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Improving Gambling Disorder Screening and Management in College Health Settings: A Quality Improvement Project

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Abstract

Gambling is an emerging high-risk behavior on college campuses. College students are especially vulnerable to gambling due to social pressures and marketing specifically targeted at young adults. Gambling disorder (GD) is a psychiatric diagnosis that involves maladaptive, problematic gambling behavior that can lead to clinically significant impairment or distress. Healthcare clinicians (HCCs) play a crucial role in detecting signs of GD in their patients. Therefore, it is imperative that HCCs understand concepts that can guide the identification of GD and ensure that high-risk patients are provided with appropriate assistance. To address this, a quality improvement (QI) project to improve knowledge, attitudes, and behaviors was implemented in a student health clinic at a public university in South Florida. A total of 26 staff members working in this student health clinic were included in this project. The results were analyzed and a significant increase in mean scores for knowledge, attitudes and behaviors following and evidence-based educational intervention was noted. Overall, there was a 25.56% increase in mean knowledge, 59.62% increase in mean attitude scores, and 90.37% increase in mean practice behavior scores when compared to baseline. A paired, two-tailed t-test was performed to determine statistical significance showing a result of $p < 0.0001$. The data shows that an evidence-based educational intervention is effective in enhancing knowledge and confidence when screening for and making treatment recommendations for GD. Based on the evidence and results of this project, future education should be implemented, and screening protocols incorporated in the college health setting.

Keywords: healthcare clinicians, gambling disorder, college health, screening protocols, management, education

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Introduction

Gambling involves risking something of value in hopes of obtaining something of greater value. Gambling disorder (GD), previously known as pathological gambling, is a psychiatric diagnosis limited to those who meet diagnostic criteria outlined in the fifth edition text revision of the Diagnostic and Statistical Manual for Mental Disorders (DSM-V-TR) (American Psychiatric Association, 2022). The essential feature noted among those who meet criteria for diagnosis of GD is persistent, maladaptive gambling behavior that disrupts personal, family, and vocational pursuits (American Psychiatric Association, 2022). The most frequently associated criteria are related to preoccupation with gambling and "chasing" losses. A pattern of chasing losses can be described as losing money and returning to gamble another day, often placing larger bets, or taking higher risks, in an urgent attempt to rectify a series of losses (Dwyer et al., 2017). College is the first time many individuals experience independence, allowing them to make decisions without the guidance from their loved ones. Navigating this newfound independence can be stressful, as many students face social, academic, and financial pressures that lead to unhealthy behaviors such as gambling. These individuals have access to monetary funds through student loans and credit card solutions without guidance or supervision, potentially propelling them into financial debt. It has been shown that gambling can lead to decreased work and school performance, relationship strains, financial difficulties, emotional distress, poor physical health, and criminal activity (Latvala et al., 2019); therefore, education for healthcare clinicians (HCCs) working in college health to implement gambling screening protocols and clinical interventions is essential.

Problem Statement and Significance

The rapid growth of the internet is making gambling more accessible and pervasive. College students, between the ages of 18 and 24, are specifically targeted and susceptible to the allure of gambling because internet marketing platforms glamorize gambling as a fun, easy, and quick way to make money. Research suggests that an estimated 10% of college students meet the criteria for GD which is five times higher than the prevalence in the general adult population (Lotsutter et.al, 2019). Lack of screening by HCCs working in the college health setting leads to under recognition of GD. HCCs may not be screening because they are not aware of the prevalence of gambling on college campuses, or they may lack confidence in screening for GD. The line between responsible gambling and disordered gambling is difficult to discern; it is crucial that HCCs working with college students understand the risk factors, gambling motives, and GD screening protocols as GD can lead to disruption of physical, emotional, and psychological wellbeing. One solution to increase baseline awareness and improve gambling risk identification is an educational seminar that provides HCCs with evidence-based information on GD and screening protocols that will enable them to identify students with GD in a college health setting and provide resources for the management of GD.

College students are at an age associated with a wide range of risky behaviors. Findings suggest that college students are 2 to 3 times more likely than adults in the general population to gamble problematically (Lostutter et al., 2018). Gambling can result in significant increases in emotional and psychological distress leading to negative impacts on mental and physical health and wellbeing. Individuals may also experience conflict at home related to loss of trust due to dishonesty and concealment of gambling behaviors (Latvala et al., 2019). Gambling literature has found higher rates of suicidal thoughts, suicide attempts, and completed suicide in those with

GD with up to half of individuals in treatment for GD reporting suicidal ideation, and about 17% report attempted suicide (Latvala et al., 2019; American Psychiatric Association, 2022). College students may experience negative consequences such as sleep deprivation, class absence, failing grades, financial debt, social and physical isolation, anxiety, depression, and suicidality therefore screening for GD in this population is crucial.

Summary of the Literature

Literature Search Process

The databases used for this literature search included *PubMed*, *The Cumulative Index to Nursing and Allied Health Literature (CINAHL) Plus with Full Text*, and *Medline*. These sources were chosen because they contained scholarly articles related to nursing, healthcare, and public health. Search terms included “college students” or “university students” and “gambling” or “gambling disorder” or “internet gambling” or “online gambling” or “sports gambling” and “screening” or “treatment” or “management”. Boolean and phrase search terms were used. Search limitations included articles published between 2017 and 2023 in academic journals, full text access, written in English, and sources dedicated to adolescent and adult population to capture college aged students between 18 to 24 years old. *PubMed* resulted in 180 (n=180) articles. *CIANHL* resulted on 75 (n=75) articles. *Medline* resulted in 65 (n=65) articles. From these articles, 13 (n=13) were chosen because they focused on gambling, GD, internet gambling, and sports betting in college students ages 18 to 24 . Articles excluded briefly discussed gambling as it related to other risk behaviors or mental health conditions but did not detail gambling prevalence, motivations, risk factors, screening tools, and management options for GD.

Inclusion Criteria

In this literature review, only peer-reviewed articles were considered. The inclusion criteria included only studies written in English with full-text availability. Research articles had to be published between 2017 and 2023 and the age of participants included individuals between 18 to 24 years old. The articles selected had to include “gambling”, “gambling disorder”, “internet gambling”, “online gambling”, or “sports gambling” and “college students” or “university students” in the title or abstract.

Exclusion Criteria

In this literature review, articles were excluded if they did not include information specific to gambling or GD in the population of college or university students. Articles were not included if they were not written in English, did not focus on gambling, did not include a population of aged 18 to 24 years old, or were not full text. Grey literature and duplicate articles were excluded.

Literature Appraisal

This literature review included peer reviewed journal articles comprised of meta-analyses, longitudinal studies, cross-sectional studies, retrospective studies, and narrative reviews (see Appendix A). The articles in this literature review are non-experimental studies that are descriptive and correlational. There were three meta-analyses, level I evidence, that systematically reviewed multiple randomized control trials published and integrated data included in the studies. There were six cross sectional studies that involved self-report surveys to draw correlations between different variables, level IV evidence. One longitudinal study was review, level IV evidence ,following a group of college students from year 1 to 5 to assess substance use and gambling. One retrospective study was reviewed, level IV evidence. This

retrospective study consisted of documentation review and descriptive statistics of patients in a rehabilitation center. Two narrative reviews, level V evidence, were reviewed and provided insight into the gaps in knowledge related to college students and gambling. After due processing and categorizing, the information that met the selection criteria was summarized and divided into sub-themes below.

Emerging Gambling Technology and Trends

Multiple studies revealed the impact of technological advances on gambling including increased accessibility and growing popularity among college students. Studies by Barrera-Algarín & Vázquez-Fernández (2021), Dwyer et al. (2017), and Lawn et al. (2019) highlight the proliferation of online betting services that have been shown to increase psychological, social, and relationship strains affecting young adults. Using digital technology like the internet and smart phones, the gambling industry has expanded its' customer base, particularly among younger individuals (Lawn et al., 2019). Advertisements offer a distorted portrayal of gambling as a harmless activity and can lure young adults in with "virtual money" and "welcome bonuses" (Barrera-Algarín & Vázquez-Fernández, 2021). These targeted advertisements are deployed during live sporting events and through online platforms such as YouTube and other social media applications (Barrera-Algarín & Vázquez-Fernández, 2021). Fantasy sports is an emerging trend of sports betting in an online context. Fantasy sports is unique because many participants are betting against friends, family, and coworkers making it socially motivated (Dwyer et al., 2017). Growth in online gambling indicates greater potential diversity in gambler types and a new population of individuals experiencing GD (Lawn et al., 2019). Consequences of online gambling include debts incurred from personal loans and microcredits acquired online, social isolation, loss of concentration, poor academic performance, and school and work absenteeism

(Barrera-Algarín & Vázquez-Fernández, 2021). Online gambling is unique because it is available over multiple devices with internet connection and gambling sites cannot enforce legal age limits making accessible to younger individuals. Money can be easily transferred between bank accounts online placing college students at risk for financial distress. With rising online gambling rates among college students, there is a concern that this form of gambling is more harmful than land-based gambling.

Risk Factors and Gambling Motivations

Young adulthood is a critical time for the onset of common mental health conditions, especially among those attending college. College students are susceptible to developing GD due to a confluence of several factors termed "The Five A's" which include age, availability, acceptability, advertising, and access (Nowak, 2018). College years, ages 18 to 24, are associated with a wide range of risky behaviors. Gambling is easily available, it is integrated into mainstream culture and socially accepted, glorified in the media, and lastly college students have access to monetary funds from student loans or numerous credit card solicitations (Nowak, 2018). Among college students, lower parental education, absence of siblings, lower grades, and younger age when first gambled were all associated with risky gambling behaviors (Riley et al, 2021). The most prominent predictor of gambling is gender with males, particularly non-white athletes, engaging in gambling more frequently than females (Nowak, 2018). In a study by Riley et al. (2021) young respondents were motivated by monetary gain and believed that gambling yields high financial return on investment. Individuals that view money as means to gain power are at a higher risk for disordered gambling (Lostutter et al., 2019). Recognizing the influence of an individual's attitude on gambling behaviors can assist HCCs in better understanding college students' risks and motivations for gambling.

College students are moving away from friends and family, starting at a new school or new job, and experiencing new financial responsibilities which can be stressful. Stressful life events within the last year have an influence on gambling behaviors because young adults may turn to gambling to cope (Wang et al., 2020). Research also suggests that there is a direct effect of behavioral dysregulation on more frequent gambling (Caldiera et al., 2017). Those with GD were found to score higher on emotional dysregulation, impulsivity, and maladaptive coping mechanisms (Riley et al., 2021). Understanding gambling risk factors and motivations is important when screening for gambling and identifying resources that would benefit the individual.

Co-occurring Conditions

Findings support the notion that there is an association between gambling and substance use that can be partially attributable to shared risk factors such as sex, race and ethnicity, sensation seeking, and behavioral dysregulation (Riley et al., 2021; Nowak, 2018). Barrera-Algarín & Vázquez-Fernández (2021), King & Whelan (2020), and Wang et al. (2020) examined how common factors in young adults influence both substance use and GD and their tendency to co-occur on college campuses. The motivation of sensation seeking in gamblers is also seen in those who engage in frequent substance use (Wang et al., 2020). Gambling is correlated with psychological problems linked to depression, anxiety, violence, suicidal ideation and attempts, social problems such as antisocial behavior, and backgrounds of family and school difficulties leading to a lower quality of life in young gamblers (Barrera-Algarín & Vázquez-Fernández, 2021). Co-occurring gambling and alcohol problems may have similar health impacts such as pain, fatigue, and weakness (King & Whelan, 2020). Screening for these conditions

concurrently is important as there is overlap between gambling, substance use, stressful life events and other psychological conditions.

Screening Tools

The Problem Gambling Severity Index (PGSI), discussed in three articles reviewed, was identified as the gold standard epidemiological tool for estimating prevalence of problematic gambling globally and has been used to evaluate problem gambling severity (Dowling et al., 2018). More recently, the PGSI has also been utilized to measure online gambling behaviors (Dwyer et al., 2017). Studies suggest PGSI is a reliable measurement of gambling involvement, problem gambling severity and harmful consequences (Kam et al., 2017). Consistent evidence supports that the PGSI displays good concurrent validity with other problem gambling measures and diagnostic interviews and questionnaires and suggests that the PGSI is psychometrically stronger than similar screening tools (Dowling et al., 2018). Using the PGSI as a reference, Dowling et al. (2018) found that the five-item Brief Problem Gambling Scale (BPGS) displayed satisfactory sensitivity in detecting any levels of problem gambling. The Centre for Addiction and Mental Health (n.d) found that the BPGS has 98 percent sensitivity meaning it detects 98 percent of individuals with GD, or true positives. The BPGS was found to have 90 percent specificity, correctly reporting 90 percent of people without problem gambling as negative, or true negatives (Centre for Addiction and Mental Health, n.d). When discussing a screening tool for this QI project it is important to consider gambling motives, beliefs, and perceptions and should acknowledge existing mental health conditions, stressful life events, and emotional well-being.

Management and Treatment

This QI project aimed to improve HCC knowledge about GD management and treatment recommendations. Anderson et al. (2021) and Goslar et al. (2018) investigated psychological and pharmacologic management of GD. Their meta-analyses discussed cognitive interventions, pharmacologic interventions, and combined management. Pharmacologic interventions discussed in this study included antidepressants, mood stabilizers, and opioid antagonists. Cognitive remediation focuses on training higher order cognitive processes and aims to strengthen executive functioning and problem solving (Anderson et al., 2021). This goal-oriented intervention appears to be effective in remediating impulsive choices while pharmacologic therapy was shown to be beneficial to cognition, reduce GD severity and reduce financial loss (Anderson et al., 2021; Goslar et al., 2018). When developing a plan of care for college students identified as having GD, combined psychological and pharmacologic therapies are recommended to produce optimal patient outcomes.

Summary of Findings

GD among college students runs along a continuum from no gambling, occasional gambling, regular gambling, to excessive gambling; therefore, it is crucial to increase HCCs' awareness about screening protocols and the positive impact they can have on an individual's health related quality of life. This literature review served as a guide for the evidence-based educational session aimed at improving the knowledge, attitudes, and behaviors of HCCs working in college health settings and identified evidence-based screening interventions for GD in college students. It is important to consider overlapping mental health conditions such as substance use disorders, mood disorders such as anxiety, depression, and bipolar disorder, disordered eating, and other psychological illnesses when screening for GD. The evidence-based

educational session included how to assess, diagnose, and manage college students identified as having GD. HCCs knowledgeable about GD risk factors, screening protocols, and management recommendations can help guide college students to resources where they can access cognitive and pharmacologic therapies beneficial in the management of GD. In addition, with the prevalence of online gambling and ever-increasing connectivity to the internet, providing resources to at-risk individuals in the college health setting can help mitigate future gambling behaviors and co-occurring mental health conditions.

Purpose of Quality Improvement Project

The purpose of this quality improvement (QI) project was to determine whether an evidence-based educational seminar about GD screening protocols and treatment recommendations would improve the knowledge, attitude, and practice behaviors of HCCs working in a college health setting. The goal of this QI project was to support HCCs who may feel unprepared to screen for GD and build their confidence in screening protocols and practice approaches when providing care in a college health facility. Gambling, especially when online, is dangerous due to accessibility, anonymity, and 24-hour availability (Caldeira et al., 2017). It is imperative that HCCs providing care to college students are aware of this issue and are well equipped with the resources required to screen for and address GD in this population.

Clinical Question

If healthcare clinicians working in college health (P) are given an evidence-based educational seminar that includes gambling disorder risk factors, screening protocols, and management recommendation (I) compared to no education intervention (C), will change occur to the clinicians' gambling disorder knowledge, attitudes, and behaviors (O)? The population is HCCs providing care to college students. The intervention is an education session about risk

factors, screening tools, and resources available for GD. Comparison is clinician knowledge and screening practices before an evidence-based education session. Outcome is improved clinician knowledge, attitudes, and practice behaviors.

Objectives

This QI project determined if change occurred in knowledge, attitudes, and behaviors of HCCs after attending an evidence-based educational seminar about GD in college students aged 18 to 24. HCCs attended an evidence-based educational seminar that discussed the prevalence of GD in college students, risk factors of GD in college students, co-occurring conditions, standardized screening tools, and available resources for treatment and management of GD. Following the educational seminar, this QI project aimed to increase HCCs knowledge, attitudes, and behaviors about GD in a college health setting. In the months after the start of this QI program HCCs were expected to feel knowledgeable about screening for GD and confidently present resources and management options available to these students.

Goal 1

Identify HCC knowledge, attitudes, and behaviors surrounding GD risk factors, screening protocols, management in a college health setting using the survey questionnaire issued to participants by July 13th, 2023.

Goal 2

Provide a comprehensive, evidence-based educational session to HCCs in a college health setting to best facilitate change in knowledge, attitudes, and behaviors surrounding GD risk factors, screening protocols, and management in college aged students by July 13th, 2023.

Goal 3

Identify change in knowledge, attitudes, and behaviors surrounding GD risk factors, screening protocols, management in a college health setting in HCCs who participated in this QI project's educational session by August 11th, 2023.

Definition of Terms

The following are terms used in this QI project:

- Gambling: risking something of value in hopes of obtaining something of greater value (American Psychiatric Association, 2022).
- Problematic gambling: gambling that disrupts one's life to such an extent that the gambling behavior takes precedence over that person's responsibilities and duties and results in adverse consequences (Nowak, 2018)
- Gambling disorder (GD): persistent and recurrent maladaptive, problematic gambling behavior that disrupts personal, family, and/or vocational pursuits leading to clinically significant impairment or distress. (American Psychiatric Association, 2022).
- Healthcare Clinicians (HCCs): Individuals who provide direct patient care in a healthcare setting such as physicians, nurse practitioners, physician associates, psychiatrists, nurses, and other allied health professionals.
- Screening tool: a standardized questionnaire or procedure that examines risk factors and symptoms to guide clinicians in the identification of potential health conditions.
- College health: health and wellness services provided to college aged students located on the college campus they are enrolled in.

Conceptual Underpinning

Theoretical Framework

Crucial to the implementation of an evidence-based educational session for GD in a college health setting, a translational theory was used to guide this QI project. Translational theories focus on the interrelationships and complex organizational dimensions that are relevant to the research and implementation of new knowledge in clinical practice. Malcolm Knowles developed the adult learning model, andragogy, based on six assumptions of adult learning (Purwati et al., 2022). Knowles' theory highlights six characteristics: self-concept, experiences, readiness to learn, motivation, need to know, and problem-centered learning (Purwati et al., 2022). Knowles theory suggests that adults need to know why they need to learn something, adults learn best when the topic is of immediate value, adults need to learn experientially, and adults approach learning as problem solving (Purwati et al., 2022). Knowles's ideas are particularly important because they focus on the differences between what learners already know and what they learn from experience (Mukhalalati & Taylor, 2019). This theory proposes adults are self-motivated in learning and take responsibility for their decisions (Mukhalalati & Taylor, 2019). Knowles' Theory of Adult Learning offered insight into how adults learn and their motivations and provided guidance for development of the evidence-based educational session implemented to improve knowledge, attitudes, and behaviors of HCCs in a college health setting.

Conceptual Model

Figure 1 depicts a conceptual model for the constructs of this study. At the center of this conceptual model is the educational session that incorporated characteristics of Knowles Adult Learning Theory. HCCs reflected on their previous knowledge related to addiction and gambling prior to the educational session. The evidence-based presentation provided value to HCCs by

allowing for personal and professional growth which further motivated learning. Rather than simply presenting facts to HCCs, the educational seminar was problem-centered to orient learners to the impact of screening protocols on their clinical practice. The educational session was shown to improve confidence and knowledge about gambling, subsequently improving self-concept.

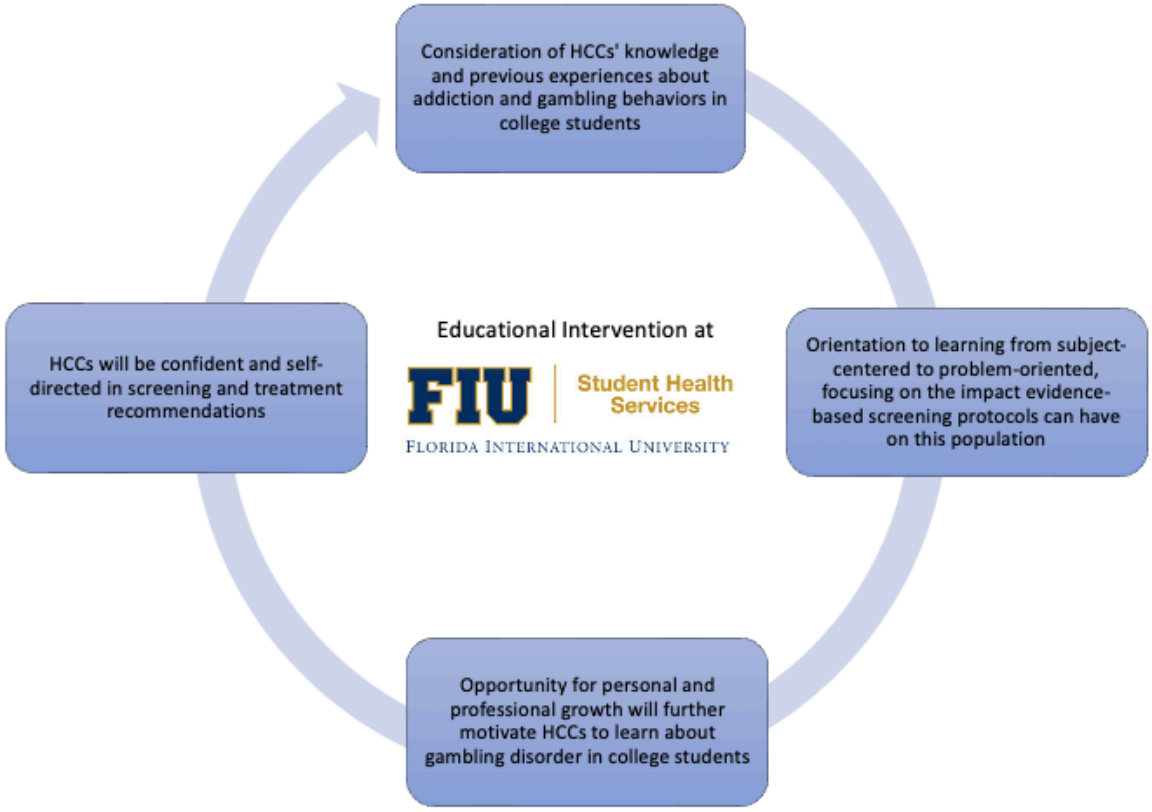


Figure 1

Methodology

Setting

This QI took place at a student health center (SHC) located in large public university South Florida with a student body of more than 56,000 students among five different campuses,

65.2% of students are aged 18-24. The SHC has a diverse student population with 61% of students being Hispanic, 15% White Non-Hispanic, 13% Black, 4% Asian or Pacific Islander and 7% other minority groups and provides services to approximately 100 patients daily. The SHC provides acute, primary care services to the students along with specialty services such as gynecologic, dermatologic, and psychiatric services for enrolled students.

Participants and Recruitment

HCCs working in the SHC were recruited via email sent by the DNP candidate to participates in this QI project. SHC staff members' emails were organized into an email distribution group. An email distribution group contains the email addresses of those working in the department and allows for emails to be sent without individual email addresses being shown. The email provided a brief introduction to the purpose, procedures, and benefits of this QI project. The DNP candidate posted recruitment flyers in the common areas such as conference and break rooms.

Design

Once recruited, participating HCCs were sent emails by the DNP candidate with the informed consent and Qualtrics survey links. Surveys were created using the Qualtrics survey platform which collected responses anonymously and stored the data. Participants were expected to complete the pre-intervention survey 1 month prior to attendance of the educational session. The pre-intervention survey evaluated HCC knowledge regarding the prevalence and risk factors of GD in college students, GD screening protocols, and management recommendations and their confidence with application of learned knowledge into their clinical practice. The HCCs attended

a 20-minute interactive evidence-based educational session on July 13th, 2023, presented via PowerPoint presentation. An email was sent out to all participants containing a recorded video of the presentation for those who may not have been able to attend the in-person session due to scheduling conflicts. The in-person session included a question portion, while participants that watched the recorded session were able to send their questions via email to the DNP candidate. The post-intervention survey was distributed for completion within 4 weeks following the educational intervention.

Data Collection

Using the Qualtrics survey platform, participants completed surveys anonymously. With the Qualtrics platform, once a survey is set to anonymize responses, all personal identifiable information, as well as the IP address will be removed from the data responses. Participants completed pre- and post-intervention surveys that evaluated their knowledge, attitudes, and behaviors about GD and their screening and management behaviors. Survey data was compared before and after the educational session to determine change in knowledge, attitudes, and behaviors.

Data Analysis and Management

Data was collected and stored in the Qualtrics electronic database. Qualtrics is an online survey platform, compliant with Health Insurance Portability and Accountability Act of 1996 (HIPAA), that makes it easy to process data and create reports (Qualtrics, 2022). No identifiable private information was collected. Demographic data, including gender, age range, ethnicity, and title was obtained as part of the survey. Additionally, the pre- and post-intervention surveys were

used to collect data related to participants' knowledge, attitudes, and practices related to GD risk factors, screening protocols and management. No data analysis was done at the QI setting, all data was completed virtually. Data from incomplete surveys was not used in data analysis. Pre- and post- intervention surveys were scored using a percentage. A mean score was calculated for each survey and the mean scores were assessed for improvement. Only investigators had access to the completed pre-and post-intervention surveys. There were no hard copy forms. Data collected from the pre- and post-intervention surveys was tabulated anonymously to electronic spreadsheets, which was maintained on a password protected laptop computer. A report was created from the pre- and post-intervention survey data to compare mean percentages to determine change in HCC knowledge, attitudes, and behaviors.

Protection of Human Subjects

All investigators in this QI project completed the Collaborative Institutional Training Initiative (CITI) programs training about the protection of human subjects in research. The Institutional Review Board (IRB) made the determination of any risks to the potential participants. Email lists were used for to protect privacy, email addresses were distributed. All data regarding participant knowledge, attitudes, and practices regarding GD screening protocols and management was collected anonymously. Participants had the opportunity to provide informed consent. Participants were able to withdraw consent at any time during this QI project. Participants were informed that the benefits of participation in this 20-minute educational seminar including the improvement of knowledge, attitudes, and behaviors related to GD and available screening and management protocols. Participants used unique identifier codes: the month and date of father's birthday and the first three letters of mother's maiden name. Data

collected was kept private and protected by a password encrypted laptop computer. Only members of this research team had access to this data. No identifying information will be used in publications or presentations.

Benefits

The main benefits of this QI project were to increase the participant's knowledge, attitudes, and behaviors surrounding GD, risk factors, screening protocols and management. HCCs were able to implement information learned during the evidence-based educational session into their clinical practice to identify GD and provide appropriate management recommendations. This QI was expected to benefit society by guiding clinicians in accurate identification and intervention of GD in college-aged students.

Risks

There was minimal risk associated with this QI project because it was unlikely for participants to experience any physical, psychological, social, or economic harm as a result of participating. The only perceived risk stemmed from sensitive topics discussed such as GD, substance disorders, and mood or other psychological disorders that may be uncomfortable or may trigger a negative emotional, psychological, or cultural reaction. The DNP candidate took this risk into consideration to present the project in a sensitive manner. Risks were the same if participants were in their home filling out an online questionnaire or viewing an online video, however, they were able to opt-out if they became fatigued during the online session. The DNP candidate surveyed current knowledge, attitudes, and behaviors and provided an educational session to increase knowledge. There were no costs associated with participation. Participants

were made aware that this project is voluntary and there are no known alternatives other than not taking part in this QI project.

Results

The purpose of this QI project was to evaluate the impact of providing education to HCCs about gambling prevalence, motivations, risk factors, screening tools, and management options in a college health setting. Specifically, the goal was to improve HCC's knowledge, attitudes, and practice behaviors in screening, identifying, and recommending treatment options for GD in college-aged individuals. Approximately fifty potential participants were invited to participate in this QI project. Thirty-five participants either attended the evidence-based educational session on July 13, 2023, or watched the pre-recorded session via video link. Of these participants, 33 participants completed the pre-intervention survey, and 28 participants completed the post-survey. Pre- and post-intervention survey data was matched using participant unique identifier codes. After matching responses, 26 paired pre- and post-intervention surveys were identified. Pre- and post-intervention surveys that could not be paired, were excluded from the data analysis.

Demographics

Table 1

Participant Demographic Data

	Count (n=26)	Percentage (%)
Gender		
Male	5	19.23%
Female	21	80.77%
Non-binary	0	0.00%
Prefer not to say	0	0.00%
Age		
20-30 years old	9	34.62%

31-40 years old	6	23.08%
41-50 years old	4	15.38%
51+ years old	7	26.92%
Ethnicity (select all that apply)		
American Indian/Alaskan Native	0	0.00%
Asian	0	0.00%
Black/African American	4	14.81%
Hispanic/Latino	14	51.85%
Native Hawaiian/Pacific Islander	0	0.00%
White/Caucasian	9	33.33%
Other	0	0.00%
Position in Facility		
Medical Doctor	1	3.85%
Nurse Practitioner	7	26.92%
Registered Nurse	5	19.23%
Medical Assistant	2	7.69%
Patient Access Representative	4	15.38%
Health Educator	1	3.85%
Psychologist/Psychotherapist	1	3.85%
Other	5	19.23%
Years of experience in this field		
Less than 1 year	2	8.00%
1-5 years	8	32.00%
5-10 years	2	8.00%
10-20 years	10	40.00%
More than 20 years	3	12.00%

Participant Sample

The participant's demographic data is illustrated in Table 1. Of the 26 participants in the (n=26) pre- and post-intervention sample, 21 (80.77%) were female and 5 (19.23%) were male. Of these participants, 9 (24.62%) were 20 to 30 years old, 6 (23.08%) were 31 to 40 years old, 4 (15.38%) were 41 to 50 years old, and 7 (26.92%) were 51 years old or above. Fourteen (51.85%) participants identified their ethnicity as Hispanic/Latino, 9 (33.33%) identified as White/Caucasian, and 4 (14.81%) identified as Black/African American.

The sample consisted of 1 (3.85%) medical doctor, 7 (26.92%) nurse practitioners, 5 (19.23%) registered nurses, 2 (7.69%) medical assistants, 4 (15.38%) patient access

representatives, 1 (3.85%) health educator, 1 (3.85%) psychologist/psychotherapist, and 5 (19.23%) participants identified as other. Those who selected other described themselves as students, interns, or health promotion members. Participants' experience in the field ranged from less than 1 year to more than 20 years. Two participants (8.00%) had less than 1 year experience, 8 (32.00%) had 1 to 5 years of experience, 2 (8.00%) reported 10 to 20 years of experience, and 3 (12.00%) had more than 20 years of experience in their field.

Pre- and Post-Intervention Results

Knowledge

The participant's pre-intervention survey mean score for knowledge about GD was 48.84 (SD 19.47). The educational intervention significantly changed the post-intervention mean scores to 74.40 (SD 12.02). Table 3 indicates that the p-value was <0.0001, meaning the null hypothesis was rejected. The pre- and post-intervention survey questions regarding GD knowledge are illustrated in Table 2. As illustrated in Table 2, HCCs were knowledgeable about the definition of GD, risk factors, co-occurring conditions, and management recommendations prior to the intervention despite only 26% participants self-rating their knowledge as 'excellent' or 'good' compared to 65.38%, a 38.77% percent increase, following the educational intervention. Prior to the educational intervention 15.38% of participants correctly identified the gold-standard screening tool. Following the educational intervention 84.62% of participants correctly identified the PGSI as the gold standard epidemiological tool for problem gambling and GD, a 69.24% increase between pre- and post-intervention. Pre-intervention survey data showed that 61.54% of participants were unsure about what cognitive remediation was and 41.46% did not correctly identify examples of cognitive enhancements. Post-survey data displayed a 38.46% increase in

correct identification of cognitive remediation and 33.90% increase in correct identification of cognitive enhancements. The percentage of participants' responses to each question about their knowledge about GD are illustrated in Table 2.

Table 2

Participant's Knowledge about Gambling Disorder Pre- and Post-Intervention Scores

Question	Pre-Intervention	Post-Intervention	% Change
Self- rated knowledge about gambling disorder, risk factors, screening protocols, and management			
Excellent *	1 (3.85%)	5 (19.23%)	15.38 ↑
Good *	6 (23.06%)	12 (46.15%)	23.09 ↑
Fair	10 (38.46%)	8 (30.77%)	7.69 ↓
Poor	9 (34.62%)	1 (3.85%)	30.77 ↓
Gambling disorder is defined as			
Betting on occasion with family friends such as poker night or sports bets.	0 (0.00%)	0 (0.00%)	0
Persistent and recurrent maladaptive, problematic gambling behavior that disrupts personal, family, and/or vocational pursuits leading to clinically significant impairment or distress. *	26 (100%)	26 (100%)	0
Unsure	0 (0.00%)	0 (0.00%)	0
What emerging forms of gambling are most popular			

among college students? (Select all)			
Internet Gambling *	20 (37.74%)	25 (47.17 %)	9.43 ↑
Sports Betting *	20 (37.74%)	22 (41.51%)	3.77 ↑
Lottery	6 (11.32%)	5 (9.43%)	1.89 ↓
Horse Betting	3 (5.66%)	1 (1.89%)	3.77 ↓
Unsure	4 (7.55%)	0 (0.00%)	7.55 ↓
What are risk factors for problem gambling or gambling disorder? (Select all)			
Male Gender *	16 (25.00%)	24 (28.92%)	3.92 ↑
Female Gender	1 (1.56%)	1 (1.20%)	0.36 ↓
Athletic Involvement *	7 (10.94%)	18 (21.69%)	10.75 ↑
Emotional Dysregulation *	14 (21.88%)	21 (25.30%)	3.42 ↑
Sensation Seeking *	20 (31.25%)	18 (21.69%)	9.56 ↓
Unsure	6 (9.38%)	1 (1.20%)	8.18 ↓
The prevalence of gambling disorder in college students is five times higher than the prevalence in the general adult population.			
True *	6 (23.08%)	24 (92.31%)	69.23 ↑
False	6 (23.08%)	0 (0.00%)	23.08 ↓
Unsure	14 (53.85%)	2 (7.69%)	46.16 ↓
What conditions co-occur with gambling disorder (select all)			

Substance use disorders *	21 (35.00%)	26 (33.77%)	1.23 ↓
Mood Disorders*	19 (31.67%)	24 (31.17%)	0.50 ↓
Suicidality *	11 (18.33%)	20 (25.97%)	7.64 ↑
Disordered eating*	6 (10.00%)	7 (9.09%)	0.91 ↓
Unsure	3 (5.00%)	0 (0.00%)	5.00 ↓
What are consequences of problem gambling and gambling disorder? (Select all)			
Debt*	26 (31.33%)	25 (25.25%)	6.08 ↓
Poor academic/work performance*	21 (25.30%)	25 (25.25%)	0.05 ↓
Relationship stress*	20 (24.10%)	25 (25.25%)	1.15 ↑
Social isolation*	16 (19.28%)	24 (24.24%)	4.96 ↑
Unsure	0 (0.00%)	0 (0.00%)	0
What is the gold standard epidemiological tool for estimating prevalence of problem gambling globally and can be used to evaluate severity of problem gambling?			
Problem Gambling Severity Index (PGSI) *	4 (15.38%)	22 (84.62%)	69.24 ↑
South Oaks Problem Gambling Screen (SOGS)	0 (0.00%)	1 (3.85%)	3.85 ↑
Gambling Screening and Severity Tool	2 (7.69%)	2 (7.69%)	0
Unsure	20 (76.92%)	1 (3.85%)	73.07 ↓

What treatment focuses on training higher order cognitive processes and aims to strengthen cognitive functioning and problem solving?			
Cognitive Remediation (CR)*	1 (3.85%)	11 (42.31)	38.46 ↑
Computerized Cognitive Training (CCT)	1 (3.85%)	0 (0.00%)	3.85 ↓
Cognitive Enhancements (CE)	8 (30.77%)	13 (50%)	19.23 ↑
Unsure	16 (61.54%)	2 (7.69%)	53.85 ↓
What are some examples of Cognitive Enhancements (CE) used in the treatment of gambling disorder? (Select all)			
Antidepressants*	10 (24.39%)	21 (34.43%)	10.04 ↑
Mood Stabilizers*	10 (24.39%)	22 (36.07%)	12.31 ↑
Opioid Antagonists*	4 (9.76%)	13 (21.31%)	11.55 ↑
Essential Oils	2 (4.88%)	1 (1.64%)	3.24 ↓
I am not sure	15 (36.59%)	4 (6.56%)	30.03 ↓

Note: % Change= Percent Change, *= Correct answer, ↑= Increase in percent change, ↓= Decrease in percent change

Two-Tailed Paired Samples t-Test

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of knowledge of GD pre- and post-interventions scores was significantly different from the zero. The observed effect size, Cohen's d, is large, 1.57. This indicates that the magnitude of the

difference between the pre- and post-intervention average large. The result of the two-tailed paired sample t-test was significant based on the alpha value (α), significance level 0.05, $t(50)=5.6959$, $p < 0.0001$. The *t*-statistic 5.6959, which is not in the 95% region of acceptance, -2.0186 and 2.0186 , indicating the null hypothesis can be rejected. This suggests the difference in the mean scores was significantly different from zero. The results are presented in Table 3. A bar graph of the means is presented in Figure 2.

Table 3

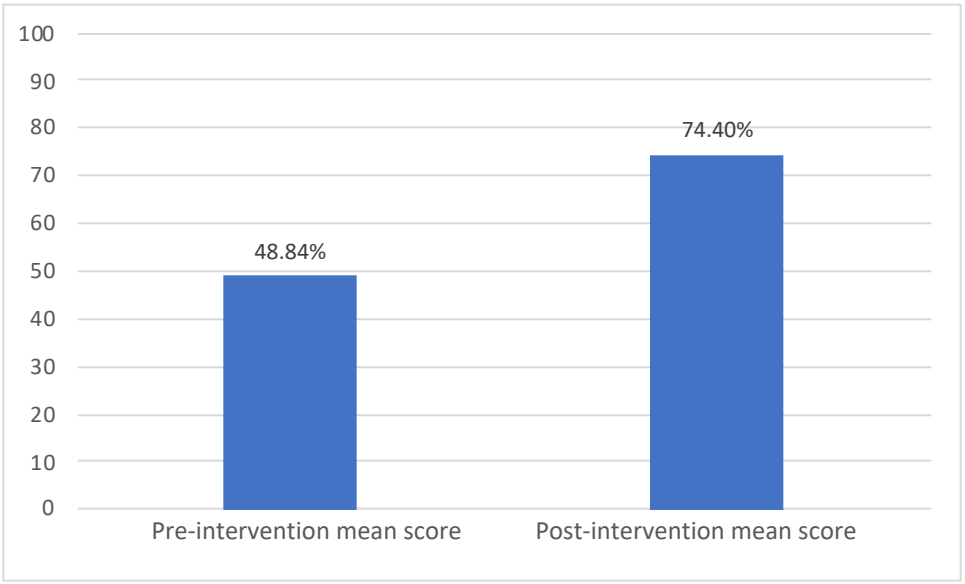
Two-Tailed Paired Samples t-Test for the Difference Between Pre-Intervention and Post-Intervention Knowledge of GD Scores

Pre-intervention		Post-intervention				
M	SD	M	SD	*t*	*p*	*d*
48.84	19.47	74.40	12.02	5.6959	< 0.0001	1.5798

Note: n = 26. Degrees of Freedom for the t-statistic = 50. d represents Cohen's d, effect size.

Figure 2

The Means of Knowledge of GD Pre- and Post-Intervention



Note: Comparison of the pre-test and post-test mean scores, 48.84% and 74.40% respectively.

Attitude

In this QI project, the mean scores for attitude about GD screening and management was 37.50 (SD 27.61) and the post-intervention mean score was 97.12 (10.78). Table 5 indicates that the p-value was < 0.0001, meaning the null hypothesis was rejected. Pre- and post-intervention questions regarding GD attitudes are illustrated in Table 4. There was 15.40 % increase in participants who 'strongly' agree it is worthwhile to screen for GD. The pre-intervention survey responses for self-rated comfort assessing indicators of GD were 11.54%, after the educational intervention participants' self-rated comfort increased with 96.16% reporting 'strongly agree' or 'agree'. Following the educational intervention 92.30% participants 'strongly agreed' or 'agreed' to feeling prepared to ask questions about GD and 100% 'strongly agreed' or 'agreed' they would feel comfortable recommending resources to patients, compared to 23.08% and 26.93% respectively prior to the educational intervention. The percentage of participants' responses to each question about their attitude about GD are illustrated in Table 4.

Table 4

Participant's Attitude about Gambling Disorder Pre- and Post-Intervention Scores

Question	Pre-Intervention	Post-Intervention	% Change
I am comfortable with assessing a person with possible indicators of gambling disorder:			
Strongly agree *	0 (0.00%)	6 (23.08%)	23.08 ↑
Agree *	3 (11.54%)	19 (73.08%)	61.54↑
Neither agree or disagree	6 (23.06%)	0 (0.00%)	23.06↓
Disagree	12 (46.15%)	1 (3.85%)	42.8↓

Strongly disagree	5 (19.23%)	0 (0.00%)	19.23 ↓
It is worthwhile to screen patient for gambling disorder when it is suspected:			
Strongly agree *	7 (26.92%)	11 (42.32%)	15.40 ↑
Agree *	16 (61.54%)	15 (57.69%)	3.85 ↓
Neither agree or disagree	3 (11.54%)	0 (0.00%)	11.54 ↓
Disagree	0 (0.00%)	0 (0.00%)	0
Strongly disagree	0 (0.00%)	0 (0.00%)	0
I feel prepared to ask questions about gambling disorder to patients:			
Strongly agree *	1 (3.85%)	7 (26.92%)	23.07 ↑
Agree *	5 (19.23%)	17 (65.38%)	46.15 ↑
Neither agree or disagree	6 (23.08%)	0 (0.00%)	23.08↓
Disagree	10 (38.46%)	2 (7.69%)	30.77 ↓
Strongly disagree	4 (15.38%)	0 (0.00%)	15.38 ↓
I am comfortable with recommending resources and management options to patients with gambling disorder:			
Strongly agree *	1 (3.85%)	7 (26.92%)	23.07 ↑
Agree *	6 (23.08%)	19 (73.08%)	50.00 ↑
Neither agree or disagree	6 (23.08%)	0 (0.00%)	23.08↓
Disagree	8 (30.77%)	0 (0.00%)	30.77 ↓

Strongly disagree	5 (19.23%)	0 (0.00%)	19.23 ↓

Note: % Change= Percent Change, *= Correct answer, ↑= Increase in percent change, ↓= Decrease in percent change

Two-Tailed Paired Samples t-Test

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of attitude about GD pre- and post-interventions scores was significantly different from the zero. The observed effect size, Cohen's d, is large, 2.84. This indicates that the magnitude of the difference between the pre- and post-intervention average is large. The result of the two-tailed paired sample t-test was significant based on the alpha value (α), significance level 0.05, $t(50)=10.2669$, $p < 0.0001$. The *t*-statistic 10.2669, which is not in the 95% region of acceptance, -2.0358 and 2.0358, indicating the null hypothesis can be rejected. This suggests the difference in the mean scores was significantly different from zero. The results are presented in Table 5. A bar graph of the means is presented in Figure 3.

Table 5

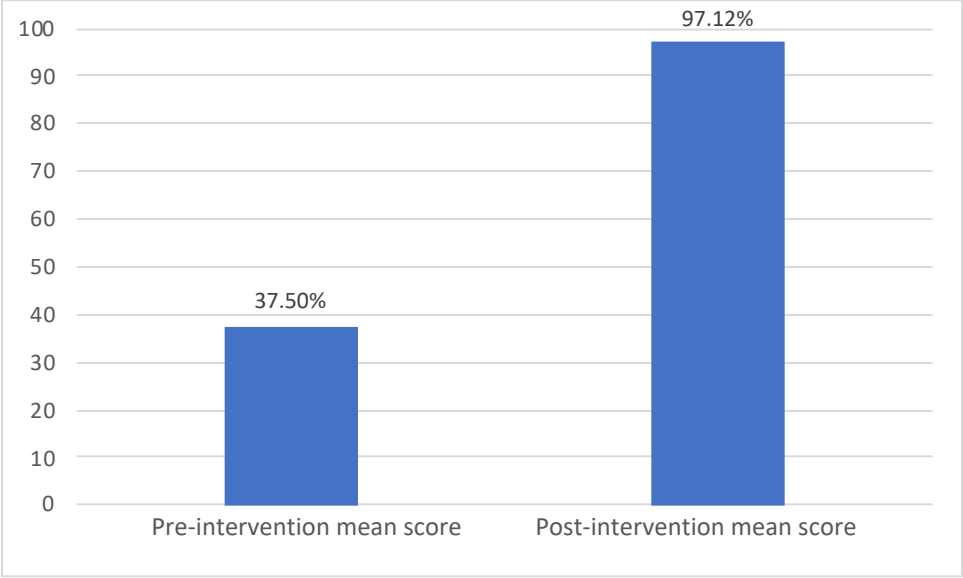
Two-Tailed Paired Samples t-Test for the Difference Between Pre-Intervention and Post-Intervention Attitudes of GD Scores

Pre-intervention		Post-intervention				
M	SD	M	SD	*t*	*p*	*d*
37.50	27.61	97.12	10.78	10.2669	< 0.0001	2.8447

Note: n = 26. Degrees of Freedom for the t-statistic = 50. d represents Cohen's d, effect size.

Figure 3

The Means of Attitudes of GD Pre- and Post-Intervention



Note: Comparison of the pre-test and post-test mean scores, 35.50% and 97.12% respectively.

Behavior

In this QI project, the participants' pre-intervention behavior mean score regarding GD practice behaviors was 8.65 (SD 23.39), however following the educational intervention the mean score was 99.03 (SD 4.90). Pre- and post-intervention questions regarding GD practice behaviors are illustrated in Table 6. Table 7 indicates that the p-value was <0.0001, meaning that the null hypothesis was rejected. When asked if participants had the strategy or skills to further investigate or act on suspicion of GD, only 7.70% responded 'strongly agree' or agree' prior to the educational intervention. Following the intervention 100% responded 'strongly agree' or 'agree' to the same question. Eighty-eight percent of participants reported having the strategy or skills to recommend resources or management options to a patient with GD prior to the intervention. An increase of 11.84% was seen following the intervention with 100% reporting

they ‘strongly agree’ or ‘agree’ to that question. These findings indicate that HCCs would benefit from the educational intervention to improve GD practice behaviors. As noted in Table 6, only 2 participants reported suspecting a patient of having GD after the educational intervention, which is one more participant than prior to the intervention. The percentage of participants' responses to each question about their practice behaviors related to GD screening and management recommendations are illustrated in Table 6.

Table 6

Participant’s Behaviors related to Gambling Disorder Pre- and Post-Intervention Scores

Question	Pre-Intervention	Post-Intervention	% Change
I have the strategy or skills to further investigate or act on suspicion of gambling disorder:			
Strongly agree *	1 (3.85%)	7 (26.92%)	23.07 ↑
Agree *	1 (3.85%)	19 (73.08%)	69.23 ↑
Undecided	9 (34.62%)	0 (0.00%)	34.62 ↓
Disagree	7 (26.92%)	0 (0.00%)	26.92 ↓
Strongly disagree	8 (30.77%)	0 (0.00%)	30.77 ↓
I have enough time to screen a patient I suspect of having gambling disorder:			
Strongly agree *	1 (3.85%)	9 (34.62%)	30.77 ↑
Agree *	2 (7.69%)	16 (61.54%)	53.85 ↑
Undecided	13 (50.00%)	0 (0.00%)	50.00 ↓
Disagree	7 (26.92%)	1 (3.85%)	23.07 ↓

Strongly disagree	3 (11.54%)	0 (0.00%)	711.54↓
I have the strategy or skills to recommend resources or management options to a patient with gambling disorder:			
Strongly agree *	7 (26.92%)	7 (26.92%)	0
Agree *	16 (61.54%)	19 (73.08%)	11.54 ↑
Undecided	3 (11.54%)	0 (0.00%)	11.54↓
Disagree	0 (0.00%)	0 (0.00%)	0
Strongly disagree	0 (0.00%)	0 (0.00%)	0
I have enough time to counsel someone and provide appropriate resources or management options to a patient with gambling disorder:			
Strongly agree *	1 (3.85%)	12 (46.15%)	42.3 ↑
Agree *	1 (3.85%)	14 (53.85%)	50 ↑
Undecided	12 (46.15%)	0 (0.00%)	46.15 ↓
Disagree	8 (30.77%)	0 (0.00%)	30.77 ↓
Strongly disagree	4 (15.38%)	0 (0.00%)	15.38 ↓
I have suspected that a patient of mine has gambling disorder.			
Yes *	1 (3.85%)	2 (7.69%)	3.84 ↑
No	18 (69.23%)	23 (88.46%)	19.23 ↑
Unsure	7 (26.92%)	1 (3.85%)	23.07 ↓

(If yes to question 5) I have responded appropriately and screened the patient for gambling disorder?			
N/A	25 (96.15%)	24 (92.30)	3.85 ↓
Yes *	0 (0.00%)	1 (3.84%)	3.84 ↑
No	1 (3.84%)	1 (3.84%)	0

Note: % Change= Percent Change, *= Correct answer, ↑= Increase in percent change, ↓= Decrease in percent change

Two-Tailed Paired Samples t-Test

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of practice behaviors regarding GD pre- and post-interventions scores was significantly different from the zero. The observed effect size, Cohen's d, is large, 5.35. This indicates that the magnitude of the difference between the pre- and post-intervention average is large. The result of the two-tailed paired sample t-test was significant based on the alpha value (α), significance level 0.05, $t(50)=19.2842$, $p < 0.0001$. The *t*-statistic 19.2842, which is not in the 95% region of acceptance, -2.0512 and 2.0512, indicating the null hypothesis can be rejected. This suggests the difference in the mean scores was significantly different from zero. The results are presented in Table 7. A bar graph of the means is presented in Figure 4.

Table 7

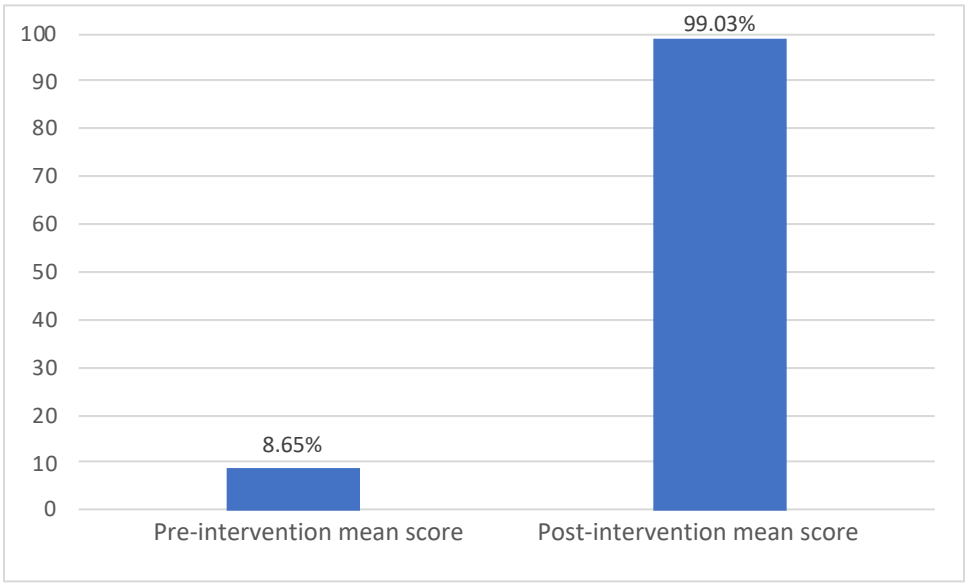
Two-Tailed Paired Samples t-Test for the Difference Between Pre-Intervention and Post-Intervention Behaviors of GD Scores

Pre- intervention		Post-intervention				
M	SD	M	SD	*t*	*p*	*d*
8.65	23.39	99.03	4.90	19.2842	< 0.0001	5.3485

Note: n = 26. Degrees of Freedom for the t-statistic = 50. d represents Cohen's d, effect size.

Figure 4

The Means of Behaviors of GD Pre- and Post-Intervention



Note: Comparison of the pre-test and post-test mean scores, 8.65% and 99.03% respectively.

Discussion

After data analysis, it was clear the most significant changes were seen in the mean scores of attitudes and behaviors with means of 97.12 and 99.03 respectively. This indicates a 59.62% increase in mean attitude scores and 90.38% increase in behavior scores following the educational session. An 85% increase was seen in comfort assessing a person with possible indicators of GD, 15% increase in participants reporting it is worthwhile to screen for GD, 69% increase in participants feeling prepared to ask questions about GD, 73% increase in comfort recommending resources and management options to patients with GD. Post-intervention survey data showed that there was a 92% increase in reported strategy or skills to further investigate suspicion of GD, an 11% increase with all participants reporting having strategy to recommend resources for GD, and 85% and 92% increase in participants reporting they have enough time to

screen for and provide counseling for suspected GD respectively. These findings indicate that HCCs benefited from the evidence-based educational intervention to improve attitudes and practice behaviors related to GD, screening protocols and management options.

A gap in knowledge was identified when analyzing the participants' knowledge about screening tools and management options. The results suggest that while many participants had previous knowledge about GD, possible risk factors, and co-occurring conditions, a majority, 84.61%, of respondents were not able to correctly identify the gold standard epidemiological screening tool. Prior to the evidence-based educational intervention, 100% of participants were able to correctly define GD, 75% were able to identify emerging gambling trends, 90% identified risk factors and 95% correctly selected co-occurring conditions prior to the intervention. When discussing management options, the data displayed that following the educational intervention less than 43% of participants identified the cognitive remediation as a treatment that focuses on training higher order cognitive processes. These findings suggest that although participants were familiar with GD, HCCs may not be aware for screening tools and treatment options available to evaluate for GD and would benefit from additional educational interventions focused on screening protocols and management recommendations.

Limitations

A notable limitation to this QI was the sample size with 26 participants completing pre- and post-intervention surveys in their entirety. Attrition can be attributed to multi-step involvement; participants were required to complete the informed consent, pre-intervention survey, attend the in-person educational session or watch the recorded session, and complete the post-intervention survey. Recruitment emails and flyers were distributed on June 13th, 2023, and

the post-intervention surveys were to be completed by August 11th, 2023. During this time-period there were multiple psychiatric-mental health interns and medical residents who completed rotations within the SHC which also contributed to attrition. Some participants completed the pre-intervention survey but had moved on to their next clinical rotation by the time the educational intervention was held in July 2023. While the online format was a strength, it was also a limitation in this QI project. Some individuals were not comfortable using Qualtrics and therefore may not have started or completed their surveys. The voluntary nature of this QI project had proven to be a limitation, staff members may not have felt motivated to participate in this QI project due to the perceived increase in workload associated with participation. One hundred percent of participants believed it was worthwhile to screen for GD following the educational intervention, but some individuals may not have believed GD is relevant in college health and therefore may not have participated in this QI project. In future evidence-based educational sessions teaching HCCs about GD, it will be beneficial to highlight the benefits and relevance in this population to entice and motivate individuals to participate.

Implications to Practice

Gambling can disrupt physical, social, psychological, and vocational aspects of an individual's life causing poor academic and work performance, financial stress, psychological distress. This QI project provided insight into the knowledge gaps within the SHC of a public university in South Florida. Improvements in HCC knowledge and screening practices can lead to early detection and subsequently prevent the disruptive consequences that are associated with GD including suicidality, social isolation, and severe psychiatric features. College students may not be aware of the negative effects of GD therefore spreading awareness will empower them

stop their gambling behaviors or recognize when they may need help. If students can recognize harmful behaviors that can devolve into GD, they may be encouraged to seek help sooner. Educating HCCs about management options and community resources can allow them to be better equipped to make treatment recommendations and suggest community resources and organizations available to these young adults.

This QI emphasized the importance of GD screening efforts and educational resources that can be utilized by students and HCCs alike. As previously discussed, young adults may not recognize these behaviors as harmful and are therefore unlikely to seek help. In the SHC, students are screened for domestic violence, depression, and anxiety with every physical examination. Changes can be made to include a GD screening question which allows students to be routinely screened and can prevent the under recognition of GD commonly seen in this population. Once a patient is identified as being at risk for having GD, the HCC can provide education and recommend resources available within the community. It is vital that HCCs are prepared to identify problematic gambling behaviors and guide young adults as they navigate college and prevent them from engaging in risky behaviors. As gambling trends evolve, this QI supports continuing educational efforts for HCCs in the college health setting. It is crucial that as technology advances and gambling trends change and expand, HCCs can grow and expand with them. Staying up-to-date and continuing educational sessions throughout the HCC's career will allow them to better serve the patient population they work in and contribute to the impact made in the lives of young adults.

Conclusion

GD has been associated with poor academic and work performance, relationship strain, social isolation, and financial stress. Research suggests around 6-8% of young people having a serious gambling problem globally (Kam et al., 2017). Gambling among college students can occur socially, as seen in sports betting, so students perceive it as a group activity. Young people may not perceive internet gambling to be a problem because it resembles the video games, they grew up playing and may not seek help. Internet gambling is particularly prevalent on colleges campuses and is unique because they have increased freedom, accessibility and can gamble from the privacy of their dorm rooms. Following the evidence-based educational intervention there was an increase in self-reported knowledge, increased perceived strategy in investigating suspected GD and, increased comfort in screening for and recommending management options for college students who screen positively for GD. Despite the prevalence of gambling on campuses, only 22% of college and university campuses have formal policies on gambling and only 7% of administrators reporting receiving in-service education about gambling-related issues (Nowak, 2018). Gambling is becoming more and more pervasive and accessible, and administrators, faculty, and staff must keep up with the rise in gambling on college campuses. To help students with GD to succeed in higher education, it is essential that HCCs working in college health are educated on gambling screening protocols, clinical interventions, and GD organizations.

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Appendix A: Literature Matrix

First Author/Year	Purpose/ Problem/ Objective/ Aims	Study Design	Sample (Setting)	Data Collection Measures	Results	Strengths/ Limitations	Relationship to Project	Level of Evidence/ Quality Ranking
Anderson, A.C., 2021	To evaluate and compare the effects of three cognitive boosting intervention approaches on measures of impulsive action and impulsive choice.	Meta-analysis	A multi-level search was conducted, 2204 unique studies were identified, 60 were included in the full-text review, 16 of which were eligible for the meta-analysis.	This meta-analysis identified studies through PubMed, Scopus and PsycINFO for articles published before December 31st, 2019. Search terms included alcohol use and cognitive training and impulsivity. Participants were adults, age 18 years and over, who were seeking treatment for substance use disorder or gambling disorder and had no past medical history of a co-morbid disorder, bipolar disorder, acquired brain injury, other neurological disorder or intellectual disability. Studies examining the acute effects of treatment such as single intervention and testing session were excluded.	This meta-analysis suggests cognitive remediation, specifically, goal management training, may be an effective treatment for addressing impulsive choice in addiction.	Limitations include small number of pooled studies and risk biases for randomization in computerized cognitive therapy and cognitive remediation studies that pharmacological cognitive enhancers. Despite limitations, this research provides treatment recommendations for gambling.	This meta-analysis can be useful in the development of an evidence-based, educational session for HCCs to provide treatment and management recommendations.	Level I
Goslar, M., 2018	Investigate the efficacy of pharmacological treatments for disordered gambling for reducing global severity, frequency, and financial loss from gambling.	Meta-analysis	A multi-level literature search yielded 34 studies including open-label and placebo-controlled studies totaling 1340 participants.	A multilevel literature search was conducted using the databases PsycINFO, Medline, Psyndex, PubMed, ProQuest Digital Dissertations, the Cochrane Central Register of Clinical Trials, , and the web search engine Google Scholar. Studies were considered for inclusion if they employed pharmacological or combined treatments, used within-group, randomized, or quasi-randomized controlled study designs including placebo intervention, measured specified outcome variables (severity, frequency, or financial loss), reported statistical data for effect size	Results from within-group study designs revealed that pharmacological treatments effectively reduced the severity and financial loss from gambling in the short-term. Results from placebo studies showed that opioid antagonists and mood stabilizers combined with cognitive intervention and lithium for gambling with bipolar disorder showed promising results.	This meta-analysis was limited to a small number of studies, the studies differed in methodological quality, and medication dosage varied among studies. Despite these limitations, results suggest a variety of medication effective in the management of gambling behaviors.	This meta-analysis provides information about gambling management that can guide treatment recommendations in this quality improvement project.	Level I

				calculations. Studies were excluded if the study was a single case study, disordered gambling was secondary to Parkinson's disease or to other medical conditions, study sample overlap, or there was no abstract or full text study available.				
Nowak, D.E., 2018	Gather and synthesize data about the prevalence of both probable pathological and problem gambling among college athletes.	Meta-analysis	A thorough literature review and coding procedure yielded data estimates retrieved from 6 studies conducted between 1987 and 2018, surveying 2,130 college athletes in the United States.	Methodology includes searching for key terms related to gambling, college students, and student athletes in the following databases: PsycINFO, PsycARTICLES, ERIC, SPORTDiscus, MEDLINE and Dissertation Abstracts International (ProQuest). Inclusion criteria included the use of SOGS as the main gambling pathology assessment tool, the articles being published after 1987 which is when the SOGS was introduced, a score of 5 or higher on SOGS, surveyed group includes college athletes between the age of 18-25, and the study took place in a non-clinical setting.	The estimated percentage of probable gambling disorder among the 1,923 college athletes surveyed ranged from 3.80% to 9.40% with the median on 6.20%. An additional 8.97% of these college athletes met the criteria for gambling disorder. This analysis suggests that athletes had somewhat higher rates of disordered gambling than their general college student counterparts.	This meta-analysis was limited to studies that discussed college student-athlete rates of pathological and problem gambling which was limited. There were no international studies that contributed to this data set. At the time, this meta-analysis was the first of its kind resenting an up-to-date proportion of those athletes exhibiting gambling pathology as assessed by the SOGS.	This study provides information about gambling in college athletes and provides recommendations for university administrators, college counselors, faculty and staff, coaches, and areas for future research.	Level I
Barrera-Algarín, E., 2021	Analyze changes in gambling habits and addiction in young people ages 18-30.	Retrospective Study	A sample of 188 online gamblers that were treated in the ACOJER rehabilitation center in Cordoba between March 2015 and March 2019.	Methodology techniques included documentary review and descriptive statistics. They analyzed the ACOJER's intervention records containing information from healthcare clinicians and social workers.	This study results suggest an impact at all levels. Economically, these individuals have debts, using loan services, and credit cards, especially if they can do so via Internet plat- forms. Socially gambling has an impact on their study and work environments. On a personal level, problems were detected such as anxiety, sadness, mood and character changes, irritability, insomnia, and ideas of suicide.	This study explores an emerging form of gambling, online gambling, and its effects on participants. Limitations of this study include the sample being comprised of treatment seeking males in Spain. This study does not provide data concerning the rise and possible impact of advertising.	This study provides information about the effects of online gambling on young people.	Level IV

Caldiera, K.M, 2017	Identify common and unique risk factors for gambling and substance use among young adults.	Longitudinal study	1,019 young adults were surveyed annually for 5 years since entry into college.	Annually, past year frequency was assessed for seven different gambling behaviors and tobacco, alcohol, and other drug use at year 5. The seven different gambling activities were gambling on the Internet, playing cards for money with friends, going to a casino, playing the lottery, betting on sports, betting on horse or dog races, and betting on games of personal skill. Five measures of behavioral inhibition and sensation seeking were assessed year 1. Symptoms of depression and anxiety were assessed year 1using the Beck Depression Inventory and Beck Anxiety Inventory. Parental substance use and mental health history was assessed in year 2 through 5. Extracurricular involvement was also assessed years 2 through 5.	60% of the sample engaged in at least one gambling behavior during the past year. Casino gambling was the most prevalent gambling activity assess followed by playing cards, and betting on sports. Sensation seeking was directly associated with every substance use variable and had additional indirect effects on gambling. There was a direct effect of behavioral dysregulation on more frequent gambling. Individuals who gambled were more likely to be male, athletes, and involved in Greek life.	The results of this study expanded knowledge and understanding of independent and overlapping relationships of several risk factors with substance use and gambling. The study is limited by the cross-sectional nature of the relationships between gambling and substance use variable. This study also did not account for possible of changes to risk factors in different colleges.	Provides insight into the relationships between gambling and substance use and can highlight important differences in the prevention and intervention approaches. The correlation made between gambling and males, athletes, and Greek life can help guide screening for gambling.	Level IV
Dowling, N.A, 2017	Compare the classification accuracy of different gambling screening instruments.	Cross-sectional study	837 participants recruited from eight adult and youth mental health services.	Participants completed an online survey while in the waiting room of mental health services. Participants filled out nine screening tools: the Lie/Bet Questionnaire, Brief Problem Gambling Screen (BPGS), NODS-CLiP, NODS-CLiP2, Brief Biosocial Gambling Screen (BBGS) and NODS-PERC. The Problem Gambling Severity Index (PGSI) was the reference standard.	The optimal brief screening instrument for mental health services wanting to screen only any level of gambling problem is the five item BPGS. If the goal is to screen for only more severe gambling problems the NODS-CLiP or the three item BPGS should be used. Services that can only employ a very brief instrument can use the Lie/Bet questionnaire or the two-item BPGS. The BBGS showed a higher positive predictive value for moderate-risk gamblers.	The findings of this study revealed multiple brief screening tools that could be adopted to improve early identification of gambling-related problems across the continuum of severity. Limitations of this research include a slight overlap between the BPGS instruments and the reference standard, PGSI.	Compares different screening tool and their features to identify which one would be best to employ for the purposes of this project.	Level IV

Dwyer, B. 2017	Explore problem gambling behavior among daily fantasy sports participants.	Cross-sectional study	546 daily fantasy sports participants completed an online questionnaire on Qualtrics.	The questionnaire consisted of 73 items including demographics, motives, gambling perceptions, participatory behavior, and problem gambling severity. Motives were assessed by a Motivational Scale for Fantasy Football Participation. Participants were also asked their level of attachment to NFL football, the amount of chance and skill in the activity, how competitive they would be when competing against 100 other participants, and their preference of fantasy football activities: daily or season-long fantasy football.	This study found gambling behaviors consistent with other forms of online gambling including online poker, horse racing, and sport betting. 38% of the sample indicated a moderate to high risk for problem gambling. Overconfidence and behavioral factors such as the number of lineups entered in a given week, were found to positively predict problem gambling behavior.	This study was limited to a cross- sectional approach, only explored daily fantasy sports participants, only discussed football, and relied on self-reported behavior. Strength from a policy perspective support the need for regulation of fantasy sports and wagering.	This study provides information about sports betting and motives for those participating in fantasy sports.	Level IV
Kam, S.M., 2017	To fill a research gap by providing evidence-based dare on gambling behavior and problem gambling and to identify correlation data to inform preventive measures. Explore if sensation seeking and affect states were associated with gambling.	Cross-sectional study	A sample of 999 Chinese students studying in ten Macau universities and colleges.	A self-administered questionnaire with the following sections: demographics, questions about gambling reasons, gambling frequency, monthly amount wagered, and types of gambling activities preferred in last year, the 9-item Problem Gambling Severity Index (PGSI), sensation seeking assessed by an 8-item Brief Sensation Seeking Scale (BSSS-8), and the Bradburn's Affect Balance Scale (ABS) to assess emotional well-being.	Almost one third of study participants gambled in the past year. 5.3% of participants were problem gamblers. 77.4% of problem gamblers were males and 22.6% were female. The five most frequently reported reasons for gambling were entertainment, killing time, peer influence, affordability due to small stakes, and perceiving gambling as a challenge. Problem gamblers were most fond of seeking sensation compared to the non-problem gamblers, low-risk gamblers, and moderate risk gamblers. Problematic gamblers experienced negative consequences to their emotional well-being compared to non-problematic gamblers. The data confirms that	A limitation of this study was that the research data was collected by convenience sampling strategy, in the future random sample would enhance data representation. Despite that, the survey increased knowledge and understanding about student's gambling involvement.	The data showed sensation seeking as a motive behind gambling, showed a correlation to emotional well-being and demonstrated a correlation between early gambling and gambling severity. This highlights the need for prevention program in adolescence and into college years.	Level IV

					early gambling is negatively correlated to problem gambling severity.			
King, S.M., 2020	Understand the impact of alcohol, gambling, and their combination of both on an individual's health and if personality correlates with who is most at risk for gambling and alcohol problems.	Cross-sectional study	513 undergraduate students at a large Midwestern university. Participants were recruited from an undergraduate psychology course.	Gambling problems were assessed using several questions from the South Oaks Gambling Screen Revised for Adolescents (SOGS-RA). Gambling beliefs were measured using the Gambler's Beliefs Questionnaire (GBQ), a self - reports of gambler's cognitive distortions. The RAND-36 was used to measure health related quality of life functioning by a self-reports rating scale. Personality was measured using the Multidimensional Personality Questionnaire.	Individuals were separated in 4 groups: no problem, alcohol problem, gambling problem, and co-occurrence. The gambling only group had a higher score in luck and perseverance and higher levels of constraint. Gambling was associated with impact to physical health functioning and quality of life. Individuals with co-occurring gambling and alcohol use showed greater negative emotionality relative those with only one. The results suggest a lower functioning among individuals with one of both problems.	Literature discussing gambling and alcohol use is centered on the adult population, this study discusses young adults. This study includes different effects and patterns for various health domains. Limitations of this study include its focus on college students and not representative of fuller population in this age range. The study was not longitudinal and was not able to determine temporal sequencing of problems or functioning in these areas.	Discusses gambling motives, risks, and effect on quality of life. Also discusses the effects of alcohol and gambling together which is important because they tend to occur concurrently.	Level IV
Lostutter, T.W., 2018	Investigate the relationship between money attitudes, gambling behaviors, and disordered gambling severity among college students.	Cross-sectional study	Participants were recruited from an undergraduate research subject pool at a large northwestern university in the United States. A total on 4,014 individuals participated.	Participants completed a brief demographics questionnaire that included their age, birth, sex, sexual orientation, ethnic and racial background, and year in school. A 29-item Money Attitudes Scale was used in this study. Gambling outcomes were assessed using items from the Gambling Quantity and Perceived Norms Scale. Gambling related consequences were assessed using the 23-item Gambling Problem Index. Gambling severity was measured with a modified version of the 20-item SOGS.	Findings suggest power-prestige attitudes toward money may be at risk for gambling involvement and gambling disorder among college students. This study also found that individuals with higher anxiety attitudes about money may view gambling as means of increasing financial security and may persist in gambling. Students who viewed money from a distrustful perspective were more likely to report zero gambling and spent less money gambling.	The research adds to the sparse literature about money attitudes and gambling outcomes in college students. This study supports an association between attitudes about money and gambling frequency, quantity, consequences, and problem severity. Limitations include the cross-sectional study design, the study was not able to determine extent to which money attitudes predict future gambling behavior, and only sampled undergraduate students enrolled in psychology courses at one university.	This study provides insight into the relationship between how students perceive money and their gambling behaviors. This is important because during college, students have more financial responsibility that affects their attitudes towards money.	Level IV

Wang, C., 2020	Examining the moderating factors of gambling to cope with stressful life event in last year and individual impulsivity factors. Examines the relationship between stressful life events and increased negative health outcomes and greater predisposition to various forms of substance use and gambling behavior.	Cross-sectional study	653 students enrolled in 17 different 4-year universities across the United States who scored a three or higher on the South Oaks Gambling Screen (SOGS).	Eligibility criteria included being at least 18 years old and scoring a three or higher on the SOGS. Email invitations were sent out to eligible students. The 20-item Gambling Problem Index was used to assess gambling problems. Gambling frequency was assessed using an item from the Gambling Quantity & Perceived Norms Scale. Items from the Holmes-Rahe Stress Inventory was used to assess for stressful life events. The scale asks respondents to report whether they had experienced a list of 43 life events the last year. The 59-item impulsive behavior scale was used to measure five distinct facets of impulsivity. The 3-item gambling to cope subscale of the Gambling Motives Scale was used to measure gambling to cope as a motive.	A correlation was found between stressful life events and gambling problems in addition to gambling frequency. Gambling to cope was found to have a moderate link between stressful life events and gambling problems. Those who gamble to cope, regardless of impulsivity, may be even more susceptible to experiencing greater gambling problems.	Due to its cross-sectional design, this study could not make causal or directional inferences between stressful life events and gambling problems. Another limitation is that this study was limited to those who scores a 3 or higher on the SOGS. This study demonstrates the importance of researching the impact of stressful life events on young adults and sheds a light on gambling to cope.	This study examined stressful life events, impulsivity, and gambling. College students experience major life stress by starting a new school, change in living condition, changes in social events, starting a new job, changes in friend groups, and change in responsibilities. Understanding the relationship is important when screening for possible gambling behaviors.	Level IV
Lawn, S., 2019	A gap analysis of emerging technologies and trends in gambling	Systematic review of peer-reviewed journal articles	A gap analysis of peer-reviewed literature published since 2015, identifying 116 articles.	Methods included a systematic literature search followed a rapid review methodology. Peer reviewed literature was sourced through searches of the electronic databases Medline, Emcare, PsycINFO, SCOPUS, Web of Science and Proquest. Key search terms related to gambling and technology were used. Inclusion criteria included articles published after 2015 and a focus on gambling and emerging technologies or new trends. Articles were from sources around the globe.	The gap analysis process led to the identification of five priority areas: Internet gambling; video gaming and gambling; electronic gaming machines; advertising; and expansion of the sports betting market. Internet gambling was the most researched emerging technology/trend. A potential for greater problems associated with gambling via mobile/smartphone was identified. This was identified as an area for future research. The challenges of monitoring online gambling activity	Some limitations included the methodology used to search the literature including the omission of literature published prior to 2015 and exclusion of grey literature. There was a possibility for inherent bias by relying on gaps and recommendations made in the reviewed articles that were promoted as important.	This narrative review identified gaps in knowledge and areas of emerging technology. This is important as an educational curriculum is created about the commonly accessed forms of gambling and technology.	Level V

					were noted. Another emerging area of future research is sports gambling.			
Riley, B.J., 2021	Gap analysis of attitudes, risk factors, and gambling behaviors in adolescents and young people.	Systematic review of peer reviewed literature, narrative review	Gap analysis of peer-reviewed articles from January 2015 to August 2020. The 85 articles spanned 23 countries.	A systematic search was conducted of the electronic databases Medline, Emcare, PsycINFO, SCOPUS, Web of Science, and Proquest (Health & Medicine, Social Sciences Collection). Key search terms were related to gambling and different forms of gambling. The inclusion criteria were articles published between 2015 and 2020 with a focus on adolescent/youth gambling and attitudes.	The most frequently associated risk was being male, followed by the attitudes of parents, family, and friends towards gambling, involvement with alcohol and/or other substances, sensation seeking, and poor social connectedness. Other risk factors identified included older age, lower parental education, absence of siblings, lower grades, and lower age when first gambled. Gambling as a means of emotional regulation was seen as a motive.	Research has focused on gambling behavior and prevalence; this review explores attitudes and reasons for gambling. Limitations include omission of articles from before 2015, only peer-reviewed work in English was included, and other sources of information such as books, conferences, and grey literature were not using. A bias may occur from relying on the gaps identified by research teams as important.	This review provides information about gambling, risk factors, attitudes, and behaviors that can better inform screening and practice protocols.	Level V

Appendix B: Gambling Disorder HCC Survey

Unique Code Identifier (Fathers birthday (MMDD) and the first three letters of your mother's maiden name) _____

Informed Consent (shown prior to completion of survey)

- ☐ By completing this survey, I attest that I have completed the informed consent form for participation in this QI improvement project. I understand that I can withdraw consent at any time during this QI improvement project. The risks and benefits associated with participation have been explained to me and I understand them.
- ☐ I do not consent to participation in this QI and therefore will not be completing this survey.

<u>Demographics</u>

1. Male Female I prefer not to say.
2. Age 20-30 31-40 41-50 51+
3. Ethnicity

   Hispanic or Latino White or Caucasian Black or African American

   Asian Other I prefer not to say
4. Position in Facility
   a) Medical Doctor
   b) Psychologist / Psychotherapist
   c) Nurse Practitioner
   d) Registered Nurse

e) Medical Assistant

f) Patient Access Representatives

g) Health Educator

h) Other

5. Years of Experience in Medical Field

   Less than 1 year 1 – 5 years

   5 – 10 years 10 – 20 years More than 20 years

Knowledge

1. Self- rated knowledge about gambling disorder, risk factors, screening protocols, and management

   Excellent Good Fair Poor

2. Gambling disorder is defined as

   a) Betting on occasion with family friends such as poker night or sports bets.

   b) Persistent and recurrent maladaptive, problematic gambling behavior that disrupts personal, family, and/or vocational pursuits leading to clinically significant impairment or distress. *

   c) I am not sure.

3. What emerging forms of gambling are most popular among college students?

   a) Internet / Online gambling *

   b) Sports betting *

   c) Lottery

   d) Horses

e) I am not sure.

4. What are risk factors for problem gambling or gambling disorder? (select all)
    a) Male gender *
    b) Female gender
    c) Athletic involvement *
    d) Emotional Dysregulation *
    e) Sensation seeking *
    f) I am not sure.
5. The prevalence of gambling disorder in college students is five times higher than the prevalence in the general adult population.
    a) True *
    b) False
    c) I am not sure.
6. What conditions co-occur with gambling disorder (select all)
    a) Substance use disorders *
    b) Mood disorders (anxiety, depression, bipolar disorder) *
    c) Suicidality (ideation, attempts, and completed suicide) *
    d) Disordered eating *
    e) I don't know.
7. What are consequences of problem gambling and gambling disorder?
    a) Debt *
    b) Poor academic/work performance *
    c) Relationship stress *

d) Social isolation *

e) I am not sure.

8. What is the gold standard epidemiological tool for estimating prevalence of problem gambling globally and can be used to evaluate severity of problem gambling?

a) Problem Gambling Severity Index (PGSI) *

b) South Oaks Problem Gambling Screen (SOGS)

c) Gambling Screening and Severity Tool

d) I am not sure.

9. What treatment focuses on training higher order cognitive processes and aims to strengthen cognitive functioning and problem solving?

a) Cognitive Remediation (CR) *

b) Computerized Cognitive Training (CCT)

c) Cognitive Enhancements (CE)

d) I am not sure.

Attitude

1. I am comfortable with assessing a person with possible indicators of gambling disorder:

Strongly agree Agree Undecided Disagree Strongly Disagree

2. It is worthwhile to screen patient for gambling disorder when it is suspected:

Strongly agree Agree Undecided Disagree Strongly Disagree

3. I feel prepared to ask questions about gambling disorder to patients:

Strongly agree Agree Undecided Disagree Strongly Disagree

4. I am comfortable with recommending resources and management options to patients with gambling disorder:

   Strongly agree Agree Undecided Disagree Strongly Disagree

Behaviors

1. I have the strategy or skills to further investigate or act on suspicion of gambling disorder:

   Strongly agree Agree Undecided Disagree Strongly Disagree
2. I have enough time to screen a patient I suspect of having gambling disorder:

   Strongly agree Agree Undecided Disagree Strongly Disagree
3. I have the strategy or skills to recommend resources or management options to a patient with gambling disorder:

   Strongly agree Agree Undecided Disagree Strongly Disagree
4. I have enough time to counsel someone and provide appropriate resources or management options to a patient with gambling disorder:

   Strongly agree Agree Undecided Disagree Strongly Disagree
5. I have suspected that a patient of mine has gambling disorder:

   Yes No Unsure
6. *(If yes to question 5)* I have responded appropriately and screened the patient for gambling disorder?

   N/A Yes No

Appendix C: Informed Consent Form

CONSENT FORM

Improving Gambling Disorder Screening and Management in College Health Settings: A Quality Improvement Project

Hello, my name is Ariel Fuentes. You have been chosen to participate in a quality improvement project for Florida International University's Student Health Clinics.

PURPOSE OF THE PROJECT

The purpose of this quality improvement project is to determine the impact of an evidence-based educational seminar in improving knowledge, attitudes, and behaviors related to gambling disorder screening protocols and management in a college health setting.

NUMBER OF PARTICIPANTS

If you decide to participate in this project, you will be one of approximately 40 staff members at Florida International University's Student Health Clinics that have been selected for this quality improvement project.

DURATION OF THE PROJECT

This project will run for about 4 months. Participation in this study will take about 1 hour of your time. This will include completion of the pre and posttest questionnaires (i.e. 5-10 minutes each), and one classroom-style educational session.

PROCEDURES

If you choose to participate in the project, I will ask you to do the following things:

1. Complete the pre-test questionnaire.

2. Attend an educational session that will be 20 to 30 minutes long.

3. Complete the post-intervention questionnaire (i.e., four weeks) after participation in the intervention.

RISKS AND/OR DISCOMFORTS

There are no foreseeable risks for participating in this study and participation in the project will not interfere with normal office performance.

BENEFITS

There are various foreseeable benefits for participation including improvement of participant knowledge, attitudes, and behaviors surrounding gambling disorders, risk factors, screening protocols and management. Participants will be able to implement information learned during the evidence-based educational session into their clinical practice to identify gambling disorder and provide appropriate management recommendations. This QI is expected to benefit society by guiding clinicians in accurate identification and intervention of gambling disorder in

college-aged students. This would ultimately improve the treatment and outcomes for this population in the society.

ALTERNATIVES

There are no known alternatives available to you other than not taking part in this study. Any significant new findings developed during the course of the project which may relate to your willingness to continue participation will be provided to you.

CONFIDENTIALITY

The records of this project including the pretest and posttest questionnaire will be kept private and will be protected to the fullest extent provided by law. In any sort of report, we might publish, we will not include any information that will make it possible to identify you. Research records will be stored securely, and only the project team will have access to the records. However, your records may be inspected by authorized University or other agents who will also keep the information confidential.

USE OF YOUR INFORMATION

Your information collected as part of the project will not be used or distributed for future research studies even if identifiers are removed.

COMPENSATION AND COSTS

There is no cost or payment for participating in this project.

RIGHT TO DECLINE OR WITHDRAW

Your participation in this project is voluntary. You are free to participate in the project or withdraw your consent at any time during the project. You will not lose any benefits if you decide not to participate or if you quit the project early. The investigator reserves the right to remove you without your consent at such time that he feels it is in the best interest. Please carefully read the entire document before agreeing to participate. You may keep a copy of this form for your records.

INVESTIGATOR CONTACT INFORMATION

If you have any questions about the purpose, procedures, or any other issues relating to this quality improvement project you may contact STUDENT NAME AND PHONE #AND EMAIL ADDRESS; or Dr. Deana Goldin at (305) 348-2958, degoldin@fiu.edu.

IRB CONTACT INFORMATION

If you would like to talk with someone about your rights of being a subject in this quality improvement plan or about ethical issues with this project, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT

I have read the information in this consent form and agree to participate in this project. I have had a chance to ask any questions I have about this project, and they have been answered for me. I understand that I will be given a copy of this form for my records.

_____ _____

Signature of Participant Date

Appendix D: Recruitment Letter

Dear Member of FIU Student Health Services,

My name is Ariel Fuentes, and I am a student from the Doctor of Nursing Practice program at Florida International University. I am writing to invite you to participate in my quality improvement project about gambling disorder screening protocols and management in college aged individuals. You are eligible to participate in this quality improvement project by working at FIU's Student Health Services.

Participation is completely voluntary. There will be no costs associated with participation. There will be no compensation offered for participation. If you decide to participate in this project, you will be asked to complete a pre-test questionnaire, attend a brief evidence-based educational session, and complete a post-test questionnaire. Questionnaires are expected to take between 5-10 minutes to complete and the educational session is expected to take approximately 20-30 minutes.

If you would like to participate, please click on the links provided to complete the informed consent forms electronically and access the pre-test questionnaire. If you have any questions about this study, do not hesitate to contact me at afuen060@fiu.edu.

Informed consent form: https://fiu.qualtrics.com/jfe/form/SV_24TfgSQd0iLQFJI
Pre-survey: https://fiu.qualtrics.com/jfe/form/SV_1AjgymTZHQW1kLY
Recorded Presentation:
https://www.dropbox.com/s/h41jj7zx511onx6/Gambling%20Disorder%20AFuentes.mp4?dl=0
Post-survey: https://fiu.qualtrics.com/jfe/form/SV_0PABzGqJLmmaxhk

The in-person educational seminar will be taking place on July 13th, 2023, at 9am in SHC 230.

Thank you,

Ariel Fuentes APRN, FNP-BC

Appendix E: Recruitment Flyer

Appendix F: Letter of Support

Letter of Support

Date: 04/05/2023
Deana Goldin, PhD, DNP, APRN
Clinical Assistant Professor
Nicole Wertheim College of Nursing & Health Sciences Florida International University

Dear Dr. Goldin:

Thank you for inviting Florida International University's Student Health Center to participate in the DNP Project of Ariel Fuentes. I understand that this student will be conducting this project as part of the requirements for the Doctor of Nursing Practice program at FIU. After reviewing the proposal of the project titled "Improving Gambling Disorder Screening and Management in College Health Settings: A Quality Improvement Project" I have warranted her permission to conduct the project in this company.

Education of clinicians has been shown to be one of the most effective strategies to improve the screening and diagnosis of various conditions and illnesses. This proposed quality improvement project seeks to investigate and synthesize the latest evidence on educational interventions for clinicians to improve and increase the identification problematic gambling in college students. There is clearly a need for a quality improvement that will consolidate all the available information on strategies to effectively identify problematic gambling in college students.

We are understanding that the project will be develop in our setting and will occur for about 4 months. We are also aware of our department participation in supporting the student to complete this project, including warrant the student access to our Primary Care Offices, give written consent, deliver the pre-test questionnaire, provide the educational intervention and two weeks after providing the posttest to the recruited participants. We will provide a peaceful environment to safeguard our participant privacy as well as adequate area to conduct the educational teaching. The educational intervention will be classroom format and will last 45 to 60 minutes. Any data collected by Ariel Fuentes will be kept confidential.

We expect that Ariel Fuentes will not interfere with the normal office performance, behaving in a professional manner and following the office standards of care. As the Office Manager of Student Health Center, I support the participation of our primary care department in this project and look forward to work with you.

Sincerely,

Lourdes Diaz-Bergouignan RN

Lourdes Diaz-Bergouignan, RN
Nurse Manager, FIU Student Health Clinic

Appendix G: IRB Exemption Approval

FIU | FLORIDA INTERNATIONAL UNIVERSITY

Office of Research Integrity
Research Compliance, MARC 414

MEMORANDUM

To: Dr. Deana Goldin
CC: Ariel Fuentes

From: Maria Melendez-Vargas, MIBA, IRB Coordinator 

Date: May 10, 2023

Protocol Title: "Improving Gambling Disorder Screening and Management in College Health Settings: A 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-23-0243 **IRB Exemption Date:** 05/10/23
TOPAZ Reference #: 113134

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.

MMV/em