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Evidence Based Practice Guidelines for Screening for Disordered Eating Among Patients with Attention Deficit Hyperactivity Disorder in an Outpatient Setting in Miami, Florida: An Educational Intervention Among Healthcare Workers

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Evidence Based Practice Guidelines for Screening for Disordered Eating Among Patients with Attention Deficit Hyperactivity Disorder in an Outpatient Setting in Miami, Florida: An Educational Intervention Among Healthcare Workers

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By

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Abstract

Background: Positive relationships have been found between attention-deficit/hyperactivity disorder (ADHD) and an increased risk of developing disordered eating. Healthcare workers who do not use a reliable and validated eating disorder assessment tool in their care face difficulties when identifying patients at risk for developing disordered eating patterns. The literature has shown that lack of awareness among healthcare providers as it pertains to recognizing indicators of disordered eating in patients with ADHD is a contributing factor to delayed treatment and care. This quality improvement project focused on enhancing healthcare workers knowledge base and awareness regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD.

Methods: A quantitative, descriptive, cross-sectional, pretest-posttest quasi-experimental study design was utilized in this project to assess the effectiveness of an educational intervention relating to screening for disordered eating amongst patients with ADHD. A convenience sampling method was used to recruit $N = 20$ participants and access data at an outpatient clinic in Miami, Florida. This quality improvement project was conducted remotely, including the distribution of the educational intervention and the administration of the pre- and posttests which measured knowledge awareness regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD.

Results: Results revealed no statistically significant mean difference between pre-test scores ($M = 5.92$, $SD = 1.73$) and post-test scores ($M = 6.75$, $SD = 0.45$) with $t(11) = -1.65$, $p = 0.127$, $p > 0.05$). Despite the results demonstrating no statistically significant

mean difference between pre- and posttest results, there are numerous studies that highlight the benefits of educational interventions in increasing knowledge awareness.

Keywords: Attention deficit hyperactivity disorder, disordered eating, eating disorders, eating disorder screening, healthcare providers

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Introduction

Attention-deficit/hyperactivity disorder (ADHD) is one of the most prevalent neurobehavioral disorders of childhood (Wolraich et al., 2019). A meta-analysis revealed a worldwide prevalence of ADHD to be 7.2% among children, with estimates from certain community-based samples to be closer to the range of 8.7% to 15.5% (Wolraich et al., 2019). Data from a national survey in 2016 revealed that 9.4% of children in the United States between the ages of 2 and 17 have received an ADHD diagnosis (Wolraich et al., 2019). Within this national survey, 8.4% of children between the ages of 2 and 17 had a current diagnosis of ADHD, which represents 5.4 million children (Wolraich et al., 2019). Attention-deficit/hyperactivity disorder can have a profound effect on a child's well-being, their social interactions, and tamper with their academic achievement (Wolraich et al., 2019).

While symptoms of ADHD transpire during childhood, most children with ADHD will notice a continuation of symptoms and impairment through adolescence and into adulthood (Wolraich et al., 2019). It is critical to note that the majority of children with ADHD also meet diagnostic criteria for another mental disorder (Wolraich et al., 2019). Various large epidemiologic and clinical studies have demonstrated that ADHD frequently co-occurs with other psychiatric disorders. This susceptibility refers particularly to disorders such as depression, bipolar disorder, anxiety disorders, conduct disorders, eating disorders, autism spectrum disorder, and substance use disorders (Faraone et al., 2021). Research has shown that a positive relationship exists between the symptoms of inattention in ADHD and the risk of developing disordered eating (Martin

et al., 2022). Villa et al. (2023) reported that children and adolescents with ADHD could present with symptoms dealing with loss of control eating and dysregulated body attitudes.

Eating disorders are complex psychiatric conditions in nature. They will affect more than 1% of the world's population, with the more frequent disorders being binge-eating, bulimia nervosa, and anorexia nervosa (Jacob et al., 2018). The U.S. Department of Health and Human Services (n.d.-b) reported that the overall prevalence of binge eating disorders in adults is 1.2% with prevalence being twice as high in females (1.6%) than males (0.8%). The overall prevalence of bulimia nervosa is 0.3% with prevalence being five times higher among females (0.5%) than males (0.1%) (U.S. Department of Human and Health Services, n.d.-b). As it pertains to anorexia nervosa, the lifetime prevalence of anorexia nervosa in adults is 0.6% with the prevalence being three times higher among females (0.9%) than males (0.3%) (U.S. Department of Human and Health Services, n.d.-b).

Eating disorders are often associated with significant psychological and physical impairment (Barakat et al., 2023). Eating disorders present with a detrimental cost to quality of life that places individuals at an increased risk of attempting suicide and increased mortality (Barakat et al., 2023). Eating disorders can range in severity and are often chronic, especially if the symptoms are not addressed in an efficient and timely manner (Barakat et al., 2023). Even subclinical levels of disordered eating have shown to negatively impact an individual's quality of life (Jacob et al., 2018). Research reviews

have also suggested a long-term increase in healthcare costs that result from unmet treatment needs in this population (Bryant et al., 2022).

Understanding the relationship that exists between ADHD and disordered eating is critical in justifying the screening for eating disorders amongst patients with ADHD. There are various screening tools that exist to aide healthcare workers in the recognition and diagnosing of eating disorders. Some of these evidence-based and validated screening tools include the SCOFF (Sick, Control, One Stone, Fat, Food) and the EDE-Q (Eating Disorder Examination Questionnaire). However, a recent study brought light to this matter and demonstrated an average delay of 5.28 years between the onset of eating disorder symptoms and the pursuit of treatment (Barakat et al., 2023). A contributing factor to this delay is the lack of awareness among healthcare professionals as it pertains to recognizing indicators of disordered eating behaviors (Barakat et al., 2023). Essentially, this signifies that eating disorders often remain unrecognized by clinicians (Barakat et al., 2023). Considering this information, this quality improvement project seeks to enhance awareness and knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD. The findings of this project contributed to the advancement of nursing knowledge as it relates to the significance of educational interventions in enhancing healthcare workers awareness and readiness in the delivery of quality care to individuals with ADHD.

Problem Statement

Attention-deficit/hyperactivity disorder (ADHD) is a disorder of neurodevelopmental nature that is portrayed by characteristics such as inattention and/or hyperactivity-impulsivity and is believed to commence usually during childhood but interferes significantly with functioning in areas such as academics, socially, and even occupational functions (El Archi et al., 2020). The U.S. Department of Health and Human Services (n.d.-a) reported that the overall lifetime prevalence of ADHD among adolescents is 8.7% with nearly half of all cases demonstrating severe impairment (4.2%). The prevalence of children ever diagnosed with ADHD increased nearly 42% between 2003 (7.8%) and 2011 (11.0%) with males demonstrating a consistently higher prevalence of ADHD than females (U.S. Department of Human and Health Services, n.d.-a). It is important to note that currently, evidence demonstrates that many impairing symptoms characteristic of ADHD persist past childhood and into adulthood in roughly 50% to 60% of ADHD cases (El Archi et al., 2020). While ADHD is inherently impairing, there is also concern for comorbidities. Research has shown that ADHD, both in childhood and adulthood, has been linked with an increased likelihood and occurrence of a multitude of both psychiatric as well as medical comorbidities (El Archi et al., 2020). Those affected by ADHD seem to be at an increased risk of developing a pattern of disordered eating with some studies proposing that symptoms of the disorder can even predict the onset of various forms of eating disorders (Martin et al., 2022). In fact, obesity is one of the most common medical comorbidities in adults with ADHD (Archi et al., 2020). However, disorders such as bulimia nervosa, binge eating disorder and anorexia nervosa have been found to be significantly linked with ADHD (Archi et al., 2020).

Even when a patient screens negative for meeting eating disorder criteria, it does not completely rule out patterns of disordered eating. ADHD has been associated with addictive-like eating behaviors even in cases where there is no diagnosis of an eating disorder (Archi et al., 2020). These eating behaviors can include a loss of control when overeating and food addictions (Archi et al., 2020). Eating disorders are not only known to significantly impact a person's quality of life but are also linked to other psychiatric disorders, somatic disorders, attempts at suicide, and suicide mortality (Jacob et al., 2018). While a patient may not fully meet criteria for an eating disorder, it is critical to note that even disordered eating at a subclinical level has been associated with negative impacts on a person's quality of life (Archi et al., 2020). This places importance and emphasis on gaining comprehension of risk factors for disordered eating patterns to intervene, treat, and even prevent the negative impacts (Archi et al., 2020). Furthermore, understanding the association between disordered eating and ADHD highlights the importance of screening for disordered eating among patients with ADHD. The purpose of this quality improvement project was to increase awareness and knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD in an outpatient setting in Miami, Florida. This project promoted awareness in healthcare workers to prevent a deterioration in the quality of these patient's lives and ultimately decrease poor health outcomes.

Advanced Literature Review

The purpose of this quality improvement project was to increase awareness and knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening for disordered eating among patients with attention deficit

hyperactivity disorder (ADHD) in an outpatient setting in Miami, Florida. Research has shown that there seems to be an increased risk of developing patterns of disordered eating in those affected by ADHD (Martin et al., 2022). A literature review was conducted to identify the gaps in the literature related to the research problem utilizing Florida International University's Libraries' one-stop advanced comprehensive database search. Key search terms included: "ADHD", "disordered eating", "psychiatric", "screening for disordered eating", "mental health", and "eating disorder". The search was limited to literature published after 2018 until current date, and only full-text English articles were selected for inclusion in the literature review. Research articles selected pertained to the relevant topics such as attention deficit hyperactivity disorder, disordered eating patterns, screening tools for eating disorders, and the link between ADHD and disordered eating. Ten articles informed and addressed the population of interest, the PICO question, and the purpose of this quality improvement project. Review of the literature concluded in three distinct content areas: (1) studies examining correlations between disordered eating and ADHD, (2) lack of screening for disordered eating among patients in the U.S., and (3) clinical and knowledge gaps among healthcare workers in the care of patients with eating disorders and ADHD.

Examining Correlations Between Disordered Eating and ADHD

This content area analyzes the correlation between patterns of disordered eating and ADHD. This content section includes four studies that were selected based on their relevance to this topic of the study. The analysis of the studies will be organized and discussed in chronological order by year of publication.

Jacob et al. (2018) performed a quantitative and analytical cross-sectional study that was aimed at examining the associations between disordered eating and ADHD symptoms after adjusting for various factors such as behavioral, sociodemographic, and psychopathological. The study utilized data from 7,403 participants who had previously partaken in the Adult Psychiatric Morbidity Survey (APMS) in 2007. The survey field work was started in October of 2006 until December 2007 by the Leicester University and the National Center for Social Research. The study utilized a multistage stratified probability sampling design. The small user postcode address file served as sampling frame, while the postcode sectors served as primary sampling units. Information from the participants was gathered through in person interviews during which some of the items on the questionnaire were self-completed using a computer. Differences in the characteristics of the sample between participants with and without ADHD were tested with chi-squared tests for categorical variables and Student's t test for continuous variables (intelligence quotient and number of stressful life events. Differences in covariates (except sociodemographic variables) by eating disorder symptoms were further studied, and effect sizes were calculated using phi for categorical variables and Hedge's g for continuous variables. Utilizing multivariable logistic regression models, the associations of ADHD (independent variable) with individual eating disorder symptoms and possible eating disorder (dependent variables) were studied. The sample included 7,403 individuals who were 16-years-old or older. The mean age of the sample was 46.3 years old and 48.6% were males. The prevalence of ADHD was 5.7% and that of possible eating disorder was 6.4%. The main findings of this exploratory study involve a 3 times higher odd for possible eating disorder associated with ADHD after adjusting

for ethnicity, sex, and age. The study also found that 28 to 42 percent of the link between ADHD and possible eating disorder was explained by other mental health disorders such as anxiety and borderline personality disorder, as well as stressful life events. The findings of this study are consistent with the literature by showing the significant association between ADHD and eating disorders or subclinical eating disorder symptoms. The researchers recommend that future research, ideally of longitudinal design, should aim their focus on the factors involved in the link between ADHD and disordered eating in order to gain better understanding on how these two conditions are linked. Based on the findings of this study, the researchers also recommend assessing for symptoms of disordered eating in individuals with ADHD on a regular basis.

Martin et al. (2022), utilizing a quantitative approach, tested the associations between ADHD symptoms and disordered eating cross sectionally and between trait impulsivity and disordered eating longitudinally. The study had two primary aims which were (1) examining the cross-sectional relationship between inattentive and hyperactive/impulsive symptoms of ADHD and disordered eating behavior while accounting and adjusting for factors associated with both ADHD and disordered eating such as drug use and self-esteem and (2) investigating the longitudinal relationships between trait impulsivity on the Barratt impulsivity scale, and following disordered eating utilizing data from baseline and follow up in the same data set. In this study, they used data from a normative cohort involving 642 young adults of which 65% were females with a mean age of 23 years old. Covariates and demographics were entered in the first two steps of both cross-sectional and longitudinal hierarchical logistic regression models. The sample of 642 young adults were from the original cohort of the

neuroscience in psychiatry network (NSPN) which is a previously established accelerated longitudinal study examining brain development in young people designed to be representative of the general population. The study's findings involved a positive cross-sectional relationship between inattentive symptoms of ADHD and overall risk of disordered eating in a community sample of young adults, even when controlling for various covariates. They also observed a potential relationship between trait impulsivity and risk of disordered eating in the same sample. The researchers discussed how the findings of the study suggest that the direction of future research be geared towards unraveling the relationships between impulsivity and depression in predicting the emergency of eating disorders.

Yilmaz et al. (2022) focused on identifying associations between ADHD symptom dimensions and symptoms of disordered eating in adolescents through a population based twin study. The primary goal of the study was to appraise the phenotypic associations while also investigating the extent to which both environmental and genetic factors are shared and contribute to the link between ADHD symptom dimensions and symptoms of disordered eating. The study follows a quantitative correlational design. The study utilized a purposive sampling strategy which consisted of twins from the Swedish Twin study of Child and Adolescent Development (TCHAD). This included all twins who were born in Sweden between May of 1985 and December of 1986. The twin pairs and their parents were selected and identified utilizing the Swedish Medical Birth Registry and invited to participate in the study. The study included 470 monozygotic and 349 dizygotic female twins, as well as 441 monozygotic and 315 dizygotic male twins. The study used a chi-square test as its quantitative data analysis

model. Major findings of this study involved common additive genetic and environmental effects accounting for significant associations between ADHD and disordered eating. For females, the strongest genetic correlation was observed for cognitive/inattention problems-bulimia (0.54) with genetic factors accounting for 67% of the phenotypic correlation. Meanwhile, for males the strongest genetic correlations were observed for conduct problems-bulimia and hyperactivity-bulimia (~0.54), accounting for 83% and 95% of the phenotypic correlation. Overall, there were similar phenotypic correlations between males and females for all ADHD symptoms and disordered eating associations. The authors share that based on the findings of the study, it is important to note the risk of comorbidity and shared genetics which emphasizes the need for preventative measures as well as specialized treatment for ADHD and disordered eating in both males and females.

Villa et al. (2023) conducted a descriptive quantitative minireview which focused on ADHD and eating disorders in children and adolescents. The primary aim of the study was to summarize the findings of various gathered studies which explored ADHD and eating disorders in childhood and adolescence over the last 10 years. The sampling method utilized for this review was a purposive sampling method which entailed an inclusion and exclusion criteria. Studies were explicitly included if they considered participants with a clinical diagnosis of ADHD, utilized measures that were quantitative for the assessment of eating disorders, and if the participants were under the age of 18 years old. Studies were explicitly excluded for this review if the patients with ADHD had additional neurodevelopment disorders, they exclusively focused on pharmacological treatment, and if they were single-case studies. All the studies reviewed were cross-

sectional. The review utilized a statistical meta-analysis to analyze and combine results. The search process for this review was conducted on PubMed which yielded 4598 relevant studies. Articles were further assessed by reading the titles and abstract and 86 studies passed this screening. Based on exclusion criteria, 78 articles were discarded which left a total of 7 articles used due to meeting all inclusion and exclusion criteria. Major findings of this review include the suggestion that ADHD is more frequently associated with binge eating disorder, followed then by bulimia nervosa, and lastly anorexia nervosa. Also, with regard to other eating difficulties, the reviewed studies demonstrated that children and adolescents with ADHD could present disturbances such as symptoms pertaining to loss of control eating and dysregulated body attitudes. The majority of the studies that were reviewed (n=5) found an association between ADHD and eating disorders. Based on the findings, the authors suggest that children and adolescents with a diagnosis of ADHD be monitored for eating disorders in order to better understand the clinical implications of this comorbidity. The review also suggests that future research explore the role of gender in this association.

The literature signals that the relationship between ADHD and disordered eating is significant and warrants the attention and awareness of healthcare professionals. This correlation is what inspired this quality improvement project to increase awareness and decrease knowledge gaps.

Lack of Screening for Disordered Eating

This content area analyzes the lack of screening for eating disorders or disordered eating. This content section includes three studies that were selected based on their

relevance to this topic of the study. The analysis of the studies will be organized and discussed in chronological order by year of publication.

Svedlund et al. (2018) carried out a quantitative study following a correlational research design that had a primary aim of exploring the influences of self-reported ADHD symptoms on recovery rate at a 1-year follow up in a group of patients being followed by a specialized eating disorder clinic. The sampling strategy utilized in this study aligns with a purposive sampling method where the researchers sought out a group of participants that were most useful to the aim of the study. The sample consisted of 443 adult females diagnosed with an eating disorder who were assessed with the ADHD Self-Report Scale for Adults, and for demographic variables and symptoms of eating disorders. This quantitative study utilized chi-square tests to analyze the scale results versus the recovery rate at the 1-year follow-up. Major findings of the study involved a high degree of ADHD symptoms at baseline being a predictor for nonrecovery of eating disorders at the 1-year follow up particularly in patients experiencing a loss of control overeating, purging, or binging. It is critical to note that the study found that the presence of inattention as an ADHD symptom was more strongly associated with poor recovery than symptoms of impulsivity or hyperactivity. The authors concluded with the note that given the high degree of ADHD symptoms having a negative impact on the recovery from eating disorders, screening and diagnostic evaluation of ADHD in all patients experiencing loss of control over eating/bingeing/purging is recommended.

Fitzsimmons-Craft et al. (2019) conducted a quantitative study utilizing a descriptive cross-sectional design where the primary objective was to determine the reach of distributing an eating disorder screener online and to examine the probable eating

disorder diagnostic and breakdown of risk of adult respondents. The sampling strategy utilized in the study was convenience sampling where participants volunteered themselves by responding to an online survey that was made public. The screening tool was promoted through Facebook ads, awareness campaigns, media articles, phone calls, emails, chat messages, and general website traffic. The data analysis was executed using chi-square analysis and analysis of variance (ANOVAs). The study consisted of 71,362 respondents of which 91% were females, 57.7% were between the ages of 18 and 24, 89.6% were non-Hispanic, and 84.7% were White. About 86.3% of respondents screened positive for an eating disorder while 10.2% showed indication of being high risk for the development of an eating disorder. Only 3.4% of the respondents showed to be at no risk. Alarmingly, of the respondent portion that screened positive for an eating disorder, 85.9% reported never having received treatment while only 3% were currently in treatment. Lastly, the authors of the study discussed recommendations and mentioned that, considering the high percentage of respondents who screened positive for an eating disorder and reported not being in treatment, has shed light on a wide treatment gap and the necessity of offering affordable, accessible, and evidence-based intervention options that are directly linked with screening.

Bryant et al. (2022) conducted a qualitative and descriptive rapid review that focused on screening, assessment, and diagnosis of eating disorders. The primary aim of the review was to summarize broadly the literature and identify any gaps relating to screening, assessment, and diagnosis of eating disorders within Western healthcare systems. The review utilized a purposive sampling strategy which included high level evidence such as meta-analysis, large population studies, and randomized control trials.

The rapid review identified 87 studies for inclusion. Three research databases were searched and included Ovid/Medline, ScienceDirect, and PubMed. The included studies had a criterion of inclusion to be publication date between 2009 and mid 2021, in the English language, and conducted within Western healthcare systems. The data analysis method used was a thematic analysis. Major findings report that given the scale of the rapid review, there was a noticeable lack of evidence on screening, assessment, and diagnosis which made up only 6% of the total body of literature reviewed. Also, there is strong evidence that recommends screening for eating disorders should be routinely implemented in the care of high-risk groups which includes youth, diabetic patients, and women seeking reproductive healthcare. This review also revealed significant unmet treatment needs which result in increased healthcare costs in the long term. The authors of the review mention that a large number of individuals with eating disorders still remain undiagnosed and untreated while research into improving detection and clinician diagnostic skill is tremendously limited. The review found that while there are tools available for broadscale screening and identification exist, they are not sufficiently used. The authors recommend innovative empirical research to be done in order to address significant individual and health system barriers currently preventing appropriate interventions.

To conclude this content section, it is critical to note that the literature signals that a lack of screening for disordered eating does exist. This overall finding is what guides this quality improvement project to pursue educational efforts geared towards healthcare professionals as it pertains to screening for eating disorders in patient with ADHD.

Clinical and Knowledge Gaps Among Healthcare Workers in the Care of Patients with Eating Disorders and Attention Deficit and Hyperactivity Disorder

This content area analyzes the clinical and knowledge gaps that may exist among healthcare workers who work with patients with eating disorders and ADHD. This content section includes three studies that were selected based on their relevance to this topic of the study. The analysis of the studies will be organized and discussed in chronological order by year of publication.

Worsfold and Sheffield (2019) conducted a quantitative and descriptive research design study that looked at the perceived knowledge, skill, and clinical practice of common health providers including psychologists, fitness instructors, and naturopaths as it pertains to working with eating disorders. The primary aim of the study was to examine within a group of health practitioners what were the practitioner's current assessment, early intervention practices, barriers to service provision, and resources needed to improve treatment. Secondly, they aimed to explore practitioners self-perceived knowledge and how their perception of the skill in detecting eating disorders compared to their measured ability to do so. The study followed a convenience sampling strategy that consisted of 115 practitioners. The sample can be further described to consist of registered psychologists (n=35), natural therapists and nutritionists (n=50), and fitness instructors (n=30). The statistical analysis involved descriptive data that was collected and the regression technique, analysis of variance, were completed to assess group differences on continuous variables with normal distributions. Of the significant ANOVA's, post-hoc testing was completed. Major findings demonstrated that 93% of practitioners in the sample group reported seeing clients with eating disorders at their

place of work, however, no significant differences were found between the proportion across practitioner groups (p=0.10, Fisher's exact test, d=0.20). Findings include practitioners asking only 50.53% of their client's questions regarding eating disorder behaviors. A large portion of practitioners (75.7%) believed that they did not miss detection of eating disorder in clinic. In terms of the practitioners who reported missing eating disorders in practice, most (85.7%) reported that it was because the client had not answered questions truthfully or because the client did not present with an eating disorder, so they did not think to screen for one (39.29%). About 53.6% reporting that it was also because their client's weight fell within normal range. Furthermore, despite the difficulties faced in detection, only 5.3% of practitioners reported using standardized surveys to screen for eating disorders. A large 72% of practitioners expressed reluctance to universally screen patients because eating disorders were not often a presenting problem (49.6%) or simply because they did not feel adequately trained in screening for eating disorders (30.4%). Finally, 74.8% reported needing further training in the form of workshops to better treat clients with eating disorders. The authors discuss implications of this study and suggest that the results reveal a strong need to introduce standardized and simple screening measures such as the SCOFF to practitioners. The authors suggest that having more standardized practices implemented in front-line health practices could help with earlier access to care and treatment. Also, the authors mention that due to the large majority of practitioners calling for more training that this training could serve to improve universal screening as well as improve skills areas found to be difficult such as talking about weight and working with defensive clients.

Bullivant et al (2020) conducted a scoping review of descriptive and qualitative nature that, utilizing a purposive sampling method, gathered 264 relevant articles. The primary aim of this review was to inform on the current state of knowledge in the field of eating disorders. The data analysis strategy used followed thematic analysis that included seven themes. Some of those themes involve recognition of symptoms and the disorder, knowledge and beliefs about risk factors and causes, beliefs about recovery, knowledge and beliefs about professional help availability, etc. Findings relevant to this advanced literature review include the fact that many health professionals feel ill-equipped when it comes to recognizing symptoms of an eating disorder. Various health professionals including psychiatrists, counselors, and even primary practitioners, demonstrated a difficulty distinguishing between different eating disorder diagnoses, primarily binge eating disorder and bulimia nervosa. The review also found that many health professionals showed a need for further professional training as it pertains to detecting, assessing, and clinically managing eating disorders.

Hay et al. (2022) collaborated on a forum of qualitative nature that provided a historical overview with the objective of presenting the current state of research in screening and the identifying of individuals with eating disorders in community and primary care. The methods for this forum involve presenting a historical overview followed by an assessment of modern instruments and practice, and barriers to case detection and appropriate referral paths. The results of the forum discuss the need for improving education and the support for primary care professionals as barriers that contribute to poor detection and treatment gaps for individuals with eating disorders. The forum mentions that even the best instruments used in screening for eating disorders

would not be able to overcome these barriers. Therefore, the forum recommended that a greater amount of focus be placed on research pertaining to encouraging primary care workers to ask about eating and body image. It is also suggested that this would require an approach that is multi-pronged which would include improved health literacy as well as improved skills of primary care physicians, first responders, other health professionals, and availability of metal health resources who have been trained adequately.

It is evident that there are knowledge gaps in this area of the field and this quality improvement project aims at increasing awareness and the knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening disordered eating among patients with ADHD. The literature also sheds significant light on the relationship between eating disorders and ADHD and persistent gaps in screening.

Significance

This quality improvement project is of significance to the discipline of nursing. It has implications for nursing practice, nursing research, and health policy.

Significance to Nursing Practice

Healthcare workers, which includes nurses and advanced practice registered nurses, play an essential role in the screening process given their direct contact with patients. This provides healthcare workers with a distinct opportunity to screen for disordered eating in individuals with ADHD. However, the literature suggests that knowledge gaps exist amongst healthcare workers in the care of patients with eating disorders. A review of the literature revealed that many healthcare professionals, including psychiatrists and primary practitioners, exhibited difficulty differentiating between various eating disorder diagnoses (Bullivant et al., 2020). The literature also

sheds light on the need for further professional training regarding the detection, assessment, and clinical management of eating disorders (Bullivant et al., 2020). The findings from this quality improvement project can serve to bridge those knowledge gaps by increasing knowledge awareness in healthcare workers as it pertains to properly screening for disordered eating in patients with ADHD and ultimately increasing health outcomes in Miami, Florida.

Significance to Nursing Research

To the researcher's knowledge, there was limited nurse practitioner-led research on eating disorder screening among healthcare workers in Miami, Florida. More specifically, there was no evidence of nurse practitioner-led research in the outpatient setting in Miami, Florida as it pertains to screening for disordered eating in individuals with ADHD. Increasing research in this field could promote an increase in awareness as it pertains to certain mental health conditions which may ultimately lead to improved outcomes within this population. The research elucidates on the correlation between disordered eating and ADHD as well as the overall lack of screening that takes place for the detection of disordered eating. Findings of one study revealed that individuals with ADHD have three times of a higher odd for a possible eating disorder (Jacob et al., 2018). Other studies that aimed at reviewing the literature revealed an apparent lack of evidence on screening, assessment, and diagnosis of eating disorders (Bryant et al., 2022). This quality improvement project can add to the existing literature and may even serve as the foundation for future interest in this particular area of research. The aim of this project is to narrow the educational gaps in healthcare workers knowledge in screening for disordered eating among individuals with ADHD.

Significance to Health Policy

Compared to their healthy counterparts, patients with ADHD are three time more likely to develop an eating disorder (Jacob et al., 2018). In fact, research has suggested that ADHD is more often linked with binge eating disorder, bulimia nervosa, and anorexia nervosa specifically (Villa et al., 2023). Understanding this connection begs that more attention be paid to screening for disordered eating among this vulnerable population. However, the literature demonstrates that there is a lack of screening that is being done as it pertains to disordered eating with one study in particular yielding an alarming result of only 3.4% of respondents showing no risk of developing an eating disorder (Fitzsimmons-Craft et al., 2019). This sheds light, not only on lack of screening, but the resulting unmet treatment needs that can lead to increased healthcare costs in the long term (Bryant et al., 2022).

Based on the findings of this study, healthcare workers may consider developing policies, guidelines, and/or protocols that address the need for knowledge and competency training in order to meet the needs of patients as it relates to their mental health. This project may also encourage providers to maintain accountability regarding continuing education and utilizing evidence-based tools for assessing and screening patients in mental health. This would entail healthcare workers to be knowledgeable in order to properly and adequately detect certain conditions in their patients. This DNP project could serve as the framework for health policy that specifically addresses the need for healthcare workers to utilize evidence-based screening tools in the detection of eating disorders among individuals with ADHD. In essence, such changes in health policy or

practices can improve the care of patients with ADHD, improve overall healthcare outcomes, and possibly reduce healthcare costs in the long term.

Purpose

The purpose of this quality improvement project was to increase awareness and knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD in an outpatient setting in Miami, Florida.

Population, Intervention, Comparison, and Outcome (PICO) Clinical Question

1) Is there a significant difference between pre- and posttest scores amongst healthcare workers in an outpatient setting in Miami, Florida after the implementation of an educational intervention regarding the evidence-based practice guidelines for screening for disordered eating amongst patients with ADHD?

H0: There is no significant difference between pretest and posttest scores amongst healthcare workers in an outpatient setting in Miami, Florida after the implementation of an educational intervention regarding evidence-based practice guidelines for screening for disordered eating amongst patients with ADHD.

Ha: There is a significant difference between pre- and posttest scores amongst healthcare workers in an outpatient setting in Miami, Florida after the implementation of an educational intervention regarding evidence-based practice guidelines for screening for disordered eating amongst patients with ADHD.

Definition of Terms

The variables of this project were knowledge awareness, age, gender, ethnicity, role in healthcare, level of education, years of experience, and perceived knowledge of topic. The project variables are described in the subsequent section.

Knowledge Awareness

This variable refers to healthcare workers knowledge awareness regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD in an outpatient setting in Miami, Florida. The researcher utilized a researcher-developed tool to quantify this variable. This researcher-developed tool was established utilizing two evidence-based eating disorder screening tools known as the SCOFF (Sick, Control, One Stone, Fat, Food) and the EDE-Q (Eating Disorder Examination Questionnaire). Studies have demonstrated that the validity of the SCOFF is high with a pooled sensitivity of 0.86 (95% CI, 0.78-0.91) and specificity of 0.83 (95% CI, 0.77-0.88) (Kutz et al., 2020). The Eating Disorder Examination Questionnaire has demonstrated a sensitivity of 0.16-0.88 and specificity of 0.62-1.0 (House et al., 2022). The researcher-developed tool will be administered before and after the educational intervention to measure change in knowledge awareness among healthcare workers.

Age

This ratio variable refers to the age of the healthcare workers in an outpatient setting in Miami, Florida. This demographic variable was grouped as follows: (a) 18 to 29 years old; (b) 30 to 44 years old; and (c) 45 years and older.

Gender

This nominal variable refers to the sex of the healthcare workers in an outpatient setting in Miami, Florida. This demographic variable was categorized as follows: (a) female, (b) male, or (c) prefer not to say.

Ethnicity

This demographic and nominal variable refers to the ethnicity of the healthcare workers in an outpatient setting in Miami, Florida. This variable was categorized as follows: (a) non-Hispanic White; (b) non-Hispanic Black; (c) Hispanic; and (d) other Ethnicity.

Role in Healthcare

This nominal variable refers to employees who work in the healthcare outpatient setting in Miami, Florida who also have exposure to patients with ADHD. The study variable was classified as follows: (a) physician (MD or DO); (b) advanced practice registered nurse (APRN); (c) registered nurse (RN); and (d) ancillary staff such as patient care coordinator, receptionists, clinical students, etc.

Level of Education

This nominal variable refers to the highest degree attained by the healthcare worker in an outpatient setting in Miami, Florida. The demographic variable was categorized as follows: (a) vocational certificate or diploma; (b) associate degree; (c) bachelor's degree; (d) master's degree; and (e) doctoral degree.

Years of Experience

This nominal variable refers to the years of clinical experience of healthcare workers who work in an outpatient setting in Miami, Florida. This demographic variable was grouped as follows: (a) 0-1 year; (b) 2-3 years; and (c) 4 or more years.

Perceived Knowledge of Topic

This categorical variable refers to the perceived knowledge of the DNP topic in healthcare workers in an outpatient setting in Miami, Florida, prior to implementation of the educational intervention. This demographic variable was grouped as follows: (a) none; (b) minimal; (c) competent; (d) proficient; and (e) expert.

Conceptual Underpinning

This project was guided by the positivist paradigm. The researcher measured knowledge levels amongst healthcare workers as it pertains to screening for disordered eating in patients with ADHD in the outpatient setting in Miami, Florida before and after an educational intervention. As a positivist, the researcher anticipates that healthcare worker's knowledge awareness regarding screening for disordered eating amongst patients with ADHD in an outpatient setting in Miami, Florida would increase after an educational intervention. The researcher used the scientific method to analyze and examine the results of this quality improvement project.

Theoretical Framework

Jean Watson's Theory of Human Caring is the theoretical framework that guided this quality improvement project. According to Butts and Rich (2011), Jean Watson wrote *Philosophy and Theory of Transpersonal Caring* in the year 1979 and attributes Maslow's psychological concepts of self-actualization, feminist theory, and Jungian psychology as inspiration for the construct of her early theory. Watson's theory carries a core belief that the foundation of caring can be characterized by ten "carative" factors which support and enhance the patient's caring experience (Devi et al., 2022). These carative factors eventually evolved into what Watson called "Caritas Processes" and

include the practice of kindness and loving others as well as oneself, enabling faith by being present in an authentic manner, hope, fostering personal spiritual practices, developing caring and trusting interpersonal relationships, showing empathy and forgiveness to oneself and others, utilizing all ways of knowing, genuinely partaking in teaching-learning experiences, creating an environment of caring and healing, valuing humanity, and approaching life's unknowns and miracles with acceptance and embrace (Wei & Watson, 2019).

Butts and Rich (2011) mention how Watson believes that the transpersonal caring relationship not only depends on elements such as moral commitment to human dignity, wholeness, caring, and healing, but also relies heavily on the nurse. The transpersonal relationship also relies on the nurse's (1) orientation to affirming the meaning of the person; (2) the nurse's ability to connect with the spirit of another; (3) the ability to recognize and feel connected to the other's state of being in the world; and (4) caring, healing modalities to enhance comfort and wholeness which include promoting inner healing, one's own life narrative, and the ability to care for the self (Butts & Rich, 2011). Watson believed that full health cannot be accomplished without proper care and that care itself is one of the most critical aspects of nursing practice given that it permits communication between the nurse and the patient (Devi et al., 2022). Devi et al. (2022) mentioned that the element of care can assist a patient in becoming better informed, more self-assured, and in charge.

Boyd (2008) discusses how Watson's theory of caring is particularly applicable to individuals who seek help for mental illness. The theory serves to emphasize how critical sensitivity to self and others is, the development of trusting relationships, the promotion

of interpersonal teaching and learning, and the provision of an environment that is supportive, protective, and takes into account mental, physical, spiritual and sociocultural elements of the environment (Boyd, 2008). Considering the various elements of Watson's theory of caring, utilizing this theoretical framework to guide the researcher's quality improvement project is appropriate and relevant. Watson proposes that the curative qualities will only work if the nurse has a strong commitment, will, values, knowledge background, and clinical competence (Devi et al., 2022). This aligns with the purpose of this project as it pertains to increasing awareness and knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD. Genuinely partaking in teaching-learning experiences is one of Watson's proposed carative factors, which is a significant element of this quality improvement project (Wei & Watson, 2019). Integrating into practice the basic beliefs of Watson's caring theory, such as partaking in teaching-learning experiences by increasing awareness and knowledge base amongst healthcare workers regarding screening for disordered eating, ultimately serve to enhance patient care and improve patient outcomes (Devi et al., 2022).

Methodology

The purpose of this quality improvement project was to increase awareness and knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD in an outpatient setting in Miami, Florida. The project researcher conducted an advance literature review and identified gaps in the literature. The advanced literature review yielded findings that were utilized in the development of a PICO clinical question while

providing justification for conducting this project. This section delineates the project's design, setting, sample, inclusion criteria, exclusion criteria, intervention, measures and instruments, data collection procedures, data analysis, and protection of human subjects.

Study Design

This quality improvement project utilized a quantitative, descriptive, cross-sectional, pretest-posttest quasi-experimental design to assess the effectiveness of the educational intervention relating to screening for disordered eating amongst patients with ADHD.

Quantitative Research Design

This quality improvement project utilized a quantitative research design. Polit and Beck (2017) elucidated on the fact that quantitative research focuses on the collection and analysis of numerical data in order to investigate a phenomenon or test a hypothesis. The researcher of this project investigated knowledge awareness amongst healthcare workers as it relates to screening for disordered eating in individuals with ADHD. The researcher collected demographic data from the healthcare workers and utilized a researcher-developed tool to assess knowledge awareness using Qualtrics. This researcher-developed tool was established utilizing two evidence-based eating disorder screening tools known as the SCOFF (Sick, Control, One Stone, Fat, Food) and the EDE-Q (Eating Disorder Examination Questionnaire).

Descriptive Design

Descriptive research serves the purpose of observing, describing, and documenting various aspects of a particular situation as it occurs while also serving as a beginning point for the development of a hypothesis or theory (Polit & Beck, 2017). The

researcher explored screening for disordered eating in individuals with ADHD amongst healthcare workers. The researcher explored this phenomenon with the intention of improving outcomes in healthcare as they pertain to this population.

Cross-Sectional Design

The researcher utilized a cross-sectional study design which involves gathering data pertaining to the phenomenon being explored at a single time point (Polit & Beck, 2017). This study design allows for the description of the status of the phenomenon as well as describing existing relationships among phenomena at a single time point (Polit & Beck, 2017). Furthermore, this project surveyed the participants relating to their knowledge awareness at a single time point following this design structure.

Pretest-Posttest Quasi-Experimental Design

This quality improvement project consisted of a pretest and posttest following a quasi-experimental design. The pretest and posttest served to measure knowledge awareness amongst healthcare workers as it pertains to screening for disordered eating amongst individuals with ADHD. Knowledge awareness will be measured before and after an educational intervention has been implemented. The researcher utilized a researcher-developed demographic instrument and pretest/posttest to quantify knowledge awareness. According to Polit and Beck (2017), quasi-experiments consist of an intervention however, they lack randomization.

Population, Intervention, Comparison, and Outcome (PICO) Clinical Question

1) Is there a significant difference between pretest and posttest scores amongst healthcare workers in an outpatient setting in Miami, Florida after the implementation of an educational intervention regarding the evidence-based

practice guidelines for screening for disordered eating amongst patients with ADHD?

H0: There is no significant difference between pretest and posttest scores amongst healthcare workers in an outpatient setting in Miami, Florida after the implementation of an educational intervention regarding evidence-based practice guidelines for screening for disordered eating amongst patients with ADHD.

Ha: There is a significant difference between pretest and posttest scores amongst healthcare workers in an outpatient setting in Miami, Florida after the implementation of an educational intervention regarding evidence-based practice guidelines for screening for disordered eating amongst patients with ADHD.

Setting

This quality improvement project was conducted in an outpatient setting in Miami, Florida.

Sample

The sample size is estimated to be $N = 12$ healthcare workers working in outpatient settings in Miami, Florida. The study utilized a snowball sampling method which is considered to be a variant form of convenience sampling. Convenience sampling involves selecting participants based on convenient availability. Furthermore, snowball sampling entails asking early sample members to refer other participants who meet the eligibility criteria (Polit & Beck, 2017).

Inclusion Criteria

Healthcare workers who work in an outpatient setting in Miami, Florida and are over the age of 18 years will be considered for this study. Those who are in direct contact

with individuals with ADHD are allowed to participate in this study. Due to snowball sampling, participants can extend an invitation to other healthcare workers who may benefit from this educational intervention in Miami, Florida. Healthcare workers can include registered nurses, advanced nurse practitioners, and ancillary staff such as administrators.

Exclusion Criteria

Healthcare workers who do not work in outpatient settings in Miami, Florida were not able to participate in the study. Individuals who were under the age of 18 years were excluded. Individuals who held a role of CNA, BHT, and paramedics were excluded from this project.

Intervention

Florida International University (FIU) Institutional Review Board (IRB) approval was obtained prior to data collection. Permission from the management team was obtained, and invitations to participate were sent to potential participants via email. Technology will be utilized to conduct this project; potential participants will be informed regarding the project's purpose and objectives via email. Furthermore, the potential participants will be provided with an overview of the project in advance, allowing them the opportunity to make informed decisions regarding their voluntary participation in the study.

Once consent for participation in the quality improvement project was completed, participants completed an online demographic questionnaire and a pretest survey with the aim of assessing their knowledge awareness of screening for disordered eating in individuals with ADHD using Qualtrics. After the completion of the online pretest

survey, the participants watched a 10-minute voiceover PowerPoint presentation, created by the researcher, with the goal of increasing their knowledge awareness as it pertains to screening for disordered eating amongst individuals with ADHD. The presentation was research-based and provided insight into the role that healthcare workers play in screening for disordered eating amongst individuals with ADHD. Upon the completion of the PowerPoint presentation, participants completed an online posttest survey to reassess their knowledge awareness relating to screening for disordered eating amongst individuals with ADHD using Qualtrics. The pretest and posttest surveys were a researcher-developed tool that was utilized to assess knowledge levels. This researcher-developed tool was established utilizing two evidence-based eating disorder screening tools known as the SCOFF (Sick, Control, One Stone, Fat, Food) and the EDE-Q (Eating Disorder Examination Questionnaire).

Measures and Instruments

Demographic data was collected using a researcher-developed demographic instrument which included: age ([a] 18 to 29 years old; [b] 30 to 44 years old; or [c] 45 years and older); gender ([a] Male; [b] Female; or [c] Prefer not to say; ethnicity ([a] non-Hispanic White; [b] non-Hispanic Black; [c] Hispanic; or [d] other); level of education ([a] vocational certificate or diploma; [b] associate degree; [c] bachelor's degree; [d] master's degree; or [e] doctoral degree); role ([a] Physician; [b] Advanced Practice Registered Nurse; [c] Registered Nurse; or [d] ancillary staff); years of experience in the current role ([a] 0 to 1 year; [b] 2 to 3 years; or [c] 4 or more years); and perceived knowledge of the topic ([a] none; [b] minimal; [c] competent; [d] proficient; or [e] expert).

Knowledge awareness of screening for disordered eating in individuals with ADHD amongst healthcare workers in an outpatient setting in Miami, Florida will be quantified using an instrument. The researcher developed an instrument that served as the pretest and posttest and was used to measure knowledge awareness before and after the educational intervention. One point will be assigned to the correct answer, and zero points will be assigned for an incorrect answer. The lowest score possible will be a zero and the highest score possible will be seven.

Data Collection and Procedures

Institutional Review Board (IRB) approval from Florida International University was obtained. The researcher also obtained permission from the managing team at an outpatient clinic in Miami, Florida in order to conduct the quality improvement project. Snowball convenience sampling method was utilized to recruit participants and access data at an outpatient setting in Miami, Florida. An email was sent to potential participants, describing the purpose and objectives of the quality improvement project with a link to the survey via Qualtrics.

Participants were first provided with a demographic survey that collected: age ([a] 18 to 29 years old; [b] 30 to 44 years old; or [c] 45 years and older); gender ([a] male; [b] female; or [c] prefer not to say; ethnicity ([a] non-Hispanic White; [b] non-Hispanic Black; [c] Hispanic; or [d] Other Ethnicity); level of education ([a] vocational certificate or diploma; [b] associate degree; [c] bachelor's degree; [d] master's degree; or [e] doctoral degree); role ([a] Physician; [b] Advanced Practice Registered Nurse; [c] Registered Nurse; or [d] ancillary staff); years of experience in the current role ([a] 0 to 1 year; [b] 2 to 3 years; or [c] 4 or more years); and perceived knowledge of the topic ([a]

none; [b] minimal; [c] competent; [d] proficient; or [e] expert). The participants then completed a researcher-developed pretest online prior to the educational intervention in the form of a 10-minute PowerPoint presentation. After the educational intervention, participants completed the posttest survey via Qualtrics to reassess healthcare worker's knowledge levels. The intervention was included in the email and participants spent approximately 25 minutes to complete the demographic questionnaire, watch the voice over PowerPoint presentation, and complete the pretest and posttest surveys using Qualtrics. The researcher administered the project using Qualtrics for four weeks or until the estimated sample size of $N = 12$ was reached.

Data Analysis

The Statistical Package for Social Sciences Program (SPSS) was utilized for the following tasks: process of data entry, data coding, data cleansing, and data analysis. Data was analyzed using descriptive analysis which includes variables such as the mean *(M)*, median *(Mdn)*, mode, standard deviation *(SD)*, and range. The *t*-test was utilized to examine statistically significant differences between variables which allowed for the evaluation of differences between values before and after the implementation of the educational intervention. A p-value < 0.05 was considered statistically significant (Polit & Beck, 2017).

Protection of Human Subjects

Institutional Review Board (IRB) approval from Florida International University was obtained prior to the start of the project. This researcher ensured research ethics and protection of human subjects was followed throughout the implementation of this quality improvement project. The researcher also completed the Collaborative Institutional

Training Initiative (CITI) ethics certification for the protection of human subjects in social and behavioral research. Data collection for this quality improvement project was anonymous through the use of Qualtrics. Participation in this project was voluntary, which signifies that participants had the ability to withdraw from the project at any time with no penalty.

Potential participants were provided with an overview of the project, including the purpose and objectives of the project prior to participation in the study. No risks were associated with this study. Potential benefits to the participants partaking in this project included an increase in knowledge awareness regarding screening for disordered eating amongst individuals with ADHD. Data collection was stored and organized anonymously on electronic spreadsheets and maintained on a password-protected computer to which only the researcher had access. Requirements to protect the privacy interests of the participants were considered since participation in this project was voluntary. There was no identifiable private information collected from participants. A unique code which served as an indirect identifier, was assigned randomly to participants via Qualtrics. This helped to ensure the privacy and the protection of any participants involved in this quality improvement project.

Results

The purpose of this quality improvement project was to increase awareness and knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD in an outpatient setting in Miami, Florida. A quantitative, descriptive, cross-sectional, pretest-posttest quasi-experimental study design was utilized to conduct this quality

improvement project. Data was collected via Qualtrics and analyzed using the Statistical Package for Social Sciences (SPSS) version 29.0.0.0. A two-tailed paired samples t-test was used to identify significant differences between pre- and posttest results. Following sections will discuss demographic data and results related to the PICO clinical question.

A total of *N* = 12 healthcare workers participated in this quality improvement project. Most of the participants were between the ages of 30 to 44 years old and only one participant was over the age of 45 years old, see Table 1 and Figure 1 below.

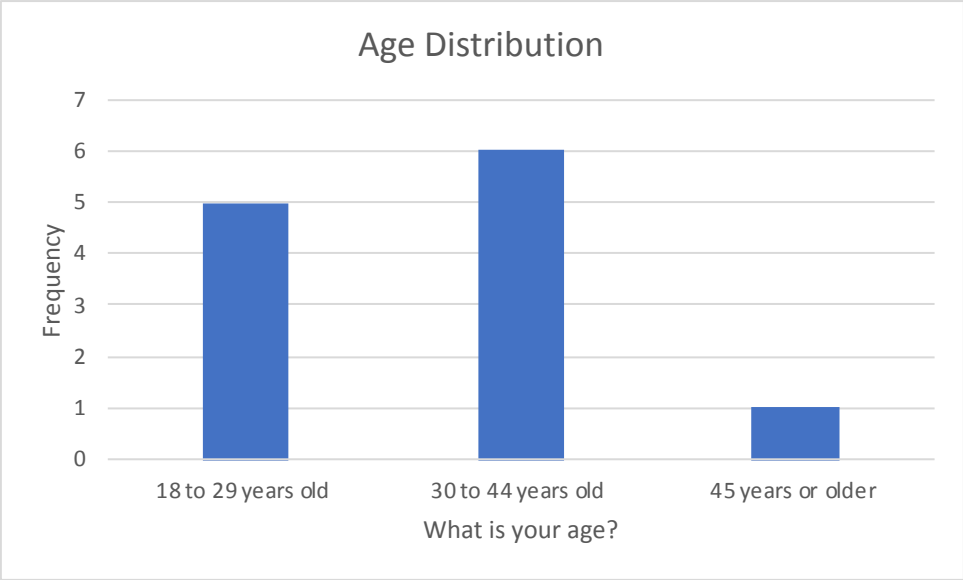
Table 1

Age Distribution Among Healthcare Workers in an Outpatient Setting (N = 12)

Age	Frequency	Percent
18 to 29 years old	5	41.7
30 to 44 years old	6	50.0
45 years or older	1	8.3
Total	12	100.0

Figure 1

Age Distribution Among Healthcare Workers in an Outpatient Setting (N = 12)



The gender of the participants was classified as male, female or Prefer not to say. Most of the participants were female and only 33.3% of participants were male (see Table 2 and Figure 2). None of the participants selected the option of Prefer not to say.

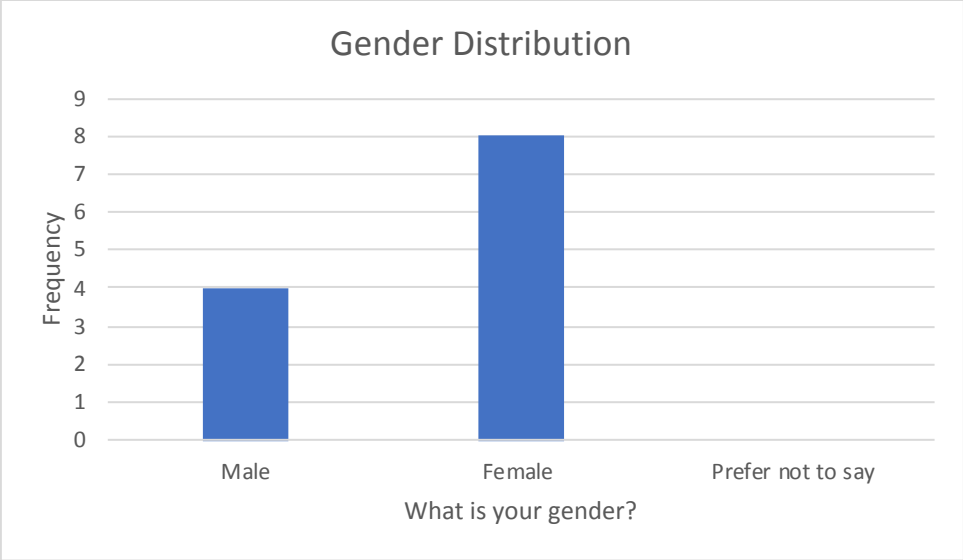
Table 2

Gender Distribution Among Healthcare Workers in an Outpatient Setting (N = 12)

Gender	Frequency	Percent
Male	4	33.3
Female	8	66.7
Other	0	0
Total	12	100.0

Figure 2

Gender Distribution Among Healthcare Workers in an Outpatient Setting (N = 12)



The ethnicity of the participants was classified as non-Hispanic White, non-Hispanic Black, Hispanic, or Other. The frequency table showed 1(8.3%) respondent was non-Hispanic White, 3(25.0%) were non-Hispanic Black and 8(66.7%) were Hispanic (see Table 3). None of the participants identified as Other.

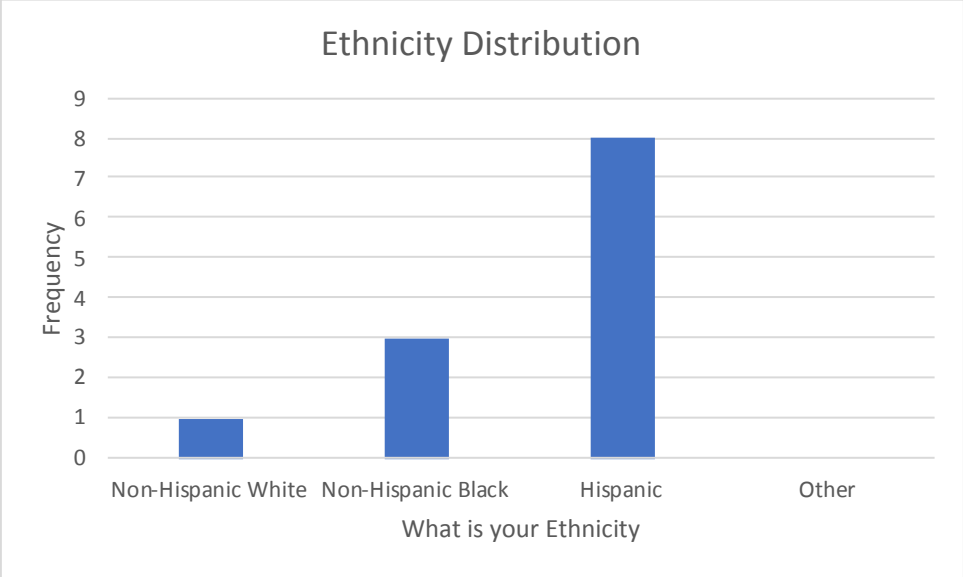
Table 3

Ethnicity Distribution Among Healthcare Workers in an Outpatient Setting (N = 12)

Ethnicity	Frequency	Percent
Non-Hispanic White	1	8.3
Non-Hispanic Black	3	25.0
Hispanic	8	66.7
Other	0	0
Total	12	100.0

Figure 3

Ethnicity Distribution Among Healthcare Workers in an Outpatient Setting (N = 12)



The level of education among the participants was classified as vocational certificate or diploma, associate's degree, bachelor's degree, master's degree, or doctoral degree. Most of the participants have a master's degree. None of the participants have a vocational certificate or associate's degree (see table 4).

Table 4

Level of Education Among Healthcare Workers in an Outpatient Setting (N = 12)

Level of Education	Frequency	Percent
Vocational Certificate	0	0
Associate's degree	0	0
Bachelor's degree	2	16.7
Master's degree	7	58.3
Doctoral degree	3	25.0
Total	12	100.0

The roles of the participants were classified as Physician, Advanced Practice Registered Nurse (APRN), Registered Nurse (RN), and Ancillary Staff. The majority of

participants held a professional role of APRN with the remaining participants holding a role of RN (see Table 5).

Table 5

Role of Healthcare Workers in an Outpatient Setting (N = 12)

Role of Healthcare Worker	Frequency	Percent
Advanced Practice Registered Nurse	9	75.0
Registered Nurse	3	25.0
Total	12	100.0

Participant's years of experience in their current role was classified as 0 to 1 year, 2 to 3 years, or 4 or more years. A majority of the participants had under one year of experience in their current role while the remaining participants reported 4 or more years of experience. None of the participants classified as having between 2 and 3 years of experience, see Table 6 below.

Table 6

Years of Experience in Current Role Among Healthcare Workers in an Outpatient Setting (N = 12)

Years of Experience	Frequency	Percent
0 to 1 year	7	58.3
4 or more years	5	41.7
Total	12	100.0

Participants were asked their current knowledge level as it pertains to screening for disordered eating among individuals with ADHD: none, minimal, competent, proficient, or expert. Many participants classified as minimal knowledge level. There were an equal number of participants who classified as none and proficient. Meanwhile, there were 3 participants who classified as competent, see Table 7 below.

Table 7

Perceived Knowledge of the Topic Among Participants in an Outpatient Setting (N = 12)

Knowledge Level	Frequency	Percent
None	2	16.7
Minimal	5	41.7
Competent	3	25.0
Proficient	2	16.7
Total	12	100.0

PICO Clinical Question

The PICO clinical question was: Is there a significant difference between pre- and posttest scores amongst healthcare workers in an outpatient setting in Miami, Florida after the implementation of an educational intervention regarding the evidence-based practice guidelines for screening for disordered eating amongst patients with ADHD? The alternative hypothesis (*Ha*) related to PICO clinical question was: There is a significant difference between pre- and posttest scores amongst healthcare workers in an outpatient setting in Miami, Florida after the implementation of an educational intervention regarding evidence-based practice guidelines for screening for disordered eating amongst patients with ADHD. Results revealed that the educational intervention did not make a statistically significant difference in knowledge levels among healthcare providers as it related to screening for disordered eating among patients with ADHD.

The pretest was completed by 12 participants ($N = 12$). The pretest answers were scored as one point for correct answers and zero points for the incorrect answer. According to Table 8, participants scored highest on items one and two which were the following questions: *Individuals with ADHD are at an increased risk of developing disordered eating; A relationship exists between inattentive symptoms of ADHD and risk*

of developing disordered eating. However, participants scored the lowest on item six which was the following question: *The Eating Disorder Examination Questionnaire (EDE-Q) consists of 28 item questions concerned with the patient's experience in the past 4 weeks (28 days) only* (see Table 8).

Table 8

Pretest Results Among Healthcare Providers at an Outpatient Psychiatric-Mental Health Clinic (N = 12)

Item	*M*	*Mdn*	*SD*
1	0.92	1.00	0.289
2	0.92	1.00	0.289
3	0.83	1.00	0.389
4	0.83	1.00	0.389
5	0.83	1.00	0.389
6	0.75	1.00	0.452
7	0.83	0.50	0.389

Furthermore, the posttest was completed by 12 participants ($N = 12$). The posttest was scored exactly as the pretest where answers that were correct were scored with one point and answers that were incorrect were scored with zero points. Participants scored highest on items 1, 2, 4, 6, and 7. The questions for these items are: *Individuals with ADHD are at an increased risk of developing disordered eating; A relationship exists between inattentive symptoms of ADHD and risk of developing disordered eating; There are various validated screening tools that can be utilized in the screening for eating disorders. Some of these tools include the SCOFF and the EDE-Q; The Eating Disorder*

Examination Questionnaire (EDE-Q) consists of 28 item questions concerned with the patient's experience in the past 4 weeks (28 days) only; Screening for eating disorders does NOT seem to be an issue, therefore healthcare workers do not need to worry about screening for disordered eating. Participants scored the lowest on items 3 and 5. The questions for these items are: *ADHD is NOT frequently associated with binge eating disorder, bulimia nervosa, or anorexia nervosa; The SCOFF questionnaire consists of 5 items (Sick, Control, One, Fat and Food)* (see Table 9).

Table 9

Posttest Results Among Healthcare Providers at an Outpatient Psychiatric-Mental Health Clinic (N = 12)

Item	*M*	*Mdn*	*SD*
1	1.00	1.00	0.000
2	1.00	1.00	0.000
3	0.92	0.50	0.289
4	1.00	1.00	0.000
5	0.92	1.00	0.289
6	1.00	1.00	0.000
7	1.00	1.00	0.000

Results of this quality improvement project revealed an improvement in results between the pre- and posttest surveys. The posttest mean score was higher than the pretest mean score. A two-tailored paired samples *t*-test was conducted to examine whether the mean difference of the posttest and the pretest were statistically significant. Results of the two-tailed paired samples *t*-test revealed that while there is a difference

between pretest (*M* = 5.92, *SD* =1.73) and post-test (*M* = 6.75, *SD* = 0.45) mean scores, there is not a statistically significant difference in scoring between the pre- and posttest mean scores after the educational intervention, *t*(11) = -1.65, *p*=0.127, *p*>0.05). Therefore, based on data analysis and an alpha value of less than 0.05, the researcher could reject the alternative hypothesis *(Ha)* and accept the null hypothesis (*H0)* for the PICO clinical question.

Table 10

Two-Tailed Paired Samples t-Test Between Pre- and Posttest Mean Scores

	M	*SD*	95% Confidence Interval of the Difference		t	df	*p* value
Posttest - Pretest	-.83	1.75	Lower: -1.94	Upper: 0.28	-1.65	11	0.127

Summary and Discussion

The purpose of this quality improvement project was to increase awareness and knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening for disordered eating among patients with ADHD in an outpatient setting in Miami, Florida. A quantitative, descriptive, cross-sectional, pretest-posttest quasi-experimental study design was utilized to conduct this quality improvement project. The project was conducted fully remotely, and participants completed a demographic, pretest, and posttest surveys utilizing Qualtrics and a researcher-developed tool to assess their knowledge awareness regarding screening for disordered eating among patients with ADHD. A convenience sampling method was used

to recruit 12 participants and access data. Data was collected via Qualtrics platform and analyzed using the Statistical Package for Social Sciences (SPSS) version 29.0.0.0. While results demonstrated that participants scored higher on the posttest after the educational intervention, results revealed that there was no statistically significant difference between pretest and posttest scores, $t(11) = -1.65$, with a $p = 0.127$, ($p > 0.05$). This researcher will further compare and contrast project findings with the literature in the section below along with discussing implications for advanced practice nursing, limitations of the project, recommendations, and conclusion.

Summary of the Results and Discussion

The overall findings of this project revealed that while there was an increase in scores between the pre- and posttest after the educational intervention, the difference in scores was not statistically significant. Findings did suggest that after the implementation of an educational intervention, healthcare workers in an outpatient psychiatric clinic in Miami, Florida had an increase in knowledge relating to screening for disordered eating among patients with ADHD. Results revealed that the mean (*M*) score of the pretest was 5.92, with a standard deviation (*SD*) of 1.73. As indicated above in the results section, participants scored the lowest on item six, which was the following question: *The Eating Disorder Examination Questionnaire (EDE-Q) consists of 28 item questions concerned with the patient's experience in the past 4 weeks (28 days) only*. Furthermore, results of the posttest after the educational intervention implementation revealed an *M* score of 6.75 with a *SD* of 0.45. The *M* score of the posttest was higher than the pretest. In the posttest, participants scored lowest on items 3 and 5 which were the following questions: *ADHD is NOT frequently associated with binge eating disorder, bulimia nervosa, or anorexia*

nervosa; The SCOFF questionnaire consists of 5 items (Sick, Control, One, Fat and Food). Results established that participants achieved higher scores on the posttest after the implementation of the educational intervention. Thus, the researcher rejected the alternative hypothesis (*Ha*) and accepted the null hypothesis (*H0*) related to the PICO clinical question, as there was no significant difference between pre- and posttest mean scores, $t(11) = -1.65$, with a $p = 0.127$, ($p > 0.05$).

Despite the results of this project not demonstrating a statistically significant improvement in knowledge awareness after the educational intervention, the literature supports the use of educational interventions to increase overall knowledge awareness. In a recent study conducted by Sundel & Emerson (2018) the purpose was to determine the effectiveness of an educational intervention on nurses' knowledge awareness regarding heart failure self-care principles. The study involved a sample size of 40 ambulatory care nurses and utilized a similar method to this project by conducting a pre-test-posttest intervention to determine if the educational intervention had a positive impact on nurse's knowledge levels (Sundel & Emerson, 2018). The study demonstrated that there was a statistically significant difference ($p<0.05$) in pretest and posttest results after the teaching intervention (Sundel & Emerson, 2018). This study supports the use of educational interventions in increasing knowledge levels amongst healthcare workers.

Similarly, a later study conducted by Offner & Rinke (2021) demonstrated that an educational intervention correlated with increased knowledge and nurses' confidence levels as it pertains to the management and administration of immunotherapy to patients in an oncological setting. The researchers distributed a confidence survey before and after the implementation of an educational intervention. The study revealed that nurses

confidence scores after the education intervention improved 51% when compared to the pre-education scores (Offner & Rinke, 2021). This supports the use of educational interventions in increasing overall knowledge awareness levels.

A most recent study conducted by Indumathi et al. (2023), revealed that an educational intervention improved cognitive and affective domains of pharmacovigilance in nursing students. The study utilized a quasi-experimental pretest and posttest study design where the participants were asked to complete a validated questionnaire that assessed knowledge, attitude, and practice on adverse drug reaction reporting (Indumathi et al., 2023). The study revealed that more than 75% of participants acquired knowledge about ADR Monitoring Centre and a more than 30% increase in awareness about eligible individuals and different methods of ADR reporting (Indumathi et al., 2023). The study supported the use of educational interventions in increasing overall knowledge awareness levels. Additionally, the study supported the implementation of periodic training programs for sustained behavioral changes in students (Indumathi et al., 2023).

Implications for Advanced Practice Nursing

This quality improvement project had significant implications for the discipline of nursing practice, research, and health policy. This project assisted healthcare workers to improve their knowledge awareness as it pertains to screening for disordered eating amongst patients with ADHD. The findings of this project can be used to drive adequate policy changes that mandate healthcare workers in appropriate settings and specialties to screen patients for disordered eating, so their patients are able to pursue timely and effective mental health care. Policy changes or protocol updates based on evidence-based findings can improve healthcare outcomes and the quality of life for this patient

population. The literature supports a lack of training and confidence of healthcare workers in screening for disordered eating, therefore, clinical settings should consider introducing additional educational training modules as a part of their employee's annual specialty training. Implementation of such educational interventions can assist in diminishing the existing knowledge gap. Healthcare workers can direct this educational intervention across their clinical setting or institution.

Limitations of the Project

Studies have limitations. The limitations of this project were:

1. This project utilized a convenience sampling technique which does not involve randomization.
2. Due to the low number of participants, there is decreased generalizability of this project.
3. Data were collected from participants associated with an outpatient specialty clinic or working in an outpatient setting in Miami, Florida; therefore, limiting the generalizability to other clinical settings.
4. A descriptive, cross-sectional, pre- and posttest design cannot be used to describe casualty between the variables.

Recommendations

Future studies should aim to further explore and expand on the educational intervention offered to healthcare workers and increasing knowledge awareness of screening for disordered eating amongst patients with ADHD outside of Miami, Florida while including a larger variety of clinical settings. Expanding on clinical settings could include inpatient psychiatric units, community clinics, medical surgical units, etc. A

larger sample size would also aid in improving the generalizability of the yielded results. Additionally, future researchers should consider assessing for the most effective method in which to deliver an educational intervention.

Conclusions

This quality improvement project did not significantly increase knowledge awareness among healthcare workers in an outpatient setting in Miami, Florida, as it pertains to evidence-based screening for disordered eating among patients with ADHD. Results of a paired *t*-test indicated no statistically significant difference between pre-test mean scores (M = 5.92, SD =1.73) and post-test mean scores (M = 6.75, SD = 0.45), with $t(11) = -1.65$, $p=0.127$, $p>0.05$). Despite the findings of this quality improvement project, the literature supports the use of educational interventions in increasing healthcare workers knowledge awareness and confidence levels. Therefore, healthcare workers should receive training and education regarding the importance of screening for disordered eating among patients with ADHD.

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Appendix A

FLORIDA INTERNATIONAL UNIVERSITY

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

FIU | FLORIDA INTERNATIONAL UNIVERSITY

Office of Research Integrity
Research Compliance, MARC 430

MEMORANDUM

To:	Dr. Francisco Brenes
CC:	Greta Alvarez
From:	Kourtney Wilson, MS, IRB Coordinator KMW
Date:	July 18, 2023
Protocol Title:	**"**Evidence Based Practice Guidelines for Screening for Disordered Eating Among Patients with Attention Deficit Hyperactivity Disorder in an Outpatient Setting in Miami, Florida: An Educational Intervention Among Healthcare Workers Quality Improvement Project**"**

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #:	IRB-23-0387	**IRB Exemption Date:**	07/18/23
TOPAZ Reference #:	113389		

As a requirement of IRB Exemption you are required to:

1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
3) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.

KMW

Appendix B

FLORIDA INTERNATIONAL UNIVERSITY

SUPPORT LETTER FROM FACILITY

South Florida Psychiatry

Phone: 786-637-0907

Fax: 305-503-7338

June 2nd, 2023

Francisco Brenes, Ph.D., APRN-BC, FNP, PMHNP

Clinical Professor

Nicole Wertheim College of Nursing & Health Sciences

Florida International University

Dear Dr. Brenes,

Thank you for inviting South Florida Psychiatry to participate in the DNP project of Greta Alvarez. I understand that this student will be conducting this project as part of the requirements for the Doctor of Nursing Practice program at Florida International University. After reviewing the proposal of the project titled "Evidence Based Practice Guidelines for Screening for Disordered Eating Among Patients with Attention Deficit Hyperactivity Disorder in an Outpatient Setting in Miami, Florida: An Educational Intervention Among Healthcare Workers." I have warranted her permission to conduct the project at this outpatient center.

We understand that the project will be developed in our setting and will occur throughout the course of a few weeks and will most likely be implemented afterward. We are also aware of our staff participation in supporting the student to complete this project, including granting the student access to our facilities, give consent, deliver the pre-test questionnaire, provide the educational intervention, and subsequently providing a posttest to the recruited participants. We will provide a peaceful environment to safeguard our participant privacy as well as an adequate area to conduct the educational activity.

The educational intervention will be in the format of a PowerPoint presentation which will be emailed to the participants and will last approximately 10 minutes in duration. Participants will be asked to complete an online demographic questionnaire and a pretest. After the presentation, they will be asked to complete a final online posttest. Demographic questionnaire, pre-and posttest surveys are expected to take approximately 25-minutes to complete. Any data collected by Greta Alvarez will be kept confidential and will be stored on a password protected USB drive, and kept in a locked file cabinet in the home of the researcher, which only the researcher will have access to.

This project intends to evaluate if a structured education targeting healthcare workers could increase knowledge awareness of evidence based practice guidelines for screening for

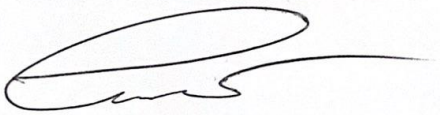
Email: Southfloridapsychiatry@outlook.com

South Florida Psychiatry

disordered eating among patients with Attention Deficit Hyperactivity Disorder. This project will be conducted with the previous consent of potential participants who are employed at the facility or practice in an outpatient center. Prior to the implementation of this project, Florida International University Institutional Review Board will evaluate and approve the procedures to conduct this project. Increasing provider knowledge awareness of screening for disordered eating amongst patients with ADHD has the potential of improving patient healthcare indicators, reducing healthcare costs, and improving patient quality of life.

We expect that Greta Alvarez will not interfere with the normal daily operations of the facility, and will present self in a professional manner that aligns with the facility's standards of care. As a lead Psychiatric Mental Health Nurse Practitioner at South Florida Psychiatry, I support the participation of our providers and staff in this project, and look forward to working with you.

Respectfully,



Ernesto L. Sarduy, DNP, APRN, PMHNP-BC

Lead Psychiatric Mental Health Nurse Practitioner

South Florida Psychiatry

Email: Southfloridapsychiatry@outlook.com

Appendix C

FLORIDA INTERNATIONAL UNIVERSITY

RECRUITMENT EMAIL

Dear Healthcare Worker,

My name is Greta Alvarez, and I am a student from the Graduate Nursing Department at Florida International University, pursuing a Doctor of Nursing Practice (DNP) degree. I am writing to invite you to participate in my quality improvement project. The aim of this project is to increase awareness and knowledge base amongst healthcare workers regarding evidence-based practice guidelines for screening for disordered eating among patients with attention deficit hyperactivity disorder (ADHD) in an outpatient setting in Miami, Florida. You are eligible to participate in this project because you are a healthcare worker in an outpatient setting in Miami, Florida. I am contacting you with the permission of South Florida Psychiatry and the head of the practice, Dr. Ernesto L. Sarduy, PMHNP, DNP.

If you decide to participate in this project, you will be asked to complete an online demographic questionnaire and a pretest. You will then be prompted to watch an online voice-over PowerPoint presentation lasting approximately 10 minutes. After the presentation, you will be asked to complete a final online posttest. Demographic questionnaire, pre-and posttest surveys are expected to take approximately 25-minutes to complete. All items will be completed on the same day. The demographic, pre- and posttest surveys, as well as the educational component are anticipated to take approximately 35-mins in total.

Keep in mind, no compensation will be provided, as participation is completely voluntary. You can choose to be in the study or not. If you would like to participate, simply open the presentation attached to this email and scan the QR code to access the demographic questionnaire and pretest. At the end of the presentation, you will find a second QR code and link to access the posttest survey. If you have any questions about the study, please reach out via email or phone using the contact information below.

Thank you very much.

Sincerely,

Greta Alvarez, MSN, APRN, PMHNP-BC
Galva023@fiu.edu | 786-314-1179

Appendix D

FLORIDA INTERNATIONAL UNIVERSITY

RESEARCHER-DEVELOPED DEMOGRAPHIC INSTRUMENT

1) Please write your randomly assigned participant ID number:_____

2) What is your age?
    a. 18 to 29 years old
    b. 30 to 44 years old
    c. 45 years or older
3) What is your gender?
    a. Male
    b. Female
    c. Prefer not to say
4) What is your ethnicity?
    a. Non-Hispanic White
    b. Non-Hispanic Black
    c. Hispanic
    d. Other
5) What is your highest level of education?
    a. Vocational certificate or diploma
    b. Associate's degree
    c. Bachelor's degree
    d. Master's degree
    e. Doctoral degree
6) What is your professional role?
    a. Physician
    b. Advanced Practice Registered Nurse
    c. Registered Nurse
    d. Ancillary Staff (i.e., patient care coordinator, receptionists, clinical students, etc.)
7) How many years of experience do you have in your current professional role?
    a. 0 to 1 year
    b. 2 to 3 years
    c. 4 or more years
8) How would you rate your current knowledge regarding screening for disordered eating among individuals with ADHD?
    a. None
    b. Minimal
    c. Competent
    d. Proficient
    e. Expert

Appendix E

FLORIDA INTERNATIONAL UNIVERSITY

PRETEST AND POSTTEST

1) Individuals with ADHD are at an increased risk of developing disordered eating.
    a. True
    b. False
2) A relationship exists between inattentive symptoms of ADHD and risk of developing disordered eating.
    a. True
    b. False
3) ADHD is NOT frequently associated with binge eating disorder, bulimia nervosa, or anorexia nervosa.
    a. True
    b. False
4) There are various validated screening tools that can be utilized in the screening for eating disorders. Some of these tools include the SCOFF and the EDE-Q.
    a. True
    b. False
5) The SCOFF questionnaire consists of 5 items (Sick, Control, One, Fat and Food).
    a. True
    b. False
6) The Eating Disorder Examination Questionnaire (EDE-Q) consists of 28 item questions concerned with the patient's experience in the past 4 weeks (28 days) only.
    a. True
    b. False
7) Screening for eating disorders does not seem to be an issue, therefore healthcare workers do not need to worry about screening for disordered eating.
    a. True
    b. False

Appendix F

FLORIDA INTERNATIONAL UNIVERSITY

CITI ETHICS CERTIFICATION

CITI PROGRAM

Completion Date 16-Jul-2023
Expiration Date 16-Jul-2026
Record ID 56708187

This is to certify that:

Greta Alvarez

Not valid for renewal of certification through CME.

Has completed the following CITI Program course:

Basic/Refresher Course - Human Subjects Research
(Curriculum Group)
Biomedical Human Research Course
(Course Learner Group)
2 - Refresher Course
(Stage)

Under requirements set by:

Florida International University

CITI
Collaborative Institutional Training Initiative

101 NE 3rd Avenue, Suite 320
Fort Lauderdale, FL 33301 US
www.citiprogram.org

Verify at www.citiprogram.org/verify/?we046cb0c-c0b3-46c0-9b18-7266b5728ade-56708187

Appendix G

FLORIDA INTERNATIONAL UNIVERSITY

CV

2015	BSN, Simmons University, Boston, MA
2015 – 2021	Registered Nurse, Nicklaus Children's Hospital, Miami, FL
2020 – 2021	Registered Nurse, Clementine Programs, Miami, FL
2022	MSN, Florida International University, Miami, FL
2022	Psychiatric-Mental Health Nurse Practitioner Resident, Department of Veteran Affairs Medical Center, Miami, FL
2023 – Present	Adjunct Clinical Lecturer
2023 – Present	Psychiatric-Mental Health Nurse Practitioner, South Florida Psychiatry, Miami, FL
2023	DNP, Florida International University, Miami, FL