2021

Implementing Eating Disorder Screening and Early Intervention in a Primary Care Clinic

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Submitted in partial fulfillment of the requirements for the Doctor of Nursing Practice degree

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Table of Contents

Abstract

Eating disorders have a high mortality rate, increasing prevalence rate, and often go unrecognized and untreated. Primary care providers are uniquely positioned to intervene early in the development of these disorders yet screening for eating disorders in primary care is limited. This project looked to improve provider confidence and improve screening for eating disorders by introducing a provider education course focused on eating disorder screening, management, and resources, as well as implementing the SCOFF questionnaire into the annual health questionnaire completed by students utilizing a university health clinic. Pre- and post-intervention survey data showed an increase in provider self-reported confidence in a myriad of aspects of eating disorder recognition and management. Data from retrospective chart review showed an overall decrease in positive eating disorder screening rates following the implementation of the SCOFF questionnaire. Future research will be needed to determine whether the increased provider confidence translates into improved patient outcomes, and whether the lowered positive screening rate is closer to the true positive rate. This project serves to exhibit the feasibility of targeted provider education interventions as well as the translation of evidence-based screening tools into practice.

Key Terms: Eating disorders, Anorexia Nervosa, Bulimia Nervosa, feasibility, quality improvement, SCOFF, screening

Introduction and Background

Eating disorders are a significant health problem in the US and world-wide. With up to 30 million cases in the United States and 200 thousand new cases each year (Maguen et al., 2018), prevalence is increasing. While the prevalence rate remains relatively small in comparison to more well-known mental health diagnoses such as depression, eating disorders remain the most lethal mental health disorder, with the highest mortality rate of any diagnosis, Anorexia Nervosa (AN) being the most severe (Campbell & Peebles, 2014). Despite their high mortality, eating disorders remain tremendously underdiagnosed (Campbell & Peebles, 2014), and screening remains under-utilized. With the age group of 13-18 being the highest risk for developing an eating disorder (Weaver, Sit, & Liebman, 2011) primary care physicians and nurse practitioners working in pediatrics are ideally positioned to identify a developing eating disorder via screening and intervene. Furthermore, a high-risk group for development of eating disorders is the college aged student, with prevalence rates thought to be far higher than the general public. While there is uncertainty to the actual prevalence rate, multiple studies have suggested a rate ranging from as low as 2.2% to as high as 39.7% (Fitzsimmons-Craft et al., 2019). More importantly, of those who screened positive, only approximately 20% received any sort of eating disorder treatment (Eisenberg et al., 2011). College-aged adults represent a high-risk group for an already high-mortality disease, and therefore are a population in need of improved screening, recognition and management.

As stated above, the prevalence of eating disorders is increasing, to a point greater than type II diabetes, and is particularly increasing in populations such as younger children, boys, and in minorities (Campbell & Peebles, 2014). Lifetime prevalence of AN is between 0.5 and 2% (Sigel, 2008) but this disorder has a remarkable mortality rate of 5 to 6%, higher than any other

psychiatric illness (Franko, Keshaviah & Eddy, 2013; Sullivan 1995). The peak age of onset is 13-18 (Weaver & Liebman, 2011), placing practitioners working with teens and young adults in a prime position to intervene. However, there remains a gap between prevalence rates and the reported rates by primary care doctors in their practices. For instance, Keski-Rahkonen and colleagues (2009) found that less than a third of the cases had been detected by a primary care provider, indicating that there are significant barriers to the early screening of eating disorders. Lifetime prevalence of Bulimia Nervosa (BN) is roughly equivalent to AN but has a lower mortality rate. Importantly however, BN has a far higher risk of suicide associated with it (Herpertz-Dahlmann, 2009), and therefore similarly shares an urgency for early identification.

The medical community has yet to reach a consensus on the screening tool best suited for screening in primary care. For instance, while the Patient Health Questionnaire (PHQ) 2 and PHQ 9 are widely accepted as suitable screening tools for Major Depressive Disorder in primary care and used as such (Arroll et al., 2010), no tool stands out in the same sense for eating disorders and there is lack of consensus on the best method for screening for eating disorders in primary care. Despite not having been validated in adolescent populations, the SCOFF questionnaire continues to be used in screening for eating disorders in primary care and is recommended by the American Academy of Pediatrics (AAP) (Campbell & Peebles, 2014). The literature suggests an overwhelming need for a standardized screening tool to be implemented into primary care. With insurmountable amount of evidence stating that eating disorders are woefully under-diagnosed, and the knowledge of the mortality rates and potential complications, a standardized screening tool implemented in primary care offices for at-risk populations such as the young adult and college-aged would be highly useful in the prevention of the development of these diseases.

Purpose and Aims

The purpose of this project is to improve the screening and recognition of eating disorders in the recently adult population and subsequently improve their outcomes. The aims through which this purpose is served is 1) to implement the SCOFF questionnaire into the annual screening questionnaire administered to all patients at the Seattle University Student Health Center (SUSHC), replacing the current two-item screening question, 2) to implement an educational session for providers at the clinic to improve confidence in eating disorder recognition, screening, management, and referral, and 3) to assess the differences in the number of positive screens for eating disorders via chart review.

Theoretical Framework

This project is based on Donabedian's Framework for Quality Improvement (1988), which focuses on an organization's structure, processes, and outcomes as the three main constructs to assess for quality improvement. Through this lens the structure is the Seattle University Student Health Center, its employees, and the population it interacts with and serves. The processes involve how patient care is carried out, including screening, diagnosis, management, referral, and other communications both with the patient and between providers and staff. Lastly, the outcomes for this project include the improved management, screening, and referral of eating disorders, which would improve long-term outcomes of mortality and morbidity.

Literature Review

Etiology

The etiology of eating disorders is unclear. Many hypotheses have been put forth, with no definitive leader. One hypothesized function is that eating disorders are tied to genetic heritability, with one study citing that influence to be as great as 50-80% (Bulik et al., 2006). Indeed, having a relative with either an eating disorder or obesity is a risk factor for eating disorders. Another hypothesis is that eating disorders are tied to dorsal caudate function and neurotransmitter action of dopamine (DA) and serotonin (5-HT), claiming that serotonin plays a role in altered satiety as well as mood regulation, and that DA may be involved in reward pathways related to eating, and executive functioning (Kaye et al., 2008). However, questions of causality are raised, as there continues to be doubt as to whether these neurotransmitter changes are the inception for the eating disorder, or if they are a secondary result of the pathophysiology of the disease (Campbell & Peebles, 2014). Another hypothesis highlights the role of temperament and personality types in children prior to their later diagnosis with an eating disorder. Some of the characteristics highlighted in this hypothesis are anxiety, inhibitory self-control and reward, set shifting difficulty, harm avoidance, perfectionism, altered interoception, and impaired appetite regulation (Kaye et al., 2008). While none of these hypotheses alone appear to fully describe the etiology of eating disorders, it is generally thought that a combination of these genetic, biological, environmental, and cultural factors plays a role in the formation and continuation of eating disorders.

Risk Factors and Early Warning Signs

With the above-mentioned hypotheses about certain risk and predisposing factors, opportunity exists for providers to recognize early manifestation of the disease. DeSocio in 2013 summarized the pertinent risk factors and phenotype characteristics as seen in table 1 below.

Many of the risk factors and characteristics are within the category of personality traits or neuropsychological differences, with only a few risk factors being in the realm of a typical provider assessment, such as family history, weight loss, discrepancy between height and weight, and subthreshold symptoms for an eating disorder.

Table 1

A Phenotype of Risk and Pre-Emptive Intervention for Anorexia Nervosa

Risk factors and phenotype characteristics		Pre-emptive interventions
History	• Positive family history of anorexia nervosa, eating disorders, or subthreshold symptoms	• Ask specific questions to elicit family history of eating disorders at annual well-child checkups, age 7-10
Personality traits	• Cautious; slow to warm up • Socially inhibited; "shy" • Harm avoidant • Rule governed • Perfectionistic	• Parent education • Annual well-child and adolescent mental health checkups include eating disorder assessment
Neuropsychological differences	• Anxiety symptoms • Interoceptive sensitivity • Weak central coherence • Cognitive inflexibility • Task perseveration	• Parent education • Emphasize importance of healthy ordered eating • Avoid dieting • Avoid overexercising • Avoid oversubscribing to activities that interfere with regular meals • Cognitive remediation exercises (CRT)
Potentiating events and experiences	• Weight loss from any source, especially in a growing child • Energy-deficient exercise	• Monitor weight for health and child's growth chart trajectory • Assure energy expenditure is compensated with caloric energy intake • Educate for early recognition of signs and symptoms of anorexia nervosa

Note: Reprinted from *The Neurobiology of Risk and Pre-Emptive Interventions for Anorexia Nervosa*, by Janiece E. DeSocio, 2013, retrieved from Journal of Child and Adolescent Psychiatric Nursing.

Furthermore, Campbell and Peebles in 2014 in their State-of-the-Art Review of the treatment of eating disorders in children and adolescents on behalf of the American Academy of Pediatrics discussed early warning signs for AN of dramatic weight loss, poor growth, new onset

food-group restrictions, overexercising, fear of gaining weight, and body image distortion. For BN they suggest mood swings, fluctuations in weight, or periods of overexercising or overeating. (Campbell & Peebles, 2014). The list of risk factors and potential ways in which a provider can recognize an eating disorder and probe further are numerous. However, there remains a gap between prevalence rates and the reported rates by primary care doctors in their practices, indicating that there are significant barriers to the early screening of eating disorders, which will be highlighted next.

Barriers

Multiple barriers prevent early detection of eating disorders in adolescents, including the secretive and subthreshold nature of the disease, cultural influences, lack of consensus on gold standard screening or treatment algorithm, provider lack of knowledge, and lack of mental health resources.

First, the initial stages of the development of an eating disorder are in thought patterns and processes. If a provider is not asking specific questions about attitudes towards food, eating habits, and body-image, it is unlikely that the patient will disclose this information in an appointment. This is highlighted in Table 1, where the majority of the risk factors are under the category of personality traits or neuropsychological differences which are both categories that require specific probing to identify in an individual (DeSocio, 2013).

Second, there is a lag time between objective signs of an eating disorder, and the severity of its development. By the time a patient with an eating disorder is displaying signs of eating disorder complications such as bradycardia, hypotension, or electrolyte imbalance, they have reached a point where return to normal organ function is jeopardized (DeSocio, 2007). The

anorectic patient often presents with non-specific complaints that are managed individually, with common presentations such as dizziness, fatigue, headaches, heartburn, constipation, or amenorrhea (Campbell & Peebles, 2014). This challenging constellation of symptoms is difficult for providers to pick up on without being prepared to identify an eating disorder.

Third, our society places an influence on being thin, and our healthcare system is still in the process of placing great emphasis on a movement away from obesity. An example of this is seen in a study done by Makino and colleagues in 2004 that showed that prevalence rates of eating disorders are higher in western cultures than in non-western cultures, but that with the westernization of these cultures we are seeing an increased rate of eating disorders (Makino et al., 2004). Indeed, this emphasis on weight reduction places those in higher weight groups at a large risk for developing an eating disorder. Boutelle and colleagues in 2002 found that overweight adolescents were more likely than their non-overweight peers to engage in unhealthy weight control habits such as diet pills, laxative use, and vomiting, (Boutelle et al, 2002). Another study found that those who were in this higher weight group were at higher risk of compensating too far and developing an eating disorder manifesting in being underweight (Neumark-Sztainer, 2003).

In addition to the previously stated barriers, the medical community has yet to reach a consensus on the screening tool best suited for screening in primary care. For instance, while the PHQ 2 and PHQ 9 are widely accepted as suitable screening tools for Major Depressive Disorder in primary care and used as such (Arroll et al., 2010), no tool stands out in the same sense for eating disorders. Though researchers have posited that the SCOFF questionnaire is well suited for screening in primary care (Hautala et al., 2009; Mond et al., 2008; Morgan, Reid, & Lacey, 1999), it does not specifically target adolescent populations (Campbell & Peebles, 2014). Despite

this, the SCOFF continues to be used in screening for eating disorders in primary care and is recommended by the AAP (Campbell & Peebles, 2014), due to its effectiveness for use in adolescence (Hautala et al., 2009) and its proven validity as a screening tool and brevity (Rindahl, 2017).

Additionally, providers report feeling either untrained or unsure of what to do with a positive result if they were to screen positive regardless of instrument, and others cite a lack of resources for mental health treatment in their area as a barrier to potential treatment (Johnston, Fornai, Cabrini, & Kendrick, 2007). Clarity on the most efficacious screening tool and what further steps health care providers must make upon detection are needed.

Management Strategies

As cited above, the well-trained provider has many different opportunities to intervene during the course of development of an eating disorder in the pediatric patient. This timeline ranges from assessing for various personality traits and weight and dieting behaviors to identifying trends in weight and height and assessing for discrepancies, finally to identifying end-organ involvement. While it would be ideal for the primary care practitioner to identify the emerging eating disorder without the assistance of a screening tool, the literature suggests that providers are unsure of their ability to do this (Lafrance Robinson, Boachie, & Lafrance, 2013). While further provider education is warranted, that is beyond the scope of this project. In addition, the management and care of the newly identified eating disorder patient is also of great importance. However, the medical community is far more advanced in its understanding of the treatment of identified eating disorders, and therefore will not be the focus of this project. The above stated literature suggests an overwhelming need for a standardized screening tool to be implemented into primary care, and the potential screening tools will be discussed below.

In reviewing the literature for the most well-suited screening tool for primary care, the following criteria were sought after: 1) high sensitivity and specificity, with a particular interest in sensitivity as the downfalls of a false-negative highly outweigh the downfalls of a false-positive result; 2) ease of application in both form as well as time management; and 3) the breadth of eating disorders included in the screening tool's scope. A variety of databases were searched to identify literature on eating disorder screening tools for primary care, including CINAHL, PubMed, Google Scholar, and UpToDate. The following screening tools were selected from the literature: Eating Disorder Examination Questionnaire (EDE-Q), Eating Attitudes Test (EAT), Patient Health Questionnaire Eating Disorder Module (PHQ-ED), Eating Disorder Inventory (EDI), SCOFF, and Eating Disorders Screen for Primary Care (EDS-PC) based on their prominence and support in the literature. Many of these screening tools have specific niche roles. For example, the EDE-Q is a 36 item, self-report questionnaire adapted from the Eating Disorder Examination (EDE) interview. The EDE-Q is well supported as the gold-standard for eating disorder assessment. However, due to its length the tool takes a considerable amount of time, and there are questions about its validity as a screening tool (Mond et al., 2004). Many studies have been conducted measuring the validity and reliability of the SCOFF, a 5-item questionnaire with an initially reported sensitivity and specificity of 100% and 87.5% respectively (Morgan, Reid, & Lacey, 1999). While later studies have reported a lower sensitivity and specificity of 78% and 88% respectively (Cotton, Ball, & Robinson, 2003), the first study to assess its validity in a US-based population reported its sensitivity and specificity as 93.2% and 66.7% respectively (Parker, Lyons, & Bonner, 2005). In addition, the tool is recommended by the American Academy of Pediatrics (Campbell & Peebles, 2014) and UpToDate, and has been adapted for the use in adolescent populations (Hautala et al., 2009;

Leung et al., 2009). While many of the screening tools appear adequate for the detection of eating disorders, the SCOFF stands out as the screening tool most suited for the detection of eating disorders in primary care due to its ease of use, sensitivity and specificity, and its brevity. As brevity and easy implementation was an important factor for this project, the SCOFF questionnaire was selected as the questionnaire to be utilized.

Methodology

Project Type and Design

This is a quality improvement project with the purpose to improve recognition and management of eating disorders (ED) in the recently adult population and subsequently improve their outcomes. This purpose was addressed by 1) Implementing the SCOFF questionnaire into the annual screening questionnaire administered to all patients at the Seattle University Student Health Center (SUSHC), 2) Implementing an educational intervention for providers at the clinic aimed to improve their confidence in ED recognition and referral, and 3) Assessing the difference in the number of positive screens and provider follow up before and after the interventions were initiated.

This project used a mixed methods design, collecting quantitative data via surveys with Likert-style questions to assess provider confidence and utilizing chart review to assess for the number of positive ED screens as well as provider follow up for ED treatment. Qualitative data was collected via questionnaires including open-ended questions for providers to express their current understanding of ED at the primary care level and their limitations.

Intervention Setting

This project was implemented at SUSHC, which serves the university's 7,291 students. The clinic provider staff consisted of four nurse practitioners.

Subject Recruitment

All students seeking health care at the SUSHC for the first time each academic year are administered the annual student health questionnaire and those that had a completed health questionnaire were eligible for the study. The annual student health questionnaire asks a myriad of questions regarding personal health history including illnesses, surgeries, hospitalizations, mental health history, family health history, and social history including living situation, occupation, safety, trauma history, and drug and alcohol use.

Providers at SUSHC were invited to participate in the provider education session and completed a pre-intervention and post-intervention survey to assess for confidence in eating disorder recognition and referral. Informed consent from the providers was acquired before data collection via the survey. Three of the four providers at the clinic completed the pre-intervention survey, while all four completed the post-intervention survey.

Intervention Descriptions

The two interventions of this project were the implementation of the SCOFF questionnaire, a five-item eating disorders screening tool, replacing the existing two-item screening question in the annual student health questionnaire, as well as the provider education course. This SCOFF questionnaire was added to the annual student questionnaire that each student is required to fill out prior to their first appointment at the health clinic each academic year. The questionnaire replaced the original question of “Have you ever been diagnosed with or thought you had an eating disorder?” When students complete the annual health questionnaire with the newly added SCOFF, their responses are flagged and reviewed by the provider during their appointment. Based on the SCOFF results as well as the other clinical data available, the provider determines whether the patient requires further follow up for ED care.

The second intervention, which was the provider education session, consisted of an hour-long course in which providers were given information about both objective and subjective warning signs of the presence of ED, as well as a referral algorithm to determine the necessary level of care. This information was consolidated from evidence-based literature and recommendations from expert groups, such as the American Psychiatric Association (APA). Additionally, information regarding Seattle area outpatient, partial hospitalization, and residential ED resources were discussed. Pre and post surveys were sent out to assess for provider confidence in screening and referral before and after the education course to assess for differences.

Measurements

The SCOFF questionnaire (Morgan, Lacy, & Reed, 1999) is a brief, self-report screening tool that has a sensitivity of 93.2% and specificity of 66.7% (Parker, Lyons, & Bonner, 2005). A score of 2 or greater on the SCOFF is highly indicative of the presence of ED. The five items on the questionnaire are:

1) Do you make yourself sick (induce vomiting because you feel uncomfortably full?

2) Do you worry that you have lost control over how much you eat?

3) Have you recently lost more than 14 pounds in a three-month period?

4) Do you think you are too fat, even though others say you are too thin?

5) Would you say that food dominates your life?

These five items were included as items on the student annual health questionnaire and the total value for positive items was provided for the clinician below the items, as well as which items were positive or negative. The provider pre- and post-intervention survey was developed using Qualtrics, a web-based survey construction tool, and contained 14 Likert style questions

and 2 qualitative free response questions. Informed consent was provided on the first page of the survey. The Qualtrics survey was anonymous, and providers' responses were reported in aggregate form only to ensure confidentiality. As an additional measure, providers' responses were stored on a password protected computer.

Data Collection and Analysis

Both quantitative and qualitative data were used to assess outcomes of the project's aims. Quantitative data were collected via both retrospective chart review and pre- and post- provider education session surveys. Qualitative data were collected via the pre- and post- provider education session surveys through Qualtrics.

The SCOFF questionnaire was implemented into the student annual health questionnaire on October 5th, 2020 about a month after Fall quarter began. Retrospective chart data were collected for students utilizing SUSHC for a 3-month period between October 5th, 2020 and January 1st, 2021. No demographic data or identifying information was recorded during this process. The pre-intervention survey was made available to providers in September of 2020. The online provider education session was delivered on November 2nd, 2020 in an hour-long session over Zoom. The post-intervention survey was made available to providers 8 weeks following the education session in January of 2021, and all responses were submitted within a week.

Quantitative data analysis consisted of examining retrospective chart review data. Information gathered included whether the student completed the original health questionnaire with the two-item ED screening question or updated annual health questionnaire with the SCOFF and whether they screened positive or negative for the eating disorder screening in either the original or updated annual questionnaire. Original and updated questionnaire data were compared on measures of percentage of students screening positive. Quantitative data from

provider pre- and post-intervention surveys were analyzed using descriptive statistics on topics of confidence in screening, management, and referral of students who screen positive for eating disorders.

Thematic analysis was used to analyze the qualitative data collected from the pre-and post-intervention surveys.

Data Dissemination

The findings from this project were shared with the providers at SUSHC via email, and the providers were invited to attend the presentation of this project.

Institutional Review Board

The Seattle University Institutional Review Board deemed this project a quality improvement study that did not require a full human subjects review. As this is a retrospective chart review intervention, no students or staff participants experienced greater risks or harm due to this study. Provider's responses to questionnaires were stored anonymously and were not linked to any identifying information.

Results

Quantitative Data

Quantitative data were collected both from retrospective chart review of students' annual health questionnaire responses and from the provider pre- and post- education session surveys.

Chart Review

During the 3-month time period, 334 independent charts were found to have a completed annual student health questionnaire. Of those 334 total charts, 219 had completed the questionnaire with the original two-item ED screening question of "Have you ever been diagnosed with or thought you had an eating disorder?" Since the implementation of the new

SCOFF questionnaire starting on October 5, 2020, 115 students had completed the annual health questionnaire updated with the SCOFF. Of the 219 completing the original student health questionnaire with the two-item ED screening question, 26 answered positively to the screening question, with an overall positivity rate of 11.8%. Of the 115 completing the SCOFF questionnaire, 6 had positive screening results, with an overall positivity rate of 5.2%.

Provider Surveys

The pre-intervention and post-intervention surveys both had the same 14 quantitative questions. These quantitative questions were posed in Likert-style ranging in response from 1 to 5. Questions assessing agreement ranged from 1= strongly disagree to 5 = strongly agree and questions assessing confidence ranged from 1= not at all confident to 5 = very confident.

Table 2

Provider Pre- and Post-Education Session Survey

Survey item	Pre-intervention (n=3) Mean (SD)	Post-intervention (n=4) Mean (SD)
Confidence in managing patients with eating disorders	2.67 (0.94)	3.75 (0.43)
Confidence in screening/ recognition of eating disorders	3.33 (0.47)	4.00 (0)
Comfort level screening for eating disorders	3.33 (0.47)	4.25 (0.43)
Knowledge of general screening tools for eating disorders	3.33 (0.94)	4.75 (0.43)
Knowledge of where to find resources pertaining to eating disorders	3.67 (0.47)	4.75 (0.43)
Feels need for more training on management of eating disorders	5.00 (0)	3.75 (0.43)
Knowledge of where to refer patients with eating disorders	4.00 (0)	4.75 (0.43)

The providers at SUSHC reported having an improved level of knowledge or overall confidence and comfort in eating disorder screening, patient management, and patient referral evaluated in this survey. Additionally, the providers reported feeling less need for further training on ED management after the provider education session.

Table 3

Provider Confidence in Management Subgroups

Level of confidence in	Pre-intervention (n=3) Mean (SD)	Post-intervention (n=4) Mean (SD)
Medication management	2.67 (0.47)	3.00 (0.71)
Nutrition and exercise information	2.33 (0.47)	3.50 (0.50)
Referral to a specialist	4.67 (0.47)	4.50 (0.50)
Medical management	3.00 (0.82)	4.00 (0)
Information for patients and family members	3.33 (0.47)	3.75 (0.43)
Referral to support groups in the area	4.33 (0.47)	4.25 (0.83)
Management of co-morbid mental health issues	4.00 (0)	4.00 (0.71)

The survey results by specific categories of eating disorder management suggest that providers felt more confident in many aspects of eating disorder care such as overall medical and medication management, nutrition and exercise, and patient education. In categories related to referral to a specialist and support groups as well as management of co-morbid mental health issues, they reported having similar levels of confidence to the pre-intervention levels.

Lastly, providers were asked on the post-intervention survey about their experiences with the SCOFF questionnaire. All providers strongly agreed that the questionnaire was easy to use, clinically useful in their practice, and practical to use. They also strongly agreed to use the

SCOFF questionnaire in their daily practice. These responses indicated that the providers found the SCOFF questionnaire helpful, and the tool was well received by the providers at the clinic.

Qualitative Data

Qualitative questions were asked on both the pre-intervention and post-intervention surveys. The pre-intervention qualitative questions inquired about factors that impacted care of patients with eating disorders and barriers to care. The post-intervention qualitative questions asked the provided to describe the impact of the SCOFF questionnaire. On the pre-intervention survey, providers were asked "What are some barriers you find you experience in treating eating disorders?" Three providers submitted their responses, and three common themes were identified: 1) lacking in the skills or training to manage eating disorders, 2) lacking in time to do comprehensive assessment and evaluation, and 3) lacking in resources to adequately treat patients with eating disorders. On the post-intervention survey, four providers at SUSHC responded that the SCOFF questionnaire was "quick," "reliable," and "asks relevant questions." However, one provider stated that the SCOFF questionnaire might take more time to utilize during patient encounter, and that it could be used for patients who screen positive on the original two-item screening questionnaire as a follow-up.

Discussion

The purpose of this study was to improve the outcomes in young adult patients presenting with concerns for eating disorders, by improving the screening, recognition, and management of ED by primary care providers. The aims through which this purpose was to be served were to implement an evidence-based screening tool into the annual student health questionnaire, to examine how positivity rates differed between the previous and updated screeners, and lastly to

provide an educational session to the providers at the SUSHC geared towards improving confidence in the complexities of eating disorder screening, recognition, and management.

The initial aim of updating the annual screening questionnaire to encompass the SCOFF questionnaire was successful, with every new annual questionnaire being completed after October 5th, 2020 containing the updated questionnaire. As stated previously, the SCOFF questionnaire is supported by the literature as a validated screener with high reliability, ease of use, and brevity (Hautala et al., 2009; Mond et al., 2008; Morgan, Reid, & Lacey, 1999) and is recommended for screening in primary care by the American Academy of Family Physicians (Pritts & Susman, 2003). Additionally, in a recent review of the literature, Fitzsimmons-Craft and colleagues recommended the SCOFF as one of a handful of validated measures and recommended it in particular in cases in which time for screening would be brief, such as primary care (Fitzsimmons-Craft et al., 2020). In analyzing the qualitative data provided through the provider post-intervention surveys, providers found it reliable and fast, and the aggregate score allowing for a rapid assessment of whether the patient is currently at risk. It is of note that this clinic and its providers were open and willing to implement the change to using the SCOFF questionnaire, a factor that may often not be the case in other organizations.

Another aim of the project was to assess the difference in positive screening rates between the original two-item screener, "Have you ever been diagnosed with or thought you had an eating disorder?" and the 5-item SCOFF questionnaire. It is interesting that the original screener had a higher positivity rate of 11.8% and the SCOFF questionnaire screened positive at a rate of 5.2%. Initial impressions might therefore be that the SCOFF questionnaire was not as successful as the original screener in highlighting patients who are at risk for an eating disorder. However, the lifetime prevalence of eating disorders in adults has been reported as being

between 0.5% to 2% (Sigel, 2008). One could interpret this difference between the two screeners as an issue of specificity. The SCOFF questionnaire has relatively high rates of sensitivity and specificity, with some studies reporting it as high as 100% and 88.5% respectively (Morgan, Reid, & Lacey, 1999). It needs to be considered that the original screener had been in use, but never been examined for its psychometric properties. As the original screener's sensitivity and specificity are unknown, one of the plausible conclusions is that the screener may have a higher rate of false positives due to its low or lack specificity. At this point, this possible explanation cannot be confirmed without following up each patient and following the gold standard of reviewing diagnostic criteria, which would be challenging in a primary care clinic. Another factor that might influence the higher positivity rate with the old screening tool is how the screening was phrased. First, the framing of the original screener's questions encompasses the entire lifespan of the patient, asking "have you ever" allowing for a larger timeframe, compared to the SCOFF questionnaire, which asks about current symptoms and beliefs. There is undoubtedly a benefit to assessing for a psychiatric history, and at the same time this could unintentionally raise the positivity rate, when the goal of screening is to assess for patients who are currently at risk. Additionally, the original screening questionnaire assessed for the patient's self-appraisal of whether they have or have previously had an eating disorder. While it is important to take the patient's perception into account, this should not replace validated screening tools, which could further increase the false-positive rate. Another variable that could account for the discrepancy is the number of charts reviewed containing either questionnaire, as the previous screener had a higher number, 219 compared to the SCOFF questionnaire with 115. This was due in part to the fact that while charts were reviewed in the 3-month time period following the SCOFF questionnaire implementation, patients who had already completed their

annual screening questionnaire for the year prior to the SCOFF implementation and were coming into the clinic for a visit during the 3-month time period had only the old questionnaire in their chart. Additionally, in general the number of patients assessed in this project was relatively small, particularly when taking into account the low prevalence rate of eating disorders in the general population. Overall, it is difficult to compare the two positivity rates in a linear way, particularly considering the less-clear prevalence rate of eating disorders in the college-aged population compared to the lifespan prevalence rate.

The final aim of the project was to implement an educational session for the providers at the SUSHC focused on improving confidence and knowledge in eating disorder care including recognition, screening, management, and referral. This aim appeared to be successful, as the average of the providers trended towards greater overall self-rated confidence and knowledge on 12 out of the 14 items that were assessed. While the sample size of this group is too small to make any suggestions regarding significance, it is a noteworthy trend. The areas in which the providers felt they had improved in efficacy were in management, referral, screening, and overall knowledge pertaining to eating disorders. This provides support for educational sessions bolstering provider knowledge in a specific subject, such as eating disorder care and management. As stated earlier, one of the barriers to treatment is provider lack of knowledge of warning signs or screening strategies, as well as what resources exist for referral (Johnston, Fornai, Cabrini, & Kendrick, 2007). Interestingly, the two items that the providers rated on average having slightly less confidence or knowledge in were both related to referrals, either to specialists or to broader resources in the area. Overall, these findings suggest that tailored education sessions towards a specific community and its resources would allow providers to be more knowledgeable of their options and limitations related to referral, which can be beneficial

to improve provider confidence. Future studies should assess whether this improvement in provider education on the referral process has an impact on patient outcomes such as an increase in the number of patients followed up with or referred to specialty services.

Limitations

Several limitations were identified through the process of implementing this project. First, it was difficult to discern whether the positivity rates were accurate due to the lack of ability to assess whether a patient screening positive on either screening instrument actually met criteria for an eating disorder. Therefore, it was not determined whether the change in a screening questionnaire was efficacious in identifying true underlying cases. Without the final patient outcome data, it was also challenging to exactly assess the relation between the increase in provider confidence and knowledge regarding eating disorders and its meaningful impact on daily practice. Another limitation of this project was the relatively small sample size in both interventions. A larger sample of both patients as well as a larger sample of providers would be more suggestive of a meaningful difference between the two groups. Another limitation noted during this project's implementation was the impact of the COVID-19 global pandemic. The lasting impact of this pandemic on those with or at risk for mental health disorders, is largely unknown. However, data suggest that prevalence rates related to various mental illness have increased. For instance, a recent study published in the Journal of the American Medical Association (JAMA) found that the depression prevalence rate has more than tripled, from 9% to 28% compared to pre-pandemic rate (Ettman et al., 2020). The impact of this pandemic and its complexities on prevalence rates of mental health issues or the number of patients seeking services for mental health issues at the SUSHC is unknown. Due to this pandemic, the clinic began shifting emphasis towards referring mental health cases out of the clinic to allow

bandwidth to manage the COVID-19 response on campus, which could have affected results. Further inquiry could be made to examine the difference in screening rates between pre-pandemic and post-pandemic rates.

Future Implications

This project introduced and incorporated a more standardized way of screening for a mental health issue in primary care, encouraging primary care providers to start a systematic approach to identifying a mental disorder. It has also been suggested that targeted educational interventions can serve to improve provider confidence and knowledge in their management of mental health disorders in primary care setting. This project provides an example of advancing the quality of nursing practice by translating research evidence into daily practice, which is also a recommendation made by groups such as the APA and AMA.

A few recommendations are made based on this project's groundwork to improve screening, recognition, management, and referral of eating disorders at a primary care clinic. For example, future studies can strengthen provider interventions by putting more emphasis on screening and referral as indicated in the findings of the project. To determine whether the increased provider confidence and knowledge translate into improved patient outcomes, and whether the lowered positive screening rate with the standardized screening tool is closer to the true positive rate, future studies need to incorporate outcome measures such as the numbers and types of referrals made by primary care provider and the number of provider follow-ups with patients following a positive screening. Additionally, this project can provide a model for how to incorporate standardized tools and provider education into screening, recognizing, managing, and referring other often under-recognized mental health problems in primary care, including substance use disorders and suicidal ideation.

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