

PRESCRIPTION OPIOID ABUSE AMONG UNDERGRADUATES AT A STATE
UNIVERSITY IN THE SOUTHEASTERN UNITED STATES

by

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ABSTRACT

This thesis was designed to examine nonmedical use of prescription opioids by undergraduates at a state university. A survey questionnaire was completed by 94 undergraduates, 8 of whom met the criteria for nonmedical use of prescription opioids and 54 of whom met the criteria for medical use of prescription opioids. Participants classified as nonmedical users reported first time use of prescription opioids to occur in high school. Participants were equally as likely to obtain the medication from friends as compared to family members. Participants classified as medical users of prescription opioids initiated first time use between the ages of 14-19 years. The majority of prescriptions came from medical doctors with no difficulty. The total sample indicated they do not agree that because prescription opioid medication is FDA approved, it is safe to use at will. Results for this study are relevant to participants working with school-age youth and young adults.

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CHAPTER I

INTRODUCTION

Nonmedical use of prescription opioids has become a topic of heightened interest and debate throughout the years. Over the past two decades, the number of prescriptions for opioids have increased nearly 300% and continue to rise (National Institutes of Health, 2011). With this increase, the prevalence of nonmedical prescription opioid use has become an area of concern for the United States. Standard reasons given for the misuse of these drugs include pain relief, intoxication, relief from anxiety, and use as a sleep aid (Barth et al., 2013). This thesis was designed to gather information on nonmedical use of prescription opioids by college students at a four-year university in the southeastern United States.

Opioid Medications and Treatment of Pain

Prescription opioids are among the most frequently prescribed class of medication (Centers for Disease Control and Prevention, 2011). Common opioid medications include oxycodone, hydrocodone, morphine, codeine, and related drugs (National Institutes of Health, 2014a). These medications have become a drug of choice for physicians looking to treat mild to severe pain (Manchikanti et al., 2011). Data show that 259 million prescriptions for opioid medication were written in the United States during 2012 (Centers for Disease Control and Prevention, 2014). Furthermore, ten of the highest prescribing states for prescription opioids were located in the South (Centers for Disease Control and Prevention, 2014).

Research shows prescription opioids can be used as an effective treatment for short-term acute pain. However, data have proven to be limited in terms of long-term

safety and efficacy in regards to the use of opioids for treatment of chronic pain. It is estimated that as many as one-third of Americans are affected by chronic pain (Institute of Medicine of the National Academies, 2011). According to the Institute of Medicine of the National Academies, chronic pain is typically defined as any pain lasting for three months or longer. The growing prevalence of chronic pain can be attributed to the rise of the incidence of diseases within the United States population. Factors such as obesity, sedentary lifestyles, and the increase of the aging population are a major contributor to this issue. Although there is limited evidence for the long-term use of prescriptive opioid, 5 to 8 million Americans use opioids as a long-term remedy for treatment of chronic pain (National Institutes of Health, 2014b).

Barriers to the Treatment of Chronic Pain

Barriers to the assessment of pain can be partially attributed to its heavy reliance on self-report measures (Rothman, Beltran, Cappelleri, Lipscomb, & Teschendorf, 2007). Pain is a subjective experience making it difficult to quantify. Due to this issue, Patient-Reported Outcome (PRO) measures such as rating scales and questionnaires are extensively relied upon as standard for treatment. The use of PROs allows for greater patient involvement in treatment and care. However, there are some clear disadvantages to this procedure. Outcomes on these measures can be highly influenced by a person's standards, experiences, or expectations. This creates a barrier when assessing who can truly benefit from prescription opioids (Rothman et al., 2007).

While there are general guidelines for treating pain, there is little consistency on the specific measures used to prescribe opioids (Clark & Galati, 2012). A broad multi-faceted approach to the assessment of pain is commonly used as a national standard

(Hooten et al., 2013). Recommendations for screening include exploring areas such as the patient's mental status, history, impact on daily functioning, and risk/benefit ratio through the use of observation and assessment. This approach is intended to gather a comprehensive description of the patient before proceeding with treatment. However, multi-faceted assessment guidelines for pain presents numerous challenges. While this approach aims to be thorough, it is highly influenced by the clinician's knowledge and training which can lead to a discrepancy among interpretations of the information gathered. Additionally, this method functions as merely a guideline and relies on clinical judgment as a predominant guiding factor. It has been suggested that pain is being over-treated as a result (Deyo & Turner, 2009).

Abuse and Misuse of Prescription Opioid Medication

The greater availability of opioid medication is accompanied by alarming increases in the potential for nonmedical use of these drugs. Abuse of prescription medication is defined as "use for reasons other than those for which the drug is legitimately prescribed" (Hamilton, 2009). In this case, abuse would refer to the use of prescription opioids for reasons other than treatment of pain. Nonmedical use of these drugs is characterized as "use of a prescription medication that was not prescribed for the user or taking a drug only for the experience or feeling it may cause" (Substance Abuse and Mental Health Services Administration, 2007). These definitions apply to nonmedical use and abuse of all prescription medications and are not limited to opioids. This thesis will apply these terms interchangeably.

Motives for the use of prescription opioids are often viewed as complex and can vary among users (Barth et al., 2013). A substantial proportion of the reasons for

engaging in the misuse of these drugs lies in the motivation for self-treatment. A study published by Barth et al. (2013) examined the prevalence of pain and motives for the nonmedical use of prescription opioids. Self-report measures showed the majority of participants (81%) reported a current motive for nonmedical use was “relief from pain.” When asked for motivations regarding initial use of the drug, the majority of participants (70.3%) similarly reported “relief from pain.” Other cited motives included to get high (74%), gain energy (71%), addiction (56%), decrease anxiety (51%), and improve sleep (36%). Findings indicate pain is a frequent motivator for the initial and current nonmedical use of prescription opioids.

Recent data from the Substance Abuse and Mental Health Services Administration (SAMHSA) illustrates the large quantity of prescription opioids that are being distributed and frequently diverted to individual’s for nonmedical use without a prescription (Substance Abuse and Mental Health Services, 2014). An estimated 7,049, or 20.2%, of young adults (18-25) sampled had participated in nonmedical use of prescription opioid medication in their lifetime. According to results from the 2013 National Survey on Drug Use and Health, 53% of individuals abusing or misusing prescription opioids obtained the drugs from “a friend or relative for free” (Substance Abuse and Mental Health Services Administration, 2013). Another 14.6% bought, or took, from a friend or relative without asking. Additional sources included “one doctor” (21.2%), “drug dealer or stranger” (4.3%) “more than one doctor” (2.6%), “bought on internet” (0.1), and “other” (4.3%). These results demonstrate a large number of individual’s abusing or misusing prescriptive opioids are directly obtaining the drugs from friends or family members.

Negative Consequences and Side Effects

Prescription opioids have resulted in more overdose deaths when compared to any other prescriptive medication. In 2014, there were approximately one and a half more drug overdose deaths in the United States than deaths from motor vehicle crashes. Among these, 61%, or 28,647 directly involved some type of opioid (Centers for Disease Control and Prevention, 2016). Records of emergency room (ER) visits indicate there were 1,242,872 drug-related medical emergency visits involving nonmedical use of pharmaceuticals nationwide in 2011 (Substance Abuse and Mental Health Services Administration, 2013). Of these visits, 488,004 or (39.2%) were specifically related to the nonmedical use of prescription opioids. The most commonly reported drugs involved in these medical emergencies were oxycodone (12.1%), hydrocodone (6.6%), and methadone (5.4%). There were no reported gender differences between males (49.1%) and females (50.8%), however there were differences when comparing age groups. Trends for emergency room visits within the age group 21-29 were much higher when compared to younger and older patients. In particular, medical emergencies related to the use of prescription opioids has increased 183 percent from 2004 to 2011.

In addition to the high number of overdose rates, research has shown a significant number of adverse side effects resulting from the nonmedical use of prescription opioids (Benyamin, et al., 2008). Common side effects include constipation, dizziness, nausea, vomiting, drowsiness, mental confusion, and sedation. Some consumers may experience a euphoric sensation in response to the use of these drugs increasing the likelihood for abuse potential from nonmedical users (Baldini, Von Korff, & Lin, 2012). Research in regards to long-term consequences of opioid use has shown to be associated with sleep-

disordered breathing, cardiovascular issues (e.g. heart failure), respiratory depression, increased risk of musculoskeletal effects, and effects on the immune system. Arguably, the most notable side effects of nonmedical prescription opioid use are associated with tolerance and addiction.

Tolerance and Addiction

Tolerance, defined as a progressive reduction of the sensitivity of an individual to the effects of a drug, is a common byproduct of prolonged opioid treatment (National Institutes of Health, 2011). The process of tolerance occurs when the body adjusts to a medication that is frequently present. This commonly results in an increase in dose requirements of the opioid and a decrease in overall effectiveness over time. Opioid tolerance can be expected to develop with regular use of the drug. Factors associated with opioid tolerance may increase the risk for physical dependence and addiction for the prescription medication.

Similar to tolerance, physical dependence of prescription opioids occurs when the body adapts to a specific medication. If the opioid medication is discontinued, the individual will experience withdrawal symptoms such as sweating, muscle aches, insomnia, anxiety, and vomiting (National Institutes of Health, 2016). Data from 2014 shows 1.9 million people in the United States fit the clinical criteria for dependence or abuse of prescription pain relievers, outnumbering those for cocaine and heroin combined. Although short-term use of opioids is less likely to result in dependence, prolonged exposure of these drugs can lead to an increased risk for experiencing these withdrawal symptoms. The prevention of these withdrawal symptoms can be a

motivating factor for the continued nonmedical use of prescription opioids over time resulting in opioid addiction (White, 2004).

Prescription Opioids and an Increase in Heroin Use

While a number of issues have been raised with respect to adverse effects of prescription opioids, findings related to the recent relationship between nonmedical use of pain relievers and heroin has shifted (Cicero, Ellis, Surrat, & Kurtz, 2014). It has been reported over the years heroin use has increased due to a direct relationship between the prevalence and nonmedical use of prescription opioids. A study by Cicero et al. (2014) analyzed data to define the relationship between the abuse of prescription opioids and the abuse of heroin. Participants (n=2851) were patients entering substance abuse treatment programs across the United States for heroin use/dependence. Self-administered surveys and interviews were utilized to gather information on past drug use patterns. Results indicated approximately 75.2% of individuals entering treatment for heroin addiction were first introduced to opioids through prescription medication. It is suggested the migration to heroin can be partially contributed to the drugs greater accessibility and cheaper street price when compared to prescriptive opioids.

Prevalence of Individuals Seeking Treatment for Opioid Dependence

Findings related to treatment of prescription opioid dependence has significant implications for public health outcomes. Between 2002 and 2012, addiction to prescription opioids resulted in 10% of all admissions into treatment only preceded by alcohol (45%) and marijuana (17%) (Substance Abuse and Mental Health Services Administration, 2014). Overall, 47% of individuals admitted into treatment for prescription opioid addiction were between the ages of 20-29. These data suggest that

despite the increase in opioid abuse across the United States, a limited number of individuals addicted to prescription opioids actually receive professional treatment. A study done at John Hopkins Bloomberg School of Public Health analyzed data from the National Survey of Drug Use and Health to examine substance use treatment trends for individuals with opioid use disorders across the nation (Saloner & Karthikeyan, 2015). The study looked at data from 2004 to 2008 and 2009 to 2013 for individuals aged 12 and older. Findings show that only an estimated 20 percent, or 1/6th, of individuals with an opioid addiction were in treatment during each time period.

Epidemic of Prescription Opioid Abuse and What Is Being Done

The epidemic of prescription opioid abuse represents a growing economic strain for the United States. The use for nonmedical purposes has dire consequences and has resulted in hospital visits, huge medical costs, lost time at work, and an increase in criminal justice costs (Birnbaum et al., 2011). The total costs (health care, workplace, and criminal justice) of prescription opioid abuse to the United States was an estimated \$55.7 billion in 2007. The largest contributor to this amount was lost workplace productivity costs at an estimated \$25.6 billion, or 45.9%, of the total cost for prescription opioid abuse to the nation. Health care costs contributed an estimated \$23.7 billion, or 44.9%, of total costs with excess medical and drug costs making up a large portion of that number. Criminal justice costs accounted for \$5.1 billion, or only 9.2%, of total costs with the majority being allotted to correctional facilities. These numbers are staggering and represent a growing need for strategies to address these issues.

Comprehensive approaches to combat the abuse and misuse of prescription opioids across the nation are an area of focus. The Food and Drug Administration

(FDA), in particular, has focused on educating prescribers about the appropriate use of opioids accentuating when to use these drugs and for which patients they are appropriate (United States Food and Drug Administration, 2013). Safety labels for the extended-release and long-acting versions of these medications have also been altered emphasizing changes to the administration and precautions of these pills. In 2010, President Obama released a strategy for National Drug Control which placed a strong emphasis on the need to address nonmedical prescription opioid use and overdose while maintaining safe and effective treatment strategies for individuals with pain (The White House, 2015). The administration has worked to expand efforts to prevent drug use, improve practices for prescribing pain relievers, and increase access to treatment facilities.

On October 21, 2015, President Obama issued a memorandum to combat the prescription drug abuse epidemic focusing on prescriber training and improving access to treatment (The White House, 2015). The memorandum issued a requirement for Federal Departments and Agencies to provide proper training on the prescribing of prescription opioids. The memorandum also requires Federal Departments and Agencies to review potential barriers to treatment and develop an action plan to reduce these barriers. Consistent with the previous mentioned strategies, the expanding use of opioid antagonists has become a common method to combat the nonmedical use and overdose of prescription opioids.

The Use of Opioid Antagonists

Opioid antagonists have been increasingly utilized as an option for pharmacologically reversing overdoses and potentially reducing nonmedical use of opioids (Kim, Irwin, & Khoshnood, 2009). According to the National Institute of Health

(NIH), drug antagonists are defined as an interaction between two or more drugs that reduce the effectiveness and result in opposite effects on the body (National Institutes of Health, 2017). Common opioid antagonists include naltrexone, naloxone, buprenorphine, and suboxone. These medications have no effect when used in the absence of an opioid resulting in little potential for abuse. A study looking at the practical use of the opioid antagonist naloxone reported 88.5% of participants indicated they would be “willing to administer a medication to another drug user in the event of an overdose” (Lagu, Anderson, & Stein, 2006). Currently, there are 44 states that have passed a Naloxone Access Law to expand access to the drug (Drug Policy Alliance, 2015). Although these laws have been passed, there is a limited number of distribution centers providing access to these medications across the United States.

Introduction into Studies

A variety of studies have been conducted across the United States exploring the extent of prescription opioid abuse. These studies (Brandt, Taverna, & Hallock, (2014); Lord, Brevard, & Budman (2011); McCabe, Teter, & Boyd (2005); McCabe, Teter, Boyd, Knight, & Wechsler, (2005)) provide insight about the nonmedical use of prescription opioids among college students. Overviews of these studies are presented in chronological order of publication.

Study 1

A study by McCabe, Teter, Boyd, Knight, & Wechsler (2005) analyzed data from the 2001 Harvard School of Public Health College Alcohol Study (CAS) from 4-year colleges and universities in 40 states. The purpose of the study was to determine the

nonmedical use of prescription opioids among college students across the nation. Participants included 10,904 students at 119 colleges within the United States. Self-report questionnaires were utilized to obtain information about nonmedical use of prescription opioids. The following question was used to assess nonmedical use of prescription opioids: “How often, if ever, have you used any of the drugs listed below? Do not include anything you used under a doctor’s order.” Drug items listed included codeine, morphine, Percodan, Vicodin, Demerol, Darvon, Percocet, and Darvocet. The response scale also assessed the length of time since last use of the drug.

Results indicated 12% of college students reported lifetime nonmedical use of prescription opioids. Past year nonmedical use was 7% and 3% reported nonmedical use within the past month. Nonmedical use of prescription opioids was higher among Caucasian students, off-campus residents, residents of fraternity or sorority housing, students attending more competitive 4-year universities, and students with lower grade point averages. There were no findings of specific characteristics associated with nonmedical use of prescription opioids indicating this form of drug abuse may be prevalent across a variety of college and universities in the United States.

Study 2

Another study used a self-administered survey to determine the prevalence, sources, and diversion associated with nonmedical prescription opioid use (McCabe, Teter, & Boyd, 2005). Participants (N=9,161) were undergraduate college students at a 4-year university in the Midwest United States. The following areas were assessed with response scales: illicit use of prescription opioids, how these prescriptions were obtained, diversion of prescription opioids and medical use of prescription opioids. Results

indicate 1,387, or 15%, of students reported illicit use of prescription pain medication in their lifetime. Of these students, 42% initiated illicit use in college. Similar to the previous findings, participants more likely to misuse prescription pain medications had lower grade point averages and were off-campus residents. A notable finding showed nonmedical use was more likely to occur among undergraduate students who were prescribed pain medication previously.

Study 3

A web-based survey assessed motives and attitudes about nonmedical use of prescription opioids among college students (Lord et al., (2011). Participants (N=689) were limited to current students, aged 18-25, who admitted to use of prescription opioid medications in their lifetime. Surveys were administered through the social-networking site Facebook, over a two-week period, to students of 4-year public and private colleges. The survey utilized close-ended questions involving nonmedical use, motives, age at which drugs were first misused, sources, perceived risk, and peer use associated with abuse of prescription opioids.

Results indicated 18% of participants reported misuse of prescription opioids at some point in their lives. A majority reported misuse within the past year (91%) and 30% indicated they had used regularly in the past year (described as using once or more a month). The most frequently misused opioids included oxycodone (70%) and hydrocodone (67%). The most frequent source of these drugs was friends (85%). The most commonly reported reasons for nonmedical use included to relax, have fun, experiment, and get high. Overall, participants disagreed that prescription medications are less expensive, more accessible, and safer to use than other drugs.

Study 4

A study by Brandt et al. (2014) explored long-term nonmedical prescription drug use among the college student population. Participants included 303 students at a college in the northeast United States. A survey was used to determine which prescription drugs they had used non-medically, reasons for using the drugs, perceptions of the drug, and if indicated they had not used a drug, reasons for abstaining from it. Results indicated of the 36.8% indicating they had used prescription drugs non-medically, almost half (48%) reported use of prescription pain relievers. The most commonly used drug was hydrocodone (64.1%), followed by oxycodone (42.6%), and codeine (34%). Students who abstained from prescription drug use most commonly cited “lack of interest” (82.6%) as reason for their choice. When asked about perceptions of specific drugs, 24% viewed pain relievers as “rewarding.”

Findings from the aforementioned studies have significance for young adults who may be unaware of the potential risks and prevalence of nonmedical prescription opioid use. Results of these studies indicate the need for prevention programs aimed at awareness and continued monitoring of drug use behavior in the college population. Other suggestions include ensuring physicians are instructing patients on the abuse potential of these medications (McCabe, Teter, Boyd, Knight, & Wechsler, 2005). Furthermore, patients should be educated regarding proper storage and dispensing of these medications.

The current study was conducted to investigate nonmedical use of prescription opioids, perceptions of prescription opioids, and motives for the use of these drugs

among the college student population. The anonymous questionnaire format allowed for the collection of data relating to specific prescription opioids that had been used for nonmedical reasons, how the prescription medication was obtained, and how often the medication was used. Additional data on factors that are potentially associated with the abuse of prescriptive opioids were collected including grade-point average (GPA), religious affiliation, and demographic information.

The following hypotheses were tested:

Hypothesis 1: Significantly more participants who self-report use of opioid medication will indicate nonmedical use over medical use.

Hypothesis 2: Significantly more participants who indicate nonmedical use of a prescriptive opioid medication will report first time use in college compared to starting illicit use prior to college.

CHAPTER II

METHOD

Participants

Participants were 94 undergraduate college students from a state university in the mid-South United States. All participants aged 18 and over were eligible for inclusion in the study. Ages ranged from 18 to 40 years ($M = 23.02$, $SD = .38$). The sample was 81.9% female ($n = 77$) and 18.1% male ($n = 17$). The sample was comprised of participants who self-identified as Caucasian ($n = 62$), African American ($n = 24$), and other ($n = 6$).

Participants were solicited from upper division psychology courses. This method of sampling was employed primarily for two reasons. First, because psychology courses can be treated as electives for students in non-psychology majors, it was considered that the sample would include participants of diverse knowledge and experiences. Second, this method of sampling provided an efficient approach to the process of data collection.

Measurement

A survey questionnaire was created specifically for this study (See Appendix A). The survey reflected a mixed-method design with qualitative questions requiring coding for statistical analysis. Questions eliciting information about prescriptive opioid use and nonmedical use were primarily utilized in this instrument. Additional questions regarding factors including demographic information and grade point average were also included in the questionnaire. Participants were instructed to put no identifying information on the questionnaire to ensure anonymity.

The first section of the survey contains basic demographic information such as age, gender, living arrangements, and approximate GPA. In the second section, participants were asked to identify if they had ever been prescribed a prescription opioid for any reason. Participants who indicated they had been prescribed a prescriptive opioid were instructed to answer follow-up questions inquiring about reasons for the prescription, source of the medication, level of difficulty acquiring the medication, and the age when the medication was initially consumed. Subsequent questions for those responding affirmatively were qualitative, investigating matters such as how long the medication was taken and benefits, if any, the participant experienced from taking the opioid medication. Participants who reported they had never been prescribed a prescription opioid were instructed to complete the third section of the survey.

Section three of the survey consisted of specific questions regarding nonmedical use of prescriptive opioid medication. Questions consisted of whether the participant ever taken opioid medication not prescribed to them, and, if so, how the medication was obtained, and the perceived level of difficulty for obtaining the medication. Additionally, participants were asked to provide reason(s) for taking opioid medication not prescribed to them. For example, some of the choices included “it relieves pain,” “it gives me a high,” “I am addicted,” and “it is safer than street drugs”. In the last section of the survey, participants were asked to provide information about their perception of safety of the prescription opioids, and alternatives, if any, that had been utilized in replacement of prescriptive opioids as treatment for pain.

Procedure

Prior to conducting this study, researchers requested IRB consent and approval was granted (See Appendix B). Participants were recruited in their classroom at the start of a regular meeting time for their introductory psychology course. An informed consent form was supplied to students prior to participation in the study (See Appendix D). Signed informed consent forms were placed in a separate envelope and surveys were then delivered to participants wishing to be included in the study.

Participants were asked to put no identifying information on the questionnaire. Additionally, participants were also informed they could stop participation at any point with no negative consequences. Participants were given ample time to complete surveys at their own pace. Completed questionnaires were collected and stored separately from the signed consent forms to ensure anonymity. Participants were supplied with debriefing forms as a means to provide information to anyone that felt they need assistance or support following completion of the survey.

CHAPTER III

RESULTS

Participants were recruited from upper division psychology courses. Students were provided with an IRB-approved description of the study and informed of their role as research participants. Those who expressed desire to participate in the study completed Informed Consent forms prior to survey distribution. Extra credit was awarded for participation in the study and alternative assignments were offered for those who declined to participate.

The sample consisted of 94 participants. Of these participants, 82% were female and 18% were male. Ages ranged from 18 to 40 years ($M = 23.02$, $SD = .38$). The majority of participants (67.4%) self-identified as Caucasian. See Table 1 for information on the racial/ethnic composition of the sample.

Table 1.
Racial/Ethnic Composition of Participants (n = 92)

	n	%
Race/Ethnicity		
African American	24	26.1
Caucasian	62	67.4
Other	6	6.5

Data for the study were analyzed using an approach similar to grounded theory, a research methodology developed by Glaser and Strauss (1967). The methodology of grounded theory utilizes inductive reasoning and empirical data to inform the

development of research questions and theory. As this type of study is considered exploratory, two hypotheses were raised.

The first hypothesis stated that significantly more participants who self-report use of opioid medication will indicate nonmedical use over medical use. When measured directly using fixed response questions, the prevalence of the indication of nonmedical use was 8.4% (n = 8). This is below the prevalence reported in the literature, and not sufficient for analysis.

The second hypothesis stated that significantly more participants who indicate nonmedical use of a prescriptive opioid medication will report first time use in college compared to starting illicit use prior to college. The prevalence of participants indicating first time use while in college was 3.2% and well below the range of prevalence reported in the literature. As a result, there were insufficient data for analysis of this hypothesis. Although this hypothesis could not be analyzed, descriptive statistics are presented and the tables are aggregated in Appendix D.

Characteristics of the Nonmedical Users Group

A primary area of interest was the total number of participants indicating nonmedical use of a prescriptive opioid. Of the 48 reporting they had never been prescribed a prescriptive opioid, 8 participants reported nonmedical use of prescriptive opioid medication. When asked which prescriptive opioid had been most commonly taken, hydrocodone was the primary choice among participants (n = 9).

One research question was whether the majority of participants who self-report nonmedical use of prescription opioids initiated first time consumption while in college. Of these 12 respondents indicating nonmedical use of prescription opioids, the majority

(n = 8) reported initiation of first time use in high school. A related research question focused on the reasons motivating first time use of the drug. Of the 12 participants, the majority indicated the reason for taking an opioid medication not prescribed to them was primarily attributed to pain relief (n = 10) and use as a sleep aid (n = 7). See Table 2 for frequencies of motivations for nonmedical use of a prescription opioid.

Table 2.
Frequencies of Motivations for Nonmedical Use of Prescriptive Opioids (n = 27)

Survey Item	Frequency
If you have taken an opioid medication not prescribed to you, what was your reason?	
It relieves pain	10
It gives me a high	3
It helps me sleep	7
To decrease anxiety	3
Experimentation	3
It is safer than street drugs	1

A relevant area of interest was the level of difficulty, if any, nonmedical users experienced in acquiring the prescriptive medication and the source of the drug. As shown in Table 3, a higher proportion of participants reported almost no difficulty when obtaining the prescription opioid. Additionally, participants indicated it was equally as common to obtain the medication from relatives (n = 5) as well as friends (n = 5). See Table 3 for frequencies of nonmedical users reported level of difficulty experienced when obtaining a prescriptive opioid.

Table 3.
Frequencies of Nonmedical Users' Perceived Level of Difficulty for Obtaining a Prescriptive Opioid (n = 13)

Survey Item	Frequency
If you have taken an opioid medication not prescribed to you, how difficult was it to obtain the prescription medication, with 1 being easy and 10 being difficult?	6
1	2
2	1
3	1
4	1
5	1
7	1
8	

Characteristics of the Medical Users Group

A further area of interest was the total number of participants indicating they had been prescribed a prescriptive opioid. Of the 94 respondents, a significant majority of participants (n = 53) indicated they had been prescribed an opioid medication. See Table 4 for the frequencies of participants prescribed a prescriptive opioid. Furthermore, when asked about the type of opioid medication prescribed, participants indicated hydrocodone to be most common (n = 39).

The most common source of the opioid prescription for medical users was medical doctors (MD) (n = 26) followed by dentists (n = 12) and more than one practitioner (n = 10) (See Table 5). Those who reported having been prescribed a prescriptive opioid were asked to explain the cause. A majority of participants reported

surgery (n = 26) as the basis for the prescription, followed by dental reasons (n = 12) and temporomandibular joint (TMJ) syndrome (n = 10) (See Table 6).

Table 4.
Frequencies of Participants Prescribed a Prescriptive Opioid (n=91)

Survey Item	Frequency
Have you ever been prescribed a prescription opioid to treat pain?	
No	38
Yes	53

Table 5.
Frequencies for the Source of Medication for Participants Prescribed a Prescriptive Opioid (n=48)

Survey Item	Frequency
Who prescribed the pain medication?	
Dentist	12
Medical Doctor (MD)	26
More than 1 practitioner	10

Table 6.
Frequencies of Reasons for Medical Users' Consumption of a Prescriptive Opioid (n=55)

Survey Item	Frequency
Explanation of reason for receiving prescription opioid	
Dental	20
Surgery	6
Temporomandibular Joint (TMJ) Syndrome	1
Childbirth, Concussion, etc.	5
Combinations	23

For participants reporting having been prescribed opioid medication, subsequent questions followed about the initial age of use and level of difficulty obtaining the medication. Of the 52 respondents, over half indicated the start of first time use fell between the ages of 14-19 (n = 32). The next most common age range of initiation was between 20-22 years (n = 11) (See Table 7). Participants who had been prescribed an opioid were also asked if they had any difficulty acquiring a prescription for the medication. The majority of participants (n = 42) reported no difficulty obtaining the drugs. Other participants stated they experienced some level of difficulty (n = 3) (See Table 8). Participants were asked to provide an explanation for the difficulty, if any, as a follow-up question. Responses included “doctor denied request for refill” and “ran out of prescription, had to wait for refill.”

Table 7.

Frequencies of Age of Initial Use of Prescription Opioids for Medical Users (n=52)

Survey Item	Frequency
If you were prescribed an opioid, how old were you when you began the medication?	
8-10 years	1
11-13 years	1
14-16 years	16
17-19 years	16
20-22 years	11
23-25 years	3
26-29 years	3
30-32 years	1

Table 8.
Frequencies of Medical Users' Perceived Difficulty for Obtaining a Prescription
(n=45)

Survey Item	Frequency
Have you had any difficulty getting a prescription for the medication?	
No	42
Yes	3

Perception of Safety and Alternatives to Prescriptive Opioid Medication

Participants reporting use of prescription opioids (both medical and nonmedical) were asked about their overall perception of safety in regards to the drug and alternative methods for pain relief. Of the 73 respondents, a large majority revealed they do not agree that because opioid medication is FDA approved, it is safe to use at will (See Table 9). Participants were also asked if they had ever experienced chronic pain and elected to not use an opioid medication. About half of the respondents (53.2%) indicated they had used alternatives to opioid medication when compared to participants (46.8%) who had not tried other strategies. When asked for descriptions of alternative methods, the majority of respondents employed OTC medication (n = 16), followed by a combination of therapies with OTC medication (n = 10) (See Table 10).

Table 9.
Frequencies of Participants' Overall Perception of Safety Involving Prescription Opioids (n=73)

Survey Item	Frequency
Do you agree that because opioid medication is FDA approved it is safe to use at will?	
No	68
Yes	5

Table 10.
Frequencies of Participants Indicating Uses of Alternatives to Opioid Medication (n=46)

Survey Item	Frequency
What did you do instead? (If indicated they have experience chronic pain and not used opioid medication)	
Exercise/Yoga	6
Ice, Heat	3
Rest, Waited for pain to subside	3
OTC rx	16
Combination of therapies with OTC rx	10
Suffered through the pain	6

CHAPTER IV

DISCUSSION

This study provided information focusing on the increasing prevalence of prescriptive opioid use among young adults in a college setting. Prior researchers (Brandt, Taverna, & Hallock, 2014; Lord, Brevard, & Budman, 2011; McCabe, Teter, & Boyd 2005; McCabe, Teter, Boyd, Knight, & Wechsler, 2005) have concluded that nonmedical use of prescription drugs, including opioids, is a concern among young adults. This study was designed to focus on upper level undergraduate students.

It should be noted that approximately 67% of the 92 undergraduate students who completed the questionnaire reported previous use of prescription opioid medication. Of those who reported previous use, 13% (n = 8) indicated consuming the opioid medication without a prescription. When asked about the ease of acquiring the medication, approximately 69% reported obtaining the drugs with little to no difficulty (i.e. participants rating 1, 2, or 3 for perceived level of difficulty when obtaining the prescriptive opioid medication). Those 8 participants self-identified as nonmedical users due to their nonmedical use or abuse of prescribed medications that included opioids.

The finding that the most frequent motivation for use of these drugs involves relief of pain is consistent with reports in previous research. While the majority of participants (n = 10) identified relief of pain to be their primary motivation, use as a sleep aid (n = 7) was also determined to be a common motivating factor. This suggests the nonmedical use of these drugs may often result from untreated medical issues rather than recreational purposes. A study focusing solely on motivational reasons and perceived

benefit for the intake of these drugs could provide additional information for individuals working with vulnerable youth and young adults.

Researchers found that students identified hydrocodone as the prescription opioid most often used for nonmedical purposes (Brandt et al. 2014). Analysis of the data gathered in this study paralleled this finding and showed that the majority of participants (73.6%) indicated having consumed hydrocodone more often than any other prescription opioid. Results focusing on initiation of use found participants more commonly first used prescription opioids for nonmedical purposes in high school (66.7%) rather than in college (25%). Similarly, medical use of prescription opioids was more commonly initiated during late adolescence ($n = 32$). The finding in regards to age of initiation indicates the need for intervention and prevention efforts at the school-age level.

A specific strength of the study was the survey questionnaire that was utilized (See Appendix C). The questionnaire enabled researchers to gather a variety of qualitative data which were then able to be coded for statistical analyses. A possible limitation of this study was that participants were enrolled in upper level undergraduate psychology courses preparatory to applications to graduate programs. Their knowledge of prescription medication and adverse effects may have lessened the likelihood this sample would take medications for nonmedical use. For this reason, results for this study may have varied if the sample were greater and more diverse.

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APPENDICES

APPENDIX A
QUESTIONNAIRE

Questionnaire

1. Gender _____ Race _____
Age _____
2. Are you currently a member of a fraternity or sorority? _____
3. What is your current living arrangement? Check all that apply.
a. residence hall ___ b. fraternity or sorority house ___ c. off-campus housing ___ d. other ___
4. What is your approximate GPA? 2.0 – 2.5 _____ 2.5 – 3.0 _____ 3.0 – 3.5 _____
3.5 – 4.0 _____

Note: The following list is of prescription opioids with brand names in parentheses:

codeine fentanyl hydrocodone (Hysingla ER, Zohydro ER, Lorcet, Lortab, Norco, Vicodin)
hydromorphone (Dilaudid) meperidine (Demerol) methadone (Dolophine)
morphine oxycodone (Percocet, Endoct, Roxicet)

5. Have you ever been prescribed a prescription opioid for any reason? _____ Explain:
6. Have you ever been diagnosed with pain for which opioid medication has been prescribed?

7. Who prescribed the pain medication? MD _____ NP _____ Dentist _____ Pain Clinic _____
8. Which of the following medications have been prescribed for you? Check all that apply.
 - a. codeine _____
 - b. fentanyl _____
 - c. hydrocodone _____
 - d. hydromorphone _____
 - e. meperidine _____
 - f. methadone _____
 - g. morphine _____
 - h. oxycodone _____
 - i. other (please specify) _____

11. If you were prescribed an opioid, how old were you when you began the medication?

12. If you have been prescribed an opioid, how long did you take the medication?

13. If you have been prescribed an opioid, are you currently taking the medication?

14. If you are currently taking opioid medication, are you taking it as prescribed? If not, explain.

15. If you have been prescribed an opioid, in what ways did you benefit from the medication?

16. If you have been prescribed an opioid, did the medication create problems? If so, please explain.

17. Have you have any difficulty getting a prescription for the medication? Explain.

18. If you could not get the prescription opioid, what did you do?

19. If you have been prescribed an opioid, did you ever sell the medication?

20. If you answered yes to the previous question, please explain your reasons.

21. If you have been prescribed an opioid, have you ever supplied other people with your prescription medication?

22. If you answered yes to the previous question, please explain your reasons.

23. Have you ever falsified symptoms of pain in order to obtain opioid medication?

24. If you have not been prescribed an opioid medication, have you ever taken any?

25. If yes, which? Check all that apply.

a. codeine _____

b. fentanyl _____

c. hydrocodone _____

d. hydromorphone _____

e. meperidine _____

f. methadone _____

g. morphine _____

h. oxycodone _____

i. other (please specify) _____

26. If you checked yes to more than one medication, which one(s) did you take more often?

27. How did you obtain the opioid medication?

28. If you obtained the opioid medication by purchasing it, how much did you pay for it?

29. If you have taken opioid medication not prescribed to you, what was your reason(s)?

* Check all that apply and add additional reasons under other.

- a. it relieves pain _____
 - b. it gives me a high _____
 - d. it helps me sleep _____
 - c. to decrease anxiety _____
 - e. experimentation _____
 - g. it is safer than street drugs _____
 - f. it counteracts the effects of other drugs _____
 - h. I am addicted _____
 - i. other (please specify) _____
-

30. If you have taken opioid medication not prescribed to you, how difficult was it to obtain the prescription medication, with 1 being easy and 10 being difficult? _____

31. If you have taken opioid medication not prescribed to you, how often have you taken it?

32. If you have taken opioid medications not prescribed to you, did you experience any adverse side effects? If so, please explain.

33. If you have taken an opioid medication not prescribed to you, at what point in your background did you first use it?

- a. Elementary School _____
- b. Middle School _____
- c. High School _____
- d. Undergraduate _____
- e. Military _____
- f. Other (please specify) _____

34. If you have taken opioid medication not prescribed to you, did you feel like the benefits of the medication outweighed any adverse consequences experienced? Please explain.

35. If you have used opioid medication not prescribed to you, at what age did you first use it?

36. Do you agree that because opioid medication is FDA approved it is safe to use at will?

37. Have you experienced chronic pain and not used opioid medication? _____

38. What did you do instead?

39. What is your religious affiliation?

38. Do you feel like taking opioids without a prescription conflicts with one's religious beliefs. Please explain.

39. How often do you attend church or other religious meetings?

1 - Never; 2 - Once a year or less; 3 - A few times a year; 4 - A few times a month; 5 - Once a week; 6 - More than once/week

40. How often do you spend time in private religious activities, such as prayer, meditation or Bible study?

1 - Rarely or never; 2 - A few times a month; 3 - Once a week; 4 - Two or more times/week; 5 - Daily; 6 - More than once a day

The following section contains 3 statements about religious belief or experience. Please mark the extent to which each statement is true or not true for you.

41. In my life, I experience the presence of the Divine (i.e., God)

1 - Definitely not true; 2 - Tends not to be true; 3 - Unsure; 4 - Tends to be true; 5 - Definitely true of me

42. My religious beliefs are what really lie behind my whole approach to life

1 - Definitely not true; 2 - Tends not to be true; 3 - Unsure; 4 - Tends to be true; 5 - Definitely true of me

43. I try hard to carry my religion over into all other dealings in life

1 - Definitely not true; 2 - Tends not to be true; 3 - Unsure; 4 - Tends to be true; 5 - Definitely true of me

APPENDIX B

IRB APPROVAL



9/18/2015

Investigator(s): Jessica Cunningham, Gloria Hamilton
Department: Psychology
Investigator(s) Email: jdc7f@mtmail.mtsu.edu

Protocol Title: "Prescription opioid abuse among undergraduates at a state university in the Southeastern United States"

Protocol Number: 16-3013

Dear Investigator(s),

The MTSU Institutional Review Board has reviewed the research proposal identified above. The MTSU IRB has determined that the study poses minimal risk to participants or that you have satisfactorily worked to minimize risks, and you have satisfactorily addressed all of the points brought up during the review.

Approval is granted for one (1) year from the date of this letter for 500 participants.

Please note that any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918. Any change to the protocol must be submitted to the IRB before implementing this change.

You will need to submit an end-of-project form to the Office of Compliance upon completion of your research located on the IRB website. Complete research means that you have finished collecting and analyzing data. **Should you not finish your research within the one (1) year period, you must submit a Progress Report and request a continuation prior to the expiration date.** Please allow time for review and requested revisions. Failure to submit a Progress Report and request for continuation will automatically result in cancellation of your research study. Therefore, you will not be able to use any data and/or collect any data. Your study expires **9/18/2016**.

According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs to complete the required training. **If you add researchers to an approved project, please forward an updated list of researchers to the Office of Compliance before they begin to work on the project.**

All research materials must be retained by the PI or faculty advisor (if the PI is a student) for at least three (3) years after study completion and then destroyed in a manner that maintains confidentiality and anonymity.

Sincerely,

William Langston
Chair, Institutional Review Board
Middle Tennessee State University

APPENDIX C

CONSENT FORM

Principal Investigator: Jessica Cunningham

Study Title: Prescription opioid abuse among undergraduate at a university in the Southeastern United States

Institution: Middle Tennessee State University

Name of participant: _____ Age: _____

The following information is provided to inform you about the research project and your participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and the information given below. You will be given an opportunity to ask questions, and your questions will be answered. You will be given a copy of this consent form.

Your participation in this research study is voluntary. For additional information about giving consent or your rights as a participant in this study, please feel free to contact the MTSU Office of Compliance at (615) 494-8918.

1. Purpose of the study:
You are being asked to participate in a research study to explore the use of prescription opioids among college students.
2. Description of procedures to be followed and approximate duration of the study:
You are being asked to fill out a questionnaire that will take approximately 15 minutes to complete. The questionnaire asks about prescription opioid use. Should you choose to participate in this study and sign this consent form, place the signed consent form in an unmarked envelope. The completed survey, having no identifying information, will be placed in a different envelope. Note: Being invited to participate in this study in no way implies that you are taking or abusing opioid medication.
3. Expected costs: n/a
4. Description of the discomforts, inconveniences, and/or risks that can be reasonably expected as a result of participation in this study: The only discomfort that may be expected is discomfort in answering questions about the use of opioid medications.
5. Compensation in case of study-related injury: MTSU will not provide compensation in the case of study related injury.
6. Anticipated benefits from this study: The potential benefits that may result from thjs study are advances in the study of opioid use and misuse in the college population.
7. Alternative treatments available: n/a
8. Compensation for participation: No compensation will be provided for participation in this study.
9. Circumstances under which the Principal Investigator may withdraw you from study participation:
n/a

10. What happens if you choose to withdraw from study participation: You may choose to stop participation in the study at any time with no negative consequences.
11. Contact Information. If you should have any questions about this research study or possible injury, please feel free to contact (Jessica Cunningham) at (615-598-0211) or -my Faculty Advisor, (Dr. Gloria Hamilton) at (615-898-5745).
12. Confidentiality. No identifying information will be attached to your responses on the questionnaire. Please do not put identifying information on your questionnaire.
13. STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY
I have read this informed consent document and the material contained in it has been explained to me verbally. I understand each part of the document, all my questions have been answered, and I freely and voluntarily choose to participate in this study.

Date

Signature of patient/volunteer

Consent obtained by:

Date

Signature

Printed Name and Title

APPENDIX D
STATISTICAL TABLES

Table 1.
Racial/Ethnic Composition of Participants (n = 92)

	n	%
Race/Ethnicity		
African American	24	26.1
Caucasian	62	67.4
Other	6	6.5

Table 2.
Frequencies of Motivations for Nonmedical Use of Prescriptive Opioids (n = 27)

Survey Item	Frequency
If you have taken an opioid medication not prescribed to you, what was your reason?	
It relieves pain	10
It gives me a high	3
It helps me sleep	7
To decrease anxiety	3
Experimentation	3
It is safer than street drugs	1

Table 3.
Frequencies of Nonmedical Users' Perceived Level of Difficulty for Obtaining a Prescriptive Opioid (n = 13)

Survey Item	Frequency
If you have taken an opioid medication not prescribed to you, how difficult was it to obtain the prescription medication, with 1 being easy and 10 being difficult?	
1	6
2	2

Table 3. (continued)

3	1
4	1
5	1
7	1
8	1

*Table 4.**Frequencies of Participants Prescribed a Prescriptive Opioid (n=91)*

Survey Item	Frequency
Have you ever been prescribed a prescription opioid to treat pain?	
No	38
Yes	53

*Table 5.**Frequencies for the Source of Medication for Participants Prescribed a Prescriptive Opioid (n=48)*

Survey Item	Frequency
Who prescribed the pain medication?	
Dentist	12
Medical Doctor (MD)	26
More than 1 practitioner	10

*Table 6.**Frequencies of Reasons for Medical Users' Consumption of a Prescriptive Opioid (n=55)*

Survey Item	Frequency
Explanation of reason for receiving prescription opioid	
Dental	20
Surgery	6
TMJ	1
Childbirth, Concussion, etc.	5
Combinations	23

Table 7.

Frequencies of Age of Initial Use of Prescription Opioids for Medical Users (n=52)

Survey Item	Frequency
If you were prescribed an opioid, how old were you when you began the medication?	
8-10 years	1
11-13 years	1
14-16 years	16
17-19 years	16
20-22 years	11
23-25 years	3
26-29 years	3
30-32 years	1

Table 8.

Frequencies of Medical Users' Perceived Difficulty for Obtaining a Prescription (n=45)

Survey Item	Frequency
Have you had any difficulty getting a prescription for the medication?	
No	42
Yes	3

Table 9.

Frequencies of Participants' Overall Perception of Safety Involving Prescription Opioids (n=73)

Survey Item	Frequency
Do you agree that because opioid medication is FDA approved it is safe to use at will?	
No	68
Yes	5

*Table 10.**Frequencies of Participants Indicating Uses of Alternatives to Opioid Medication (n=46)*

Survey Item	Frequency
What did you do instead? (If indicated they have experience chronic pain and not used opioid medication)	
Exercise/Yoga	6
Ice, Heat	3
Rest, Waited for pain to subside	3
OTC rx	16
Combination of therapies with OTC rx	10
Suffered through the pain	6