Examining Factors Predictive of On-Campus Mental Health Services Utilization Among Collegiate Athletes

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EXAMINING FACTORS PREDICTIVE OF ON-CAMPUS
MENTAL HEALTH SERVICES UTILIZATION
AMONG COLLEGIATE ATHLETES

By

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A DISSERTATION
Submitted in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Philosophy
(in Education)

The Graduate School of Education
The University of Maine
May 2022

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EXAMINING FACTORS PREDICTIVE OF ON-CAMPUS MENTAL HEALTH SERVICES UTILIZATION AMONG COLLEGIATE ATHLETES

By Margo Diamond

Dissertation Advisor: Dr. Elizabeth J. Allan

An Abstract of the Dissertation Presented in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy (in Education) May 2022

Objective: Collegiate-athletes are vulnerable to mental health disorders, such as anxiety and depression, yet very little is known about what variables might predict the use of on-campus mental health services among them. The purpose of this study was to investigate the utility of Andersen’s Behavioral Model (ABM) in predicting the use of on-campus mental health services by student-athletes using data from the Spring 2019 American College Health Association’s National College Health Assessment IIc (ACHA-NCHA IIc). Participants: The sample consisted of college student participants in the Spring 2019 administration of the ACHA-NCHA IIc survey (n= 67,973) with 3,536 students who reported participating in “varsity” level college athletics in the previous 12 months. Methods: The ABM enabled selection of predisposing, enabling, and need predictor variables utilizing the Spring 2019 ACHA-NCHA IIc survey. Analyses were conducted individually and collectively using descriptive statistics, Chi-squares, and logistic regressions to test for differences in use of on-campus mental health services. Results: Use of on-campus mental health services was similar between college student athletes and their non-athlete peers. Results indicate that the Andersen Model is a useful model for framing the relationship between use of on-campus mental health services among college student-athletes and the
ABM variables. Need factors were more likely to predict use of mental health counseling services while Enabling variables were the least likely to predict these impacts. Comparisons pointed to heightened risks for the subgroups of Latinx, Native American/Native Hawaiians, males, heterosexuals, those attending public colleges and universities, and first year student-athletes for being the least likely to utilize on-campus mental health services. **Conclusions:** Findings in this investigation have implications for prevention, practice, and future research and warrant increased attention and targeted outreach to those student-athletes recognized for being most at-risk for not accessing on-campus mental health services. A multifaceted approach that decreases stigma and improves attitudes towards utilizing on campus mental health services could have the most meaningful effect on encouraging service use and bolstering student-athlete mental wellness. Results make the case for adopting an inclusive lens across demographic and organizational culture variables when conceptualizing mental health risk and resilience among student-athletes.
DEDICATION

I dedicate this dissertation in Education to the remembrance of my beloved grandmother Mary Okugawa Ujifusa. My grandmother was the valedictorian of her pre-war high school class in Colorado during a time of rampant anti-Japanese sentiments in the United States. On graduation day, her high school principal announced he was not going to allow “some Jap” to deliver her valedictory speech. A marvel of strength, courage, and intelligence, my grandmother was known for standing up for social justice issues and for devoting her energy and resources to the education of her children and grandchildren.

I also dedicate this work to my sons Luke and Chase. May your great-grandmother’s commitment to education and the memory of “mommy writing her paper” help encourage you to work hard in pursuit of your education, and for all you aspire to achieve.
ACKNOWLEDGEMENTS

Thank you to my advisor, Dr. Elizabeth Allan, and University of Maine professors Dr. Kathleen Gillon and Leah Hakkola for guiding me in this process and keeping me on track. Thank you Dr. Adam Howard, Dr. Katherine Cunningham, and Dr. Tarja Raag for serving, and for all the mentoring and inspiring encouragement you provided throughout the entire journey- I would not have made it without you. I would also like to thank Dr. Susan Gardner, Dr. Paige Clarke MacDonald, Dr. Erin Croddick Avery, Dr. Dan Kroger, and Lori Travis for your time, expertise, and aid. Thank you to my family for your love, patience, and support.

I am grateful to the American College Health Association for providing and approving the use of this dataset: American College Health Association-National College Health Assessment, Spring 2019. The opinions, findings, and conclusions presented/reported in this article/presentation are those of the author(s), and are in no way meant to represent the corporate opinions, views, or policies of the American College Health Association (ACHA). The ACHA does not warrant nor assume any liability or responsibility for the accuracy, completeness, or usefulness of any information presented in this article/presentation.
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CHAPTER 1

INTRODUCTION

There is a mental health crisis in collegiate athletics (Cutler & Dwyer, 2020; Neal et al., 2013; Rao et al., 2015; Wolanin et al., 2016). The National Collegiate Athletic Association (NCAA) has made student-athlete mental health care and supporting student-athlete mental wellness a top priority (Galli et al., 2014; Neal et al., 2013; Ashwin L. Rao & Eugene S. Hong, 2016; Wolanin et al., 2016) with Brian Hainline, Chief Medical Officer of the NCAA stating that mental health is the top concern in athletics, and that treatment should be viewed as important as an athlete having a serious musculoskeletal injury (Rahman, 2016). In a 2018 survey, approximately 87% of college student athletes said they felt “overwhelming anxiety” in the past 12 months (ACHA, 2018) while 21% of males and 28% of females across surveys from 2008 – 2012, reported they were suffering from depression (Brown et al., 2014).

Student-athletes have been reported to be at even greater risk to experience mental health illnesses than the overall student population (Wolanin et al., 2016) due in part to the stress of the additional time commitments and pressure to perform at a high level from coaches, fans, family members, or themselves (Carr & Davidson, 2015; Egan, 2019). To exacerbate this problem, student-athletes have been reported to be even more reluctant than their non-athlete peers to disclose a mental health concern and to seek mental health counseling (Brown et al., 2014; Sudano et al., 2017). This may be due to an ongoing stigma within sports that tend to minimize mental illnesses or psychological distress because of the expectations of strength, stability, and mental toughness inherent in the sports culture (Moreland et al., 2018). As a result, student-athletes often avoid disclosing a mental health concern, especially if the perceived negative
consequence includes being rejected by teammates or coaches due to the disclosure (Proctor & Boan-Lenzo, 2010; Wolanin et al., 2016). In many ways, this stigma further exacerbates the problem of student-athlete mental health as it inhibits effective dialogue, education and development of resources to address these issues (Carr & Davidson, 2015) and could have an adverse impact on a student’s academic outcomes and college retention (Bruffaerts et al., 2018; Lederer et al., 2020).

Poor mental health in college students is associated with lower GPAs, higher dropout rates, and negative social outcomes such as lower rates of self-efficacy, motivation, concentration, time management skills, and ability to connect with peers (Ketchen-Lipson et al., 2019; MacPhee et al., 2021). When left untreated, it also increases the risk for developing suicidal ideation (Rao et al., 2015). In a nine-year study of NCAA athlete deaths, suicide represented 35 of the 477, or 7.3% of deaths in collegiate student-athletes (Rao et al., 2015). In the spring of 2022, high-profile student-athlete suicides of Stanford soccer player Katie Meyer, University of Wisconsin track and field and cross country athlete Sarah Shulze, James Madison University softball player Lauren Burnett, and SUNY Binghamton lacrosse player Robert Martin, echo the heartbreaking previous literature on student-athletes taking their own lives including Washington State quarterback Tyler Hilinks in 2018, University of Pennsylvania cross-country athletes Madison Holleran in 2015, and The Ohio State University football player Kosta Karageorge in 2014. These tragic suicides place a spotlight on the mental health epidemic in college athletics and emphasize the importance of conducting more research to better predict who might not be getting the mental health help they may need (Born, 2016; Cutler & Dwyer, 2020; Rao, 2018).
The most common location of where college students utilize mental health services is on campus (LeViness et al., 2019; Lipson et al., 2019). In 2019, a study of 562 counseling centers found that the most frequent concerns of students who received counseling were anxiety (60.7%), followed by depression (48.6%), stress (47.0%), family concerns (29.0%), relationship problems (27.0%), academic performance difficulties (26.2%), sleep disturbance (17.7%), social isolation/loneliness (17.5%), trauma (17.2%), adjusting to a new environment (17.0%), suicidal thoughts (14.4%), and eating/body image concerns (13.6%) (LeViness et al., 2019). While there are other types of mental health services such as seeing off-campus therapists, sports psychologists, religious leaders, and community-based therapists, the use of on-campus services will be the focus of my study and used to explore student-athlete trends in mental health service utilization.

Student-athletes are not monolithic, of course, and therefore neither are their behaviors in utilizing mental health services making it important to find a way to predict who might be most at risk for not utilizing the mental health services offered on-campus. Most of the literature on student-athlete mental health issues is drawn from qualitative studies conducted on single campuses, many of which have small sample sizes. A large, multi-campus, quantitative study to explore the mental health services utilization of today’s diverse student-athlete population and testing a model that might predict what subgroups are least likely to utilize mental health services fills a gap in the literature and provides insight on how to better support the mental well-being of student-athletes (Anderson & McCormack, 2010; Collins, 2015; Steele et al., 2020; Sudano et al., 2017). The goal of this study is to identify variables that can predict mental health utilization behaviors of student-athletes in hopes of helping them reach their full academic, social, and athletic potential. The aim is to provide insights to athletic departments and on-
campus mental health services centers that will guide more targeted outreaches to student-athletes who may be most at risk for not utilizing mental health services when in need.

**Theoretical Model: Andersen Behavioral Model of Health Services Utilization (ABM)**

The ABM was chosen for this study as it was designed to promote equitable access to health services, explain disparities between the need for care and the amount of health care received, and examine socio-cultural variables such as demographics, social structures, and health beliefs, to predict how health care is used differently among groups (Andersen, 1968; 1995). This research model was originally designed by Ronald M. Andersen, a health services professor at UCLA in 1968, to guide an understanding of what predicts health care services utilization within a population (Andersen, 1995) making it a promising fit for predicting the on-campus mental health services use by student-athletes. In health services research, the ABM is the most frequently cited model of healthcare service utilization and is one of the most widely used models in the health services field to predict health services use (Fortin et al., 2018; Guilcher et al., 2012; Von Lengerke et al., 2014). Different versions of the ABM have evolved over the years and have been used across an array of disciplines to explore and predict health care utilization and behaviors including mental health services (Lederle et al., 2021).

The ABM has been used to predict college students’ use of on-campus mental health services using an earlier version of the 2014 and 2015 American College Health Association-National College Health Assessment II (ACHA-NCHA II) survey data (Pilar et al., 2020) but did not focus on the sub-population of student-athletes. It has been applied in mental health and across health services research for different target groups including the study of alternative medicine (Fouladbakhsh & Stommel, 2007), to focus on specific diseases such as spinal cord injuries (Guilcher et al., 2012), to examine caregiving settings (Chong & Ho, 2018) and for
specific target groups of vulnerable populations such as homeless people (Gelberg et al., 2000). The ABM suggests that the utilization of healthcare services is determined by three kinds of variables a) Predisposing, b) Enabling, and c) Need on both contextual and individual levels (Andersen & Newman, 2005; Andersen, 1995). These categories are represented in the ACHA-NCHA IIc survey questions.

**Figure 1.**

![Andersen's Behavioral Model of Health Services Use](image)


**Overview of Study**

This study was a non-experimental, quantitative analysis of the Spring 2019 American College Health Association-National College Health Assessment IIc (ACHA-NCHA IIc), a web-based survey of 67,972 participants, including 3,536 varsity student-athletes (ACHA, 2020). The
ACHA-NCHA IIc survey included approximately 300 questions assessing student health-related behaviors, habits, and beliefs. I applied to the ACHA and received the data for 11 of those questions (see Appendix A). Variables from this data set were applied to the Predisposing, Enabling, and Need categories of the ABM. The purpose of this study was to examine how much predictive power the ABM has relative to on-campus mental services use by varsity student-athletes. The goal was to strengthen the creation of pathways to more formalized mental health services for student-athletes in need.

The goal of this study is to examine reported on-campus mental health services use by college varsity student-athletes in relation to Predisposing variables in the ABM further outlined in Chapter 3. An understanding of these patterns may inform stakeholders about which factors might predict use of on-campus mental health services, which student-athlete populations may need more targeted mental health support, and which demographic subgroups may be more or less likely to underutilize such support (Smith, 2017).

The following questions guided my study:

1. Does the use of mental health services differ between athletes and their non-athlete peers?
2. Are there associations between race, gender, sexuality, and academic year, and other Predisposing, Enabling, and Need variables, with the use of on-campus mental health services among collegiate varsity student-athletes?
3. How much predictive power do the Predisposing, Enabling, and Need variables in the Andersen Behavioral Model have relative to the use of on-campus mental health services by student-athletes?
While there are investigations examining the use of mental health services by college
students by race (Rosenthal & Wilson, 2008), gender (Mackenzie et al., 2006), and sexual
orientation (Baams et al., 2018; Dunbar et al., 2017) there is a lack of research examining if such
demographic variables are associated with, or can even predict, the utilization of mental health
services.

**Key Terms**

For the purpose of this study, *on-campus mental health services* refers to any mental
health counseling, or other services and resources on-campus that promote the maintenance of
mental well-being (Gellman & Turner, 2013). The term *student-athlete* refers to students who
self-selected in the survey that in the past 12 months they had participated in a varsity sport.

*Race* is a category of people that share distinctive physical traits, typically associated
with biology and similar characteristics such as skin color (Delgado & Stefancic, 2017). For
many people of color, their racial and ethnic identities are a central aspect to who they are
(Alfaro et al., 2006; Sellers et al., 1998). *Ethnicity*, however, is a cultural and ancestral construct
often reflected in one’s beliefs, values, and traditions, which includes one’s worldview,
language, spiritual, or religious traditions (Helms & Cook, 1999; Markus, 2008; Smedley &
Smedley, 2005). Race and ethnicity are constructs that fabricate meaning, shape attitudes, and
generate pride, as well as undergird prejudice, beseech discrimination, and spawn inequality
(Markus, 2008). Race and ethnicity may also govern comfort levels and social acceptance of
mental health topics and receiving mental health (Mojtabai et al., 2011; Ojeda & McGuire,
2006). The term race is used primarily in this study.

While there are many racial identities, the literature focuses primarily on the racial
categories *Black, Latinx, and White*. For the purposes of this study, the categorical definitions of
Black, Latinx, and White will be used to align with current cultural understandings of race in collegiate culture.

*Gender* and *sex* are often conflated in the literature. According to the American Psychiatric Association (2021), gender has two components: gender identity and gender expression. Gender identity is a person’s internal sense of being a man, woman, gender queer, or another gender. Gender expression is what is conveyed by appearance, behaviors, and personality styles and is often expressed on a continuum from *masculine* to *feminine*. According to Haidari et al. (2016), gender is socially constructed and refers to the attitudes, feelings, and behaviors that a given culture associates with a person's biological sex. I will use the terms *female* and *woman* and *male* and *man* interchangeably to reflect the literature. Gender can be misunderstood as binary (e.g., man/woman), but there are other gender terms within the scope of gender such as trans-gender and non-binary/ non-conforming (Heidari et al., 2016).

*Transgender* is currently the most widely accepted term to describe those individuals who identify as a gender different than their sex designated at birth (Beemyn & Rankin, 2016; Moser & Devereux, 2019). While I use the term transgender throughout this paper, I acknowledge that others adopt different terminology such as gender non-conforming, genderqueer, bigender, gender, among others. Recognizing the variety of terms that are used, I chose transgender because of its popular use in the literature. About one third of transgender individuals identify as non-binary (Matsuno & Budge, 2017). Those who are *nonbinary* are distinct from transgender in that they typically report that their gender identity or their gender expression fall outside the traditional male–female binary. For example, one who is nonbinary may identify as both male and female or neither male nor female (Diamond, 2020).
Sexual orientation is a part of an individual’s identity that includes one’s attraction, both sexual and emotional, to another person, as well as the resulting behavior and social affiliations that stem from this attraction (Baams et al., 2018). Some examples of sexual identities are lesbian, gay, heterosexual, straight, asexual, bisexual, queer, polysexual, and pansexual, which can also be called multi-sexual and omni-sexual (Baams et al., 2018). The terms sexual orientation, sexuality, sexual preference, sexual identity, and sexual orientation identity also exist in the literature. The term queer to can be used as an encompassing label for lesbian, gay, bisexual, intersex, and queer-identified people and to represent gender-diverse people more effectively to reinforce identity categories and the politics that surround (Kolker et al., 2020). While the term “queer” is being employed with greater frequency in research, it is a contested term with debates as to how it should be used and as to what it refers (Ball, 2013). For the purposes of this study, the term queer will be used as an umbrella term for sexual identities including lesbian, gay, bisexual, and other sexual identities not considered heterosexual.

Anxiety is the most common type of mental health illness and occurs when a general fear or worry, or the fear of failure, is so intense it affects a person’s ability to function (Stock & Levine, 2016). Depression is a common mental health illness that negatively affects how one feels, thinks, and acts, with symptoms that may include: sadness, anger, and anhedonia, a lack of interest or pleasure in daily activities, weight loss or gain, insomnia or excessive sleeping, lack of energy, the inability to concentrate, feelings of worthlessness or excessive guilt, and/or recurrent thoughts of death or suicide (Schatzberg & Nemeroff, 2017). Stigma is a discrediting attribute for one who possesses what is opined to be an undesirable difference or deviance.

In Chapter Two, I provide an overview of the literature related to this study. In Chapter Three, I describe the research design and methods that were used to conduct the study. In
Chapter Four, I present the results of the descriptive, Chi-square, and logistic regression analyses before discussing the key findings, limitations, contribution to the literature, and implications for future research and practice in Chapter Five.
CHAPTER 2
LITERATURE REVIEW

The purpose of this chapter is to provide an overview of literature related to college student-athletes’ mental health and variables that may predict and prevent them from utilizing help. First, I review the literature relative to the nature and extent of depression and anxiety, the most common mental health illnesses diagnosed in the general college student population and in student-athlete populations (MacPhee et al., 2021; Armstrong et al., 2015). Then, I review current literature about the underutilization of campus professional mental health services by college students and the barriers that may prevent student-athletes from utilizing professional mental health services offered on-campus. Following, I address the literature on demographic variables such as gender, sexual orientation, and race with student-athletes’ mental health help utilizing behaviors. I also reviewed literature on the reliability and validity of the ACHA-NCHA IIc data set as well as the ABM and its proven track record of predicting mental health services use. I concluded by outlining gaps in the current literature.

Anxiety and Depression Escalating on Campus

Anxiety and depression have been on the rise in the overall U.S. college population (Blanco et al., 2008; Bruffaerts et al., 2018; Eisenberg et al., 2013; Gallagher, 2015; Lipson et al., 2019; Schwartz & Kay, 2009) particularly in college students (Beiter et al., 2015; Gill, 2008; MacPhee et al., 2021; Mahmoud et al., 2012). According to the American College Health Association, 66% of college students reported overwhelming anxiety at some point during the last year, 56% reported feelings of hopelessness, 45% felt so depressed it was difficult for them to function, 71% felt very sad, and 13% seriously considered suicide (ACHA, 2019). Anxiety and depression have been associated with reduced levels of college students’ social engagement...
lower rates of self-efficacy, motivation, concentration, and time management skills (Collins & Mowbray, 2005; Megivern et al., 2003), and lower academic performance (Eisenberg et al., 2007; Salzer, 2012).

Whether a student attends a full-time, four-year, residential, or community college, the college years are a time when students are susceptible to the development or exacerbation of already present mental health illnesses (Hernández-Torrano et al., 2020). These years generally coincide with transitional experiences and new challenges such as making independent decisions about their studies and their lives, interacting with a diverse range of new people, distancing themselves from their homes and support networks for the first time (Byrd & McKinney, 2012; Cleary et al., 2011; Ketchen-Lipson et al., 2015), managing an increased academic workload, and navigating new and challenging demands academically and socially (Kwan et al., 2021; Locke et al., 2016; Pedrelli et al., 2015).

College students often encounter greater exploration of their racial (Syed & Azmitia, 2009), sexual (Oswalt & Wyatt, 2011; Woodford et al., 2014), and gender identities (Mayer et al., 2008) at a time when there may be greater experimentation with drugs, alcohol, and sexual activity (Gervais & Eagan, 2017; Kitzrow, 2009), all of which can give rise to stress experiences during a salient time of increased vulnerability to depression and anxiety (Cox et al., 2017b; Ketchen-Lipson et al., 2015; Maurer & Roh, 2015; Pilar et al., 2020; Wolanin et al., 2016). Mobile phone addiction has been reported to be correlated with anxiety and depression among college students ages 18-24 who may lack the self-regulatory ability to moderate their excessive use of their mobile phones while already experiencing stress, impulsive behavior, and poor sleep quality (Demirci et al., 2015; Li et al., 2020; Thomée, 2018).
Anxiety and Depression in Student-Athletes

In addition to the stressors commonly experienced by most college students, student-athletes, across athletic associations and divisions, also struggle with the pressure to perform in practice and competitions (Armstrong et al., 2015), must manage time constraints from training, competition, and frequent traveling (Weigand et al., 2013), and balance dual roles of being a student and an athlete (Brown et al., 2014). Some student-athletes feel a loss of personal identity outside of their sport which can create feelings of isolation in addition to elevating their depression and anxiety (Etzel, 2006). Student-athletes often feel pressure to maintain peak physical condition, and at times adhere to bodyweight expectations that can lead to depression and anxiety (Smith et al., 1990; Sundgot-Borgen & Torstveit, 2004). Additionally, student-athletes must manage interpersonal conflicts with teammates and/or coaches (Sudano et al., 2017), cope with the emotions of athletic success and failure (Reardon et al., 2019) and, some in what are considered high-profile sports, deal with pressure from the commercialization of college athletics (Brown et al., 2014). Depression and anxiety can manifest in student-athletes when they cope with an injury, exhaust their athletic eligibility, or lose their identity as an athlete if their career ends suddenly or ends when expected (Stokowski et al., 2019). An endorphin crash can happen after a college athlete competes which can leave an athlete feeling isolated and mentally distressed (Stokowski et al., 2019).

Student-athletes often possess traits that are already common among individuals with anxiety disorders or depression such as perfectionism, a need for achievement, and an ability to withstand pain. These characteristics may lead them to believe symptoms of depression and
anxiety are typical reactions to the daily demands of college athletics, blinding them to the notion that they are issues worthy of seeking mental health help (Barnard, 2016; Jorm, 2005). Student-athletes may not have a perceived need for treatment which makes it difficult to distinguish between “normal” and “abnormal” distress and leave one unsure what would warrant getting professional help (Kelly et al., 2007; Kim et al., 2015). Academic outcomes and college retention may be jeopardized when mental health illnesses go untreated (Bruffaerts et al., 2018; Lederer & Hoban, 2020). A student-athlete’s athletic performance (Moore, 2017), and adjustment to life on campus outside of athletics may suffer adverse effects as well (Watson & Kissinger, 2007). The severity of risks associated with not getting the appropriate mental health treatment may increase with time given the high degree of comorbidity between untreated mental health issues with drug abuse, binge drinking, and even suicidal ideation (Brown et al., 2014).

On-Campus Mental Health Services Underutilized

Utilization of mental health services by college students has increased substantially over the past decade with most students turning to on-campus counseling centers for help (Lipson et al., 2019). However, approximately 95% of college counseling centers report being strained, under resourced, and operate with full capacity (Xiao et al., 2017). Meeting the needs of students in need continues to be a growing concern (LeViness et al., 2019; Reetz et al., 2016). In 2019, 87.3% of on-campus counseling center directors reported experiencing an increased student demand for counseling services in the past year approximately 12% more patients were served (LeViness et al., 2019). Potential factors explaining this growth include increased mental health awareness and more targeted on-campus campaigns dedicated to destigmatization of mental health issues (Lipson et al., 2018).
Knowing where to receive treatment on campus for depression and anxiety is a vital aspect of effective mental health care (Cox et al., 2017a; Gallagher, 2015; Hayden, 2018). Despite rates of documented depression and anxiety rising on college campuses, evidence points to students not making enough use of on-campus mental health resources (Etzel, 2006; Wahto et al., 2016). In addition to students not seeking treatment, many on-campus mental health counseling centers are under resourced and operating at full capacity (Xiao et al., 2017). Some college students report they are generally unaware of what mental health counseling, psychotherapy, and other comprehensive treatment plans are available on campus (Cheng et al., 2018; Kim et al., 2015).

**Mental Health Stigma**

Evidence suggests that the negative stigma associated with getting mental health help-seeking behavior is one of the main reasons college students tend to underutilize mental health resources on campus (Wahto et al., 2016). For student-athletes, in particular, disclosing a mental health illness or need for mental health counseling may be interpreted as a weakness (Cox et al., 2017a; Wolanin et al., 2015). Mental health stigmatization may generate feelings of insecurity, inadequacy, inferiority, and weakness—all of which can damage one’s feelings of self-worth and their outward reputation (Goffman, 1963; Lannin et al., 2016). An athletic sub-culture that stigmatizes mental illness and help-seeking behavior may make the suffering student-athlete—trained to be tough and to push through physical and mental pain—could make them feel vulnerable, ashamed, and reluctant to admit they need help (Kaier et al., 2015; Putukian, 2016).

Athletes have reported the fear that disclosing a mental health illness could result in a loss of playing time or athletic scholarship, as well as a deterioration in relationships with teammates, coaches, and their overall support network (Kaier et al., 2015; Wahto et al., 2016).
First-year student-athletes are a particularly at risk for not disclosing a mental illness or that they need mental health services in fear their coaches and teammates will view them as too weak for the rigors of college athletics (Papanikolaou et al., 2003). High-profile student-athletes may have concerns about confidentiality should they be recognized and seen walking into a mental health clinic (Corrigan et al., 2014; Ferrante et al., 1996; López & Levy, 2013).

Men are more likely to have internalized stigma about mental health topics and the utilization of mental health services than women (Vogel et al., 2014). Women with higher levels of education, especially those with a degree, have the highest levels of mental health literacy and lowest levels of mental health stigma (Holman, 2015). Those identifying as Black have been reported to have more negative attitudes about getting mental health help that their White peers (Brown et al., 2010; Conner et al., 2009; Sirey et al., 2014). Those identifying as Latinx have reported having lower levels of mental health literacy, higher levels of mental health stigma, and using mental health services less than their non-Latinx White peers (Benuto et al., 2019).

**Student-Athlete Suicide Risk**

Students-athletes with untreated anxiety and depression may also be more vulnerable to suicide (Rao et al., 2015). Extant studies indicate student-athletes are suffering from untreated depression and/or anxiety making more organized efforts essential to help the acutely depressed or suicidal athlete get the mental health counseling they may need (Rao et al., 2015). Mental health counselors on campus report being “stretched too thin,” making it important to find ways to predict which student-athletes may be at most risk for not getting the help they need so that more targeted efforts can be made to help them utilize these finite resources (Moreland et al., 2018). In 2017, the NCAA published the handbook *Managing Student-Athletes’ Mental Health Issues* to educate coaches and athletic personnel about suicidality among NCAA athletes and
advice on how to identify mental health illnesses in student-athletes. The goal was to enlist educators and mental health professionals in the active management of depression, anxiety, and acute stress reactions due to illness, injury, personal loss, or the transition to college life.

**Demographic Predictors of Who Utilizes Mental Health Services**

In the following section, I provide an overview of the literature about demographic differences in mental health help utilization behaviors, including (a) race; (b) gender; and (c) sexual orientation.

**Race**

Non-White student populations may be subject to complex variables that influence perceptions of mental health care and on utilizing mental health services, including structural racism, racial microaggressions, and the attitudes of family and community (Hingwe, 2021) while bearing a disproportionate burden of mental health conditions such as depression and anxiety compared to their White counterparts (Eisenberg et al., 2013). Students of color have lower access to care, resulting in fewer diagnoses and treatment (Schatzberg & Nemeroff, 2017). When comparing rates of reported depression and anxiety by race, Latinx, multi-racial, Asian/Asian-American, and Arab/Arab American students report higher rates than White students (Chen et al., 2019; Lipson et al., 2018). However students of color are less likely to seek mental health treatment (Eisenberg et al., 2009; Herman et al., 2011; Masuda et al., 2012) which may be due in part to the lack of a racially diverse representation in the field of psychology, where 86% of psychologists in the United States are White (Lin et al., 2018).

Despite shared college experiences, Black college students face different stressors than their White peers that may increase vulnerability to mental health illnesses such as racism, cultural conflict, and lack of social and academic support (Greer & Chwalisz, 2007; Stansbury et
al., 2011). Black student-athletes, especially males, report deep-rooted racial stereotyping on college campuses that they are athletically superior and academically inferior to their counterparts (Beamon, 2014; Campbell, 2019; Comeaux, 2011, 2012; Harper et al., 2009; Harper et al., 2013) which may lead to them internalizing the stigmas of negative stereotypes, and lead to feeling racially isolated, having lower self-esteem, and fearing rejection (Corrigan & Rao, 2012; Quinn et al., 2014; Quinn et al., 2015). Having a mental illness is often viewed as a weakness and stigmatized within Black and Latinx communities which may dissuade them from getting the help they may need (Benuto et al., 2019; Mushonga, 2020).

**Gender**

To date, studies indicate that female college athletes and non-athletes have been reported to be more likely to have depression and anxiety when compared with both male-identified athletes and non-athletes (Maurer & Roh, 2015) but also tend to have more positive attitudes towards utilizing mental health services than males (Moreland et al., 2018; Watson & Kissinger, 2007). For example, in studies of NCAA Division I student-athletes, females exhibited 1.3 to 1.8 greater odds than males for coping with clinically relevant levels of depressive symptoms (Cox et al., 2017; Wolanin et al., 2015). Female college athletes having higher reports of anxiety than male college athletes which may be connected to self-esteem and gendered influences such as the media, family, friends, peers, and society (Cox et al., 2017; McLester et al., 2014). Female athletes may demonstrate more anxiety and stress about their bodies and weight due to societal pressures for females to be thin, lose weight, and be more aesthetically appealing (George, 2005; Krane et al., 2004; Krane et al., 2001; Markula, 1995; Zanker & Gard, 2008). Both male and female athletes participating in aesthetic sports, or ones impacted by weight status, physique, and physical size, or sports that have revealing uniforms such as swimming, wrestling, track, and
cross country, are more likely to engage in pathogenic eating and weight control behaviors and develop mental health issues such as depression and/or anxiety because of it (Brown et al., 2014; Chatterton & Petrie, 2013). However, females are more likely to have health insurance, and are more likely to utilize overall health care services (Upright et al., 2014; Barbaresco et al., 2015).

Male student-athletes and males who are not student-athletes are reported to be less willing to seek mental health help when compared to females (Moreland et al., 2018). Males may be discouraged from utilizing mental health services as getting help may be viewed as unmasculine and weak, which has shown to be especially true in contact sports such as football and wrestling, where even more negative attitudes about mental health issues have been reported (Wahto et al., 2016; Watson & Kissinger, 2007; Yang et al., 2007).

Transgender and gender non-conforming individuals have a higher risk for depression, substance abuse, self-harm and suicide ideation compared to heterosexuals with a cisgender identity (Carmel & Erickson-Schroth, 2016; Garvey, 2020; Su et al., 2016). This may be due to factors such as the expectation of rejection which may lead transgender students to feel unworthy and unsafe, leaving them more susceptible to depression, anxiety, and other mental health challenges as compared to their classmate counterparts who classify as cisgender (Bouman et al., 2017; Denton et al., 2014). Those who are transgender may be met with anti-transgender attitudes from both the majority population and from the Queer community (Cunningham et al., 2018). Transgender athletes may face the additional challenges of being restricted from the locker-room that matches their identity. Being excluded from the locker-room that facilitates the bonding of a team, and the stigma of not having a comfortable safe place to change may deter a transgender athlete from sport participation (Carroll & Griffin, 2011; Cunningham et al., 2018).
In 2011, the NCAA released a “NCAA Inclusion of Transgender Student-Athletes” resource to provide guidance to athletic programs about how to ensure that transgender student-athletes receive fair, respectful, and legal access to college sport teams (Carroll & Griffin, 2011). The document provided practices and policy recommendations based on legal and medical knowledge at the time for intercollegiate athletic programs. It provided clarification on student-athletes who were undergoing gender transformation hormonal treatment and those who were not, and decided testosterone was the main decision maker for where an athlete should participate. A medical exemption must be presented as testosterone is otherwise considered a banned substance for athletes because of its performance-enhancing effects. For transgender men who make a social transition who may change their name, pronouns, and physical appearance, yet do not take testosterone, are able to continue competing on a women’s team. A transgender man using testosterone with a medical exemption for diagnosed gender identity disorder or gender dysphoria and/or transsexualism, is no longer eligible to compete on a women’s team unless the team changes its status to a mixed team, which would make the team ineligible to compete for a women’s NCAA championship (Carroll & Griffin, 2011; Cunningham et al., 2018).

**Sexual Orientation**

Homophobic climates still exist on college campuses and may have adverse effects on queer student-athletes’ academic and athletic outcomes, and put them at increased risk for depression, anxiety, and other adverse mental health outcomes (Walker & Melton, 2015). Queer college students have been reported to be at higher risk for depression and anxiety than heterosexual peers (Baams et al., 2018; Grella et al., 2011) but also have been reported to receive more counseling or mental health services compared to their heterosexual counterparts (Baams et
Queer students face additional stressors such as stigma, discrimination, and victimization, which adds to the developmental challenges college students already face (Meyer, 2003; Russell & Fish, 2016; Savin-Williams & Rodriguez, 1993). The pressures queer individuals may feel to conform to heterosexist norms to change, disguise, or deny their identities may result in feelings that are tied to developing depression and anxiety such as guilt, shame, and internalized turmoil (Anderson, 2011; Anderson & McCormack, 2010; Walker & Melton, 2015).

Heteronormative sports cultures may typecast gay males as being effeminate, less masculine, or less competitive generating insecurities and that may increase risk for depression and/or anxiety (Turk et al., 2019). Some studies indicate queer college students are more likely to receive counseling and mental healthcare than heterosexual students (Baams et al., 2018; Bouris & Hill, 2017; Kerr et al., 2013). A queer student may view sexual orientation as a barrier to getting the mental health support they may need due to not feeling comfortable discussing their identity with counseling staff who they fear are less accepting (Cage et al., 2020; Oswalt & Wyatt, 2011). While there has been an increase in literature on mental health services utilization behavior of queer-identifying college students, there is scant literature examining the experiences of this same population specifically in collegiate athletics (Anderson, 2011; Brown et al., 2014; Weber, 2016).

The literature suggests that bisexual students have a higher need for mental health services and also have a higher suicide rate relative to gay/lesbian students (Bostwick et al., 2010; Oswalt & Wyatt, 2011) as they may face greater stress in navigating different social groups given negative attitudes by heterosexuals and those who identify as queer towards bisexual individuals (Israel & Mohr, 2004) who may perceive bisexuality as a transition or denial
of one’s actual sexual orientation (Eliason, 2000) or that one who is bi-sexual is just unsure of their sexual orientation (Oswalt & Wyatt, 2011).

**Gaps in Literature**

Researchers have found evidence of higher levels of mental health illnesses in collegiate athletes by variables such as race (Armstrong, 2018; Cooper, 2017), gender (Wolanin et al., 2016), and sexuality (Walker & Melton, 2015). However, current studies do not demonstrate if mental health services use can be predicted for student-athletes by these same demographic variables. Division I athletes have also been found to be significantly less likely to seek counseling than athletes from Divisions II and III, perhaps fearing loss of scholarship or playing time, or disappointing coaches and teammates (Moore, 2017). However, there are gaps in the literature about levels of depression, anxiety, and other mental illnesses by athletic conference, sports being in-season versus not in-season, and team versus individual sports. There is also a gap in the literature, and perhaps lack of overall programming, in what predicts mental health care utilization and how to best support the athletes who may not be getting the help they need.

**Summary**

Thus far I have illustrated that scholars examining student-athlete mental health and the variables that may prevent them from getting help have and found that: (a) anxiety and depression are on the rise on campus for both student-athletes and the overall college population, particular as college is a time when students explore their racial, gender, and sexual identities; (b) that student-athletes have additional stressors from participating in their sport that may exacerbate mental health conditions such as depression and anxiety; (c) on-campus mental health services are underutilized by the overall college population; (d) that college students may not get mental health help on campus due to the stigmatization of disclosing a mental illness; (e) the danger of
not getting mental health help is that it can lead to suicide or suicide ideation; (f) that gender, sexual orientation, and race have an effect on patterns of mental health services usage. The literature, however, did not produce consistent results around the use of mental health services for college student athletes. Scholars using qualitative methods have observed college student-athletes being more reluctant to get mental health help. Given the attention the media has played to mental health struggles and tragic suicides of college level and other elite level athletes, perhaps the continued destigmatization will make it more likely for student-athletes to access the mental health help they may need.

In the next chapter, I provide an overview of the study using a secondary analysis of the 2019 ACHA-NCHA IIc survey respondents who report they are varsity athletes using the ABM as the theoretical model.
CHAPTER 3

RESEARCH DESIGN AND METHODS

This study was a non-experimental, quantitative, data analysis of the Spring 2019 ACHA-NCHA IIc survey. Inferential statistics and regression analysis examined which ABM variables had predicative power relative to the use of on-campus mental health services by student-athletes (see Appendix A for survey questions selected). The design of the study responded to identified gaps in the scholarship on depression and anxiety in collegiate athletes, and the need for further research focused on which factors predict use of on-campus mental health services by student-athletes with depression and/or anxiety. The following research questions framed this investigation:

1. Does the use of mental health services differ between athletes and their non-athlete peers?
2. Are there associations between race, gender, sexuality, and academic year, and other Predisposing, Enabling, and Need variables, with the use of on-campus mental health services among collegiate varsity student-athletes?
3. How much predictive power do the Predisposing, Enabling, and Need variables in the Andersen Behavioral Model have relative to the use of on-campus mental health services by student-athletes?

Informed by the literature, I hypothesized that: (a) student-athletes will be less likely to utilize on-campus mental health services than their non-athlete peers (Rao et al., 2016); (b) on-campus mental health services use will be utilized more by females student-athletes than male student-athletes (Smith et al., 2013; Vogel et al., 2014); (c) transgender individuals will be more likely to access services than males (Russell et al., 2016; Oswalt et al., 2017); (d) students
identifying as heterosexual will be less likely to seek help than students claiming other sexual identities (Dunbar et al., 2017); (e) racial and ethnic minority students, including Black and Latinx respondents, will be less likely than White students to use mental health services (Acito, 2018); (f) first year students will be the least likely to use on-campus mental health services (Vaccaro et al., 2015) ; and (e) the ABM variables will predict student-athletes’ use of on-campus mental health services, and that the need variables will best predict the use of on-campus mental health services among this sample (Pilar et al., 2020).

In this chapter, I will outline the methods utilized for analyzing these three research questions including (a) procedure (b) instrumentation, (c) critical quantitative lens, (d) variables, (e) theoretical framework, (f) data analysis, (g) ethical conduct of research, and (h) rationale. As a former NCAA Division I athlete, coach, adjunct professor, and now as an emerging scholar, I approached this investigation from a critical quantitative research paradigm (Hernández, 2015; Stage & Wells, 2014). I used quantitative methods to unveil outcome inequalities and question models, measures, and other analytical practices (Stage & Wells, 2014) to reveal outcome inequalities (Tabron, 2019). The ABM variables have been proven to have predictive power of mental health services use by college students (Nam et al., 2018; Pilar et al., 2020) but to my knowledge, the ABM has not been proven to predict on-campus mental health services use by student-athletes. My hope is for these findings to be used to inform mental health policies for student-athletes to help advance equity for those groups who may be at risk for not using mental health services when in need.

**Procedure**

This study was a secondary data analysis of the Spring 2019 ACHA-NCHA IIc survey. I examined the relationships between each of the variables from the ABM model (Predisposing,
Enabling, and Need) and the use of on-campus mental health services by those who identified themselves as student-athletes in ACHA-NCHA IIc survey. I completed the ACHA-NCHA data request form for permission from the ACHA to use this national data set. Access to the data for the secondary data analysis was granted by the ACHA-NCHA on January 12, 2021. IRB approval was granted and will be maintained throughout the data analysis process by The University of Maine.

Instrumentation

When conducting quantitative educational research, it is important to choose an instrument that has established reliability and validity (McMillan & Schumacher, 2010). The ACHA-NCHA IIc is a nationally recognized, widely used, comprehensive survey research survey designed to assist colleges and universities across the nation in collecting precise data about their students' health habits, behaviors, and perceptions (Lederer & Hoban, 2020). It is administered to college students annually in the fall and spring at North American postsecondary institutions to assesses college students’ health behaviors and outcomes at the institutional and national levels with the intention of understanding the health needs and capacities of college students to create healthier campus communities (Manchester, 2020). The Spring 2019 ACHA-NCHA IIc survey is the second major revision of the survey instrument since the ACHA-NCHA was established in 2000 with a sample size of 67,972 participants, including 3,536 college students self-identifying as varsity-athletes (ACHA, 2020).

Critical Quantitative Research Lens

Critical quantitative research emerges when a researcher seeks to improve the ways to investigate problems using models, measures, and analytics to reveal social inequalities and to identify large-scale institutional perpetration of systemic inequalities (Stage, 2007). As a critical
quantitative researcher my goal is for the findings derived from this scholarship to be used to change be used to inform policies around mental health practices and programming in collegiate athletics (Rios-Aguilar, 2014). A critical quantitative research lens allowed me to dig deeper into outcome inequalities and question the ACHA-NCHA IIc survey and ABM model. I engaged in this quantitative work and designed a new research study in the hopes of decolonizing interpretations of mental health services utilization (Stage & Wells, 2014; Tabron, 2019). The work I conducted was made possible as a result of the ACHA allowing me to make use of their large, representative data so I could form a quantitative approach to describe the data on mental health usage by college-athletes, particularly by subgroups of athletes whose use of on-campus mental health services are not adequately representative in the literature.

**Variables**

All demographic variables were categorical in nature. Due to the analysis detailed below, certain variables were recoded for statistical analysis. I recognize that the simplification of demographic categories may be viewed as limiting and does not recognize the full array of identities that any given student may have chosen for themselves. Frequencies and descriptive analyses were conducted first on demographic variables in the sample. All missing case numbers were less than .5% and therefore not considered in the descriptive analyses.

To assess the presence of depression and/or anxiety all participants were asked, “Within the last 12 months, have you been diagnosed or treated by a professional for any of the following?” Questions by the ACHA asked if a student-athlete was diagnosed with depression, with anxiety, or with a list of other mental health illnesses. The answers were originally categorized as: 1) No (not diagnosed); 2) Yes, diagnosed, but not treated; 3) Yes, treated with medication; 4) Yes, treated with psychotherapy; 5) Yes, treated with medication and
psychotherapy; and 6) Yes, other treatment. New variables were created to compare a combined group of students who answered any form of Yes to having depression, anxiety, or another mental health illness.

Students were also asked if they participate in organized college varsity athletics (yes/no). The terms college varsity athletes and student-athletes will be used interchangeably in this study. The main outcome variable for this analysis the use of mental health services on campus, is a dichotomous variable based on the survey question: “Have you ever received psychological or mental health services from your current college/university's Counseling or Health Service? (yes/no).” Next, using the ABM as a framework, variables were selected from the ACHA-NCHA IIc survey and categorized into Predisposing, Enabling, or Need variables.

The Predisposing set of variables entered the logistic regression, illustrated in Figure 2., included Race, Gender, Sexual Orientation, Academic Year, and Public or Private Institution. The Enabling set included the variables Received Info on Depression/Anxiety, Work Hours, and Health Insurance Status. The Need block included If Grades Were Negatively Affected by Depression and/or Anxiety and if the student-athlete was Diagnosed or Previously treated for Depression and/or Anxiety or another mental health condition.

Figure 2.
Theoretical Model: The ABM

When examining variables that may predict on-campus mental health services use by student-athletes, the ABM is a helpful model to examine the ACHA-NCHA Ilc data to aid in the prediction of health care services utilization. It is important to know which variables have the best ability to predict use of mental health services that will help inform development of interventions and promote increased utilization. The ABM divides health services use variables into three categories: (a) Predisposing, (b) Enabling, and (c) Need.

Predisposing characteristics include structural variables such as gender, sexual orientation, and race. Enabling variables are resources such as financial security, having health insurance, and having mental health literacy, all of which can assist with engaging with a source of care. Need variables are either considered perceived, when an individual recognizes having an illness, or evaluated, such as when a professional judges that one has an illness (Andersen, 1995). When developing interventions to promote and improve mental health support for student-athletes, it is important to know which variables have the most impact on mental health care utilization and design strategies with those in mind. Identifying these variables may be useful in applying targeted intervention strategies (Eisenberg et al., 2013).

ABM Predisposing Variables

Predisposing variables, the first part of the ABM, include 1) demographics (such as gender, race, and sexual orientation) which contribute to one’s need for health services; 2) social structure, measured by a broad array of variables that determine one's status in the community (such as education, occupation, social networks, and culture) and 3) health beliefs (such as
attitudes, values and knowledge that people have about health and health services that influence perceptions of need and the use of health services (Andersen, 1995).

Selected demographic questions from the ACHA-NCHA IIc survey include: a) What sex were you assigned at birth, such as on an original birth certificate; b) Do you identify as transgender? c) Which term do you use to describe your gender identity? d) What term best describes your sexual orientation? e) How do you usually describe yourself? (race). The survey question regarding varsity athlete-states was: a) Within the last 12 months, have you participated in organized college athletics at any of the following levels? (varsity, club, intramural).

**ABM Enabling Variables**

Enabling variables, that comprise the second category of the ABM, are based on the assumption that people must have knowledge about the availability of services and the supportive social support, including financial security, to make use of them (Andersen, 1995). An example is having health insurance to help make medical services more affordable (Wong et al., 2014). On-campus health services, including mental health services, are designed to provide primary and preventive healthcare for students regardless of their health insurance status at little to no cost; however, this is not available at all colleges (Burkhart & Moreno, 2019). Some institutions also place a cap on the number of counseling sessions that can be had without an additional cost which raises economic accessibility concerns for students who cannot afford to pay for these services (Wesley, 2019). Enabling resources are made up of personal/family resources such as a student’s financial circumstances, health insurance, as well as an accessibility to and awareness of available resources (Andersen, 1995). Questions regarding Enabling and impeding financial circumstances included: a) How many hours a week do you work for pay? b) What is your primary source of health insurance?
ABM Need Variables

Need variables, the third category of the ABM, are perceived demands for care that can be used to predict the type of health care services an individual seeks when physically sick or mentally unwell (Andersen, 1995). These variables impact the use of health services and include perceived need (an individual’s personal assessment of their health) and evaluated need (the professionally assessed need for care as interpreted by a medical professional) (Hulka & Wheat, 1985). Examples of need include the experience of symptoms as well as the impact on daily activities. The ABM health behavior domain further describes actions people take to manage their health, including personal health and lifestyle behaviors, which interact with the use, or non-use, of health services to influence health outcomes (Andersen, 2008).

Perceived need can be explained by social structure and health beliefs and is considered to be a social phenomenon. (Andersen, 1995). Evaluated need is a professional's judgment about a person's health status and the need for healthcare (Andersen, 1995). Survey questions regarding perceived need include: In the last 12 months have you been diagnosed/treated for: a) Anxiety (including generalized anxiety, social anxiety, panic disorder, specific phobia) b) depression c) another mental health illness (including bipolar related conditions, borderline personality disorder, avoidant personality, dependent personality, other personality disorders, obsessive-compulsive and related conditions, posttraumatic stress disorder, schizophrenia and other psychotic conditions) Yes, diagnosed but not treated, 2) Yes, treated with medication, 3) Yes, treated with psychotherapy, 4) Yes, treated with medication and psychotherapy, 5) Yes, other treatment. The final question from the survey chosen for the model asked: has (depression, anxiety) negatively impacted academic performance?
Data Analysis

To address the three primary research questions guiding this investigation, data from the 3,536 student-athletes were analyzed using Statistical Package for Social Science (SPSS) v.27—a statistical software platform. Before conducting these analyses, the data were screened for inaccuracies, missing data, and outliers. First, descriptive statistics were employed to characterize the demographic and institutional variables of the sample and how they correlate with use of mental health services. Then Chi-square analyses assessed associations between the predictor and outcome variables to uncover the variables with statically significant associations. Lastly, individual multi-variate logistic regression models were run for variables with significant associations to assess the likelihood of students’ using on-campus mental health services in the context of the Andersen model’s Predisposing, Enabling, and Need categories. Regression models were combined to assess the overall predictive power of the ABM relative to on-campus mental health services utilization by student-athletes.

Descriptive Statistics

Descriptive statistics organize and summarize data and, as a result, improve comprehension (Coladarci & Cobb, 2013). In quantitative research, descriptive statistics is indispensable for interpreting results (McMillan & Schumacher, 2010). Descriptive statistics were used to organize and summarize the datasets and presented in aggregate for all student-athlete respondents, further detailed by demographic characteristics of race, gender, and sexual orientation, to illustrate patterns of on-campus mental health services use.

Chi-square Analyses

To build on the results of the descriptive statistics, Chi-square tests for independence examined the relationship between the categorical dependent variable, if on-campus mental
health services are used, and categorical independent variables such as race, gender, and sexual orientation to assess the associations between the predictor and outcome variables. The use of a Chi-Square analysis provided an opportunity to understand potential relationships between dependent mental health services utilization behavior, and demographic variables and provide an opportunity to understand the intersections and potential relationships between them (McMillan, 2012). Chi-square analyses were conducted for athletes and non-athletes to determine baseline and cohort frequency differences for gender, sexual orientation, and race in students’ depression and anxiety and mental health services utilization behaviors on campus.

The sample size was large enough for the data set to meet Chi-square tests for independence of observations where expected frequencies were large enough with two or more categories for each variable. Point-biserial correlations were used to examine the strength of association between the outcome variable (use of on-campus mental health services) and other variables (e.g., race, gender, sexual orientation, academic year).

Regression Analyses

Informed by these descriptive statistic and Chi-square results, a hierarchical logistic regression was conducted to determine if the ABM was a useful model for framing the relationship between the use of on-campus mental health services and college athletes who self-report they have depression and/or anxiety. Logistic regressions examine variables predictive of a binary outcome. They are often used in higher education research for issues that involve dichotomous results such as retention, admission, and graduation (Meng et al., 2016). More recently, researchers have utilized logistic regression analysis to examine predictive variables using the ABM for the overall college student population, but not for student-athletes with depression and/or anxiety (Dhingra et al., 2010; Fasoli et al., 2010; Pilar et al., 2020).
administrators and athletic departments can use these findings to explore the health-related needs of college student-athletes who may be at most risk for untreated depression and anxiety and implement services to accommodate these needs.

First, I conducted individual logistic regression models for student-athlete use of on-campus counseling by conducting logistic regressions for Predisposing, Enabling, and Need variables. Next, I conducted the hierarchical logistic regression which combined all the significant variables from the three individual logistic regressions. I wanted to explore the overall impact of Predisposing, Enabling, and Need variables in explaining the variance associated with use of counseling services to show how well the model predicted it. To my knowledge, the ABM has not been used to examine mental health services utilization for the population of student-athletes with depression and/or anxiety before.

Following criteria outlined by Tabachnick and Fidell (2013), and Peng (2016), I used simplified logistic regression models and several indicators to assess the degree to which these models fit the data, examining: (a) the overall model evaluation, (b) statistical tests of individual predictors, (c) goodness-of-fit statistics (i.e., the Hosmer-Le meshow test and the Cox and Snell and Nagelkerke R-squared indices), and (d) validations of estimated probabilities.

**Ethical Conduct of Research**

For the purposes of this study, the following steps were performed to conduct ethical secondary analyses of the Spring 2019 ACHA-NCHA IIc dataset. Per ACHA regulations, to obtain the dataset, I applied for ACHA membership and submitted a data request form. Membership was granted and my data request form was submitted and approved. As a result, the ACHA provided the anonymous dataset to interpret. Prior to the acquisition of ACHA-NCHA IIc datasets, I obtained ethics clearance and approval from the University of Maine Institutional
Review Board. This secondary analysis does not include new data collection on any human subjects.

Due to the nature of the ACHA study incorporating human subjects in their original study, ethical and honest measures were taken by ACHA, including IRB approval, to protect all participants and ensure personal and institutional information kept confidential. Participants needed to click yes to give consent to move forward with the survey after the ACHA states:

The following questions ask about various aspects of your health. This survey is completely voluntary. You may choose not to participate or not to answer any specific questions. You may skip any question you are not comfortable answering. The survey is confidential. E-mail contact information is destroyed before data are compiled to protect confidentiality. Composite data will then be shared with your campus for use in health promotion activities.

Rationale

The goal of this study was to contribute to the literature on college varsity student-athlete use of on-campus mental health services by examining the potential predictive power of the ABM. The hope was that findings from this investigation could help to inform the NCAA and other governing boards, athletic departments, coaches, and on-campus counseling centers by presenting a model that has been proven to predict which student-athlete subgroups may be at greater risk for not using mental health services. In accordance with the overall on-campus mental health services and regulations set by the National Association of Student Personnel Administration (NASPA), students-athletes need to have transparent, connected, and flexible systems to meet their full spectrum of mental health needs if they are not being met (Wesley, 2019). Customized facilitation may be offered to incentivize these student-athletes to access
mental health services, or to at least help disrupt cycles that put these students at greater risk for not seeking help. Ideas include offering group therapy sessions as option in addition to individual therapy, as well as other more informal outreachs that may serve as pathways to formalized mental health counseling and services.

Validity and Reliability

In quantitative educational research, particularly for noncognitive measures such as emotions, attitudes, values, interests, and opinions that can be negatively influenced by the participants wanting to respond in a socially desirable or appropriate way, it is important to use an instrument that has established reliability and validity (McMillan & Schumacher, 2010). It is also important to choose an instrument that is justified by its presence in the extant literature (McMillan & Schumacher, 2010). In health services research, the ABM is one of the most widely used frameworks to predict health services use and is the most frequently cited model of healthcare service utilization (Fortin et al., 2018; Guilcher et al., 2012; Von Lengerke et al., 2014). It has been used across an array of disciplines to explore and predict health care utilization and behaviors including mental health services use (Lederle et al., 2021). The ABM was used in conjunction with data from the ACHA-NCHA IIc, a nationally recognized survey known widely for collecting accurate data about their students' health habits, behaviors, and perceptions (Lederer & Hoban, 2020) making this a valid and reliable combination to use in this study.
CHAPTER FOUR

RESULTS

The primary goal of this study, as previously described, was to examine if there are demographic or institutional variables, able to predict patterns in the use of on-campus mental health services by college student-athletes. The study was designed to examine the strength of the ABM’s Predisposing, Enabling, and Need variables in predicting student-athlete on-campus mental health services use.

In the previous chapter, I outlined methods I utilized for this non-experimental, quantitative investigation, specifically my (a) procedure (b) instrumentation, (c) variables, (d) theoretical framework, (e) data analysis, and (f) ethical conduct of research. Furthermore, I illustrated how these data met the necessary assumptions (e.g., adequate sample size) for me to conduct the types of data analysis (i.e., descriptive statistics, Chi-square tests for independence, logistic regression) that inform the results I present throughout this chapter.

I began by utilizing descriptive statistics to summarize the total survey data set, to compare the use of on-campus mental health services by athletes and their non-athlete peers. Chi-square tests for independence were then utilized to examine the relationship between variables (i.e., race, gender, sexual orientation, academic year, public or private school, health insurance status, if the student had received information on depression and anxiety from the school, work hours, if grades were affected by depression and/or anxiety, diagnosis of depression and/or anxiety or another mental health condition) and the outcome variable (the use of on-campus mental health services).

The results from these descriptive statistics and Chi-square analyses were used to address the first set of research questions guiding this inquiry, which sought to examine the
association of Predisposing, Enabling, and Need variables and use of on-campus mental health services among college student-athletes. Informed by these results, the second research question, determining if certain variables within the Andersen Behavioral Model’s Predisposing, Enabling, and Need categories have relative predictive power in a student-athletes’ use of on-campus mental health services, was investigated using logistic regression. Results are subsequently presented in this chapter.

**Descriptive Statistics**

The original data set included 67,972 respondents, with 65,993 who answered the question about if they had participated in a varsity sport. Results indicated that 5% of respondents who answered this question were varsity-athletes (n=3520). Descriptive statistics were run for athletes for the 3 main ABM variable categories of Predisposing, Enabling, and Need. These descriptive statistics about the population of the student-athlete data set helped interpret the data, improve my comprehension, and influenced my subsequent inferential analyses (Coladarci & Cobb, 2014; McMillian & Schumacher, 2010). Descriptive statistics showed that student-athletes, and their non-athlete peers, have similar utilization of on-campus mental health services (21%, 22%), see Table 1. The Chi-square analyses results indicating that being a varsity athlete was not associated with the use of on-campus mental health services guided the decision to focus the remaining analyses only on student-athlete responses instead of the entire student population.
Table 1.

Comparison of Athlete and Non-Athlete Use of On-Campus Mental Health Services

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Valid Frequency</th>
<th>Received Help</th>
<th>%</th>
<th>No Help</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Participants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athletes</td>
<td>3,520</td>
<td>753</td>
<td>0.2</td>
<td>2767</td>
<td>0.8</td>
</tr>
<tr>
<td>Non-Athletes</td>
<td>62,473</td>
<td>13776</td>
<td>0.2</td>
<td>48697</td>
<td>0.8</td>
</tr>
</tbody>
</table>

* Frequencies exclude those who did not answer (a) athlete or (b) utilized mental health services

As shown in Table 2, for the Predisposing variables, the sample of student-athletes was primarily White (67%), female (63%) and heterosexual (88%). Slightly more student-athletes attended private institutions (51%) than public ones (49%). Only 3% of respondents identified as queer, 2% as transgender or non-binary, and less than 1% as Native American/ Native Hawaiian.

For the Enabling variables, most student-athletes surveyed were on their parents’ health insurance plan (83%). When asked if they had received information from their college or university about depression and anxiety, 73% of student-athletes said yes. Roughly 49% of the respondents did not have a job, while 39% worked 1-19 hours, 10% worked 20-39 hours and only 2% of student-athletes worked 40+ hours.

When examining the need variables, 47% of student-athletes said their grades had been affected negatively by depression and/or anxiety. Most student-athletes indicated that they had not been previously diagnosed or treated for any kind of mental health illness (75%). Of those student-athletes who had been previously diagnosed, 19% had been previously diagnosed with depression and/or anxiety, while 6% had been diagnosed with other mental health conditions. These descriptive statistics were used to summarize and interpret the data,
and to inform the subsequent Chi-square analyses presented throughout this section. The descriptive statistics are presented in Table 2.

**Table 2.**

*Demographic Variables of Student-Athlete Participants*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race (n = 3524)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2,369</td>
<td>67.2</td>
</tr>
<tr>
<td>Black</td>
<td>237</td>
<td>6.7</td>
</tr>
<tr>
<td>Latinx</td>
<td>377</td>
<td>10.7</td>
</tr>
<tr>
<td>Asian Pacific Islander</td>
<td>283</td>
<td>8.0</td>
</tr>
<tr>
<td>Native American Native</td>
<td>35</td>
<td>1.0</td>
</tr>
<tr>
<td>Hawaiian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Bi-racial multi-racial</td>
<td>223</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Gender (n = 3492)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2,183</td>
<td>62.5</td>
</tr>
<tr>
<td>Male</td>
<td>1,233</td>
<td>35.3</td>
</tr>
<tr>
<td>Transgender or Non-Binary</td>
<td>76</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Sexual Orientation (n = 3496)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Straight</td>
<td>3,075</td>
<td>88.0</td>
</tr>
<tr>
<td>Queer</td>
<td>94</td>
<td>2.7</td>
</tr>
<tr>
<td>Bisexual</td>
<td>209</td>
<td>6.0</td>
</tr>
<tr>
<td>Another Identity</td>
<td>118</td>
<td>3.4</td>
</tr>
<tr>
<td><strong>Academic Year (n = 3513)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st year</td>
<td>1,265</td>
<td>36.0</td>
</tr>
<tr>
<td>2nd year</td>
<td>898</td>
<td>25.6</td>
</tr>
<tr>
<td>3rd year</td>
<td>677</td>
<td>19.3</td>
</tr>
<tr>
<td>4th year</td>
<td>492</td>
<td>14.0</td>
</tr>
<tr>
<td>Graduate</td>
<td>106</td>
<td>3.0</td>
</tr>
<tr>
<td>Other</td>
<td>75</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Public or Private School (n= 3481)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>1,781</td>
<td>51.2</td>
</tr>
<tr>
<td>Public</td>
<td>1,700</td>
<td>48.8</td>
</tr>
</tbody>
</table>
Chi-Square Analyses

Chi-squares were run to determine percentages of on-campus mental health service use within the three sub-categories of Predisposing variables (race, gender, sexual orientation, academic year, public or private university), Enabling variables (health insurance, if the student received info from school on depression and/or anxiety, work hours), and Need variables (grades negatively affected by depression and/or anxiety, diagnosis or treatment for depression and/or anxiety or any other mental health condition). The effect size for each significant Chi-square analysis was examined using Cramer’s V.

To begin, I conducted a Chi-square analysis to examine the relationship between varsity athlete status and non-athlete status with the outcome variable of on-campus mental health
services use. Then Chi-squares were run for all variables to address the first research question: Are there associations between Predisposing, Enabling, and Need variables, particularly race, gender, sexuality, academic year, with the use of on-campus mental health services among collegiate varsity student-athletes? Does mental health services use differ between athletes and their non-athlete peers?

**Varsity Athlete Status**

Echoing the results in the preliminary descriptive analyses, Chi-square results indicated there was not a significant relationship observed between the use of on-campus mental health services between student-athletes and their non-athlete peers, $X^2(1, N=3520) = .84, p=.359$. Because there was not a significant relationship observed between varsity athlete status and non-athlete students, subsequent Chi-squares were run only on the varsity athlete population for the Predisposing, Enabling, and Need variables.

**Predisposing Variables**

Following the Chi-square analyses to assess associations between athlete versus non-athlete status and use of mental health services, I examined the relationship between Predisposing variables (race, gender, sexual orientation, academic year, public or private institution) for students who indicated they were varsity student-athletes. The results of the Chi-square analysis for Predisposing variables are presented in Table 3.

**Race**

Results indicated there was a significant relationship between race and the use of on-campus mental health services by student-athletes, $X^2 (5, N=3509) = 29.85, p=.000$, and the null hypothesis was rejected. Among varsity athletes Bi-racial/multi-racial students indicated using mental health services the most (29%), followed by White (23%), Black (18%), Asian Pacific
Islander (17%), Latinx (15%), and Native American/Native Hawaiian (6%).

**Gender**

Results indicated there was a significant relationship between gender and the use of on-campus mental health services by student-athletes, \(X^2(2, N=3482) = 87.27, p=.000\), and the null hypothesis was rejected. Transgender and non-binary students tend to use services more than females and males (41%, 25%, 13%).

**Sexual Orientation**

Results indicated there was a statistical association between sexual orientation and use of on-campus mental health services by varsity athletes, \(X^2 (3, N=3488) = 97.83, p=.000\), and the null hypothesis was rejected. Bisexual student-athletes used services more than queer/other sexual identities (44%, 41%). Straight students used on-campus mental health services the least (19%).

**Academic Year**

Results indicated there was a statistical association between a student-athlete’s academic year and their use of on-campus mental health services, \(X^2 (5, N=3499) = 60.74, p=.000\), and the null hypothesis was rejected.

**Public or Private Institution**

A statistical association for student-athletes utilizing on-campus mental health services was found based on their enrollment at a public or private institution, \(X^2 (1, N=3466) = 25.14, p=.000\), and the null hypothesis was rejected. For private postsecondary institutions, 25% of student-athletes indicated they used on-campus mental health services, compared to 18% of student-athletes who attended public institutions.
Table 3.

**Chi-Square Analysis for Predisposing Variables**

<table>
<thead>
<tr>
<th></th>
<th>% Uses services</th>
<th>Chi-Square Test Statistic</th>
<th>df</th>
<th>p-value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>22.8</td>
<td>29.85</td>
<td>5</td>
<td>.000</td>
<td>.092</td>
</tr>
<tr>
<td>Black</td>
<td>18.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latinx</td>
<td>14.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian Pacific Islander</td>
<td>17.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native America/Native Hawaiian</td>
<td>5.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other/ Multi/Biracial</td>
<td>29.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td>87.27</td>
<td>2</td>
<td>.000</td>
<td>.114</td>
</tr>
<tr>
<td>Female</td>
<td>25.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transgender</td>
<td>41.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sexual Orientation</strong></td>
<td></td>
<td>97.83</td>
<td>3</td>
<td>.000</td>
<td>.167</td>
</tr>
<tr>
<td>Straight</td>
<td>19.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Queer</td>
<td>40.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bisexual</td>
<td>44.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Another identity</td>
<td>26.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Academic Year</strong></td>
<td></td>
<td>60.74</td>
<td>5</td>
<td>.000</td>
<td>.132</td>
</tr>
<tr>
<td>1st year</td>
<td>15.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>22.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd year</td>
<td>25.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4th year</td>
<td>30.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate</td>
<td>19.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>26.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Public or Private Institution</strong></td>
<td></td>
<td>25.14</td>
<td>1</td>
<td>.000</td>
<td>.085</td>
</tr>
<tr>
<td>Private</td>
<td>24.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>17.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Enabling Variables

After concluding the Chi-square analyses for the Predisposing variables, I examined the relationship between the Enabling variables and the variable for utilization of on-campus mental health services. The results of the Chi-square analysis for Predisposing variables are presented in
Table 4.

**Health Insurance**

Results indicate there was not a significant relationship between student-athletes’ kind of health insurance or having health insurance on utilization of on-campus mental health services, $X^2(2, N=3489) = 3.98, p=.137$, and the null hypothesis was accepted. Students who have health insurance through their college or another plan used services more than those who were on their parents’ insurance plans, and those who didn’t know if they had health insurance or didn’t have health insurance used services slightly less (25%, 21%, 20%). This difference was not significant.

**Received Information**

Results suggested there is a significant association between a student-athlete receiving information from the school on depression and/or anxiety and utilization of on-campus mental health services, $X^2(1, N=3500) = 22.56, p=.000$, and the null hypothesis was rejected. Those student-athletes who received information on depression and anxiety from their school were more likely to utilize on-campus mental health services than those who did not receive information (23%, 16%).

**Work Hours**

A significant association was found between the number of hours a student-athlete works in a job and using on-campus mental health services, $X^2(3, N=3505) = 12.85, p=.005$, and the null hypothesis was rejected. Student-athletes who did not work in a job had rates of on-campus mental health services use of 19% while those who worked 1-39 hours a week utilized services at 24%.
**Table 4.**

*Chi-Square Analysis for Enabling Variables*

<table>
<thead>
<tr>
<th></th>
<th>% uses services</th>
<th>Chi-Square Test Statistic</th>
<th>df</th>
<th>p-value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Insurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents’ plan</td>
<td>20.8</td>
<td>3.98</td>
<td>2</td>
<td>.137</td>
<td>.034</td>
</tr>
<tr>
<td>College or Other Plan</td>
<td>24.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know/ Don’t have</td>
<td>20.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received Info on Depression/Anxiety</td>
<td>22.56</td>
<td>1</td>
<td>.000</td>
<td>.080</td>
<td></td>
</tr>
<tr>
<td>Received Info</td>
<td>23.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not Receive Info</td>
<td>16.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Hours</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>No Work</td>
<td>19.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-19 hours</td>
<td>23.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-39 hours</td>
<td>23.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Need Variables**

Next, I examined the relationship between the need variables and if a student-athlete utilized mental health help. The need variables had the most association with on-campus mental health services use. The results of the Chi-square analysis for Predisposing variables are presented in Table 5.

**Academics Negatively Affected**

There was a significant relationship between student-athletes whose grades suffered negatively due to depression and/or anxiety and use of on-campus mental health services, $X^2(1, N=3500) = 204.60$, $p=.000$, and the null hypothesis was rejected. Those student-athletes who indicated their grades were affected by depression and/or anxiety were more likely to utilize on-campus mental health services than those who indicated their grades were not affected (32%, 12%).
**Diagnosis**

Lastly, those student-athletes who were diagnosed/treated for depression and/or anxiety or another mental health illness had a significant association with using on-campus mental health services, \(X^2(2, N=3398) = 376.05, p=.000\), and the null hypothesis was rejected. Those who were diagnosed with depression and anxiety (49%) were twice as likely to have utilized on-campus mental health services than those diagnosed with any other mental health (25%). Only 14% of students who have not been diagnosed with any mental health condition utilized on-campus mental health services.

**Table 5.**

<table>
<thead>
<tr>
<th>Chi-Square Analysis for Need Variables</th>
<th>% uses services</th>
<th>Chi-Square Test Statistic</th>
<th>df</th>
<th>p-value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grades Affected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades Affected</td>
<td>204.60</td>
<td></td>
<td>1</td>
<td>.000</td>
<td>.242</td>
</tr>
<tr>
<td>Grades Not Affected</td>
<td>31.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Diagnosed</td>
<td>376.05</td>
<td></td>
<td>2</td>
<td>.000</td>
<td>.333</td>
</tr>
<tr>
<td>Diagnosed Depression and/or Anxiety</td>
<td>14.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosed with Other Mental Health</td>
<td>49.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>24.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Cramer’s V Effect Size**

Effect sizes estimate the magnitude of association or effect between two or more variables (Ferguson, 2016) and are mostly resistant to sample size influence, providing a truer measure of the effect between variables (Rosnow & Rosenthal, 2003). In social sciences, effect sizes are often small and because they are estimates, interpretations can be complicated, particularly when determining what magnitude of effect is necessary to establish practical and clinical significance. Cramer’s V was used to measure effect size as it is considered robust
regardless of sample size (Ferguson, 2016). The criteria set by Gravetter and Wallnau (2004) and Cohen (1992) both suggest that small effect sizes are .100, moderate effect sizes are .300, and large effect sizes are .500. Ferguson (2016) recommended a minimum effect size of .200 for significance.

Some variables such as race (.092) and if a school was public or private (.085) had lower effect sizes than the .100 preferred by Cohen (1992) and Gravetter & Wallnau (2004) but according to scholars, these cut-offs are guidelines and should not be applied rigidly (Cohen, 1992; Snyder & Lawson, 1993; Thompson, 2002). The observed effect sizes for gender (.114), sexual orientation, (.167), academic year (.132) were above the 0.100 level and were in line with guidelines put forth by Cohen (1992) and Gravetter and Wallnau (2004) for having significance. Considering effect size, the strongest associations of the independent and dependent variables with significant p-values (p<.100) were observed between the Need variable category which was comprised of Being Diagnosed with Depression and/or Anxiety or Another Mental Health Condition (.333) and If Grades Were Affected by Depression and/or Anxiety (.242). Both were above the .200 guideline suggested by Ferguson (2009) illustrating that the Need variables have the most association with receiving on-campus mental health help in the ABM. The weakest association observed was between Having Health Insurance and receiving on-campus mental health help (p= .137). Consequently, I did not include this in the logistic regression models.

**Summary of Chi-Square Results**

In summary, I conducted 11 Chi-square analyses for this investigation, with 82% of the relationships between independent variables and the dependent variable being statistically significant with p-values <.100. First, the status of being a varsity athlete or not had a p-value of .359 indicating that there was not a statistical association between being an athlete or not and use
of on-campus mental health services. This guided the rest of my study in conducting analyses for the student-athlete population only. These Chi-square results determined which variables had strong and weak associations with the use of on-campus mental health services by student-athletes. Health insurance status had a p-value of .137. The null hypothesis was accepted and informed the decision to remove this variable from the logistic regression analysis and the findings presented in Chapter Five.

**Logistic Regression**

Informed by descriptive statistic and Chi-square results, I utilized logistic regression to address the second research questions guiding this investigation: How much power do the ABM’s Predisposing, Enabling, and Need variables have for predicting student-athletes’ use of on-campus mental health services? I first conducted individual logistic regression models for Predisposing, Enabling, and Need variables for student-athlete use of on-campus counseling based on the previous Chi-square and descriptive statistic results, and the conceptual frameworks informing this inquiry.

These variables were all shown in the Chi-square analyses to have a significant association with Use of On-Campus Mental Health Services. Both variables in the need set (if a student-athlete’s grades had been affected negatively by depression and/or anxiety, and if a student-athlete had been diagnosed or treated previously with depression and/or anxiety or another mental health condition) proved to be the most statistically significant variables in the Chi-square analysis. A student-athlete’s health insurance status (p-value = .137) did not have statistically significant associations with on-campus mental health services use and thus were not included in the regression models.
In accordance with Peng (2016), the fit of the models was assessed by examining (a) the p-value, (b) statistical tests of individual predictors, (c) goodness-of-fit statistics (i.e., the Hosmer- Lemeshow test and Nagelkerke R-squared indices), and (d) predicted classification tables as shown in Model 1.

**Predisposing variables**

Model 1 indicates that the Predisposing variables, including Race, Gender, Sexual Orientation, Academic Year, Public or Private University, account for approximately 11% of the overall variance in on-campus mental health service utilization, indicating an overall regression model that is statistically significant and a good fit for the data, $X^2 = 242.010, df = 16, p=.000$. Goodness of fit via the Hosmer and Lemeshow Test, $X^2(8)=3.970, p=.860$, had an observed p-value above .05, suggesting the data fit the model and that the Predisposing variables had a significant effect on the odds of students utilizing on-campus mental health services (Hosmer & Lemeshow, 2000; Tabachnick & Fidell, 2013).

The regression coefficient for Male was significant, $(B = -0.71, OR = 0.50, 95\% CI = .40,.60, p=.000)$, indicating Male student-athletes were 50% less likely to utilize on-campus mental health services than their female peers while transgender and non-binary student-athletes, $(B = 0.35, OR = 1.42, 95\% CI = .82, 2.43, p =.207)$ were 42% more likely to utilize on-campus mental health services than females.

The regression coefficient for Latinx was also significant $(B= -0.47, OR 0.63, 95\% CI = .45,.86, p=.005)$ and Native American/Alaskan/Native Hawaiian $(B= -1.61, OR = 0.20, 95\% CI .05,.85, p=.030)$ indicated that compared to White students, those who were Latinx were 37% less likely to use on-campus mental services, and those who were Native were 80% less likely. The regression coefficients for students indicating they were Black $(B = -0.12, OR$
= 0.88, 95% CI .61, 1.28, p=.513), Asian (B = -0.22, OR 0.81, 95% CI .57, 1.13, p=.211), and Bi-racial/ Multi-Racial/ Other (B = 0.23, OR = 1.23, 95% CI .90, 1.75, p= .180) were not significant, indicating these variables did not have a significant effect on the odds of students utilizing on-campus mental health services.

The regression coefficient for student-athletes identifying as Queer was significant (B=1.01, OR = 2.73, 95% CI 1.74, 4.29, p =.000) or Bisexual (B= 1.14, OR 3.14, p = .000) indicating that those who indicated they identified as Queer were 173% more likely to use on-campus mental health services than straight student-athletes. Those who identified as Bisexual were 214% more likely to utilize on-campus mental health services than Straight student-athletes.

The regression coefficient for a student-athlete’s academic year was significant, indicating that with each progressing year of enrollment, the odds of accessing on-campus services increased as indicated by 2nd year (B = 0.51, OR = 1.67, 95% CI 1.33, 2.10, p =.000), 3rd year (B = 0.71, OR = 2.03, 95% CI = 1.59, 2.59, p = .000), 4th year (B= 0.51, OR = 1.67, 95% CI 1.87, 3.15, p=.000) the odds of accessing campus services also increased.

Finally, the regression coefficient for if a student was enrolled in a public or private institution was significant (B= -0.31, OR = 0.73, 95% CI .62, .88, p =.001) indicating that student-athletes enrolled in public institutions were 27% less likely to access on-campus mental health services than student-athletes attending private institutions.
Model 1.

*Individual logistic regression model for Predisposing Variables and Student-Athlete Use of On-Campus Mental Health Services Utilization*

<table>
<thead>
<tr>
<th>Predisposing Variables</th>
<th>Model fit $X^2 = 242.010, df = 16, p=.000 (n= 3,387)$, Pseudo $R^2=.106$</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Est</td>
<td>p-value</td>
<td>OR</td>
<td>CI, L%</td>
</tr>
<tr>
<td><strong>Race (p=.005)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-0.123</td>
<td>0.513</td>
<td>0.884</td>
<td>0.61</td>
</tr>
<tr>
<td>Latinx</td>
<td>-0.472</td>
<td>0.005</td>
<td>0.624</td>
<td>0.45</td>
</tr>
<tr>
<td>Asian</td>
<td>-0.216</td>
<td>0.211</td>
<td>0.806</td>
<td>0.57</td>
</tr>
<tr>
<td>Native</td>
<td>-1.608</td>
<td>0.030</td>
<td>0.200</td>
<td>0.05</td>
</tr>
<tr>
<td>Other</td>
<td>0.227</td>
<td>0.180</td>
<td>1.255</td>
<td>0.90</td>
</tr>
<tr>
<td><strong>Gender (p=.000)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>-0.709</td>
<td>0.000</td>
<td>0.492</td>
<td>0.40</td>
</tr>
<tr>
<td>Transgender, Nonbinary, Other</td>
<td>0.349</td>
<td>0.207</td>
<td>1.417</td>
<td>0.82</td>
</tr>
<tr>
<td><strong>Sexual Orientation (p=.000)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Queer</td>
<td>1.005</td>
<td>0.000</td>
<td>2.732</td>
<td>1.74</td>
</tr>
<tr>
<td>Bisexual</td>
<td>1.143</td>
<td>0.000</td>
<td>3.137</td>
<td>2.31</td>
</tr>
<tr>
<td>Another identity/ Unsure</td>
<td>0.382</td>
<td>0.118</td>
<td>1.466</td>
<td>0.91</td>
</tr>
<tr>
<td><strong>Academic Year (p=.000)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>0.513</td>
<td>0.000</td>
<td>1.670</td>
<td>1.33</td>
</tr>
<tr>
<td>3rd year</td>
<td>0.708</td>
<td>0.000</td>
<td>2.029</td>
<td>1.59</td>
</tr>
<tr>
<td>4th year</td>
<td>0.885</td>
<td>0.000</td>
<td>2.422</td>
<td>1.87</td>
</tr>
<tr>
<td>Graduate Student</td>
<td>0.560</td>
<td>0.039</td>
<td>1.750</td>
<td>1.03</td>
</tr>
<tr>
<td>Other</td>
<td>0.804</td>
<td>0.008</td>
<td>2.235</td>
<td>1.24</td>
</tr>
<tr>
<td><strong>Type of Institution (p=.001)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public</td>
<td>-0.308</td>
<td>0.001</td>
<td>0.735</td>
<td>0.62</td>
</tr>
</tbody>
</table>

Enabling variables

Model 2 indicates the Enabling variables, that included if a Student Has Received Information On Depression/Anxiety from the school and a student-athletes’ Hours of Work, account for approximately 1.6% of the overall variance in on-campus mental health services
utilization, indicating an overall regression model that is statistically significant and a good fit for the data, $X^2 = 37.295$, $df = 4$, $p = .000$, and had predictive power with the use of on-campus mental health services by student-athletes. The goodness of fit test via the Hosmer and Lemeshow Test, $X^2(4) = .931$, $p = .920$, had an observed p-value above .05, suggesting the data fit the model and that the overall Enabling variables had a significant effect on the odds of students utilizing on-campus mental health services (Hosmer & Lemeshow, 2000; Tabachnick & Fidell, 2013).

The regression coefficient for If a Student Received Information on Depression and/or Anxiety was significant, $(B = -0.49, OR = 0.61, 95\% CI .50, .75, p = .000)$, with those receiving information being more likely to utilize mental health services compared to those who indicated they did not receive information from their college or university.

The regression coefficient for a student-athlete being employed and their Work Hours per week was significant. Compared to those students who did not have a job, students who worked 1-19 hours $(B = .30, OR = 1.34, 95\% CI 1.13, 1.59, p = .001)$ and 20-39 hours $(B = .30, OR = 1.34, 95\% CI 1.02, 1.76, p = .038)$ were 1.34 times more likely utilize on-campus mental health services.
Model 2.

*Individual logistic regression model for Enabling Variables and Student-Athlete Use of On-Campus Mental Health Services Utilization*

<table>
<thead>
<tr>
<th>Enabling Variables</th>
<th>Model fit $X^2=37.295$, $df = 4$, $p=.000$ (n= 3,486), Pseudo $R^2=.016$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Est</td>
</tr>
<tr>
<td>Received Info</td>
<td></td>
</tr>
<tr>
<td>Depression/Anxiety (p=.000)</td>
<td></td>
</tr>
<tr>
<td>Did Not Receive Info</td>
<td>-0.489</td>
</tr>
<tr>
<td>Work Hours (p=.005)</td>
<td></td>
</tr>
<tr>
<td>1-19 Hours</td>
<td>0.291</td>
</tr>
<tr>
<td>20-39 Hours</td>
<td>0.291</td>
</tr>
</tbody>
</table>

**Need variables**

Model 3 indicates that the need variables (If Grades Were Effected Negatively by Depression and/or Anxiety, and If a Student-Athlete was Diagnosed with Depression and/or Anxiety, or Diagnosed with Another Mental Health condition) account for approximately 16.9% of the overall variance in on-campus mental health services utilization, indicating an overall regression model that is statistically significant and a good fit for the data, $X^2=$ 391.995, $df = 3$, $p=.000$, and had predictive power with the use of on-campus mental health services by student-athletes. The goodness-of-fit test via the Hosmer and Lemeshow Test, $X^2(3)=.535$, $p=.911$, had an observed p-value above .05, suggesting the data fit the model and that the need variables had a significant effect on the odds of students utilizing on-campus mental health services (Hosmer & Lemeshow, 2000; Tabachnick & Fidell, 2013).

The regression coefficient for Grades Being Negatively Affected by Depression and/or
Anxiety was significant (B = 0.75, OR = 2.12, 95% CI 1.74, 1.59, p = 0.000) with student-athletes being 112% more likely to utilize on-campus mental health services when their grades had been affected negatively. Compared with students who received no diagnosis for depression and/or anxiety or any other mental health condition in the past year, those who were diagnosed with depression and/or anxiety B = 1.427, OR = 4.167, p = .000, and those who were diagnosed with another mental health condition B = 0.597, OR = 1.816, p = .001 were 317% and 81% more likely to use on-campus mental health services than those who had not been previously diagnosed.

Model 3.

*Individual logistic regression model for Need Variables and Student-Athlete Use of On-Campus Mental Health Services Utilization*

<table>
<thead>
<tr>
<th>Need Variables</th>
<th>Model fit $X^2 = 391.995$, $df = 3$, p = 0.000 (n = 3,384), Pseudo $R^2 = .169$</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Grades Affected Negatively due to Depression and/or Anxiety (p = 0.000)</td>
<td>Est</td>
</tr>
<tr>
<td>Grades Were Affected</td>
<td>0.753</td>
</tr>
<tr>
<td>Diagnosed (p = 0.000)</td>
<td></td>
</tr>
<tr>
<td>Diagnosed with Depression and/or Anxiety</td>
<td>1.427</td>
</tr>
<tr>
<td>Diagnosed with Other Mental Health Condition</td>
<td>0.597</td>
</tr>
</tbody>
</table>

Hierarchical Logistic Regression Model

To determine the overall impact of the individual variable groups in the ABM associated with the utilization of on-campus mental health services by student-athletes, Model 4 combined the significant variables from Models 1-3. As detailed in Table 4, more power to
predict whether student-athletes would utilize on-campus mental health services with the addition of each set of variable groups. The overall variance for student-athletes utilizing on-campus mental health services had a predictive power of approximately 24%.

Model 4

| Hierarchical logistic regression model for on-campus mental health services utilization (n= 3520) |
|---|---|---|---|---|
| Explanatory models | Model 1: Predisposing variables | Model 2: Enabling variables | Model 3: Need variables | Total |
| Pseudo R² | 0.106 | 0.016 | 0.169 | 0.243 |
| Constant B estimate | -1.281 | -1.303 | -1.291 | -1.274 |
| Constant Odds Ratio | 0.278 | 0.272 | 0.275 | 0.28 |

*All models significant with p-values of .000

Summary of Logistic Regression Results

This study examined how well the use of on-campus mental health services could be predicted for college student-athletes using the ABM and data from the ACHA-NCHA II survey. In summary, frequencies were calculated for the Predisposing, Enabling, and Need variables of interest and helped me interpret the datasets and discover some student-athletes were having different experiences of utilizing on-campus mental health services. Higher percentages of certain student-athlete subgroups (e.g., transgender students) utilized on-campus services the most and other groups (e.g., Native American students) used on-campus services the least. Chi-squares were used to examine frequency differences in utilization of on-campus mental health services among the Predisposing, Enabling, and Need variables.

Building on the descriptive statistics and Chi-square results, I utilized logistic regression...
to examine the predictive power relative to the use of on-campus mental health services by student-athletes. The associations between each of the Predisposing, Enabling, and Need variables and the use of on-campus mental health services utilization generally agree with the associations reported in the literature (Dhingra et al., 2010). The Need variables had the strongest prediction of student-athletes utilizing mental health services; Predisposing and Enabling factors were also significantly correlated with receipt of treatment.

In Chapter Five, the results of these analyses are interpreted as key findings relative to the research questions guiding this investigation and connections are drawn to the literature. New knowledge produced by this investigation will be highlighted as will the limitations of this investigation. Implications for practice and prevention and implications for future research are also be described.
CHAPTER FIVE

DISCUSSION

In the previous chapter I detailed results of the descriptive statistics, Chi-square, and logistic regression analyses. These statistical analyses were conducted to address the two research questions guiding this investigation and their associated hypotheses. In this section, the results of Chi-square and logistic regression analyses will be presented to address the research questions and develop key findings and implications. I start this chapter with a discussion to interpret and summarize the Chi-squares and logistic regressions. I draw connections to previous scholarship and highlighting new knowledge produced by this investigation and proceed to the limitations of the study. I conclude with implications for prevention, practice, policy, and future research.

Key Findings

In this section, I utilize the inferential statistic results to address the research questions, discuss the findings relative to the literature, and summarize results. For the first research question asking if there are associations between Predisposing, Enabling, and Need variables, particularly race, gender, sexuality, academic year, with the use of on-campus mental health services among collegiate varsity student-athletes and if mental health services use differed between athletes and their non-athlete peers, I utilized both descriptive and Chi-square analyses. For this question I will focus on the results of the Chi-square analyses. As discussed in the previous chapter, 11 Chi-squares were subsequently conducted for the Predisposing, Enabling, and Need factors. The Chi-squares showed there was not a significant association between athletes and non-athletes and their use of on-campus mental health services \((p=.359)\). The rest of the Chi-square analyses were found mostly to have statistically significant
associations based on an alpha of 0.05 (n=9, 82%). The two variables evaluating need, which were if grades were negatively affected by depression, anxiety, or another mental health condition, and if a student-athlete had been previously diagnosed with a mental health condition, had effect sizes above 0.200.

The second research question guiding this investigation sought to examine how much power the Andersen Behavior Model’s Predisposing, Enabling, and Need variables have in predicting the use of on-campus mental health services by student-athletes. The full regression model, consisting of Predisposing, Enabling, and Need variables, showed that the ABM could predict the use of on-campus mental health services by athletes and accounted for 24% of the overall variance in on-campus mental health service utilization.

For all student-athletes these key findings suggest: (a) the ABM is predictive of on-campus mental health services use; (b) Need variables were the most predictive, followed by Predisposing variables, then Enabling variables; (c) there are some individual demographic variables most likely to predict the use of on-campus mental health services and echo results found in the literature; (i.e., race, academic year, gender); and (d) institutional factors, such as if a school was public or private, did not have predictive power.

Examining the results and findings derived from descriptive statistics, Chi square analysis, and regression, I now turn to a discussion seeking to illustrate, where the scholarship allows, the connections to existing scholarship on the use of on-campus mental health services. Then, contributions of this study will be discussed. Finally, limitations to using the ACHA-NCHA IIc survey and ABM model are acknowledged, and I end with the conclusion.
Chi Squares

Results presented in the interpretation of the Chi squares replicate and build upon existing scholarship for on-campus mental health services by student-athletes.

**Varsity Athlete Status**

As noted previously, Chi squares were employed to determine if there was a significant relationship observed between the use of on-campus mental health services by athletes and their non-athlete peers (p=.359). Because there was not a significant difference between the utilization between athletes and their non-athlete peers, I focused the investigation on the student-athlete population. This is inconsistent with the literature that found athletes to be less likely to utilize mental health services than their non-athlete peers, due in part to more negative views and attitudes by athletes towards counseling (Daltry et al., 2018; Daltry et al., 2021; Ashwin L Rao & Eugene S Hong, 2016; Watson, 2005).

The inconsistency in the literature may be due to positive trickle down effects of efforts discussed in Chapters 1 and 2 on athletes raising awareness and speaking out about their mental health journeys, as well due to increasing efforts made by the NCAA and other stakeholders to continue to increase mental health education, knowledge, and awareness to encourage athletes to better embrace positive mental health help utilization behaviors (Kroshus, 2016; Ryan et al., 2018). For example, the NCAA Sports Science Institute (SSI) and the Association for Applied Sports Psychology (AASP) have been and are still working with mental health and sports psychology researchers to tackle the mental health crisis in collegiate athletics with a multi-modal approach involving ecological and proactive prevention, early intervention, and crisis intervention strategies (Cox et al., 2017a; Moreland et al., 2018).
In 2016, the NCAA published *Mental Health Best Practices (MHBP): Inter-Association Consensus Document: Best Practices for Understanding and Supporting Student-Athlete Mental Wellness* to help provide athletics and sports medicine departments, irrespective of size or resources, with best practices to support and promote the overall mental well-being of student-athletes to best help student-athletes too ashamed to admit to their immediate support networks that they need help (Gearity & Moore, 2017) which has had a greater focus on student-athlete mental health than earlier CHAMPS/Life Skills programs designed by the NCAA to improve the overall wellness of student-athletes (Carodine et al., 2001). These efforts by the NCAA and other collegiate athlete governing bodies, particularly in recent years, may be helping to shift the organizational culture in athletics and creating a new set of expectations for coaches and administrators to prioritize student-athlete mental health and wellness. This commitment may partially account for the results in this survey that student-athletes use on-campus mental health services as much as their non-athlete peers when previous scholarship had found student athletes to be less likely to use mental health services than their non-athlete peers.

**Race**

Results indicated there was a significant relationship between race and use of on-campus mental health services by student-athletes with Black (18%), Latinx (17%) and Native American (6%) having the lowest reports of on-campus mental health use. This supports the literature that racial minorities such as Black, Latinx, and Native American/Native Hawaiian were less likely to use mental health services than White students (Acito, 2018; Aponte-Rivera et al., 2014; Chen et al., 2019; Nestor et al., 2016; Sanchez et al., 2016). As stated in the literature, the lower rates of mental health diagnosis and use of mental health services by racially minoritized populations may be attributable to stigma, language, and a lack of culturally sensitive interventions and
mental health services practitioners that together discourage racial/ethnic minorities from seeking professional help (Acito, 2018; Cheng et al., 2013; DeFreitas et al., 2018).

In aggregate, multi-racial and bi-racial varsity athletes had higher rates of on-campus mental health services use (29%) than White student-athletes (23%). The greater use of mental health services by those student-athletes who identified as multi-racial or bi-racial is of note given that the literature has reported these student may experience greater internal conflict due to a mismatch in how they self-identify and how others perceive them, which can make them too unauthentic to belong to any racial group (Campbell & Troyer, 2007; Yeh & Hunter, 2004). With the increase in mixed-racial parentage in North America comes a need for increased research to bring greater understanding to the bi-racial and multi-racial experiences of mental health services utilization (Nuttgens, 2010), particularly in collegiate student-athletes. The use of mental health services by bi-racial and multi-racial college student-athletes is not as well documented in the literature making this investigation a contribution to existing scholarship.

Gender

Results indicated there was a significant relationship between gender and use of on-campus mental health services by student-athletes. Descriptive statistical findings for varsity athletes found a higher percentage of female varsity athletes utilized services (25%) than male varsity athletes (13%), and that the highest population of use was transgender students (41%). These descriptive statistics are in line with the findings of scholars such Cooper et al. (2003), Watson & Kissinger (2007), Moreland et al. (2018) that female athletes utilize mental health services at higher rates than males and that they hold more positive help-seeking attitudes than males making them more likely to utilize mental health services. This may be due to males perceiving the use of on-campus mental health services to be unmasculine and weak, especially
in contact sports such as football and wrestling that have reported even more negative attitudes toward help-seeking behavior (Wahto et al., 2016). The difference in use of mental health services between males and females is well-established in the literature and was not a focal point in the study.

Transgender students were more likely to utilize on-campus mental health services than males which is consistent with the literature (Russell et al., 2016; Oswalt et al., 2017), but results of my study also showed transgender students were more likely to use on-campus mental health services than females. According to the literature, psychological factors of identifying as transgender, such as the anticipation of rejection may lead some students feeling unworthy and unsafe, explaining why those who are transgender may be more likely to reach out for help compared to their counterparts who classify as cisgender (Bockting et al., 2013; Bouman et al., 2017; Dawson et al., 2017).

**Sexual Orientation**

Results indicated that there was a statistical association for sexual orientation and the use of on-campus mental health services by varsity-athletes, and that straight students used services the least. This is consistent with the literature that students who identify as queer utilize mental health services more than those who identify as straight (Denton et al., 2014; Dunbar et al., 2017; Kerr et al., 2013; Oswalt & Wyatt, 2011). The Chi-squares also uncovered that bisexual student-athletes used services more than queer student-athletes. The use of mental health services may be higher in transgender students-athletes than in queer student-athletes due to queer students having more mental health support from their community (Alessi et al., 2017; Woodford et al., 2014; Woodford & Kulick, 2015).
**Academic Year**

Results indicated there was a statistical association between a student-athlete’s academic year and their use of on-campus mental health services. Similar to the literature the results showed that first-year undergraduates (15%) were less likely to utilize on-campus mental health services compared to second-year (22%) and beyond students (Eisenberg et al., 2007; Eisenberg et al., 2011) however also found that the use of on-campus mental health services also increased for student-athletes in their third year (25%) and fourth year (30%) of college. First year students are at higher risk of suffering from mental health challenges (Brandy, et al., 2015) which suggests that first-year students who responded to this survey may be experiencing need for treatment and are not utilizing on-campus mental health services. A longitudinal study would be needed to further explore throughout the traditional four years of college.

**Chi Square Summary**

The results suggest that the rates of mental health services use across Latinx, Native American, male, straight, first year student variables were the lowest. Repeated findings in this investigation warrant increased attention or mental health outreach to those student-athletes to help bolster their mental wellness. These contributions have implications for prevention, practice, and future research and will be subsequently discussed.

**Logistic Regression**

The results of the logistic regression predicting the utilization of on-campus mental health services for athletes indicated that the ABM variables using the ACHA-NCHA IIc, significantly predicted use of on-campus mental health services by student-athletes. These analyses strengthened results of the descriptive statistic and Chi-square analyses by further illustrating that the ABM variables are predicative of the use of on-campus mental health services. This is consistent with the literature that the ABM can predict the use of on-campus mental health
services by college students (Nam, 2018; Pilar et al., 2020). However, to my knowledge, the ABM has not been proven to predict on-campus mental health services use by student-athletes. This section will explore the significance of the total model, the significance of each area of the ABM group, as well as the individual variables that were demonstrated to be the most statistically significant predictors of mental health services use on-campus by student-athletes.

**Total Regression Model**

The total regression model consisting of Predisposing, Enabling, and Need variables, was combined to assess the overall impact of the variable groups in explaining the variance associated with the utilization of on-campus mental health services utilization. The full model had more prediction power than the individual models and accounted for 24% of the overall variance in on-campus mental health service utilization.

**Predisposing, Enabling, and Need Variables**

The Predisposing variables accounted for roughly 11% of the overall predictive value. Of note, variables such as race were significant, however different subgroups of race were found to not be significant. For example, student-athletes indicating that they were Black, Asian, bi-racial/multi-racial or other did not have a significant predictive power on student-athletes utilizing on-campus mental health services. Latinx students were 37% less likely to use on-campus mental services than White student-athletes, and those who were Native American/Native Hawaiian were 80% less likely than White student-athletes to use services. Male students were 50% less likely to utilize on-campus mental health services than their female peers while transgender and non-binary student-athletes were 42% more likely to utilize on-campus mental health services than females. Queer students were 173% more likely to use on-campus mental health services than straight student-athletes while those who were Bisexual were 214% more likely to utilize
on-campus mental health services than Straight student-athletes. The regression coefficient for a student-athlete’s academic year was significant, indicating that with each progressing academic year the odds of accessing on-campus services also increased. Finally, the regression coefficient for if a student was enrolled in a public or private institution was significant indicating that student-athletes enrolled in public institutions were less likely to access on-campus mental health services than student-athletes attending private institutions.

The Enabling variables showed to not be as significant, accounting for roughly 2% of the overall predictive value, while the Need variables had the most predictive value of all the ABM variables at 17% which is similar to Pilar (2020)’s findings. The regression findings presented are consistent with the literature which also indicates the importance of Need variables in the ABM relative to the other categories (Andersen, 1995; Dhingra et al., 2010; Pilar et al., 2020).

**Logistic Regression Summary**

The aim of the study was to examine how much predictive power can be derived when using the ABM as a guide in selecting variables. Using the variables queried in ACHA-NCHA IIc survey, I found that the total models accounted for 24% of the variance in the use of on-campus mental health services. Based on these findings I conclude the ABM provides a helpful start point when predicting the use of on-campus mental health services for student-athletes. I also conclude that the data set of the ACHA-NCHA IIc survey might be missing questions that address additional factors that may be predictive of a student-athlete’s decision to utilize on-campus mental health services, as discussed in the limitations section.

**Limitations**

The strengths of this investigation’s design are outlined in Chapter Three. This study included limitations that should be considered such as: a) using data from a pre-existing survey
not originally designed to be used to answer these particular research questions; b) the difficulties in fitting some variables into the ABM; c) athletes engaging in other forms of mental health counseling aside from the outcome variable of utilizing on-campus mental health services; and d) data collected before the COVID-19 pandemic such that results do not reflect the additional mental health burdens of collegiate athletes during this time and how the pandemic affected their ability to utilize barriers on-campus mental health services (Edwards & Thornton, 2020; Reardon et al., 2020).

The ACHA-NCHA IIc survey provided the opportunity to select variables from a well-known data source. However, this secondary analysis was based on self-report measures, which may have resulted in potential recall and response biases (Maulik et al., 2011; Snowden, 1998). While self-reported assessments can be informative, a formal assessment by a trained mental health practitioner would be needed to confirm official mental health diagnostic information. Depression and anxiety, for example, would be better measured by validated tools to improve the sensitivity and the specificity in evaluating the mental health of student-athletes (Sudano et al., 2017; Trojan, 2016). Mental health screening instruments include the Patient Health Questionnaire (PHQ-4) for depression and anxiety (Kroenke et al., 2009), Generalized Anxiety Disorder 7-item scale (GAD-7) for anxiety disorders (Spitzer et al., 2006), and the Mood Disorder Questionnaire (MDQ) for bipolar spectrum disorders (Wagner et al., 2006). Having a data source catered to student-athletes that fits directly, and more specifically into the Predisposing, Enabling, and Need variables of the ABM model would illuminate mental health utilization patterns and power of prediction in a way an already existing survey likely could not do alone. It is also very likely some student-athletes had undiagnosed and untreated depression and anxiety potentially resulting in an under-diagnosis of depression, anxiety, or other mental
health illnesses self-reports in the survey results. There were other relevant variables not captured as directly by the ACHA-NCHA IIc survey such as a survey question asking about socio-economic status to see how income level might be associated and/or able to predict mental health utilization behaviors (Choi & Miller, 2018).

The ABM allowed me to compare the literature reviewed using a structured and standardized tool. The model was helpful due in part to how relatively adaptable it was; however, it was also challenging to make certain variables from the ACHA-NCHA IIc survey fit perfectly into the Predisposing, Enabling, and Need categories. Some variables could have fit into more than one of the categories. As I proceeded with the study it seemed there may have been more variables from the survey, I could have categorized into the ABM which may underscore the moderate predictive value of the analysis reported.

The data used in this study were collected in the Fall of 2019 before the COVID-19 pandemic. The ACHA-NCHA IIc survey has been adjusted and now has questions regarding COVID-19 to help inform decisions on-campus during an extraordinary time when the mental health risk factors of college students have been exacerbated. A joint report by the American College Health Association and Healthy Minds Network (2020) on the effects of COVID-19 revealed that in spring 2020, after most colleges and universities closed campuses and moved courses to online formats, 60% of students seeking counseling reported more difficulty obtaining psychological treatment (Lederer et al., 2020). The pandemic has continued to cause college students personal distress by dismantling their interpersonal, institutional, and community networks, which may be exacerbated by additional stressors including potential housing and food insecurity, financial hardships, and uncertainty about the future (Lederer et al., 2020) which has implications and may impact the results should the same study be conducted using a future
NCHA ACHA data-set in post-pandemic times. College students may need more mental health support during this time when many are feeling increased levels of stress, anxiety, and depressive symptoms due lack of social connectedness and sense of belonging (Kecojevic et al., 2020; Wang et al., 2020). The ACHA has since added questions about students’ COVID-19 beliefs, behaviors, and experiences to gain preliminary information about the impact of COVID-19 on students’ mental health in spring 2020. It is a limitation to not have this information but also would be an opportunity for future research.

Despite these limitations, these results suggest that this study makes significant contributions to the existing literature by further exploring the predictive factors associated with the use of on-campus mental health services by college student-athletes.

**Implications**

There are several implications that can be derived from the results and key findings of this investigation. I begin by discussing targeted interventions. I then discuss the potential benefits of shifting collegiate athletic organizational culture to be more mental health services utilization. Finally, I discuss the opportunities inspired by this investigation for future research.

**Implications for Practice**

The results of this study showed that male, heterosexual, first-year, Latinx, and Native American student-athletes were the least likely in their demographic categories to utilize on-campus mental health services. This highlights the importance of gender specific and ethnically/culturally responsive mental health interventions to better address the unique challenges facing subpopulations of college students. Mental health interventions designed for specific cultural groups have been found four times more effective than those provided to a group of individuals from culturally diverse backgrounds and led by those who are reflective of
the increasingly diverse collegiate population (Wyatt et al., 2017). This is especially true for racially minoritized populations who identify more barriers to mental health treatment and mental health stigmatization, than White students (Miranda, 2015). Efforts to continue to hire a more diverse counseling staff, which includes racial, sexual orientation, and gender diversity, will be helpful in addressing and relating to the lived experiences and needs of all students (Wesley, 2019). According to LeViness and colleagues (2019), 70% of mental health clinical staff on college campuses were White, 86% were heterosexual, 76% were female, 3% were Latinx, and less than 1% were Native American/Native Hawaiian. Athletic departments should explore mental health training for coaches and staff working with male athletes and partnerships made with relevant student groups, such as Latinx and Native American student groups on campus, to help increase mental health literacy and awareness. Given resource constraints, counseling centers and athletic departments may need to hire part-time clinicians who can lead mental health initiatives that are targeted to particular cultural groups.

When looking to connect with first-year students, who are the least likely to utilize on-campus mental health services, approaches that are relevant to the audience, such as using social media to increase awareness, or should be explored (Vaccaro et al., 2015). A majority of first year college students reported favorable attitudes towards digital interventions that can be effective in improving depression, anxiety, and stress, and other variables of mental health services that were not in person (Davies et al., 2014). In 2019, on-campus college counseling directors in the US reported offering options for services that were not in person including tele-health services (48%), mental health screening online (28%), therapist assisted online (9.9%), telephone counseling sessions (7.6%), video counseling sessions (3.4%) (LeViness et al., 2019). Targeted interventions and efforts such as these could lead to positive changes in these student-
athletes’ mental, academic, and social outcomes throughout their college experience, and perhaps even their life.

The literature suggests that an effective way to address mental health concerns in student-athletes is to utilize a collaborative team approach that includes coaching staff, athletic trainers, counseling services, faculty, staff, and any other necessary stakeholder (Neal et al., 2013). Preparing these stakeholders to recognize signs and symptoms of mental health struggles helps mitigate stigma and encourages open dialogue with student-athletes about their well-being which may help the athlete start a path to recovery, and overall success as a student-athlete better help assess the needs of a student-athlete would allow for a better continuum of care for the student athlete and best assess needs of the student athlete to help them receive more comprehensive care (Gearity & Moore, 2017; Carr & Davidson, 2014). A multi-disciplinary team approach would help provide more opportunities for student-athletes to make a connection with a campus professional who can help them access the help they need, and help prevent more severe mental health consequences down the line (Davoren & Hwang, 2014; López & Levy, 2013).

Trainings and supplemental materials like a handbook or toolkit should be provided to student-athletes, and those who work with them, and be made easily accessible on the athletic department’s website. At a minimum, these resources should include descriptions of the most common mental health disorders in student-athletes, as well as the symptoms and signs present in most psychological disorders, how these disorders can be treated and managed, why student athletes might have an elevated risk for certain mental health illnesses, and where should a student-athlete in need be referred for help.
The NCAA is the largest athletic governance organization with nearly half a million collegiate athletes across NCAA Division I, with 351 member institutions. NCAA Division II has 308 member institutions, and NCAA Division III is the largest with 443 institutions (NCAA, 2021). NCAA Division I is afforded the most funding from the NCAA to support student-athletes who are competing at the highest collegiate level and offers athletic-based scholarships. The smaller governing organizations include the National Association of Intercollegiate Athletes (NAIA), National Christian College Athletic Association (NCCAA), the National Junior College Athletic Association (NJCAA), and the California Community College Athletic Association (CCCAA) (Mikel, 2003).

The NCAA has published resources and guidelines to encourage researchers, university officials, athletics programs, and policy makers to develop more programs, campaigns, and practices to intervene in the early identification and treatment of mental health disorders to help reduce the student-athlete’s risk of potential harm and reduce the duration of one’s symptoms (Etzel, 2006; Kroshus, 2016). In 2014 the NCAA composed a consensus document called *Mind, Body, Sport* (MBS) designed to further educate sport stakeholders about the severity of mental health issues in student athletes on campus and advocate further for campuses to develop more effective strategies to best understand and support student-athlete mental wellness. MBS champions that student-athletes need more professional mental health assistance available to them, and that proper protocols and resources should be made available to coaches, trainers, and athletic departments to ensure these students athletes have the resources and channels of support should they be in need (Brown et al., 2014; Gearth & Moore, 2017). In 2016, the NCAA published *Mental Health Best Practices (MHBP): Inter-Association Consensus Document: Best Practices for Understanding and Supporting Student-Athlete Mental Wellness* as more in-depth
extension of MBS, and took a more all-inclusive look at the mental health experiences of student athletes, including sharing personal narratives from athletes and coaches and their struggles and encounters with mental health disorders. MHBP stresses the importance of an athletic department having: (a) licensed mental health professionals trained in the clinical, ethical, and cultural aspects of mental health to lead the interdisciplinary teams to coordinate proper mental health care; (b) proper procedures, such as a comprehensive and context-specific protocol, for the identification, management, response, and referral system of student-athletes to qualified practitioners in both emergency and non-emergency situations; (c) student athletes complete a pre-participation mental health screening using a reliable and valid screening instruments chosen by licensed mental health care professionals; and (d) promote positive athletic environments that encourage and normalize mental health seeking behavior to support a student-athlete’s mental well-being, build their confidence and resilience, teach them proper coping skills to help reduce risk-taking behaviors, and further promote student athletes’ fostering positive self-care, personal growth, acceptance, respect, and autonomy (Gearity & Moore, 2017).

The NCAA’s MBS and MHBP have been influential in bringing more awareness to the mental health crisis in collegiate athletics, however at this time there are not policies in place that mandate athletic departments to provide mental health programming and suicide prevention training for student-athletes which leaves some student-athletes in crisis to struggle on their own. The NCAA can do more by enforcing more formalized policies dedicated to the prevention and treatment of mental health disorders as well as the prediction of who might not be accessing mental health services when in need. Developing mandatory training for athletic departments and for those who work with student athletes on how to approach a suicidal student-athlete, and on how a stakeholder can screen or recognize signs of mental health issues may help with greater
identification of warning signs and potentially aid in mental health emergencies that involve suicide ideation. Early identification and treatment can play an important role in lessening the harm, limiting the duration of mental health illness symptoms, and helps slow or prevent potential progression, which when left untreated may lead to more severe emotional and psychiatric consequences (Davoren & Hwang, 2014; Kroshus, 2016; López & Levy, 2013). As discussed in Chapter One, within months of completing this study, student-athlete suicides of Stanford soccer player Katie Meyer, University of Wisconsin track and field and cross-country athlete Sarah Shulze, James Madison University softball player Lauren Burnett, and SUNY Binghamton lacrosse player Robert Martin, have made headlines. Coaches and other stakeholders working with athletes on campus should be trained on the early warning signs of suicidality in the event a student-athlete will not seek mental health services, as well as grief counseling for athletic communities mourning the loss of a student-athlete.

The NCAA can use the ABM to help predict who is not utilizing mental health services and lean on scholarship such as Prevention Science, that focuses on reducing risk factors to improve health and wellbeing of student-athletes, using evidence-based strategies. The core of prevention science is to promote health equity and reduce disparities by studying how demographics, mirroring those in the ABM, influence healthy development and well-being. The tenants of prevention science can be used to influence practices and policies in mental health to help student-athletes thrive, particularly: a) a coalition-based approach with buy-in from a range of stakeholders who work directly with student-athletes; b) visible leadership messaging from the NCAA, athletic departments, senior administrators, faculty, coaches, team captains, about the healthier mental health culture they want to create; c) data-driven results based on research using the ABM to help evaluate who might be at most risk for not getting mental health help and
provide a feedback loop; d) more allocation of resources, including both time and funding, by the NCAA and athletic departments to the topic of mental wellness; e) include language on mental health prevention and training in job descriptions for coaches, and those working with student-athletes; f) having athletic departments aligning this commitment to mental health prevention and help with the institutional mission, and working with the institution to shift the mission to be more focused on mental well-being for all students.

Mental health screening and education should be part of the pre-season in collegiate sports medicine settings for all student-athletes, with particular attention paid to those sub-groups found to be most at risk on each campus in the ABM. Pre-screening student-athletes when they arrive on campus would provide an opportunity to educate them and their parents on the mental health policies, protocols, and mental health resources available on campus. Early identification of mental health disorders such as depression and anxiety, which would include a professional diagnosis and proper counseling services treatment plan, can help mitigate the long-term damage experienced by the student-athlete, help shorten the duration and magnitude of symptoms, and help block the potential escalation to more severe symptoms and outcomes (Kroshus, 2016). There also needs to be greater uniformity and consistency in the type of mental health validated instruments used, if they are used, to help screen for mental health disorders and risk behaviors in a more uniform manner. Policies should be put in place to protect the confidentiality of a student-athlete seeking mental health services. Some student-athletes may fear that if they are identified by teammates or others before proving themselves on the team that they may be at greater risk for losing an athletic scholarship or playing time in games.

The NCAA has the funding, and the platform to raise awareness about the mental health crisis. Advertisement time should be dedicated during televised games creating more awareness
to the mental health crisis, and in suicide prevention. Funding should also be allocated by the NCAA, or in alliance with organizations such as the Center for Mental Health Services, created by Congress to promote the prevention and treatment of mental disorders on a federal level to bring new hope to those who suffer from mental illness and emotional disorders. These organizations could work with athletic departments, and athletic departments can work with individual teams, on awareness ideas such as having a “Mental Health Day” where teams are not permitted to practice or compete. The focus should be on mental health education and awareness raised on which student subgroups may be most unlikely to use mental health services to help raise awareness on topics surrounding suicide prevention.

**Examining Organizational Culture**

Institutions can promote an organizational culture that supports well-being and seeking help within each athletic team, athletic department, and on campus. The organizational culture of intercollegiate athletics lands in a unique space between sport and education (Beyer et al., 2000). Athletics are a form of campus ritual that can propagate organizational culture and create a sense of coherence and unity meaningful to both organizational members and the exterior publics they serve. The experiences of a collegiate athlete and perceptions of the roles they play are influenced by the organizational culture of intercollegiate athletic departments (Jayakumar & Comeaux, 2016). Governing bodies, such as the NCAA, are external influences that regulate actions of administrators, coaches, athletes, and boosters (Schroeder, 2010) that shape and can alter the values of an athletic culture (Southall et al., 2005), and have the influence to help shift an organizational culture to one more supportive of mental health utilization of student-athletes. These cultures can also be driven by the college or university’s mission, institutional type and
size, administrative policies, admissions standards, and other influences that shape perceptions, values, and assumptions about athletics (Duderstadt, 2009).

If the organizational culture does not offer a supportive environment that offers resources to student-athletes to get referrals to mental health services, it further perpetuates the idea that student athletes cannot admit they have a stigmatized problem that contradicts the institution’s image of a perfectly balanced student-athlete (Jayakumar & Comeaux, 2016; Moreland et al., 2018). An organizational culture that does not promote mental health awareness, education, and literacy may prevent a student athlete, teammate, coach, or trainer from recognizing the early symptoms and signs of a burgeoning mental health disorder (Moore, 2017). A shift in organizational culture can be impactful in the destigmatization of mental health issues if it normalizes help seeking, establishes more mental health identification, procedures, and promotes mental health literacy and education on college campuses and should be the goal.

When examining any organizational culture, an accounting of subcultures is also imperative. Subcultures arise when subgroups within the organization share enough experiences to create their own idiosyncratic clusters of ideologies (Beyer et al., 2000). Subcultures, such as athletic teams, tend to accept the norms of the overall culture, however the subcultures can also affect the dominant organizational culture (Schroeder, 2010), meaning individual sports teams can collectively affect the athletic department culture. The organizational culture of an athletic department is shaped by the NCAA, institution, and external environments. If the organizational culture does not offer a supportive environment that offers resources to student athletes to get referrals to mental health services, it further perpetuates the idea that the student athlete cannot admit they have a stigmatized problem that contradicts the institution’s image of a perfectly balanced student athlete (Jayakumar & Comeaux, 2016). A shift in organizational culture can be
impactful in the destigmatization of mental health issues if it normalizes help seeking, establishes more mental health identification, procedures, and promotes mental health literacy and education on college campuses (Moreland et al., 2018).

The stigma of mental health issues persists particularly within modern athletic culture (Bauman, 2016). This stigma may be a trickle-down effect from an organizational culture and climate in athletics that emphasizes self-reliance and prioritizing the team over self (Kaier et al., 2015). Stigma may make athletes wary about revealing symptoms, and prevent them from seeking the help they need (Sudano et al., 2017; Wolanin et al., 2015). A large part of battling the mental health crisis in collegiate athletics is creating an athletic environment that counteracts mental health stigma (Cox et al., 2017a; Rao et al., 2015; Wahto et al., 2016; Wolanin et al., 2015). A shift in collegiate athletic organizational culture to one that better encourages the utilization of on-campus mental health services and better supports mental wellness advocacy may help counteract the stigmatized mental health panorama and drive positive change within and outside of intercollegiate athletics.

One way to examine the values influencing the organizational culture of an athletic department is to read the mission statements and handbooks of the institution stating what the organization wants and the importance of these desires. An assessment of leadership and power within an athletic department is necessary to account for an athletic department’s culture as it is those who are in managerial control who are capable of leading, negotiating, and changing the power balance among the university, athletic department, and external environment (Schroeder, 2010). It would also be helpful to examine visible elements of intercollegiate athletic department culture include mascots, logos, slogans, facilities, cheers, rituals, and ceremonies designed to convey implicit and explicit messages, and promote suggested behaviors (Southall et al., 2005).
Some of these rituals and traditions may represent an institutional culture driven by hypermasculinity, where seeking help may be portrayed as a sign of weakness and failure, and where student athletes are conditioned to push through physical and mental thresholds (Gill, 2008; Moore, 2017; Putukian, 2016). A hyper-masculine culture and a history of being coached to stay “mentally tough” and “push through pain” might deter a student athlete from coming forward to teammates or coaches with mental health concerns (Chew & Thompson, 2014; Kroshus, 2014; López & Levy, 2013).

A portion of what is regarded as organizational culture could be characterized as organizational climate as well (Alvesson & Berg, 2011). Organizational climate is one way to view the perceptions of the images college athletes are expected to uphold within intercollegiate athletic culture even though organizational climate is usually used to organizations (Ali & Patnaik, 2014). When looking to influence the organizational climate the most important factors are team orientation, empowerment, core values and agreement. In transforming organizational culture one must look into the main parameters on each level and work with those factors (Schein, 2004). If student-athletes feel supported in being able to talk openly about mental health concerns it would help create a culture more conducive to seeking help. Some team subcultures have a “no pain, no gain” mentality which may make an athlete feel unsupported and will influence a resistance to getting help (Kroshus, 2014; López & Levy, 2013). It would be helpful to examine the role each organizational layer plays using a problem analysis approach. From the athlete and team, all the way up to the NCAA, it should be examined if there is an athletic culture where mental health concerns are normalized and help-seeking behavior is encouraged, or an athletic culture that stigmatizes mental health illness which may impel an athlete to remain silent and untreated.
**Future Research**

The NCAA has launched a NCAA Innovations in Research and Practice Grant program to support initiatives dedicated to enhancing student-athlete mental and psychosocial well-being. In 2022 the NCAA will award up to $100,000 in grants that support to pilot on-campus programs aimed at enhancing the well-being of NCAA student-athletes, which includes topics of new approaches to encouraging mental health well-being and encouraging mental health help-seeking behaviors. A grant should be proposed to further this research by creating a survey, asking questions to specifically tied to the predisposing, enabling, and need variables of the ABM, and also include questions about the athletic association, division of NCAA if applicable, and sport. This study has proven that the ABM if affective in predicting use of on-campus mental health services use by student-athletes.

As stated previously as part of the limitations, a survey designed specifically to test the ABM would be better suited and may increase the variance percentage. If a newly created survey was sent from the NCAA to all athletic departments, the sample size of athletes would be large enough to test interdisciplinary aspects of the model and would, for example, be able to compare the mental health services usage of students of multiple identities such as a gay, Black, male athlete, to see if there are intersectional identities at most risk. There should also be questions added about types of mental health counseling to capture other kinds of therapy they are receiving outside on-campus services. There should also be an additional outcome variable added so that the ABM can also be used to predict which student-athlete sub-groups have a higher likelihood of suicide ideation.

By creating a replica of this study with a larger sample size, the ABM could be used to explore how the intersectionality as identities, such as race and sexuality, impact the predicted
use of on-campus mental health services by student-athletes. In my study, the sample sizes at the intersections of identity were too small to draw precise and accurate conclusions. Sample sizes that are not sufficiently powered to detect a difference can result in data that are invariably inconclusive (Nayak, 2010). This is important to explore as forms of oppression, such as belonging to a marginalized identity, can be intensified when combined (Crenshaw et al., 1995; Davis, 2011; Loewenberg & Bogin, 2010). Social and behavioral research such as this are important as choices to utilize mental health services may be affected when examining the intersections of more than one sociocultural identity, such as race, class, gender, or sexuality (Cho et al., 2013; Collins, 2015; Crenshaw et al., 1995; Hancock, 2016).

One example that could be explored with a larger data set of student-athletes, would be to look at the mental health implications, utilization of mental health services, and suicide ideation patterns of a Black, queer, male athlete, who may feel marginalized even further within their own racial and sexual communities due to contradicting, and often oppositional, discriminations held by their different identities (Anderson & McCormack, 2010). Most Black American male athletes tend to be portrayed in sport culture as heterosexual, while gay male athletes tend to be portrayed as White (Anderson, 2011; Anderson & McCormack, 2010). Athletes who are both Black and gay may choose not to sacrifice their heterosexual masculine privilege and identify only with their racial identity to maintain a socially perceived queer identity (King, 2004) as homophobia, or gay and lesbian intolerance, is reported to be escalated among Black Americans (Hill, 2013).

Another area for future research is creating or finding a dataset that disaggregates student-athletes by athletic conference or by NCAA division, and by each sport, and using that data in the ABM to see if the prediction of mental health services utilization differs between the
Predisposing, Enabling, and Need variables, with the additional layer of athletic conference or division. The differences between athletic conferences, and the three NCAA divisions, influence time commitment, philosophies, and budgets may impact the day-to-day functioning of these athletes, and perhaps their mental well-being and utilization of on-campus mental health services. Future research should also examine the barriers related to student-athletes not utilizing mental health services on-campus, such as mental health stigma, using customized studies that tie directly to the ABM that are distributed to large sample sizes of student-athletes. The best approaches should be examined and addressed to help influence a student-athlete’s comfort level in utilizing services and empower the student-athlete to discuss mental health concerns. Overall, this investigation began to address these gaps in the literature by utilizing a critical quantitative approach and examining differences in varsity athlete experiences with on-campus mental health services.

**Conclusion**

The purpose of my study was to test if the ABM would the use of on-campus mental health services by student-athletes. Need variables, such as having grades affected negatively by depression and/or anxiety and having a previous diagnosis of depression and/or anxiety or another mental health condition were the strongest predictors of using the mental health services available on campus. A more targeted study asking more directed questions about Predisposing, Enabling, and Need variables sent directly to student-athletes could provide even more comprehensive predictive results for utilization of on-campus mental health services, or mental health services not limited to what is offered on campus. To my knowledge, this study represents the only investigation utilizing the ABM to predict use of on-campus mental health services by
collegiate student-athletes. Therefore, the results present several unique findings that could significantly advance the topic of mental health care utilization in college athletics.

This study found that certain groups of student-athletes including those identifying as male, heterosexual, Latinx, and Native American, are less likely to use on-campus mental health services. The tragic suicides of collegiate student-athletes broadcasted in the media have put a spotlight on the detrimental consequences of a student-athlete not receiving the mental health support they may need. In a survey of NCAA athletes, 9% experienced suicide ideation (Moore, 2017) and suicide is the third leading cause of death of student-athletes (Born, 2016; Coakley, 2014). This topic is worthy of more research.

The ABM has long been considered an important resource for predicting health utilization and is one of the most widely used frameworks in health services to predict use of health services (Fortin et al., 2018; Guilcher et al., 2012; Von Lengerke et al., 2014). Increasingly, the ABM is acknowledged as an important tool for predicting mental health utilization (Dhingra et al., 2010) in vulnerable populations such as homeless women (Stein et al., 2007) and in college students (Pilar et al., 2020). My study showed that it is also an effective model to predict on-campus mental health services use in the collegiate varsity-athlete population. The overall ABM explains 24% of student-athletes’ use of on-campus mental health services, which means that approximately 76% of on-campus mental health services utilization cannot be explained by these ACHA-NCHA IIc variables. These results illustrate that the ABM is a helpful start for predicting use but would likely be a lot stronger if a data set was created specifically to test this model instead of utilizing a secondary analysis of the ACHA-NCHA IIc or other data set that was not designed specifically to fit into the ABM’s Predisposing, Enabling, and Need categories.
I selected variables from the ACHA-NCHA IIc survey based on a review of relevant literature and illustrated how this data met the necessary assumptions to conduct the types of data analysis (i.e., descriptive statistics, Chi-square analyses, logistic regression) that informed my results and key findings. Key findings suggest: (a) Need variables had the most predictability of on-campus mental health services utilization by student-athletes; (b) males, heterosexuals, Latinx, and Native American students were least likely to utilize on-campus mental health services (c) transgender, multi-racial/bi-racial, and bisexual students were most likely to use on-campus mental health services; (d) the ABM is an effective model to predict use of on-campus mental health services for the collegiate student-athlete population.

It is well documented that student-athletes are suffering from mental health issues such as depression and/or anxiety and are not utilizing mental health services (Moreland et al., 2018; Sudano et al., 2017). Untreated mental health issues such as depression and/or anxiety puts one at greater risk for developing additional mental health illnesses and increases the risk of suicide or suicidal ideation (Rao et al., 2015). Knowing this and not proactively trying to predict which students might not be getting the mental health support they need can result in inadequate protection of the health and safety of student-athletes who may have untreated mental health illnesses. Athletic departments with an established predictive model in place would be more likely to catch those student-athletes who are less likely to utilize services. Using the ABM could help on-campus counseling centers and athletic departments identify those who may be most at risk for not getting the help they need.

Future research should also use the ABM to explore mental health services usage by student-athletes divided into other categories (i.e., by NCAA division, by sport) to determine if interpretations of predictability offered throughout this investigation are replicated. If subsequent
investigations continue to find the ABM to be less predictive of student-athletes utilizing mental health services, a different model may be more appropriate. This investigation makes contributions to the literature by documenting the nature and extent of varsity athlete experiences by variables, establishing the ABM as a reliable and valid predictor of student and varsity use of on-campus mental health services. If collegiate student-athletes do not receive the support necessary to help them, the number of college athletes experiencing behavioral health risks will likely not improve (Beauchemin, 2014; Dean & Rowan, 2014). It is imperative that these services are promoted particularly among groups such as Latinx, Native American, male, straight students who are at most risk for not utilizing services to address their mental health needs, maximize their educational attainment, and quality of life.

The intention of this study was to provide insights to help guide policies and procedures in educating collegiate athletic coaches, administrators, and athletes and in encouraging new approaches to help student-athletes improve their mental health counseling use behaviors, and their overall holistic well-being. Getting the mental health counseling support these student-athletes may lead to positive, and potentially lifesaving impacts on their lives.
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APPENDIX A: ACHA-NCHA II, Variable Data Requested

National College Health Assessment

The following questions ask about various aspects of your health. This survey is completely voluntary. You may choose not to participate or not to answer any specific questions. You may skip any question you are not comfortable answering. The survey is confidential. E-mail contact information is destroyed before data are compiled to protect confidentiality. Composite data will then be shared with your campus for use in health promotion activities.

31A) Within the last 12 months, have you been diagnosed or treated by a professional for any of the following? (Please mark the appropriate column for each row)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anorexia</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Anxiety</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Attention</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deficit Hyperactivity Disorder (ADHD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bipolar Disorder</td>
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<td></td>
</tr>
<tr>
<td>Bulimia</td>
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<td></td>
</tr>
<tr>
<td>Depression</td>
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<td></td>
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<tr>
<td>Insomnia</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other sleep disorder</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

32) Have you ever received psychological or mental health services from your current college/university's Counseling or Health Service?

(1) □ No
(2) □ Yes
45A) Within the last 12 months, have any of the following affected your academic performance? (Please select the most serious outcome for each item below)

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This did not happen to me/not applicable</td>
<td>I have experienced this issue but my academics have not been affected</td>
<td>Received a lower grade on an exam or important project</td>
<td>Received a lower grade in the course</td>
<td>Received an incomplete or dropped the course</td>
<td>Significant disruption in thesis, dissertation, research, or practicum work</td>
</tr>
</tbody>
</table>

(3) Anxiety

45B) Within the last 12 months, have any of the following affected your academic performance? (Please select the most serious outcome for each item below)

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4) Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

47C) Which term do you use to describe your gender identity?

1) Woman
2) Man
3) Trans woman
4) Trans man
5) Genderqueer
6) Another identity (please specify)

48) What term best describes your sexual orientation?

1) Asexual
2) Bisexual
3) Gay
4) Lesbian
5) Pansexual
6) Queer
7) Questioning
8) Same Gender Loving
9) Straight/Heterosexual
10) Another identity (please specify)

50) How do you usually describe yourself? (Mark all that apply)

A) White  
B) Black  
C) Hispanic or Latino/a  
D) Asian or Pacific Islander  
E) American Indian, Alaskan Native, or Native Hawaiian
(F) □ Biracial or Multiracial
(G) □ Other

Within the last 12 months, have you participated in organized college athletics at any of the following levels? (Please mark the appropriate column for each row)

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Varsity</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>(B) Club sports</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>(C) Intramurals</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

RNQ47 uses the responses to NQ47a, NQ47b, and NQ46c to create a new variable, SEX AND GENDER. This variable is used to sort respondents into female and male categories in the ACHA- NCHA report documents.

- If a student’s gender identity (nq47c) is consistent with their sex at birth (nq47a) AND the student selects "no" for transgender (nq47b), then respondents are sorted as female or male.
- If a student selects "yes" for transgender (nq47b) OR their sex at birth (nq47a) is not consistent with their gender identity (nq47c), the respondent is sorted as non-binary.

Institutional Control
(1) Public
(2) Private
BIOGRAPHY OF THE AUTHOR

Margo Diamond was a former Division I scholarship athlete at the University of California, Berkeley, and graduate school assistant coach at Columbia University. She is also a former Adjunct Professor at Colby College. She has witnessed the tragic cost of untreated mental health illnesses which sadly led to the suicides of three college student-athletes in her athletic communities. Her hope is to help inform effective interventions to enhance mental health services for those who need it most. Her personal motivation for devoting her doctoral research to this topic is rooted in remembrance of those lost as well as the fervent desire to deter others from taking that same path. She is a candidate for the Doctor of Philosophy in Education from the University of Maine in May, 2022.