ABSTRACT

DEPRESSION AND SUBSTANCE USE: FINDING POSSIBLE DIFFERENCES AMONG COLLEGE STUDENTS

The purpose of this study was to find a possible difference between depression and substance use among students at Fresno State. Furthermore, the study analyzed the possible differences between depression and substance use among Hispanic and non-Hispanic students. According to the American Psychological Association (APA), both mental illnesses and substance abuse problems are common in college students (Eiser, 2011). This type of co-occurring disorder is common and affects 60% of the people affected by substance abuse (Volkow, 2007). Current research indicated minimal research has been completed regarding depression and substance use disorders among Hispanic student populations.

This study is a secondary analysis of the American College Health Association-National College Health Assessment II survey that was administered to a random sample of Fresno State students during the spring 2015 semester. The ACHA-NCHA II survey is a nationally recognized survey that provides current information about the health habits, behaviors, and perceptions of the college community (American College Health Association, 2013). Analysis of the ACHA-NCHA II survey data will be conducted during the spring 2016 semester.

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DEPRESSION AND SUBSTANCE USE: FINDING POSSIBLE DIFFERENCES AMONG COLLEGE STUDENTS

by

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A thesis submitted in partial fulfillment of the requirements for the degree of Master of Public Health in the College of Health and Human Services California State University, Fresno August 2016
APPROVED

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CHAPTER 1: INTRODUCTION

Introduction

According to the National Institute on Drug Abuse, drug abuse is a chronic illness concerned with drug-seeking behavior and usage, even if the consequences are negative (National Institute on Drug Abuse [NIDA], 2014). Using alcohol and drugs can lead to adverse health effects and both a physical and mental dependence on the substance (World Health Organization [WHO], 2016). Drug abuse is a complex disease that is difficult for the person affected to overcome even with treatment (National Institutes of Health [NIH], 2014). Substance abuse can affect anyone at any age, creating a need for more understanding and knowledge of the disease (NIH, 2014).

Mental illness is characterized as a varying range of disorders having to do with thought, mood, and behavior (Mayo Clinic, 2015). Several factors contribute to a person’s overall mental health, including sociological, psychological, and biological factors (WHO, 2014). According to the United States Department of Health & Human Services [HHS] (2016), these factors can include life events, a family history of mental health problems, and specific genetic traits that may have been inherited. Due to the various aspects of mental illness, including prevalence, all populations are at risk.

According to the National Institutes of Health, various studies have shown that a relationship exists between mental illness and the use of substances such as drugs and alcohol (NIH, 2014). The Substance Abuse and Mental Health Services Administration (SAMHSA) discovered that about 8.4 million people in the United States concurrently have both mental and substance use conditions (SAMHSA, 2012). The mentally ill population is twice as likely to also have a problem with
using drugs and alcohol compared to those who do not have a mental illness (NIDA, 2010). Very few seek and receive treatment for either disease, creating a largely untreated population that is continuously at risk (NIH, 2014). The purpose of this study was to find a possible difference between depression and substance use among students at Fresno State. Furthermore, the study will analyze the possible differences between depression and substance use among Hispanic and non-Hispanic students.

**Background**

The World Health Organization recognizes that mental health is a vital component of overall health and that it is defined by more than simply the absence of mental disorders (WHO, 2016a). There are various types of mental disorders, all ranging in varying severities, and affecting people of all ages (National Alliance on Mental Illness [NAMI], 2012). The most common among these illnesses are called “anxiety disorders,” which can negatively affect all aspects of a person’s daily life, creating extreme difficulty in completing even the most basic tasks (NAMI, 2012). Mood disorders describe another branch of mental illnesses, which include both depression and bipolar disorder (National Library of Medicine [NLM], 2014). These mood disorders are defined by more than momentary feelings of sadness and affect a person for life, alternating between various periods of feeling well and recurrence of illness (NAMI, 2012). According to WHO (2016b), 350 million people in the world suffer from some form of depression alone.

Those who have these illnesses are at an increased risk for physical health problems like heart disease and diabetes (NLM, 2014). Personality disorders are illnesses that interfere with a person’s relationships with others and work ethic
Antisocial or avoidant behaviors are examples of symptoms in people inflicted with these disorders (NLM, 2014). Psychotic disorders are another group of mental illnesses that are categorized by people who are out of touch with reality; this group presents symptoms of false beliefs, hallucinations, and delusions, leading to abnormal thoughts (NLM, 2014).

Globally, one in every four people will develop a mental illness of some kind during their lives (WHO, 2011). Just over 43 million adults in the United States were found to have any form of mental illness according to a study done by the National Institute of Mental Health (NIMH) in 2012 (NIMH, 2012). This translates to over 18% of just the adult population in America being identified as having some type of mental health disorder (NIMH, 2012). Children in America are also at risk for mental diseases, as about 13% of children aged 8-15 were found to be affected based on a study completed by the National Institute of Mental Health in 2010 (NIMH, 2010). In 2009, 20% of California’s population was found to have any form of mental illness according to the Substance and Abuse and Mental Health Services Administration (SAMHSA, 2012). These data fall in line with the current trend identified globally by the World Health Organization (2016b).

Although many resources are currently available for the treatment of mental illnesses, many of those affected do not seek help due to the stigma that exists surrounding the topic (Centers for Disease Control and Prevention [CDC], 2010). These negative attitudes create an extra barrier that prevents acceptance of these illnesses, and produces a need for more awareness and knowledge on the issue (CDC, 2010).

Misusing drugs and alcohol can lead to problems dealing with general health, legal status, and relationships (WHO, 2016a). The disease itself is
considered to be a “brain disease,” as drugs and alcohol can both temporarily and permanently alter brain function, which can lead to destructive behaviors (NIDA, 2014). There are various types of drugs, grouped together based on their chemical makeup (NIH, 2014). Nicotine is an addictive substance that can be found in tobacco products such as cigarettes, cigars, and chew tobacco (NIH, 2014). Alcohol is a depressant that can lead to feelings of euphoria and uninhibited decisions and behaviors (NIH, 2014). At a global level, a study revealed that 3.3 million people died due to alcohol related problems alone in 2012 (WHO, 2016c). The cannabinoid group contains both marijuana and hashish, which can provide deep relaxation, paranoia, and sometimes psychosis for the user (NIH, 2014). Cocaine and methamphetamine are stimulant drugs that can cause feelings of mental alertness, increased energy, and irritability (NIH, 2014). Drugs considered opioids, like heroin and opium, create feelings of drowsiness, impaired coordination, and confusion (NIH, 2014).

The World Health Organization reported that over 5% of the global disease burden is attributed to both alcohol and illicit drug use, and some 230 million people in the world were estimated to use some kind of illicit drug in 2010 (WHO, 2016c). In 2012, the National Institute on Drug Abuse found that nearly 24 million people over the age of 12 in America had abused drugs within the last month (NIDA, 2012a). This number is equivalent to about 9% of the American population, an increase from the 8.4% result the study last yielded in 2002 (NIDA, 2012b).

Addiction can begin from trying any drug and alcohol substance just one time (Mayo Clinic, 2014). After first use, more of the specific drug is needed in order to feel the “high” effect that it provides (Mayo Clinic, 2014).
“tolerance” (NLM, 2014). This drug-induced high can create feelings of intense euphoria for the user, which is then sought after consistently, leading to an addiction (Mayo Clinic, 2014). Symptoms of substance use disorder can happen to anyone and include using the substance on a regular basis, stealing in order to obtain the substance, and making sure that a consistent supply of the drug is maintained (Mayo Clinic, 2014).

Someone affected with a substance use disorder may experience withdrawal symptoms if a drug was repeatedly used for an extended amount of time and then stopped (Mayo Clinic, 2014). These symptoms can include vomiting, nausea, sleeplessness, anxiety, and other physical changes due to the body’s intense craving for the substance (Mayo, Clinic, 2014). Because the disease is so complex, it can be very difficult to treat (NIDA, 2014). Of the 24 million people in America affected by this disease, only 2.4 million actually received treatment, creating a need for further outreach knowledge pertaining to the problem (NIDA, 2014). The purpose of this study was to find a possible difference between depression and substance use among students at Fresno State. Furthermore, the study analyzed the possible differences between depression and substance use among Hispanic and non-Hispanic students.

The Problem

According to the U.S. Census, Fresno County, California features a very diverse population of residents with over half of the total 965,974 identifying as Hispanic or Latino (United States Census Bureau, 2015). Thirty percent of residents identify as being white, nearly 11% identify as Asian and about 6% classify themselves as African American (United States Census Bureau, 2015). Amongst this ethnic diversity, the population in Fresno County also faces
immense poverty and crime, with nearly 30% of residents at or below the poverty level (United States Census Bureau, 2015). Poverty, regardless of ethnicity, is considered a risk factor for mental illness and has been well documented in the research (Heflin & Iceland, 2009).

Within Fresno County, over 24,000 students attend Fresno State University (Fresno State University, 2016). The university’s population is very diverse and features mostly students from the area surrounding the university; its student body is made up primarily of Hispanic students, coming in at just over 40% (Fresno State University, 2016).

According to the American Psychological Association, both mental illnesses and substance abuse problems are common in college students (APA, 2014). This type of co-occurring disorder is common and affects 60% of the people affected by substance abuse (Volkow, 2007). One out of every four adults aged 18 to 24 is diagnosed with a mental disorder (NAMI, 2014). Seventy-five percent of all cases have begun by age 24, thus causing mental disability during the most productive time of human life (NIMH, 2005). In 2009, a study done by the American Psychological Association found that 96% of college students seeking mental help were diagnosed with at least one mental illness (Eiser, 2011). In 2011, the National Alliance for Mental Illness found that 64% of college students dropped out due to suffering from a mental disorder (NAMI, 2011). Out of this population, about 45% of students said that they dropped out because they had not received any appropriate accommodations to help with the issue (NAMI, 2011). Additionally, students said that the number 1 reason for why they did not seek help had to do with the stigma that surrounds mental illness (NAMI, 2011).

Due to the increased risk of dropping out of college and possibility of not starting a career, young adults affected by mental illness and substance abuse pose a
potential enormous cost to society if they do not receive the adequate treatment needed (United States Department of Justice [DOJ], 2011).

Without proper professional treatment, students with mental illness are at increased risk for self-medicating with substances such as alcohol and illicit drugs (NIDA, 2015). The National Center for Addiction and Substance Abuse at Columbia University (CASA) conducted a survey, which revealed that 50% of full-time college students, or 3.8 million, abuse alcohol and drugs (Califano, 2007). In 2011, the American College Health Association found that 62% of college students had used alcohol and 14% had used marijuana within the last 30 days (ACHA, 2011). Because substance abuse can affect the brain and make permanent changes, mental illnesses can develop from the persistent abuse itself (NIH, 2012). A sample of college students attending Fresno State was studied in order to see if the study results coincide with these previously researched findings.

Hypotheses

The study investigated Fresno State University students facing depression and also using alcohol and/or marijuana, specifically focusing on the following hypotheses:

Hypothesis 1: There is no statistically significant difference between depression and alcohol use among Fresno State college students.

Hypothesis 2: There is no statistically significant difference between depression and marijuana use among Fresno State college students.

Hypothesis 3: There is no statistically significant difference in rates of depression among Hispanic college students and non-Hispanic college students.

Hypothesis 4: There is no statistically significant difference in rates of alcohol use among Hispanic and non-Hispanic college students.
Hypothesis 5: There is no statistically significant difference in rates of marijuana use among Hispanic and non-Hispanic college students.

**Theoretical Framework**

As previously mentioned, co-occurring disorders are often found among people who suffer from mental illness and substance abuse (SAMHSA, 2012). In order to properly understand this connection between mental illness and substance abuse, an understanding for the cause of co-occurring disorders must be assessed. Although research has suggested that these disorders correspond together often, the reason for this is still not fully understood (Volkow, 2007).

Many ideas concerning the cause have been speculated, but there are three primary theories at the forefront of the research (NIDA, 2010). The first possibility discusses the idea that drugs and other chemical substances can induce a mental disorder based on the symptoms that occur following their use (NIDA, 2010). The second option discusses the existence of an early stressful or traumatic event, of neurological brain deficits, or of genetic susceptibility that can cause a disorder to manifest in specific individuals (NIDA, 2010). This model is known as the Stress-Vulnerability Model (Zubin & Spring, 1977). Although it is possible for one disorder to cause another, it is not always the case, making the origin of illness very difficult to pinpoint (NIDA, 2010). The third theory of co-occurring disorders focuses on the idea that mental illness came first for the individual, and that chemical substances are sought in a desperate attempt to treat the imbalance (NIDA, 2010). Research in this area is still needed as there has been no definitive determination as to why co-occurring disorders exist (Volkow, 2007).

For the purpose of the study, we will be closely examining the Self-Medication Theory of addiction. This theory was developed after researchers
studied the behaviors of heroin addicts, quickly discovering that the primary reason for using the drug was to cope with a co-occurring mentally related issue (Khantzian, Mack, & Schatzberg, 1974). Upon further investigation, the researchers found that individuals using chemical substances are attempting to treat underlying psychological conditions that already exist within them (Khantzian, 1985). Since the theory has been developed, several studies have appeared showing connections between co-occurring disorders.

Students attending college face an increase in added stress, financial independence, and serious decision-making that impacts the rest of their educational and professional careers (DeJong & Ross, 2008). The United States Government Accountability Office stated that young adults require various social skills during the period of transitioning to financial independence, finishing college, and starting a career; the skills needed in young adulthood may never develop or be hindered by the threat of both mental disease and substance abuse problems (DOJ, 2011). To cope with these new stresses, students are more likely to use alcohol and drugs in an attempt to feel more comfortable and ease the burdens that come with attending college, revealing a correlation (DeJong & Ross, 2008). This study sought to identify specific outcomes that may contribute to this societal cost and identify the possible differences of co-occurring disorders among the Fresno State student population based on ethnicity.

The stigma that surrounds these diseases prevents students from seeking help, increasing the likelihood of consulting drugs and alcohol for assistance (NAMI, 2011). Although research has been done to link mental illness and substance abuse on a large level, very little research has been conducted concerning specific outcomes of these disorders (Lo, Monge, Howell, & Cheng, 2013). A large study containing a sample of over 5,000 students was completed
using secondary national data that focused on certain outcomes for both disorders, specifically mental illness against alcohol and prescription drug abuse based on gender in college students (Lo et al., 2013). The study found that 17% of the students surveyed suffered from alcohol abuse alone; as such, the aforementioned study is among the first to compare specific outcomes in order to determine a relationship between co-occurring disorders (Lo et al., 2013).

**Limitations**

The limitations of the study are as follows:

The data used in the study were collected by another source. This may have led to error in the analysis, causing incorrect values and/or outcomes.

The data used in the study were collected via email. Students may have felt that answers they gave could be linked to them and answered dishonestly, causing inaccurate results.

The topic of the study is concerned with subject matter that may be considered uncomfortable and/or sensitive. This may have caused students to respond to the survey in an untruthful manner, which may have led to inaccurate outcomes.

**Definitions**

*Alcohol:* a specific depressive substance that can create feelings of euphoria for the user that can lead to uninhibited thoughts and actions (NIH, 2014).

*Anxiety:* a specific mental disorder that creates feelings of panic and distress that may affect basics of life (NAMI, 2014).

*Depression:* a specific mental disorder that is chronic in nature and characterized by alternating periods of feeling sadness and wellness (NAMI, 2014).
Marijuana: a specific drug that gives the user extreme euphoria, paranoia, and relaxation that is typically smoked (NIH, 2014).

Mental Illness/Disorder: various diseases that deal with moods, thoughts, and behaviors (Mayo Clinic, 2014)

Methamphetamine: a specific stimulant drug that gives the user increased mental alertness, energy, and irritability, also highly addictive (NIH, 2014).

Substance/Drug abuse: chronic illness that is concerned with persistent drug seeking behaviors and usage, despite any negative consequences that may follow (NIDA, 2014).

Summary

Both mental illness and drug abuse are prevalent among the college population. Many students who have a disorder of either type are not likely to get the proper treatment required, thus are at risk of seeking assistance through the use of drugs and alcohol. Research has shown that a relationship exists between these variables. College students are likely to have symptoms of mental disease and substance abuse problems due to the amount of stress, newfound responsibilities, and financial independence that are pertinent within young adults. The purpose of this study is to find a possible difference between depression and substance use among students at Fresno State. Furthermore, the study will analyze the possible differences between depression and substance use among Hispanic and non-Hispanic students.
CHAPTER 2: LITERATURE REVIEW

This chapter contains literature that pertains to the prevalence of depression and substance use behaviors within the college student population. In addition, information on how specific ethnic groups are affected by these disorders is also featured. The chapter also includes information on how both mental health and substance abuse outcomes may or may not be correlated as shown through previous studies. The chapter is divided into four sections: depression in college students, alcohol use in college students, marijuana use in college students, and a summary.

Depression in College Students

Depression can be very common amongst the college population due to new stresses and responsibilities that occur for young adults (Konopka, 2014). In 2004, the American College Health Association (ACHA) surveyed 74 college campuses in the United States using the National College Health Assessment (NCHA) (ACHA, 2004). The random sample of college students generated from the surveyed campuses was approximately 47,202 students (ACHA, 2004). According to the ACHA, nearly 15% of college students who participated in the study were reported to suffer from depression (ACHA, 2004). This result was almost a 5% increase from the when the survey had last been given in the year 2000 (ACHA, 2004). Accordingly, the number of students with severe depression has increased from 34% to 41% within the last 10 years, most likely due to students entering college with pre-existing mental conditions (Eiser, 2011).

A study conducted in 2009 assessed the prevalence of depression in students attending a “midsize northwestern” public university that participated in the National College Health Assessment in 2002 (Lindsey, Fabiano, & Stark,
The population was a random sample of 2,500 students, with 618 respondents (Lindsey et al., 2009). An analysis of this NCHA data revealed depression as ranking among the top 3 health conditions in college students and within the sample, more women than men were shown to be afflicted with depression (Lindsey et al., 2009). The study results also showed that no correlation existed between students experiencing depression and alcohol use; results also showed a correlation between students who were facing depression and marijuana and cocaine use (Lindsey et al., 2009).

Another study published in 2010 showed that depression existed for 20% of the sampled students (Roberts, Glod, Kim, & Houchell, 2010). From the random sample of 2,336 students, 428 responded with a completed survey (Roberts et al., 2010). The study also found that the students who exhibited signs of depression were not as likely to abuse alcohol; the same group of students who faced depression from this study was almost three times more likely to use marijuana and other stimulant drugs than those who were not depressed (Roberts et al, 2010).

In 2011, a study on depression was published that contained a sample of 158 college students (Hirsch, Webb, & Jeglic, 2011). Of the 158 students tested, 66 showed results of having severe depressive symptoms, while 13 others were reported to have at least mild depressive symptoms (Hirsch et al., 2011). Among the sampled population, 49% of the students reported having thoughts or ideas of attempting suicide in conjunction with having severe depressive symptoms (Hirsch et al., 2011). Another study had findings similar to the Hirsch et al., citing a high percentage of students with having suicidal ideation at some time in their lives during college (Lester, 2014). Additionally, Lester found that stress due to both college and general life aspects were significant predictors for depression and suicidal thoughts among college students. Although there is a copious amount of
literature that points to a common prevalence of depression in college students, there is less research on differences in ethnicity for the college student population. However, studies have found that there are differences between depression and ethnicity for the general population (González, Tarraf, Whitfield, & Vega, 2010). In a comprehensive study analyzing depression and ethnicity in America, the Hispanic population had a higher prevalence rate of depression (González et al., 2010). It has been speculated that this is possibly due to a lack of access to health care and treatment for illness (González et al., 2010). Additionally, depression has been found to be higher in Hispanic populations possibly due to acculturation (Lorenzo-Blanco, Unger, Baezconde-Garbanati, Ritt-Olson, & Soto, 2012).

**Alcohol Use in College Students**

Research has shown that the amount of episodic alcohol consumption among college students has increased within the last decade (Hingson, Zha, & Weitzman, 2009). Evidence has revealed severe increases in heavy episodic drinking, more commonly known as “binge drinking.” Hingson et al. found that 12 million people aged 18-24 have indulged in consuming at least five alcoholic beverages within one sitting. This study is one of many that correspond with the literature, reflecting generally heavy alcohol consumption and episodic drinking behaviors among college students.

A study published in 2013 analyzed the prevalence of alcohol consumption in college students attending two universities in Belgium (Lorant, Nicaise, Soto, & D’Hoore, 2013). The study results showed that excessive consumption of alcohol took place on an average of three occasions per month; in addition, the study reported that 25% of the students surveyed considered themselves to be a “heavy drinker,” consuming six or more drinks on a single occasion (Lorant et al., 2013).
The results also revealed that on average, students engaged in various levels of alcohol consumption on seven separate occasions within 1 month (Lorant et al., 2013). Another study conducted in 2011 analyzed the usage of club drugs and alcohol and confirmed the high prevalence of alcohol use among college student participants, who were found to have used alcohol 46 days within 4 months (Ramo, Grov, Delucchi, Kelly, & Parsons, 2011).

College student drinking is a common theme amongst many universities, as one study revealed that 80% of surveyed students reported drinking alcohol at least once during the fall semester of school (Wei, Barnett, & Clark, 2010). The same students were found to drink on an average of 11 times during the semester and being classified as “drunk” on six of those occasions (Wei et al., 2010). Another study showed 67% of college students having reported heavy drinking behavior within the last 2 weeks, with an average of 5.91 drinks per occasion (Haas & Flores, 2012). These results are in agreement with other studies that have found heavy drinking to be a growing problem (Wei et al., 2010).

With research having already outlined the prominence of alcohol use among college students, further studies have been completed to determine the likely correlation with other risky behaviors (Pedrelli et al., 2011). Just like episodic drinking, driving under the influence poses a serious health risk to the college student population and has been found to be correlated (Hingson et al., 2009). A study conducted by the University of Missouri-Columbia studied the prevalence of college students that drove after consuming alcohol (McCarthy, Lynch, & Pedersen, 2007). A whopping 43% of the population group reported that they had driven after drinking (McCarthy et al., 2007). Another study affirmed these conclusions, citing that 7 million college students drove under the
influence of alcohol in 2009, contributing to about 5,000 injuries or deaths that occur in a year for this population (Hingson et al., 2009).

Aside from driving under the influence, other high-risk behaviors have been examined against alcohol consumption to see if a correlation existed. A study from 2011 found that students who approved of heavy episodic drinking were up to 10 times more likely to also use another chemical substance as well, as opposed to students who did not approve of heavy drinking (Pedrelli et al., 2011). A study published in 2014 found that college students who felt close with peers who engaged in risky drinking behaviors increased their own odds of drinking heavily by 10 times, suggesting a strong peer influence (Mason, Zaharakis, & Benotsch, 2014). At a private university in San Francisco, California, 336 respondents answered a survey regarding alcohol consumption and alcohol poisoning (Haas & Flores, 2012). Only 37% of students could correctly identify all six signs of alcohol poisoning, revealing a lack of knowledge concerning binge drinking (Haas & Flores, 2012). In addition, over 83% of the college students reported “yes” to prior alcohol use before having started college, suggesting an issue among adolescents and alcohol use (Haas & Flores, 2012). The strong correlation between alcohol consumption and use of other substances continues to be examined within the college student population (Pedrelli et al., 2011). The literature reveals a theme of high alcohol consumption prevalence for college students and includes a tendency toward other risky behaviors warranting serious health concern.

Research has also been done to see if a difference in alcohol consumption and ethnicity exists within the college student population (Pacek, Malcolm, & Martins, 2012). The Pacek et al. study revealed that Whites and Hispanics had similar prevalence rates of alcohol use that were greater than the prevalence for
African-American students. Another study completed in 2014 found that there was no difference in alcohol use between White college students and Hispanic college students (Cacciola & Nevid, 2014). These studies, however, all had small samples of Hispanic students. Additionally, there are several mixed results in terms of alcohol use and association with Hispanic students in terms of acculturation (Zamboanga, Tomaso, Kondo, & Schwartz, 2014). The Zamboanga et al. study found negative, positive, or no result at all for an association between alcohol use and the Hispanic population with this factor.

Marijuana Use in College Students

As marijuana becomes increasingly accepted by the public, the age when first exposed to the drug decreases, which creates various health problems for those engaging in the behavior (Konopka, 2014). Marijuana use is common amongst college students, as the population is vulnerable to several new stresses and experiences that may be using the substance to cope (Palmer, Mcmahon, Moregg, Rounsaville, & Ball, 2012). However, according to an article published in the Croatian Medical Journal in 2014, marijuana use can negatively affect brain function and lead to a “lack of participation in life”; chronic marijuana use can also lead to irregularity of moods, possibly leading to depression and lack of motivation in varying aspects of life (Konopka, 2014).

When having to face the new responsibilities and challenges that come with attending college, students require emotional stability and support in order to cope in a healthy way; in an attempt to deal with these new trials, students will likely choose the easiest form of coping, which can result in the regular usage of alcohol and other drugs (Kronopka, 2014). Prior to these findings, an additional study found that about 90% of participants reported using marijuana (Palmer et al.,
One study featuring 11 different universities in the U.S. looked at the prevalence of marijuana use in college students, especially use amongst college freshman (Suerken et al., 2014). Students who had reported ever using marijuana before college were grouped as “lifetime users,” while those who used for the first time after starting college were grouped as those who had experienced marijuana “initiation” (Suerken et al., 2014). From the selected sample, 30% were found to have used marijuana before starting college, while the rate of initiation was 8.5% for those who had never tried marijuana before college (Suerken et al., 2014).

In a previously mentioned study that analyzed club drug usage, marijuana use was included in the analysis; on average, those who reported using marijuana within the last four months had done so on an average of 39 days within that time, signifying a high prevalence (Ramo et al., 2011). Research has also implicated the likelihood of risky behaviors following marijuana use (McCarthy et al., 2007). Results of McCarthy et al.’s study showed that 47% of surveyed students self-reported that they drove under the influence after using marijuana.

A 2007 study found that out of 634 students who used marijuana, the average number of times used within 90 days reached just over six (Lee, Neighbors, & Woods, 2007). Over 67% of those students also reported experiencing at least one negative consequence from using marijuana within the last year (Lee et al., 2007). These reasons included skipping studying for an exam, not completing homework, and over spending money on marijuana, therefore unable to participate in other functions (Lee et al., 2007). Out of this sample, 18% of students who used marijuana did so in order to cope with stress and feelings of depression (Lee et al., 2007). A later study from 2012 found a similar link that students who used marijuana actually had an adverse effect when trying to handle
daily life despite the perception of students that it was helping them cope (Palmer et al., 2012).

A study from 2014 measured substance use and mental health (Mason et al., 2014). The sample of 729 individuals self-reported on various behaviors with results showing that over 18% of the population used marijuana on a weekly basis (Mason et al., 2014). The study also found that closeness with peers indicated a significant increase of marijuana use by three times (Mason et al., 2014).

Research has been done to see if a difference exists between marijuana use and ethnicity among college students (Pacek et al., 2012). This previous research has shown that ethnicity is not a significant predictor for marijuana use (Bates, Accordino, & Hewes, 2010); Bates et al. found that students who used marijuana had similar rates of use regardless of ethnicity. A study completed in 2012 supported the previous research and found that there was no difference in marijuana use between White students and Hispanic students (Pacek et al., 2012).

**Summary**

College students are at risk for depression due to many new responsibilities and stressors in order to properly function in society. These pressures result in a substantial number of college students suffering with mental illnesses, including depression (Konopka, 2014). In addition, a high prevalence rate in alcohol consumption exists for the college student population (Hingson et al., 2009). Other drugs, such as marijuana, are also increasing in prevalence within this population (Konopka, 2014). Mental illness and substance abuse have been found to be correlated, as college students may seek to treat or cope with various mental health conditions, including depression, by means of drinking alcohol and using drugs (Lindsey et al., 2009).
CHAPTER 3: METHODOLOGY

The purpose of this study was to find a possible correlation between depression and substance use among students at Fresno State. Furthermore, the study analyzed the possible differences between depression and substance use among Hispanic and non-Hispanic students. Within this chapter, the setting and sources of data will be discussed in detail. This will be followed by a description of data collection methods for both pilot and main studies. The methods for data analysis will also be listed and the chapter will conclude with a summary.

Setting and Data Source

The setting of the study contained a random sample of students from a public California State University in Fresno, California. The study was completed using secondary data that had been previously collected by the American College Health Association in spring of 2015. About 1,707 respondents answered to the survey, creating a 31% response rate (ACHA, 2015).

The National College Health Assessment (NCHA) is a nationally recognized survey that covers a wide range of topics concerning health (ACHA, 2015). The NCHA asks several questions regarding “alcohol/drug use, sexual health, weight/nutrition/exercise, mental health, personal safety/violence” (ACHA, 2015). It is the largest and most comprehensive set of data that concerns the health of college students (ACHA, 2015).

Data Collection

The original ACHA-NCHA survey was pilot tested in 2008, and was revised to create the latest version of the survey, the ACHA-NCHA II (ACHA, 2015). For the main study, the survey was administered to a random sample of
Fresno State students via email in the spring of 2015. The students were notified about the survey through their email accounts that were currently being used through the university. The sample was told that the survey was completely confidential and would take about 30 minutes to complete. Students were also advised that they could start and stop the responding process as needed until the survey was finished in its entirety. The students were given an incentive of possibly winning $100 if they participated and only if they responded to the survey.

Compiling the Data

The data were compiled into the SPSS system in order for proper analysis and organization of variables. Specific questions from the survey were used to create specific groups that were used to see if a correlation exists. For the purpose of the study, any student who responded to the question “have you ever felt so depressed that it was difficult to function?” within the last year was classified as being depressed. Students who did not report being depressed within the last year were classified in “no” category. Students who responded “yes” to using alcohol and marijuana at any point in the last 30 days were grouped into two separate groups, respectively. If students reported never using or “have used but not in the last 30 days,” they were categorized as non-users. Students were also grouped by the ethnicities they declared in the survey. Those who indicated their ethnicity as “Hispanic” remained in their own category. Those who marked their ethnicity as being anything other than Hispanic were grouped together into a category labeled “non-Hispanic.”
Data Analysis

Although the data were collected in spring of 2015, the dataset was not analyzed until the spring of 2016. To create two ethnicity groups, students who answered as “Hispanic” were grouped together. All students who identified themselves as anything other than “Hispanic” were made into the second group of “non-Hispanic” individuals. In order to establish the prevalence of depression among the college student population, students who responded to “feeling so depressed that it was difficult to function” at any point within the last year were grouped together. Students who responded to using alcohol or marijuana “at any point within the last 30 days” were grouped separately as well.

All hypotheses were analyzed using a Chi-Square test in order to determine whether there was a significant difference between the two specific variables. Depression was analyzed against alcohol and marijuana use, separately. Depression was then assessed against ethnicity (Hispanic/non-Hispanic). Alcohol use and marijuana use were analyzed with ethnicity (Hispanic/non-Hispanic) separately.

The findings from the data analysis were recorded whether or not a relationship existed between the variables. The data are simplified in a table featured in the results section of the study to show prevalence rates and possible relationships amongst the variables. Results were discussed with any pertinent findings.

Summary

The study was completed by first using secondary data from the American College Health Association that was collected in spring of 2015. The sample of students attended Fresno State University in spring of 2015. Analysis of the data took place in spring of 2016. Students were grouped by ethnicity in order to
analyze differences. The students who identified as depressed were separated from those who did not identify as depressed. Participants who responded “yes” to using alcohol and marijuana were grouped separately in order to obtain prevalence rates. Additionally, the students who answered “yes” to the two previous items were grouped by the ethnicity declared on the survey. A Chi-Square test was run to determine if a difference existed between depression, alcohol, and marijuana. Additionally, depression, alcohol, marijuana were all analyzed separately against ethnicity (Hispanic/non-Hispanic). The findings will be reported in the next chapter.
CHAPTER 4: RESULTS

This chapter highlights the results of the study and provides tables that list specific information. Table 1 provides the variables and groupings used in the analysis; Table 2 gives a brief glimpse at the data.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Survey Question</th>
<th>Value/Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Have you ever felt so depressed that it was difficult to function?</td>
<td>0 = No (Never, Not in the last 12 months)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Yes (In the last 2 weeks, 30 days, 12 months)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Within the last thirty days, on how many days did you use: alcohol (beer, wine, liquor)?</td>
<td>0 = No Use (Never, Have used, but not in last 30 days)</td>
</tr>
<tr>
<td>Use</td>
<td></td>
<td>1 = Use (1-2 days, 3-5 days, 6-9 days, 10-19 days, 20-29 days, Used daily)</td>
</tr>
<tr>
<td>Marijuana</td>
<td>Within the last thirty days, on how many days did you use: marijuana (pot, weed, hashish, hash oil)?</td>
<td>0 = No Use (Never, Have used, but not in last 30 days)</td>
</tr>
<tr>
<td>Use</td>
<td></td>
<td>1 = Use (1-2 days, 3-5 days, 6-9 days, 10-19 days, 20-29 days, Used daily)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>How do you usually describe yourself?</td>
<td>0 = non-Hispanic (White, Black or African American, Asian or Pacific Islander, American Indian or Alaskan)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Hispanic (or Latino)</td>
</tr>
</tbody>
</table>

Table 2

The Data: A Brief View

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Alcohol</th>
<th>Marijuana</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>.722 (No)</td>
<td>.529 (No)</td>
<td>.921 (No)</td>
<td>.457 (Hispanic)</td>
</tr>
<tr>
<td></td>
<td>.278 (Yes)</td>
<td>.471 (Yes)</td>
<td>.079 (Yes)</td>
<td>.543 (non-Hispanic)</td>
</tr>
<tr>
<td>Mode</td>
<td>No depression</td>
<td>No alcohol use</td>
<td>No marijuana use</td>
<td>non-Hispanic</td>
</tr>
</tbody>
</table>

Table 3 offers an assessment of depression status and alcohol use. There was a statistically significant difference in rates of depression and alcohol use among Fresno State college students, \(X^2(1, n = 1682) = 8.15, p = .004\).
Table 3

Assessment of Depression Status and Alcohol Usage

<table>
<thead>
<tr>
<th>Depression</th>
<th>Alcohol</th>
<th>( \chi^2 )</th>
<th>( \Phi )</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>8.15*</td>
<td>.070</td>
</tr>
<tr>
<td>No</td>
<td>652</td>
<td>552</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(74.6%)</td>
<td>(68.3%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>222</td>
<td>256</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(25.4%)</td>
<td>(31.7%)</td>
<td></td>
</tr>
</tbody>
</table>

Note. \( N = 1682 \)
* = \( p < .05 \)

Table 4 offers an assessment of depression status and marijuana use. There was a statistically significant difference in rates of depression and marijuana use among Fresno State college students, \( \chi^2(1, n = 1683) = 22.38, p = <.001 \).

Table 4

Assessment of Depression Status and Marijuana Usage

<table>
<thead>
<tr>
<th>Depression</th>
<th>Marijuana</th>
<th>( \chi^2 )</th>
<th>( \Phi )</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>22.38*</td>
<td>.115</td>
</tr>
<tr>
<td>No</td>
<td>1126</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(73.3%)</td>
<td>(54.8%)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>411</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(26.7%)</td>
<td>(45.2%)</td>
<td></td>
</tr>
</tbody>
</table>

Note. \( N = 1683 \)
* = \( p < .05 \)

Table 5 offers an assessment of depression status and ethnicity. There was no statistically significant difference in rates of depression among Hispanic and non-Hispanic college students, \( \chi^2(1, n = 1696) = 1.19, p = .275 \).

Table 6 offers an assessment of alcohol use and ethnicity. There was a statistically significant difference in rates of alcohol use among Hispanic and non-Hispanic college students, \( \chi^2(1, n = 1691) = 8.70, p = .003 \).
Table 5

Assessment of Depression Status and Ethnicity

<table>
<thead>
<tr>
<th>Depression</th>
<th>Ethnicity</th>
<th></th>
<th></th>
<th>( \chi^2 )</th>
<th>( \Phi )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hispanic</td>
<td>non-Hispanic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>567 (72.9%)</td>
<td>647 (70.5%)</td>
<td>1.19</td>
<td></td>
<td>-.027</td>
</tr>
<tr>
<td>Yes</td>
<td>211 (27.1%)</td>
<td>271 (29.5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 1696

* = \( p < .05 \)

Table 6

Assessment of Alcohol Usage and Ethnicity

<table>
<thead>
<tr>
<th>Alcohol</th>
<th>Ethnicity</th>
<th></th>
<th></th>
<th>( \chi^2 )</th>
<th>( \Phi )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hispanic</td>
<td>non-Hispanic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>432 (55.9%)</td>
<td>447 (48.7%)</td>
<td>8.70*</td>
<td></td>
<td>-.072</td>
</tr>
<tr>
<td>Yes</td>
<td>341 (44.1%)</td>
<td>471 (51.3%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 1691

* = \( p < .05 \)

Table 7 offers an assessment of marijuana use and ethnicity. There was no statistically significant difference in rates of marijuana use among Hispanic and non-Hispanic college students, \( \chi^2(1, \ n = 1693) = 0.79, \ p = .375 \).

Table 7

Assessment of Marijuana Usage and Ethnicity

<table>
<thead>
<tr>
<th>Marijuana</th>
<th>Ethnicity</th>
<th></th>
<th></th>
<th>( \chi^2 )</th>
<th>( \Phi )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hispanic</td>
<td>non-Hispanic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>711 (92.0%)</td>
<td>835 (90.8%)</td>
<td>0.79</td>
<td></td>
<td>-.022</td>
</tr>
<tr>
<td>Yes</td>
<td>62 (8.0%)</td>
<td>85 (9.2%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. N = 1693

* = \( p < .05 \)
CHAPTER 5: DISCUSSION AND CONCLUSIONS

Discussion

Prevalence data revealed that almost 30% of students self-reported as having depression. Nearly half of students reported alcohol use, while only 8% reported using marijuana. About 46% of the students surveyed identified as Hispanic, while 54% self-reported as non-Hispanic.

Depression was first compared to alcohol, showing a significant $p$ value of .004. This means that a significant difference does exist between depression and alcohol use among Fresno State college students. Depression was also analyzed with marijuana use in order to see if a difference existed. The $p$ value revealed a significance of less than .001. There is a significant difference between depression and marijuana use. When depression was compared to ethnicity (Hispanic and non-Hispanic students), a $p$ value of .275 was given. Based on this result, hypothesis 3 is accurate as no differences exist in rates of depression among Hispanic and non-Hispanic students. Both alcohol use and ethnicity were also evaluated in order to see if a difference existed. The statistical test generated a $p$ value of .003, signifying a lower prevalence of alcohol among Hispanic students. Due to this finding, hypothesis 4 is rejected, as the alternative is correct. A difference does exist in rates of alcohol use among Hispanic and non-Hispanic students at Fresno State. Ethnicity and marijuana were also compared to see if differences existed among college students. The $p$ value for the test was .375, revealing no difference between Hispanic and non-Hispanic college students that used marijuana. Hypothesis 5 is accepted based on this insignificant test result.

Because differences were found between depression and rates of alcohol and marijuana use, these findings were similar to those found in the research.
Students who self-reported as depressed were more likely to use alcohol and marijuana than students who were not depressed. No significant difference was found between depression and ethnicity. The finding implies that within the population, rates of depression were similar regardless of ethnicity, which does not correlate with the research (González et al., 2010). It is possible that this may be due to the high amount of poverty within Fresno County, which is a significant factor for mental illness regardless of ethnicity (Heflin & Iceland, 2009). There was a significant difference between alcohol use and ethnicity. This resulted in the conclusion that within this population, Hispanic students were less likely to use alcohol than non-Hispanic students. This unexpected finding did not correlate with previous research. It is possible that this is due to acculturation or a familial protective factor within the Hispanic student population at Fresno State (Zamboanga et al., 2014). No significant difference was found between marijuana use and ethnicity. This finding indicates that students use or do not use marijuana at the same rates regardless of ethnic background, which does correlate with the research.

**Conclusions**

The findings for the differences between depression and both alcohol and marijuana use imply these differences were unlikely due to just chance alone, and may signify other factors at play. In order to assess these possible processes, further research might include testing for a possible relationship between these same variables within the same population. Prevalence for depression correlated well with the research among the Fresno State population, at about 30% of students. Because prevalence was almost half for using alcohol among all students who responded, providing education on the effects of using alcohol would
be beneficial to the student population at Fresno State. This information may come in the form of pamphlets and fliers, which should be created in both English and Spanish in order to reach multiple student populations. Although prevalence was significantly less for marijuana use among the Fresno State population compared to alcohol, education on marijuana’s effects should also be provided, as research shows that usage is increasing among college students (Konopka, 2014). The student health center may also want to make sure that students are aware of available mental health services, as about 30% identified as being depressed alone. This might include pamphlets or regular emails indicating that counseling services exist for students in order to increase awareness of available resources on the Fresno State campus.

Further research would need to be done using the Fresno State population in order to see why there is a discrepancy between alcohol use and ethnicity. This research may focus on attitudes and beliefs between each of the separate ethnic groups to see if that plays a factor on using alcohol. Although it is possible that depressed students are turning to alcohol and marijuana use in order to cope with mental illness, this could not be concluded from the tests that were run and would need further statistical analysis. The possibility of correlation would support the research showing that many college students will turn to substance use in order to cope with all of the new stresses that college life offers (DeJong & Ross, 2008).
REFERENCES


Zamboanga, B. L., Tomaso, C. C., Kondo, K. K., & Schwartz, S. J. (2014). Surveying the literature on acculturation and alcohol use among Hispanic college students: We’re not all on the same page. *Substance Use & Misuse, 49*(8), 1074-1078. doi:10.3109/10826084.2014.887731

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Date