corstorphine and colleagues, found an association between the history of childhood sexual abuse, substance use, and impulsivity in patients who had eating disorders. And then other factors that may impact the risk of development, include poor paternal education, a close maternal relationship which is actually protective, substance use or eating disorder behavior modeling.

Stephanie Ferrin: So in their family members, or those that are around them, their peers, and then maternal concern about weight loss and appearance, which is also a modeling behavior.

Stephanie Ferrin: Comorbid substance use and bulimia nervosa is the most well-known and documented out of all the eating disorders. And although saying that 30% to 70% of adults diagnosed with bulimia nervosa also have substance use disorder is quite the widespread; I typically like to quote the DSM V, which estimates that for bulimia nervosa, there's about a 30% lifetime comorbidity of substance use disorder with bulimia nervosa.

Stephanie Ferrin: It is important to note that most studies look at patient populations with eating disorders who have substance use, rather than patients with substance use disorder that have an eating disorder. So, that may actually affect the interpretation of the reported prevalence's.

Stephanie Ferrin: It's also important to note that women with eating disorders are more likely to abuse substances than women without eating disorders. And men specifically with binge-eating disorder, have a higher rate of diagnosed substance use disorder when compared to women with binge-eating disorder.

Stephanie Ferrin: I'd like to point out that in all of the previous studies cited, they've discussed diagnosed substance use disorders. However, this is actually different from substance use, for which there's probably a higher rate of use. But is difficult to document and monitor, especially if they don't need the threshold for criteria for a use disorder.

Stephanie Ferrin: Alcohol and other psychotropic substances are commonly used by individuals with eating disorders for emotional regulation, or as part of a pattern of impulsive behavior and methods to aid in their disordered eating. So alcohol and nicotine especially, are commonly used as appetite suppressants. Among adolescents with bulimia nervosa, who used illegal drugs, marijuana was the most used drug followed by cocaine and amphetamines. And I suspect, if the studies were repeated we would also see some more opiate use as well, too.

Stephanie Ferrin: One risk factor that is often cited, especially in the case of anorexia nervosa, is temperament. So, certain personality traits have often been associated with anorexia. Well, the narrow and now outdated view that anorexia only affects cisgender White females from middle to upper socioeconomic standing. The idea that is associated with what is colloquially called a type A personality may hold some merit.

Stephanie Ferrin: So anorexia nervosa, particularly the restricting type, has an association with character traits of perfectionism, rigidity, and scheduling, and attempts at being the best in other arenas such as academics and sports. While this is not always the case, the rigidity and thought in seeking of control is common in individuals with anorexia nervosa. Bulimia nervosa, and binge-eating disorder on the other hand, often have more personality traits of impulsivity, and sometimes risk taking behavior with increased emotional intensity and what we may be referred to as dramatic features. Binge-eating disorder specifically, may also feature personality traits such as harm and conflict avoidance.

Stephanie Ferrin: Other psychological risk factors may include difficulty with coping skills and emotional regulation. Large changes, such as moving to a new city or matriculating to a new school, may serve as a trigger for the development of an eating disorder. Other known risk factors that may play a part are for coping skills around changes include early puberty changes in early menarche, or when patients are start having their periods as compared to their peers. We also know that poor self-esteem and body dissatisfaction play a large role in the development of eating disorders and behaviors intended to correct their perceived deficiencies.

Stephanie Ferrin: We know that early dieting behaviors in females is often brought about by poor body satisfaction, and that those individuals who engage in dieting behavior are attempting to use cognitive control to override psychological cues of hunger and fullness. This places them at a risk for disinhibited eating, and makes them more vulnerable to binge eating. Dieting due to body dissatisfaction is also known to precede the use of more extreme weight control behaviors that is found in anorexia nervosa.

Stephanie Ferrin: Finally, let's look at the social sphere of influence that increases the risk of development of an eating disorder. Just like all the others, there will be overlap with the other biological and psychological domains.

Stephanie Ferrin: So for a long time a social influence, um social influences were often attributed as being the main reason for the development of an eating disorder. And while they definitely served as potential causes, they are not the singular root problem. Instead, it's likely that there's a large amount of interplay between the societal pressures and other risk factors mentioned previously.

Stephanie Ferrin: And one such risk factor includes a geographical location in which an individual resides. So individuals who live in primarily industrialized, western culture-based countries have a higher rate of eating disorders. This is probably culturally bound, and that there is a value placed upon thinness, and the sufficient availability and access to food is such that being overweight is a realistic probability, and also considered problematic and less desirable. In societies where widespread starvation is a possibility, a goal of thinness is being desirable, is often not present, except in the wealthier classes of higher social strata, where westernized body image may have been adopted.

Stephanie Ferrin: It is also more common to have development of an eating disorder in more urban areas as compared to rural, although with the globalization of social media that may be changing. Among males, older persons, and those with mental challenges, individuals who are racial or ethnic minorities are among the most commonly overlooked and under diagnosed patient populations.

Stephanie Ferrin: In the United States, eating disorders, and especially anorexia nervosa was considered to be a disorder that primarily only affected White, affluent females. However, those demographics are shifting, and we are seeing other racial and ethnic groups be similarly affected and this would include, Asian, Latin, and African American. Whether this is due to a true rise in those populations, or rather just better identification with less bias in diagnostic screening and evaluation, is difficult to say. African-Americans in particular, have an increased prevalence of anorexia nervosa amongst those of higher socioeconomic status.

Stephanie Ferrin: And again, amongst different groups that people may belong to, there are some that have been demonstrated to have higher rates of eating disorders. These include

people who are actors, models, and media personalities where they are front facing to a large audience.

Stephanie Ferrin: Especially, if it is a consumer audience and the product is oriented around physical appearance or health aspirations.

Stephanie Ferrin: This was especially prevalent in the 1990's and early 2000's, with the rise of models with idealized body shapes and weights that were extremely thin to cachectic. However, this also includes other persons where the idea of thinness is not quite as apparent. But, the pressure of a stylized appearance is still important, such as news and sportscasters. More common examples today, would be influencers on social media platforms and the spreading of thinspiration goals. A group that may also be overlooked includes military personnel as the armed forces have strict annual weight requirements for career service that may provoke rapid dieting and weight loss, attempts that could contribute to the development of longer lasting eating disorders.

Stephanie Ferrin: And then, finally, sports participation is a very common risk factor encounter among adolescents with the development of an eating disorder.

Stephanie Ferrin: So, adolescents who participate in sports where there are high performance and appearance demands are noted to have an increased rate of the development of an eating disorder. This is often from a combination of stress to not only excel at the sport, but also to meet associated weight goals for the sport itself, or to meet demands in appearance where there's a certain body habitus, often that of a slim build that is considered desirable or expected.

Stephanie Ferrin: This is not only limited to female sports either, as a males with strict weight criteria, such as wrestlers, have a higher risk for the development of an eating disorder, disordered eating, and exercise behaviors may even be encouraged by coach or family members to meet those demands.

Stephanie Ferrin: This can be a difficult position for adolescents to be in, as they are receiving positive reinforcement for their damaging behaviors, and may initially experience an

improvement in their athletic participation. But, many ultimately start to perform worse over time.

Stephanie Ferrin: And it can also be difficult to distinguish from RED-S or relative energy deficiency in sports where there's no desire to lose weight to meet a certain weight goal, or body habitus.

Stephanie Ferrin: But, rather the physical demands and energy expenditure are outpatient, outpacing the nutritional intake of the athlete which results in unintended weight loss and potential medical complications that can seem similar to a restrictive eating disorder.

Stephanie Ferrin: A study titled, "Project EAT, or Eating in Activity among Teens and Young Adults" was carried out to evaluate eating and weight related issues and adolescents, and the intersection between weight, binge eating, and extreme weight control practices, so the use of diet pills, laxatives, and self-induced vomiting.

Stephanie Ferrin: When they evaluated the outcome, certain trends image emerged as risk factors in the adolescents, and these included risks based on the families weight related norms and household culture around eating and foods. So, negative risk factors would be commentary by a family member usually a parent or sibling, about the youth's weight. This could be either helpful in the attempt at being encouraging, or it could be teasing and harmful.

Stephanie Ferrin: Other risk factors include modeling of both maternal and paternal weight concerns and behaviors. So if the parents are engaging in dieting and exercise habits, and are frequently having negative commentary around weight that increases the risk of developing an eating disorder in the youths themselves.

Stephanie Ferrin: And similar to family pressure, peer pressure and bullying are common influencing factors that may predispose to the development of an eating disorder. Bullying around weight in childhood and adolescence is common and frequent trigger cited by adolescents receiving treatment. It may be something that is engaged in by their peers, especially when the main peer group they interact with are all engaged in weight focused activities like ballet, and so it's accepted as being the norm.

Stephanie Ferrin: Individuals may also receive feedback that the weight they've lost is a positive thing, which then serves as a positive cue to continue such practices.

Stephanie Ferrin: And, then finally bullying by others, especially by those who are peers, or who may have even been friends, can be a triggering event for the development of an eating disorder. And this is especially true when the bullying is focused around appearance and weight as individuals may engage in practices to lose that weight in an attempt to divert the negative attention, or be better accepted by their fellow youth.

Stephanie Ferrin: And then, as mentioned before, social cultural expectations for thinness are a risk factor for eating disorders, and are not limited to what would be considered Western civilizations, as they are starting to see an uptick in other countries globally that are starting to value thinness, probably from the global spread of Western media.

Stephanie Ferrin: This has kind of resulted in propagating and promoting these unrealistic ideal body standards.

Stephanie Ferrin: And so recently, things such as thinspiration which is a portmanteau of thin and inspiration, has spread widely across social media platforms. To the point where even the platforms themselves are trying to block any posts that propagate these harmful practices.

Stephanie Ferrin: But this is, this can't be regulated everywhere. And so there are presence of other internet influences, such as pro-ana or pro-mia websites that give tips and advice, while also providing a social outlet and support for individuals who are struggling with eating disorders.

Stephanie Ferrin: And, and, beyond that there's even more nefarious social media sites that engage in predatory behaviors with coaches or trainers who are often adults that coax susceptible individuals, typically minors, into submitting pictures for judgment, and then doling out rewards or punishments to the youths, and controlling what they eat, how they exercise, and if they purge.

Stephanie Ferrin: So to further emphasize the importance and magnitude the environmental influences have upon individuals and the potential development of eating disorders. From these risk factors I'd like to read a few excerpts to you from various studies and papers published around the topic.

Stephanie Ferrin: So the best-known environmental contributor to the development of eating disorders is the socio-cultural idealization of thinness.

Stephanie Ferrin: 79% of weight-loss participants reported coping with weight stigma by eating more food. Up to 40% of overweight girls and 37% of overweight boys are teased about their weight by peers or family members. Weight teasing predicts weight gain, binge eating, and extreme weight control measures.

Stephanie Ferrin: Weight-based victimization among overweight youths has been linked to lower levels of physical activity, negative attitudes about sports, lower participation, and physical activity among overweight students. Among overweight and obese adults, those who experience weight-based stigmatization engage in more frequent binge eating, are at an increased risk for eating disorder symptoms, and are more likely to have a diagnosis of binge eating disorder.

Stephanie Ferrin: Multiple studies have found that dieting was associated with greater weight gain and increased rates of binge eating in both boys and girls.

Stephanie Ferrin: So, now that we've discussed the risk factors for the development of eating disorders and the complex biological, social, and psychological interplays between them, let's move on to discuss the eating disorders themselves. Well, the overarching questions of what constitutes an eating disorder, maybe in flux, the DSM Of so the Diagnostic and Statistical Manual of Mental Disorders 5th addition, or what I refer to as the DSM, remains the standard for diagnosis and diagnosing eating disorders.

Stephanie Ferrin: That does not mean it's not without its weaknesses. As some individuals with many features typical for an eating disorder may be missed using these criteria, but we will discuss these as we come upon them. It follows similarly with the upcoming International Classification of Diseases, or ICD 11 which is used globally, that there is also some pitfalls with that system such as hard weight and BMI cutoffs which could exclude a good number of individuals that would otherwise qualify.

Stephanie Ferrin: So, of those eating disorders listed in the DSM, I will focus on the 4 major categories so avoidant restricted food intake disorder or ARFID, anorexia nervosa, bulimia nervosa, and binge-eating disorder.

Stephanie Ferrin: These 4 diagnoses cover most clinical cases of eating disorders who present for treatment, although there are variations and eating the source that lack clear cut features could be considered for OSFED or other specified feeding and eating disorder. I will not cover PICA, which has a medical origin, and it arises from a deficiency in micronutrients. I will also not cover rumination disorder which may be due to underlying medical causes, or maybe a behavioral approach avoidance relationship to food which is repeatedly swallowed and regurgitated, that is distinct from bulimia nervosa.

Stephanie Ferrin: So when discussing the prevalence of eating disorders, it depends on the criteria used for diagnosis. The point in time whether you're discussing point, prevalence, or lifetime prevalence.

Stephanie Ferrin: And for the purposes of this talk, I'll primarily be talking about lifetime prevalence. Although, if I state a study that discusses point prevalence, I'll be sure to point that out.

Stephanie Ferrin: Eating disorders in total have a lifetime prevalence of approximately 3.7% in the general population. Anorexia nervosa again, has a lifetime prevalence of about .9% females .3% males amongst the community.

Stephanie Ferrin: And anorexia typically begins once again, in during early adolescence, so around 12 to 16 years old, and rarely begins before puberty or after age 40.

Stephanie Ferrin: It's often associated with a stressful or triggering life event which may include any of the risk factors previously discussed. But may be something very innocuous, such as just starting a new school.

Stephanie Ferrin: And there are 3 main criteria for a diagnosis of anorexia nervosa, basically a weight lower than expected for age or for growth stage, intense fear of becoming fat, which may even worsen as weight decreases, and then a distorted view of the body, weight, or shape, which may manifest as feeling either globally overweight, or may be restricted to certain areas. This often leads to frequent weighing, obsessive measuring, and persistent checks in the mirror. Self-esteem is often highly dependent on their body weight and shape with weight loss viewed as an achievement of self-discipline and weight gain as a failure of self-control.

Stephanie Ferrin: Amenorrhea is no longer a criteria for diagnosing anorexia nervosa, as it would exclude not only males, but also those on birth control methods who have induced periods.

Stephanie Ferrin: However, it is good to note that about 20% to 30% of females with anorexia developed amenorrhea before significant weight loss about 50% develop it about the same time as the weight loss and 25% developed it after the significant weight loss.

Stephanie Ferrin: Resumption of menses usually occur about 3 to 6 months after achieving a weight that's approximately 95% of their median BMI.

Stephanie Ferrin: And so, what is significantly low body weight? In patients with anorexia, it can be difficult to distinguish what it exactly constitutes a low body weight. The CDC and World Health Organization have established BMI criteria for adults, however, for adolescents and children, it can be more tricky and you should refer to their growth curves.

Stephanie Ferrin: For those who otherwise might meet criteria for anorexia, but have a normal BMI, they maybe be considered an atypical anorexia nervosa. This is not consider the decrement of weight change that has occurred from the starting weight to the lowest weight; and because of this it may not reflect the true medical severity of the patient with anorexia.

Stephanie Ferrin: For example, someone who started in what would be classified as obese and has lost a significant amount of weight, may now be considered a normal BMI, but would still have anorexia nervosa and still suffer from all the medical complications of starvation and malnourishment. And would still have all the disordered eating thoughts and cognitions, and

would still have the social dysfunction, even though they may not carry the classic label of anorexia nervosa.

Stephanie Ferrin: Another limitation and diagnostic criteria for anorexia are those that experience an inadvertent onset of weight loss from various causes, but then later demonstrate a typical symptomatology of anorexia. And this picture is actually published, originally, in a fashion magazine, and then republished in a psychology journal and I think it fairly well depicts cachexia.

Stephanie Ferrin: So, when evaluating a patient for an eating disorder, it may actually be the family or loved one who brings the patient in with other concerns. They may mention unexplained weight, loss, or failure to gain weight proportional to height in pre-teens and adolescents, seemingly stalling out or falling behind their peers.

Stephanie Ferrin: There may also be a concern for weight loss, or a loss of pubertal progression or that periods have stopped or where they're delayed, or not happening at all in the female at a time when it would be expected.

Stephanie Ferrin: They may have concerns about a seeming preoccupation with a need for additional weight loss or body shape changes, despite obvious thinness, or sometimes muscularity in males. They may engage in frequent weight loss talk, and have a negative comparison of themselves to their peers or even celebrities.

Stephanie Ferrin: Family members may report that the patient seems irritable, depressed, or anxious. They may have difficulty sleeping or less engaged in sexual intimacy with a partner. They may also have changed their clothing style to camouflage their appearance, and so wear inappropriately warm clothing for the season or climate, so think fur lined boots in the summer in the South.

Stephanie Ferrin: It also doesn't have to be the family necessarily who notices the change; it could also be a teacher or coach and so that that may be something that the patient is presenting with as well, too.

Stephanie Ferrin: When patients present to the clinic for physical examination it can be difficult to immediately appreciate a patient has anorexia unless there is severe cachexia. They may be wearing layered clothing to obscure their body, shape, and size.

Stephanie Ferrin: But for classic anorexia nervosa in patients with a lower weight and a moderate degree of malnourishment, you should be able to appreciate increased bony prominences of the shoulders, hips, and spinous processes. Then as malnourishment progresses, true cachexia, and an appearance of wasting becomes more readily noticeable. The face may start to appear gaunt, as there is a loss of adipose reserves, especially in the cheeks and the temple area of the face.

Stephanie Ferrin: Patients may also experience what's called telogen effluvium, which is diffuse hair loss across the entire scalp.

Stephanie Ferrin: They may report clumps of their hair falling out as new growth arrests from malnourishment. You can also check in with the office when they're seeing you with a hair pull test. So if the patient regularly brushes the hair and they do have to regularly brush it, or this won't work. If you gently run your hand through their hair and gently pull on the hair, if you get more than 4 to 5 hairs at a time that would be considered a positive sign.

Stephanie Ferrin: And finally, patients with anorexia may also present with lanugo, which is the development of that downy soft hair usually to the upper body upper back, but it can be anywhere on the body or face and can be very distressing for the patient, but will actually go away on its own with renourishment.

Stephanie Ferrin: This is a growth curve of an actual patient that demonstrates the weight deflection across growth percentiles to an underweight category in a 12 year old female with classic restrictive anorexia nervosa.

Stephanie Ferrin: You can see the initial deflection and weight at the first arrow and the beginning of weight restoration and treatment at the second arrow.

Stephanie Ferrin: And this is a growth curve for a case of atypical anorexia nervosa. So note the same trend of weight deflection, and loss as from the prior growth curve, but that there was that preceding weight gain, at around ages 7 to 10. Then the patient developed all the classic features of anorexia, and then ultimately had a significant amount of weight loss.

Stephanie Ferrin: If you are not looking at their growth curve and we're just evaluating their weight or BMI from a straight number, not considering their behaviors, you may have actually missed this case because they were never actually considered underweight.

Stephanie Ferrin: In anorexia, all organ systems are subject to starvation, and the results in physiologic changes that produces. For the cardiovascular system, the patient may experience a loss of muscle mass in the heart with myocardial atrophy, and may present with an elongated, thin heart on imaging.

Stephanie Ferrin: There may also be a loss of structural integrity that presents as a systolic murmur associated with a mitral valve prolapse. Rhythm disturbances are very common with sinus bradycardia being the one of the most common presenting features. A lot of people will say, oh, they're just athletic; that's their healthy, normal, resting heart.

Stephanie Ferrin: It is not normal, very few Olympic-level athletes have heart rates that are in the 30's or 40's without other comorbid signs of malnourishment. And of course, another common presenting symptom is reports of syncope or near syncope, so fainting often due to orthostasis. So with changes in position going from a lying or sitting to standing.

Stephanie Ferrin: And so usually you're going to note a rise in heart rate of 20 to 30 beats per minute, with position change, or a drop in blood pressure of 20 of the diastolic, 20 of the systolic, and 10 of the diastolic within 1-5 minutes of that change and then overall hypertension as well too.

Stephanie Ferrin: With starvation changes, patients may also start to develop some cerebral atrophy, wherein they're losing both gray and white matter. This can be reflected on imaging of the brains which is an a such as an MRI, so you can see here the diffuse loss of brain matter with increased prominence of the gyri, and especially increased intraventricular space and this is often reported symptomatically as a decline in cognitive functioning, so worsening of grades

in a previously academically high-achieving student it can also be present a slowing, where expressive speech and also central processing of language is decreased. Concentration is poor, short-term memory can be affected, so they have difficulties recalling what may have been discussed rather recently, or difficulty remembering to finish a task.

Stephanie Ferrin: The unfortunate news about this and cerebral atrophy is that this may not be completely reversible. It seems that younger patients who have more plasticity to their plasticity to their brain and who have a more rapid rate of, more rapid rate of weight restoration, do better than older individuals or those who are slow to regain weight.

Stephanie Ferrin: But, I've had some patients that unfortunately, just never seem to get back to what their previous cognitive levels were, and so they may have been a high achieving, all A's honor student, and now they're struggling in their regular coursework.

Stephanie Ferrin: Patients may also develop a peripheral neuropathy, and this is usually due to micronutrient deficiencies, such as B12 so they may complain of things such as paresthesia, so numbness, tingling, or even pain, and this is very common in patients who also engage in alcohol abuse.

Stephanie Ferrin: The gastrointestinal system is very frequently affected in patients with anorexia, so constipation, bloating, nausea, early satiety, decreased hunger cues. These are almost universally reported. This can be partly attributed to a delay in gastric emptying as well as slow transit time in the small bowel and colon.

Stephanie Ferrin: Patients may also come in with a new onset pancreatitis, although this is more common in people who are regularly engaging in vomiting. And finally, another common finding in individuals with anorexia, is the presence of a transaminitis, that can progress to a full hepatitis, especially if they're in the process of re-feeding. This is due to starvation Steatohepatitis.

Stephanie Ferrin: There is a hepatic steatosis as a consequence of an imbalance between the hepatic triglyceride synthesis, so forming those fats, and then in secretion with a decrease in lipoprotein synthesis, because they don't have as many amino acids available. So it results in the liver getting very angry and inflamed, and can cause prolonged problems and transaminitis.

Stephanie Ferrin: With anorexia, all blood cell lines can also be affected from the starvation and malnourishment. The most commonly is going to be the red blood cells, with a resultant anemia. Oftentimes they're iron deficient, especially in patients who are practicing vegetarianism or veganism.

Stephanie Ferrin: And then a finding on peripheral smear that you may see is the Echinocytes or Burr cells, it's not pathognomonic, it can be seen in other disordered states, too, but in the case of anorexia it's thought to be attributable to a defect in the formation of that phosphate, phospholipid bilayer of the cell membrane and so it results in this kind of spiky, speculated-appearance under microscope. Much like with neurotransmitters, in the cases of malnourishment and starvation with anorexia, the body simply does not have the substrate to be able to make hormones, so a lot of patients with anorexia may develop endocrinopathies.

Stephanie Ferrin: The most commonly reported is going to be a functional hypothalamic hypogonadism. And so what happens is that there is a deficiency in the hypothalamic pituitary and gonadal axis, so everything downstream is low.

Stephanie Ferrin: So for female patients, the ovaries are not going to be stimulated to produce estrogen, and so they actually end up being hypoestrogenemic, which can result in those irregular periods that we see or even a lack of periods. In males, the testes will start to fail to produce testosterone, so they can start to report decreased energy; they may have a stalling of their height which is not always completely reversible, so they may actually do enough damage that they don't reach their final height potential as an adult.

Stephanie Ferrin: it can also create some other unintended effects, such as improvement in acne as you don't have as much testosterone and androgens, which is often a culprit in acne. Because of the hypogonadal state we just mentioned, patients with anorexia are at an increased risk of developing osteopenia and osteoporosis. So weak, brittle bones, and this is especially true for female patients.

Stephanie Ferrin: This is because estrogen is needed for normal bone deposition. And so if you don't have the estrogen, you can't make new bone. But what you can do is break down and utilize the bone you already have, and so this results in the bones getting less and less dense, and makes them more susceptible to breaks.

Stephanie Ferrin: You typically see this as recurrent stress fractures, usually in athletes, or even in those that aren't athletic but you can also see an unexpected and uncommon breaks such as in this case of a fracture of the femoral neck in a male patient with anorexia nervosa.

Stephanie Ferrin: You can see this on imaging, and specifically DEXA scans, which demonstrate a lower z score for their age and sex cohort.

Stephanie Ferrin: When you're evaluating labs, in patients with anorexia, just keep in mind that almost everything will be low. So cell lines will be low, their electrolytes will be low, and electrolyte derangements are one of the most common findings. Typically, you will see a hypokalemia, hypophosphatemia, and hypomagnesemia, and that is very classic.

Stephanie Ferrin: Hyponatremia may also be present, so low sodium, and this is usually due to excess water intake or water loading, to decrease feelings of hunger or create falsely elevated weights. You can see lower thyroid levels, lower hormone levels, elevated LFTs, so liver function tests.

Stephanie Ferrin: And then urine tests may show the presence of ketones as they are breaking down their body cells, and so that's Ketonuria. For EKG's, you may see rhythm disturbances most commonly sinus bradycardia, but they may also have a prolonged QT interval, this is usually due to electrolyte derangements, and so patients should be supplemented with potassium, phosphate, and magnesium but it may also be due to medications they're using at the same time. The reason this is important is because it can progress to Torsades de Pointes and, ultimately sudden death.

Stephanie Ferrin: Other findings that are nonspecific, but can include low voltage changes, T-wave inversions, and ST segment depressions.

Stephanie Ferrin: So moving on to our next eating disorder, bulimia has a higher prevalence rate than anorexia. Again similar, 3-1 female to male ratio, usually occurs at younger age, but I'm a little bit older at the 17 to 21 age group.

Stephanie Ferrin: So bulimia is categorized with the following DSM criteria: so recurrent episodes of binge eating; recurrent episodes of compensatory behaviors to prevent weight gain, which is purging; bingeing and purging must occur at least once a week for 3 months, so there is a time criterion.

Stephanie Ferrin: Their self-evaluation is unduly influenced by body shape and weight, and then it cannot occur in the setting of anorexia nervosa, so if a patient meets criteria for anorexia nervosa, but they do also engage in bingeing and purging, that is actually a subtype of anorexia, and should be classified as such.

Stephanie Ferrin: So what is a binge? This is a bit of a potential flaw in the diagnostic criteria, as it is subject to the provider who is making a diagnosis. But typically a binge is defined as eating an amount of food that is definitely larger than what most individuals could eat in a discrete time period, usually 2 hours.

Stephanie Ferrin: It's a bit nebulous, but there is definitely a loss of control that occurs, and then feelings of guilt and shame after the binge has completed. Most binges are going to be calorically dense foods. However, I have had some patients that would eat 10 pound bags of carrots, or 5 heads of shredded raw cabbage, which would be something that the average person would not be able or would not eat on their own.

Stephanie Ferrin: So to further explain, bingeing behavior is typically driven by 3 factors: hunger, distressed moods, and habit patterns related to time or day, of time of day or place.

Stephanie Ferrin: So, initially, binges started as a response to food restriction, weight loss, and hunger, and the most common presenting kind of pattern is high school and college students will skip breakfast; they may or may not skip lunch, or eat a very light lunch, and then they're fighting hunger all day long. Then they get home in the afternoon, and then the hunger leads to a binge and then, when they binge on this palatable food, the body releases dopamine which then reinforces the effects when they eat, so it's a pleasure response.

Stephanie Ferrin: Gradually binges become triggered by distressed mood, such as anxiety, a low mood from something like a relationship upset, or just feelings of boredom or emptiness. And

binging behavior helps in triggering those situations by temporarily providing a release from that dopamine hit.

Stephanie Ferrin: Purging is a compensatory mechanism to try and relieve the guilt or shame that accompanies a binge and makes up for the calories that were consumed during the binge. Vomiting is by far the most common method used for purging, but you can also see other things, such as laxatives, diet pills like fenfluramine, enemas, or suppository use.

Stephanie Ferrin: They may also engage in excessive exercise or fasting. An example of excessive exercise would be exercising through injury, because they are compelled to make up for any binge that has occurred. So loved ones of individuals who have bulimia nervosa may report the development of atypical behaviors that seem to be very secretive or guarded. This may include stealing food or smuggling food into the house, and hiding its presence, or finding hidden wrappers in like the under the bed or in drawers.

Stephanie Ferrin: They may notice the patient doesn't eat at normal meal times, but is up in the middle of night because of that component of shame that occurs with eating. They may notice there's an unexplained, recurrent vomiting or frequent bathroom trips, either after meals or at unexplained times. Maybe showering multiple times a day.

Stephanie Ferrin: They may even find containers holding vomit that are being hidden around the house and wait, and where they're waiting to empty them after the house is empty, and they may also find stockpiles of laxatives and diuretics.

Stephanie Ferrin: They may be going through their medications, such as levothyroxine too fast, or not refilling things like insulin as often as they should be.

Stephanie Ferrin: They may have a rapid cycling of new fat diets or exercise trends, especially in a patient who previously was not active. And there may be an associated concern for concurrent mood swings, emotional lability, and then other possible impulsive behavior, such as self-harm, shoplifting, and substance use.

Stephanie Ferrin: So this is a growth curve of a patient with bulimia nervosa. Note the initial, unintentional weight gain before the first arrow. Then the disordered eating with attempt to

lose weight that resulted in bingeing with concurrent increase weight at a rapid rise at each of those arrow markers.

Stephanie Ferrin: And so each of these are where the eating disorder flared and worsened. When patients present to the clinic for physical examination, it can be very difficult to appreciate a patient who has bulimia nervosa unless you're actively looking for signs and symptoms.

Stephanie Ferrin: So you may notice fluctuations in their weight or on their growth curves. They may have a salivary gland hypertrophy, where the parotid glands are enlarged from overstimulation to produce the amounts of saliva needed for frequent and recurrent vomiting. It can also lead to erosion of the dentition which you can see on, especially on C of the middle figure where it's all mostly on the interior aspect of the teeth and then also actual crumbling and a moth bitten appearance of the teeth as in figure B; and then sometimes in patients who use their fingers to induce vomiting, they will develop calluses on their MCP joint or knuckles. This is actually not very common, but you can sometimes see it, and it's called Russel's Sign.

Stephanie Ferrin: Other things that you can find usually pertain to problems in the GI system. So this would be things such as Mallory-Weiss tears, Boerhaave syndrome, or rupturing of the esophagus due to recurrent induced vomiting.

Stephanie Ferrin: They may have a paralytic ileus due laxative dependence or cathartic colon where the colon is distended, and there is incomplete fecal evacuation that leads to bloating and discomfort. Edema can present after the withdrawal of laxatives.

Stephanie Ferrin: Rectal prolapse can happen from abuse of suppositories, enemas, and manual evacuation of stools. And then you also have an increased risk for the development of esophageal cancer. The classic lab findings for bulimia nervosa, specifically with vomiting, is hypokalemic hypochloremic metabolic alkalosis. So this is due to potassium and chloride losses from vomiting and loss of gastric acid.

Stephanie Ferrin: In contrast, nonanion gap acidosis is common with laxative use, but that kind of depends on which laxative is being abused.

Stephanie Ferrin: Amylase may be elevated in cases of severe or frequent vomiting, because the salivary glands are hyperactive. However the lipase should be normal because they do not have a pancreatitis.

Stephanie Ferrin: Moving on to our next eating disorder. Binge-eating disorder has a higher prevalence than anorexia or bulimia. It's still roughly a 3-1 female to male ratio; and does tend to appear in young adulthood more frequently.

Stephanie Ferrin: So, binge-eating disorder: the criterion is very similar to bulimia nervosa in that they do have recurrent episodes of bingeing. They do have 3 minor criteria, so more rap, eating more rapidly, until uncomfortably full, or eating alone because they're embarrassed, or feelings of disgust or shame.

Stephanie Ferrin: It does have a time criterion as well, but there is no purging component and so it's a little bit easier to diagnose. Once you establish, they do have binge eating. They do not meet criteria for anorexia nervosa, and there is no purging behavior.

Stephanie Ferrin: So loved ones of individuals with binge-eating disorder may report the development of atypical behaviors similar to bulimia nervosa, so secretive or guarded behavior, such as stealing food or smuggling food and hiding its presence.

Stephanie Ferrin: They may notice that the patient doesn't eat with others at normal meal times, or eating at night.

Stephanie Ferrin: Alternatively, family members or friends may also report signs of expansive eating, so they may actually go into detail about the binges that they are witnessing the patient engage in.

Stephanie Ferrin: There may be much more noticeable weight gain and fixation on weight, or their eating habits with a lot of self-recriminating talk or comments about giving up with their weight. They may also have a sense of depression or hopelessness around their weight and food.

Stephanie Ferrin: So this is a growth curve of an individual who develops binge-eating disorder. Note the rapid and sudden rise and weight at the arrow. For this particular patient, this actually coincided with an incident of sexual abuse that served as the trigger for the development of their binge-eating disorder.

Stephanie Ferrin: And so our final eating disorder is ARFID, which is the most recent addition, it has less research and data on it. Studies, so far quote comparable to higher prevalence rates as to the other eating disorders.

Stephanie Ferrin: There also seems to be a more equal skew between the sexes to maybe even more males affected than females, which is unlike the other eating disorders. The age of initial onset also tends to be a little bit younger, so presenting frequently in children, although it still can present at any age or stage of life

Stephanie Ferrin: and the main and important thing to note with avoidant and restrictive food intake disorder, is that there is no concern about the body weight or shape expressed by the patient, and it is not a driving factor of their disordered eating behaviors. ARFID can come in many varieties, but the presenting features will be a significant weight loss, or failure to gain expected weight, a particular nutritional deficiency; so think of like Pellagra or niacin deficiency.

Stephanie Ferrin: A dependence upon nutritional supplements. So this is very common in my ARFID patients, where there's just a lack of interest in eating, and to be able to maintain their weight, they have to take supplemental shakes. Or it may be a marked interference with cycle social functioning. So this is the patient who can't go on vacations or go to college or eat out because they can't find foods that they can eat.

Stephanie Ferrin: The tricky part about making the diagnosis of ARFID is that it cannot be due to another underlying medical condition. So an example I like to use in these cases are that if a patient is avoiding eating because of fear of something—so fear of vomiting due to chemotherapy, that may be expected in the course of cancer, in the course of the disease process of cancer and treatment.

Stephanie Ferrin: However, if we have completed chemotherapy months ago, and we are still avoiding eating, and it's resulting in continued weight loss that may qualify now for diagnosis of ARFID.

Stephanie Ferrin: There are kind of 3 emerging ARFID subtypes. These are not necessarily diagnosable like you can't distinguish when you're making the diagnosis. But we do are seeing this trend and patterns emerge when we treat these patients.

Stephanie Ferrin: So the first group would be those who have a lack of interest in eating or food. This usually develops very young, even as early as infancy, and persists into to adulthood. These people tend to be low on their growth curve their whole life, may have a possibility.

Stephanie Ferrin: They may possibly be unable to recognize their normal hunger cues. And there is some evidence that they may be at a higher risk for turning into anorexia nervosa or developing anorexia nervosa.

Stephanie Ferrin: There are those who have sensory-based avoidance. So these are what I like to call my super tasters. They may have difficulty with combinations of food or mixed foods. They have problems with textures, colors, or smells, and you frequently can see this in patients who are on the autism spectrum disorder. They tend to be lower on their growth chart as well, and this usually develops in the first 10 years of life, and then persists into adulthood.

Stephanie Ferrin: And finally, the last group are those who have a fear or aversion of an undesired consequence. And so this would be patients who have functional dysphasia, or they have a feeling that food is sticking in their throat. This may be the individual that had a lot of vomiting, or maybe a choking event or anaphylaxis, and now they are narrowing their food choices down further and further and further. This can arise at any age, and so you can see it at any time, really.

Stephanie Ferrin: Loved ones of individuals with ARFID may report that the patient has always been a very picky and eater with a limited palette. They may complain about certain textures so they can't eat crunchy things or maybe they only like white things, so bread, rice, toast, etc. They may report severe frustration that they have to coax, threaten, or bribe the child, because they can't simply can't be bothered to eat.

Stephanie Ferrin: They may also report that since an event happen, the person has had has eaten less and less and perhaps they notice an increase in fear and anxiety, or that when the person does eat there's always kind of these vague complaints of fullness, bloating, discomfort, reflux, etc.

Stephanie Ferrin: This would be a growth curve of an individual for our food, who was a picky eater in childhood that also had some textual versions. So note they've always been on the lower side of their growth curves since childhood, and it's just kind of slowly drifted down.

Stephanie Ferrin: This would be an example of a growth curve of an individual who experienced a triggering event, in this case severe abdominal pain and vomiting, who developed aversion to eating out of fear for those symptoms. And once they were able to manage that fear, their weight was able to be restored, and they were to be able to go on and eat normally.

Stephanie Ferrin: So, moving on to kind of the last section, we do know that the effects of the pandemic has been detrimental for eating, pre-existing, and the development of eating disorders.

Stephanie Ferrin: So from the International Conference of Eating Disorders in 2021, we recognized that the COVID pandemic has deeply disrupted daily life across the globe with profound effects on mental and physical health.

Stephanie Ferrin: The eating disorder behaviors have been exacerbated by the pandemic, particularly among vulnerable groups. And it may actually have precipitated to the development of eating disorder behaviors and exacerbated the existing pathology amongst others.

Stephanie Ferrin: Many of these risk factors are the same that we've already discussed, but they all kind of converged in this perfect storm scenario.

Stephanie Ferrin: So due to the pandemic multiple areas of healthy lifestyle habits have been disrupted, which can all impact eating disorder behaviors. Some examples include limitations

on physical activity, limitations on access to food, disruptions in sleep and all of these changes to normal structured routine have known to increase the eating disorder risk.

Stephanie Ferrin: The pandemic especially has resulted in elevated feelings of depression, anxiety, the panic, boredom, and loneliness. There has been an increase in social isolation.

Stephanie Ferrin: People have not been able to compare themselves to their peers on normal behaviors and normal body ideals, especially our youth that are engaged in social media which has resulted in negative consequences.

Stephanie Ferrin: There's been a lack of support systems as well as a lack of access to providers, to not only diagnose, but continue to manage current eating disorders.

Stephanie Ferrin: We also know that there has been a problem with food access, so food scarcity, and that people with eating disorders have a complex problematic relationship. And so if the individual is having difficulty finding food, and then they are buying in bulk quantities to store up. Now they're at home potentially engaging in binge eating where they're surrounded by the surplus of excess food and then they're running out of their food afterwards, which is just compounding the stress that they are experiencing.

Stephanie Ferrin: There's also been the effect of social media on fears of weight gain, and what's called the quarantine 15.

Stephanie Ferrin: So the media has sparked these fears by kind of disseminating this information that as well as combined with reports that those with higher body weight we're associated with higher risk for hospitalization, and morbidity and mortality outcomes with the pandemic, and this has led to an increase in restriction, and other unhealthy weight control behaviors, and misguided attempts really to avoid the quarantine 15 in all patient demographics.

Stephanie Ferrin: So in this letter to the editor of the Journal of Eating Disorders, a social worker who identifies as someone living with an eating disorder. So Margaret Janse van Rensburg is her name, recounts how the pandemic had affected her directly.

Stephanie Ferrin: She discusses how not having access to the food, it caused her to have increased anxiety about how she would structure her eating schedule. She commented on the concerns with social isolation, and not being able to ignore the eating disorder thoughts and then also the behaviors that she engaged in during the pandemic that worsened her eating disorder.

Stephanie Ferrin: So to finish our discussion, I just want to present 3 recent studies published in the past 2 years, surrounding eating disorder behaviors around the pandemic. This one is from the COLLATE project in Australia, where it actually looks at quantitative and qualitative questions regarding the effects of the pandemic on eating and exercise behaviors and uses the eating disorders examination, questionnaire or EDQ.

Stephanie Ferrin: So respondents who self-identified as having an eating disorder were analyzed and of those, they reported that there was little reported a little or a lot more food restriction that was going on. So this is 64.5%, 35.5% reported increased binge eating behaviors.

Stephanie Ferrin: and then 18.9% reported increased purging behaviors. So almost half of all eating disorder. Respondents reported an increase since the COVID-19 pandemic started, of an uptick in their disordered eating behaviors

Stephanie Ferrin: For those without a history or diagnosed eating disorder, about 27.6% reported a greater level of food restriction, 34.6% reported increased binge eating behaviors, and then exercise behaviors varied, but almost half reported exercising less since the pandemic began.

Stephanie Ferrin: So the findings for this study are important, because it suggests that even in the early stages of the pandemic, people with an existing eating disorder were reporting changes in eating and exercise that may reflect an exacerbation of disordered eating.

Stephanie Ferrin: They also suggest the increased rates of disordered in behaviors and changes to exercise among the general population may lead to an important negative physical health implication if those behaviors were to continue to persist.

Stephanie Ferrin: Another study that was done evaluated 159 patients with anorexia nervosa. The WHO completed an online survey during COVID-19 when it first started and the changes in their eating disorder symptoms, and other psychological aspects, health care utilization, and strategies that they employed to cope during the pandemic.

Stephanie Ferrin: So 70% reported that they're eating, shape, weight concerns, strive for physical activity, loneliness, sadness, and inner restlessness increased. There was a decrease in access to in-person psychotherapies, there was decreased access to the general practitioners, and there was an increase in video conference therapy.

Stephanie Ferrin: This actually just looks at the different percentages who reported either worsening of existing symptoms or the development of new symptoms and worsening quality of life.

Stephanie Ferrin: And so it just goes on to underline that there was an increase in eating disorder cognitions in patients who already had a diagnosis of anorexia nervosa, and that there was a barrier to access to care because of the pandemic.

Stephanie Ferrin: And finally our last study looked at 1,820 participants. Specifically, these were those who were enrolled at the age of 14 back in 2013, and were followed forward through time.

Stephanie Ferrin: They were self-reporting their weight and height, and then they also had their BMI calculated.

Stephanie Ferrin: So, when they were asked in the study to cope with social distancing and isolation. Are you doing any of the following? Select all that apply? 2 options included unhealthy food intake and overeating and respondents would check if they engaged any of those behaviors.

Stephanie Ferrin: So 31% of participants reported overeating to cope with the pandemic, and 35% reported unhealthy food intake to cope with the pandemic.

Stephanie Ferrin: And so in examining co-occurrences of these eating behaviors, 18% reported both and then 52% reported neither.

Stephanie Ferrin: And this is just some evidence that there was an appreciable prevalence of unhealthy eating behaviors to cope with their social distancing and isolation in this young adult sample and that those who used overeating to cope had a greater weight gain as compared to individuals that did not report that.

Stephanie Ferrin: So, thank you for allowing me to present at this time, I will hand it back over.

la-shell_johnson@med.unc.edu: Thank you so much, Dr. Ferrin. A few reminders, before we quickly open up for question and answer segment immediately after this presentation, and you will receive a pop up with the evaluation survey. Please make sure that you do that. We will also be sending you an email with another evaluation for NCEED along with the slides from today's presentation, and once again this presentation will be available on the NCEED Training Center one week from today.

la-shell_johnson@med.unc.edu: I'll go ahead and ask the first question. Any unanswered questions will be sent with responses one week from today to all participants on today's call.

la-shell_johnson@med.unc.edu: The first question that we received asked, "how do you balance the holidays with an eating disorder?"

Stephanie Ferrin: Yes, so holidays are very difficult. We do definitely see an uptick in our visits. What I like to ask patients who are already established with me is what their plan around holidays is?

Stephanie Ferrin: So what kind of a meal preparation is going to be occurring? Are they going to be eating at home in a controlled environment? Or are they going to be traveling where they will disrupt their potential progress? If they are on its structured meal plans, then they will have to be able to accommodate for that and be able to keep to the usual timing and meal proportioning and plating that often happens from the family members.

Stephanie Ferrin: I also like to ask about kind of the stress that happens, and if there are certain individuals who are coming to holiday meals. and the commentary that may happen from well meeting, or sometimes not so well meaning friends and family members, and how they intend to deflect and manage those symptoms, and then, if they're having more difficulties we will have them come in for extra checks and potentially set up extra therapy. So we like to kind of have a frank discussion beforehand on what their plans are, and troubleshoot where things may go wrong for them.

la-shell_johnson@med.unc.edu: Thank you so much. Dr. Ferrin. Are there any questions that participants would like to ask? If so, please place them in the Q&A. We have another question: Does the body dysmorphia disorder, is the pheno correlated with the eating disorder.

Stephanie Ferrin: good question. So body dysmorphia disorder is not exactly the same as the body dysmorphia hat happens with anorexia nervosa. So with anorexia, you know it is tied entirely into their body, weight and shape, so that maybe globally and it may sometimes be particular areas. But what you won't see is people complaining about say their nose or about their chin, or my fingers are too long, or things like that. That's not to say that they can't have both diagnoses to be honest.

Stephanie Ferrin: But with eating disorder specifically in anorexia, it is almost completely focused on that weight and shape.

la-shell_johnson@med.unc.edu: Thank you once again back to Ferrin. I'll take our last question. If you have other questions, please place them in the chat. We'll just have to respond to those via email. The last question for today at the BN Group chart you displayed is typical in that I've often seen in that there is a period of marked weight loss before it goes back up. How do we differentiate this in real time for atypical anorexia?

Stephanie Ferrin: Yeah. So with so that was bulimia nervosa, you said, BN okay. That is correct. So with the first thing you would want to do is evaluate their behaviors because it's really the behaviors that are going to differentiate the diagnosis of an anorexia nervosa case with bingeing and purging versus bulimia. So with that anorexia binge purge, if they're meeting the criteria for anorexia already, even if it's atypical with that higher weight at the beginning. Then it's just going to be anorexia, and you would not actually diagnose them with, bulimia nervosa.

Stephanie Ferrin: It can be very difficult when they're in their very first presenting. So they're just at that, like initial deflection point.

Stephanie Ferrin: And what you will see is over time, they may have fit the diagnosis for one and they have kind of morphed into that more porous category that allows them to be diagnosed with the other, usually going from an anorexia nervosa, where they intentionally are losing weight and restricting, and then develop bingeing and purging behaviors, and then become just bingeing and purging behaviors without the restriction.

la-shell_johnson@med.unc.edu: Thank you so much, Dr. Ferrin. We have 2 questions that are unanswered. I will make sure they get these out to you guys via email at this time to be respectful of everyone's time. I'll go ahead and turn it over to the Ms. Gail Cormier to give any closing remarks, and then, Dr. Ferrin, you can say any closing remarks after Gail is finished.

Gail Cormier, (she, her): Just quickly. Thank you so much, Dr. Ferrin, this was fabulous. I learned so much as far as NFSTAC goes, we hope to see everybody on January 18th, we're having a joint center of excellence presentation named, "Reframing Language and Behavioral Health Care." So we'll have a lot of CoEs with us, and we'll talk about how to talk and we'll give you some tools that you can use so once again. Thank you, and have a great holiday.

la-shell_johnson@med.unc.edu: Thank you, Gail. Dr. Ferrin, do you have anything that you would like to say before we adjourn?

Stephanie Ferrin: No, just thank you so much for having me.

la-shell_johnson@med.unc.edu: Thank you so much for such a wonderful talk, and thank you once again to all of our participants that attended today. Please make sure that you complete both evaluations, and we will get responses to these questions along with the slides to you within the next 7 days. Thank you so much.

