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Awareness of Opioid Overdose and Naloxone Knowledge Among Mississippi College Students

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**AWARENESS OF OPIOID OVERDOSE AND NALOXONE KNOWLEDGE AMONG
MISSISSIPPI COLLEGE STUDENTS**

By

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Clinical Research Project

Submitted in Partial Fulfillment of the Requirements for the
Degree of Master of Science in Nursing, College of Nursing
and Health Sciences

Mississippi University for Women

COLUMBUS, MISSISSIPPI

July 2024

Graduate Committee Approval

The Graduate Committee of Chesley Alias, Kaylea Byrd, and
Kundriay Spencer hereby approves this research project as meeting
partial fulfillment of the requirements for the Degree of
Master of Science in Nursing

Committee Chair

Committee Member

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Approved:

Director of Graduate Studies

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Dedications

First, I would like to thank God for revealing this path, guiding and sustaining me to the end. This journey would not have been possible without Him. To my sweet husband, thank you for your constant support and love. To my precious daughter who was my biggest cheerleader and constant motivator. To my son, who has always believed in me in a sweet quiet way. To Dr. Groves, who has a servant's heart and contagious spirit to help others, thank you for your constant guidance and support this year. I am so thankful that God put you in my path. I would like to dedicate this research to the ones that could have benefited from the implications of this research. -Chesley Alias

I thank God for giving me this amazing opportunity. I remind myself every day just how blessed I truly am, and even more blessed to serve an amazing Lord. He has guided me down a path that has molded and changed me for the better. Without His amazing grace, none of this would have been possible. I thank, worship, and praise Him for all He has done for me. My loving fiance, I truly am so undeserving of you. You have gone above and beyond for me since the day we met and have truly shown your love for me throughout this rigorous journey. You have pushed, encouraged, and given me the strength I never knew I had in me. Thank you for always listening, being there, and constantly reminding me "You have got this!" in all of the good and bad days. I love you forever, Zach. Mom, I could write for an eternity. Thank you for the constant encouragement and advice you have provided throughout my entire nursing career, especially this FNP program. I love you and I can only wish to be half the FNP you are one day. Dad, thank you for always cheering me up, putting me first, and your steady reminders "It will be worth it in the end". You have motivated me and pushed me to

strive to achieve goals I never knew I would accomplish. I'll always be your little girl. To my grandparents, thank you for the numerous calls checking on me to make sure I am always okay and lifting me up in every way possible. To my sisters, thank you for always understanding how busy I have been this past year. I love each and every one of you. My wonderful friends, thank you for being just a phone call away and sticking with me for many years. My baby nieces, your "kay kay" will always love you the most! Lastly, Dr. Groves. Where do I even begin. God knew what He was doing when he placed me in your advising group. Your love and compassion for nursing is something that the world should learn from. You have amazed me in so many ways. You are such a brilliant human being with such knowledge that truly is incredible. I have learned so much from you, and continue to learn from you daily. Thank you for being there. No matter what time or day it was you were always there. You have gone out of your way to be there, to help, to ensure everything is taken care of even when you didn't have to. Because that is the type of person you are and the person I strive to be. I have never met someone so loving, caring, compassionate, or kind throughout my entire nursing career. You have truly touched my life and you will forever hold a large place in my heart. I will never be able to thank you enough for all you have done. -Kaylea Byrd

I would first like to thank God, for without him none of this would even be possible. I dedicate my all to the Almighty God who has been my source of strength, grace, and wisdom throughout this race. The bible says the blessings of the Lord maketh rich and addeth no sorrows, Today I honor God for every blessing he's bestowed upon my life. I pray he continues to guide me and lead me to walk in obedience so I will eat the good of the land. I thank him today for the fruits of the spirit. To my precious handsome son,

Kylen, you were my motivation and driving force. It is because of you that I strive so hard to be successful. Thank you for being my little reason why and giving me the push to go harder. Without you, this would all be pointless. To my wonderful mother, grandmother, great grandmother, auntie, and uncle thank you all for your prayers and endless support. Thank you for your continued push and motivation to help me on the days that I wanted to throw in the towel. You were my source of inspiration. Your unwavering encouragement and belief in my abilities have been invaluable, and I am grateful for the sacrifices you have made to help me pursue my dreams. Mom, thanks for helping make my life manageable by allowing me to spend countless hours studying, doing schoolwork, missing holidays and completing clinicals while making sure my son was taken care of every day. I would also like to thank my significant other for not allowing me to give up, understanding, and believing in me. To my friends, thank you for encouraging me to fight my way through and understanding that I couldn't attend every event. Finally, I would like to thank my advisor, Dr. Groves for pushing me to my highest potential. Thank you for being my constant encourager, listening ear, and shoulder to lean on. You have talked me out of my darkest days. I will never forget my laptop crashing on the 2nd day of school and your husband saved my life by repairing it. I will never be able to thank either of you enough. This study is a testament to the power of collaboration, dedication, and perseverance, and I am proud to share it with you. It is my hope that this work will contribute to the advancement of knowledge and understanding in this field, and ultimately lead to positive change and progress. -Kundriay Spencer

Abstract

According to the Mississippi State Department of Health (MSDH), drug overdoses in Mississippi increased by 49% in just one year from 2019-2020. Death rates from synthetic opioids such as fentanyl more than doubled (MSDH, 2023). More than 106,000 persons in the U.S. died from drug-involved overdose in 2021, including illicit drugs and prescription opioids (NIDA, 2023). In the past, community-based distribution of Naloxone, a life-saving opioid reversal agent, resulted in more than 26,000 lives saved from 1996-2014. The US Surgeon General and the Department of Health and Human Services (DHHS) have designated naloxone as a high-priority intervention for lowering opioid overdose mortality. Overdose deaths among college students have risen substantially over recent years due to the opioid epidemic. The purpose of this study was to determine Mississippi college students' awareness of opioid overdose signs and symptoms, their knowledge regarding Naloxone, and its use in opioid overdoses. The researchers used a descriptive, quantitative design to assess the student's knowledge regarding opioid overdose and naloxone administration. Data was collected from a convenience sample of students ages 18 and older and was organized via a Qualtrics survey. The study was conducted across multiple college campuses, including both universities and junior colleges, across Mississippi. Surveys were delivered electronically utilizing a QR code via a mass email send out and flyers with the QR code posted throughout the campuses. After data collection, the data was subjected to analyses using descriptive statistics. The study examined Mississippi college students' awareness of opioid overdose signs and knowledge about Naloxone. Analysis of 101 survey responses revealed high awareness: 72.3% know how to respond to an unresponsive person, 86.1% recognize overdose symptoms, and over

93% would intervene in an overdose situation. Students also demonstrate strong Naloxone knowledge, scoring an average of 5.63 on a 7-point scale. Demographic factors like age, gender, and college type don't significantly affect knowledge scores. Overall, Mississippi college students show a high theoretical understanding of opioid overdoses and Naloxone, but misconceptions and lack of awareness about campus access need to be addressed to ensure effective real-world application.

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Chapter I

Dimension of the Problem

According to the Mississippi State Department of Health (MSDH), drug overdoses in Mississippi increased by 49% in just one year from 2019-2020. Death rates from synthetic opioids such as fentanyl more than doubled (MSDH, 2023). More than 106,000 persons in the U.S. died from drug-involved overdose in 2021, including illicit drugs and prescription opioids (NIDA, 2023). With an estimated 47,600 opioid-related deaths reported in 2017, the number of opioid overdose deaths in the United States (US) has more than quadrupled since 2002. In the past, community-based distribution of Naloxone, a life-saving opioid reversal agent, resulted in more than 26,000 lives saved from 1996-2014. The US Surgeon General and the Department of Health and Human Services (DHHS) have designated naloxone as a high-priority intervention for lowering opioid overdose mortality. Naloxone is an antidote that reverses the effects of an opioid overdose. Drug overdoses are highlighted as the number one cause of death in Americans under the age of 50. Even more specifically, college-aged adults have been found to be more likely than any other group to engage in the misuse of opioids (Hill et al., 2019).

Problem Statement

Overdose deaths among college students have risen substantially over the recent years due to the opioid epidemic. The numbers of students overdosing on college campuses have recently begun to increase causing a concern for students and college personnel. The significant problem to be addressed in this study is the lack of education, resources, and availability of life-saving interventions needed to help combat fatal opioid overdoses.

Statement of Purpose

The purpose of this study is to determine Mississippi college students' awareness of opioid overdose signs and symptoms, their knowledge regarding Naloxone, and its use in opioid overdoses.

Significance of the Study

This study will be useful in determining the knowledge of Naloxone and opioid overdoses on college campuses which may help to reduce the number of overdoses due to opioid drug use. Studies have shown that Naloxone is inaccessible to college students. Inaccessibility on Mississippi college campuses may contribute to the number of deaths related to opioid overdose. If the current resources project that there is a knowledge deficit concerning Naloxone in opioid overdose, then efforts addressing this deficit may potentially decrease overdose numbers.

Conceptual Framework

The Health Belief Model (HBM) was the theoretical framework used to guide this study. The 1950s-created HBM by social psychologists Hochbaum, Rosenstock, and Kegels have helped predict health-related behaviors and develop wellness interventions. It states that individuals' choices to engage in health-promoting behaviors are affected by their perceived susceptibility to a well-being condition, the perceived seriousness of that condition, the perceived benefits of taking preventive activities, and the perceived boundaries to taking those activities (Daniati et al., 2022).

The essential premise of this model is that perceptions of well-being risks, the benefits of preventative efforts, and boundaries affect people's well-being choices and behaviors. By evaluating their perceived vulnerability to a health condition, the perceived

seriousness of that condition, the perceived benefits of health activities, and the perceived barriers to taking those activities, individuals determine their inspiration to engage in health-promoting behaviors. The HBM also recognizes the role of cues to activity, external triggers that provoke individuals to take the prescribed steps, and the concept of self-efficacy, which relates to their conviction in their ability to carry out these activities successfully. Moreover, the model incorporates the concepts of cues to activity, external prompts to start health-related activities, and self-efficacy, an individual's confidence in their capacity to execute those activities successfully (Daniati et al., 2022).

One of the unique developers of the HBM, Irwin M. Rosenstock, emphasized the centrality of psychological variables in determining health-related behavior. He highlighted the part of perceived susceptibility and seriousness, suggesting that people would be more motivated to require preventive activity if they believed they were helpless to a severe well-being condition. He also underscored the significance of understanding perceived barriers and the part of cues to action in stimulating health-promoting behaviors. Rosenstock advocated for the role of well-being education and communication in adjusting health convictions and, consequently, health-related behaviors. Rosenstock (2023) provided essential experiences in the historical advancement of the HBM. In this comprehensive piece, Rosenstock followed the roots of the HBM, examining the initial conceptualization and how the model advanced over time. He emphasized the model's role in understanding and foreseeing well-being behaviors and its commitments to health education and promotion programs.

To guide the current researchers on the knowledge of naloxone and opioid overdose on college campuses, the HBM was applied as the basic speculative framework.

HBM states that an individual's health-related behaviors are shaped by their perceived vulnerability to a well-being issue, their assessment of its reality, their preferences for addressing it, and their recognition of its barriers. It was the purpose of the current researchers to examine college student awareness and vulnerability to opioid overdoses, the gravity of such events, the focal points associated with having information about naloxone and its administration during emergencies, and the potential challenges they may face in accessing or using it. By applying the HBM, the researchers studied students' knowledge and some practices related to naloxone and opioid overdose, which will, in turn, assist in the advancement of targeted interventions and instructive programs aimed at improving naloxone information and access on college campuses.

Research Questions

The following research questions were the focus of this study:

- 1) Are Mississippi college students aware of the signs and symptoms of opioid overdose?
- 2) Are Mississippi college students knowledgeable of naloxone and its use in opioid overdose?

Definition of Terms

Opioid Overdose

Theoretical. Death from an opioid overdose happens when too much of the drug overwhelms the brain and interrupts the body's natural drive to breathe (CDC online, 2024.)

Operational. The misuse of an opioid that becomes life-threatening requiring emergency care as evidenced by shallow breathing, limpness, cold pale/blue lips, or unconsciousness.

Knowledge

Theoretical. Facts, information, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject (Merriam-Webster online, 2023.)

Operational. Knowledge is assessed as evident by a score of 50% or greater on the questionnaire.

College Students

Theoretical. An individual who is a full-time or part-time student attending an institution of higher education (Merriam-Webster online, 2023.)

Operational. Individuals enrolled in college in the state of Mississippi ages ranging from 18 yrs. to 45 and older.

Naloxone Administration

Theoretical. A synthetic potent antagonist of narcotic drugs (such as morphine and fentanyl) that is administered especially in the form of its hydrochloride $C_{19}H_{21}NO_4 \cdot HCl$ (Merriam-Webster online, 2023.)

Operational. The drug used to reverse the effects of opioid misuse or overdose, for which there is an associated knowledge gap.

Assumptions

For this study, the assumptions were as follows:

1. The participants anonymously completed the survey.

2. The participants were not forced to complete the survey.
3. Mississippi college students lack critical knowledge regarding Naloxone and its use in opioid overdoses.
4. Mississippi college students are aware of opioid overdoses.
5. The accessibility of Naloxone to students or personnel on Mississippi college campuses is little to none.
6. The likelihood of students administering or initiating an emergency medication would be high if they had access to it.

Limitations

College students have certain limitations in relation to knowledge and naloxone administration. College students are not well-informed about naloxone, its uses, or its availability. Shelton et al. (2023) determined that a lack of knowledge can limit one's ability to appropriately respond to an opioid overdose in a hasty manner. Due to the limited knowledge and familiarity of naloxone, students have expressed hesitancy about the possibility of assuming the responsibility of saving a person's life or feeling constrained to intervene if a person is overdosing. Shelton et al. (2023) explained how students have voiced fear of the possible consequences of being caught in the act of participating in illegal drug activity. It is likely that some reversals were not reported due to the availability of the reversal agent, the stigma attached to calling for help, and the fear of repercussions following the reporting of opioid use in general (Hill et al., 2019). Other limitations include training, stigma and fear, knowledge, and risky behaviors. It is essential for colleges and universities to provide education, training, and resources related to naloxone and opioid overdose response. The limitations aforementioned have

presented a direct correlation to the complexity of naloxone training (Shelton et al., 2023).

Summary

Opioid overdose deaths continue to surge and the numbers have increased over a short period of time. Naloxone is inaccessible among many Mississippi colleges, which puts more individuals at risk for potential, fatal overdoses. Naloxone knowledge is crucial among all individuals, but Mississippi college students and their Naloxone knowledge could make a difference in today's society.

Chapter II

Review of Literature

The review of literature was performed to determine the need for further evaluation of the knowledge of Mississippi college students regarding Naloxone and its use in opioid overdoses. The following review of literature discussed specific topics relevant to the current research project as well as the theoretical framework used to guide this project. The review of literature is further divided into sections that include Naloxone and opioid overdose.

Theoretical Framework

Godfrey Hochbaum, Ph.D. was one of the original theorists who developed the Health Belief Model (HBM). He helped to identify how the perception of disease, illness, and potential health threats could shape a person's decision. The use of the HBM in this research was to determine how knowledge can influence the decision of students to identify, act, and prevent college campus overdose. The HBM is defined as a person's perceived susceptibility, perceived severity, perceived benefits, cost, motivation, and enabling factors that contribute to one's health decision. Perceived susceptibility is a person's perception that a health problem is relevant or that a diagnosis is accurate. Personal susceptibility is only acted on if the individual perceives the situation as extreme enough for negative outcomes. Perceived benefits are a patient's belief that a treatment will help prevent or even cure an illness. Perceived barriers include the complexity, length, and availability of managing an illness. Motivation is the eagerness to comply (Polit, 2021). These components are all necessary to correct an active problem or prevent a negative outcome. Without perceiving an illness or situation as a threat, one may not

feel the need to take action. The researchers use the HBM to evaluate the knowledge of college students and their knowledge of naloxone. The research will study how knowledge and perception impact decisions (Hochbaum, 1968).

Godfrey Hochbaum, Ph.D. authored a sociopsychological study related to public participation in medical screening programs. He used his theoretical framework to identify the perception of the general public's willingness to volunteer to participate in free X-rays to screen for tuberculosis. The findings revealed individual beliefs regarding TB included they could contract it at any time, they could already have the disease prior to the screening or if they found the illness early the treatment would be more beneficial than later. The belief in the possibility of contracting tuberculosis was different for each person based on their educational background. Scientific facts and objective reasoning are not always the initial basis of decision-making. Beliefs can be based on any foundation whether they are based on medical knowledge or not (Hochbaum, 1968).

Alamir et al. (2022) conducted a study using the HBM regarding sleep quality and health-related quality of life among college students. The researchers strove to show the significance of sleep and how it affects the student's behavior, physical activity, mental health, and overall physical health. The HBM was utilized to further identify sleep quality in a sample of undergraduate college students relating to perceived susceptibility, perceived risk, perceived benefits, and perceived barriers. The study indicated that low barriers and high benefits lead to a higher probability of a student making a good health decision regarding sleep. The researchers were able to determine that student's knowledge and perception were good indicators of how they would value sleep.

Duncan and Annunziato (2018) used the HBM with the purpose of identifying barriers to self-management in college students with food allergies. The focus was related to students who had food allergies transitioning to college life. The perceived benefit and perceived severity of the HBM helped to identify college students are more likely to adhere to the allergen free diet. The benefit essentially outweighs the risks of straying from the diet needed to prevent a negative outcome (Duncan & Annunziato, 2018).

The current researchers were to determine the knowledge of Mississippi college students related to opioid overdose and naloxone use. The HBM outlines how perception and knowledge are key factors in how one responds or reacts to certain situations. Individuals use many factors in decision making and those who are well-informed and have baseline knowledge tend to make more educated decisions as opposed to those who do not know the risk/ benefit of decision due to lack of knowledge or experience. Current researchers plan to use the HBM to identify the relationship between knowledge, perception, and action on our Mississippi college campuses.

Review of Related Research

Drug overdose deaths significantly increased in 2021, with an overall death toll of 107,622. Opioids have been a top concern with an estimated 80,816 of these deaths. Additionally, there were roughly 18 times as many fatal overdoses involving the synthetic form of opioids in the year 2020 as there were in 2013. A national poll determined that 45% of college students reported using an illicit drug in 2018, causing them to be an extremely high-risk category (Brown et al., 2023).

Brown et al. (2023) performed a study for the purpose of determining student education regarding overdose prevention, how to identify and respond to an opioid

overdose, the proper use of Naloxone, and the implementation of expanding access to Naloxone on college campuses. The significant problem addressed in this study was the lack of access to Naloxone on college campuses and the increasing fatal opioid overdoses among college students. After a total of 4 University of Southern California (USC) students fatally overdosed in 2019, the USC pharmacy students began the Naloxone distribution program known as NaloxoneSC. One significant finding of this study was that in the event of an opioid overdose among a student, it was likely the student was among peers; not first responders, who would have immediate access and be able to readily administer Naloxone.

Brown et al. (2023) sought to provide educational training and provide further access to Naloxone kits to students who completed the proper training and passed a written test. The research questions addressed by this study include whether the educational training, Naloxone kit requests, and the increasing fatal opioid overdoses among college campuses prove that there was a need for increased access to Naloxone among college campuses. The researchers proposed that if the educational program provided even a subtle increase in Naloxone distribution, this would indicate Naloxone access for students is equally as important as for first responders.

The study was conducted at the University of California by a board-certified psychiatric pharmacist and pharmacy students. During the 2021-2022 academic year, 21,000 undergraduate students and 28,500 graduate students enrolled at the university, and both undergraduate and graduate students were allowed in the involvement of the study. The setting included the USC undergraduate and Health Sciences campuses. A committee was formed for the prevention of fatal opioid deaths in students through

increased access to the antidote, Naloxone, and peer education. The American Association of Psychiatric Pharmacists Student Chapter (AAPP-USC) applied to the California Department of HealthCare Services (DHCS) Naloxone Distribution Project (NDP) to attain the Naloxone prior to the launch of the program. A total of 500 Naloxone kits were obtained and sent to the USC School of Pharmacy free of charge. The application justification was thoroughly discussed regarding distribution and the distribution strategy. From the beginning of the program, 45 campus organizations were contacted by the AAPP-USC requesting the publication of a NaloxoneSC infographic to promote the initiative on social media. Students involved were able to pick up Naloxone kits by participating in a 1-hour Naloxone training course or by completing tasks on the NaloxoneSC website. These tasks include a 10-minute video involving how to administer Naloxone and the management of opioid overdoses, completion of a knowledge test on Qualtrics with a 100% overall score, downloading and signing the Opioid Reversal Training Attestation Form, and sending the quiz results and attestation form to the NaloxoneSC committee. Once complete, the committee schedules the pick-up from the student's preferred Student Health location (Brown et al., 2023).

The topics covered in the 1-hour training video include background education on the opioid crisis, recognizing and responding to an opioid crisis, how to test substances for fentanyl, how to administer Naloxone, the "Good Samaritan" law, which entails information regarding the protection of individuals seeking medical assistance for themselves or another person in the event of an overdose. Naloxone kits were only dispensed if the student's attendance was recorded at the training workshop or to those who emailed their results showing a score of 100%. Each kit contained 5 fentanyl test

strips and 1 box of Naloxone nasal spray with instructions included. Aside from the 10-minute video and 1-hour training, the hour-long workshop was equipped for students in health professions and includes information regarding patient counseling and Naloxone laws. The volunteers of this study are AAPP-USC Student Chapter members. Four members were assigned to primarily run the program including Naloxone kit distribution, Student Health Center communication, and website maintenance. When the Naloxone kits were down to 30 or less or the kits on hand were 3 months from their expiration date, a subsequent application was submitted to the DHCS to ensure the NaloxoneSC Program was continued (Brown et al., 2023).

The study ranged from April 2021 to February 2022. From the April 2021 launch, through the first week of June 2022, there were 327 Naloxone kit requests. Only 18 student requests of the 327 were not fulfilled due to a lack of submission of necessary materials. The most Naloxone requests were during the busy months of September and October 2021 and February through June 2022; which all correspond to the school's academic calendar. In addition to the 327 students undergoing the 10-minute educational video and 309 receiving a kit, an additional 100 received the 1-hour comprehensive version in February 2021. The second 1-hour training held in October 2021 involved over 190 students in attendance. Overall, approximately 600 USC students received opioid overdose education through NaloxoneSC (Brown et al., 2023).

Brown et al., (2023) commented that the total number of Naloxone kits distributed may have seemed relatively low in comparison to the number of enrolled students; however, there was significance in the number of life-saving kits in the hands of the students rather than limited pharmacy access. The researchers concluded that the

implementation of the Naloxone distribution program along with basic overdose prevention training proved an effective way to save a life. The implications and recommendations for the future included assessing the community's need for resources provided by the program due to the increase in Naloxone kit requests. With increased access to Naloxone, through the NaloxoneSC program, the program may serve as a model for other universities to further decrease fatal opioid overdoses and future support for other means of Naloxone kit distribution such as mail-order options and expand the educational program to host events in local communities (Brown et al., 2023).

This study was pertinent to the current study in that it provided an excellent platform for addressing student knowledge of Naloxone and fatal opioid overdose. Brown et al., (2023) offered recommendations for future research, including serving as a model for other universities to decrease fatal opioid overdoses by expanding student access, as well as, personnel access to Naloxone.

Sandhu et al. (2022) conducted a mixed-method study focused on the issue of the opioid epidemic and the need for opioid overdose awareness and reversal training (OOART) for first-year medical students. The study aimed to investigate the long-term retention of knowledge and attitudes acquired through OOART among medical students, specifically evaluating performance immediately post-training and at a 3-month follow-up. The research problem addressed in the study involved a growing opioid epidemic that has facilitated a substantial increase in opioid-related overdose deaths. The researchers focused on the significance of improving access to naloxone, a medication for opioid overdose reversal, and the importance of enhancing knowledge and attitudes among healthcare providers to reduce stigma and effectively respond to opioid overdoses.

Sandhu et al. (2022) proposed questions and hypotheses related to assessing the effectiveness of the OOART on medical students. The research questions included to what extent OOART impacts the knowledge of first-year medical students regarding opioid overdose awareness and naloxone administration, do attitudes and biases toward individuals with opioid use disorder (OUD) change because of OOART, to what degree these changes were retained, what specific components of OOART were most effective in promoting knowledge retention, attitude improvement among first-year medical students toward opioid overdose. The study explored the differential knowledge and attitudes by assessing components covered in the training.

Sandhu et al. (2022) found that OOART led to a significant increase in knowledge immediately after training. Participants demonstrated improved knowledge of opioid overdose recognition, naloxone administration, and associated topics. The researcher's findings helped to equip future healthcare providers with the knowledge and attitudes to effectively address the opioid epidemic. The longitudinal approach of the study allowed for a comprehensive understanding of the lasting impact of education regarding opioid overdoses. The research was conducted among first-year medical students at the Drexel University College of Medicine in Philadelphia. The first-year medical students at the Drexel University College of Medicine were the population of interest. The research used a convenience sampling method whereby the participants voluntarily engaged in training and the subsequent surveys. The sample included 118 first-year students who were involved in training. The researchers involved a pre-training study by emailing the participants before their online training sessions. The post-training surveys were administered at the end of online training sessions. The data was collected

at three-time points, including pre-training, immediate post-training, and at a 3-month follow-up. The variables involved included dependent variables that assessed the knowledge and attitudes among the participants and independent variables that involved the opioid overdose awareness and reversal training (OOART) provided to the participants (Sandhu et al., 2022).

The instrumentation and collection of data involved the OOART, which consisted of a PowerPoint presentation divided into seven sections, covering topics related to opioids, the opioid epidemic, OUD, harm reduction, and overdose reversal. The researchers used primary instruments for data collection which included demographic, knowledge, and attitude questions that helped gather significant information to answer the hypotheses and research questions. The data analysis involved the use of a nonparametric One-Way ANOVA to examine statistical differences between the surveys at different time points. The study acknowledged an attrition rate in responses at the 3-month follow-up. The follow-up involved only 44% of participants who completed pre- and post-OOART surveys and responded to the 3-month post-training survey (Sandhu et al., 2022).

The study had limited generalizability due to the primary focus was on first-year medical students, and the self-reported data may produce response bias. The study was significant and provided substantial data on knowledge retention and attitude over time (this is the data you are missing from above). The study is relevant to the current research in that it was performed in a similar setting and offered recommendations for how to address the opioid epidemic from provider perspectives.

Naloxone

Carter et al. (2020) performed a study for the purpose of determining the impact of education and practice-based Naloxone classroom experience on undergraduate nursing students' level of stigma regarding Naloxone, their knowledge about Naloxone, and their self-efficacy concerning Naloxone practice behaviors. In the United States, substance abuse is a growing public health issue. Over 700,000 people died from drug overdoses between 1999 and 2017. In 2017, opioids, whether legal or illegal, were responsible for around 68% of overdose deaths. Early 1990s prescriptions of opioid analgesics, which were initially prescribed to treat a range of pain-related health issues, have been connected to the current opioid epidemic. Fentanyl, which has a potency 50 times greater than that of heroin, is frequently mixed with heroin, cocaine, and illegal medications. The opioid crisis in the United States has had a big impact on the Midwestern region. Indiana has the third-highest drug overdose rate in the nation and an opioid is involved in three of every five overdose deaths in that area (Carter et al., 2020).

Naloxone is an opioid antagonist that reverses the potentially fatal effects of an opioid overdose. Although Naloxone is safe and effective, there are still issues with its widespread distribution, particularly in remote regions where it may take a long time to reach someone who is overdosing. Furthermore, the significant problem to be addressed in this study includes the gaps in nursing literature, decreased discussion regarding nursing roles in community-based Naloxone distribution, and nursing education regarding Naloxone. The study demonstrated a successful educational intervention that could positively influence the opioid epidemic. The Constructivist Learning Theory served as the theoretical foundation for this study. According to this approach, active learners adapt their beliefs to new knowledge in order to develop a new understanding of

a concept. Asking students to expand on their understanding of a phenomenon to address misconceptions, could ultimately lead to a reconstruction of their mental model based on a more accurate understanding (Carter et al., 2020).

Carter et al. (2020) sought to determine undergraduate nursing students' self-efficacy, education, and stigmas regarding Naloxone. The researchers explored the student's confidence regarding their capacity to identify a person experiencing an overdose and how confident they are in administering the medication to an individual. The research questions proposed in this study include whether undergraduate nursing students know about Naloxone, if there is an increased stigma nursing students have about Naloxone, and if an in-person lecture with an interactive simulated assessment improves student's levels of knowledge, stigma, and self-efficacy related to Naloxone.

The study was conducted at the Indiana University School of Nursing in Bloomington, Indiana. A convenience sample of 37 undergraduate nursing students enrolled in a community health nursing course participated in the current study, which used a pre-post-study design. Students responded to an 11-item online survey about stigma, self-efficacy, and knowledge of naloxone. To determine the effectiveness of the in-person training and education session, a paired sample t-test was used. During the summer of 2019, a local county health department and a school of nursing developed a partnership with a Naloxone administration trainer. A lecture and a one-on-one Naloxone demonstration were given by the director of the Naloxone distribution program to junior nursing students enrolled in a bachelor's degree in nursing program in the Midwest. During the fall 2019 semester, a convenience sample of nursing students participating in a community health course responded to a pre-and post-online survey examining

knowledge, stigma, and self-efficacy about Naloxone. The students responded to a 10-question online survey from Qualtrics prior to the presentation (Carter et al., 2020).

Carter et al. (2020) examined obstacles to Naloxone distribution among community pharmacists in North Carolina. Each student was asked to demonstrate their understanding through simulation using a Naloxone intranasal atomizer testing kit and a mannequin after a 40-minute lecture on the current condition of the opioid epidemic, including Naloxone indications and delivery. The student was given quick feedback with remediation if they were unable to exhibit practice competency. They then had the opportunity to undertake a second return demonstration. The interval between the pre-and post-survey administrations was roughly 70 minutes. A kit including one intranasal dose of Naloxone, a rapid-use manual, and an explanation of Indiana's Aarons Law, which permits residents to carry Naloxone, was given to each student. All students gave their consent to participate in the survey, and all study protocols received approval from the university's institutional review board.

The study included 37 students who were in the first semester of junior year in nursing. The statistics regarding race or ethnicity of the participants included 89% identified as female, 10.8% as male, 78% as Caucasian, 8% as African American, 8% as Multiracial, and 5% as Latinx individuals. The majority of the students (64.1%) were between the ages of 21 and 23, 27% were between the ages of 18 and 20, and 5.1% were beyond the age of 24. Beginning with Naloxone knowledge, the pre-intervention scores for Naloxone knowledge varied from 2 to 5, out of a potential 0-5, with 0 denoting the least amount of knowledge and 5 denoting the most. Pre-intervention Naloxone knowledge scores for 35.1% of the students ranged from 3 to 5, indicating a moderate

level of Naloxone understanding. In the Naloxone knowledge posttest, 73% of participants obtained a score of 5, whereas 24.3% received a score of 4. In the Naloxone knowledge assessment conducted prior to the educational intervention, only 18.9% of the participants received the highest score of 5, while in the post-intervention survey, 73% of the participants received a score of 5. The pre-intervention stigma scores for Naloxone varied from 4 to 10, with a score of 2 denoting the highest amount of stigma and a score of 10 denoting the lowest level. A pre-intervention stigma score of 7 out of 10 indicated a low degree of stigma for nearly a quarter of the participants (24.3%), while a score of 10 indicated the lowest level of stigma for 18.9% of the participants. The participants' stigma scores dramatically improved after the session, with 51.4% earning a stigma score of 10 and 21.6% receiving a stigma score of 9. Naloxone efficacy pre-intervention scores ranged from 3-15, with a score of 3 indicating a low level of self-efficacy. A high level of self-efficacy was a total score of 11. The pre-intervention survey resulted in only 13.5% earning a score of 11. The post-intervention Naloxone self-efficacy ranged from 8-11, with 51.4% earning a score of 11. The lowest score for the post-survey was an 8, with 8.1% indicating a high level of Naloxone self-efficacy. Naloxone self-efficacy significantly increased with a 95% confidence increase (Carter et al., 2020).

Carter et al. (2020) suggested that a lecture paired with a simulated practice experience could assist students with the identification of their misconceptions regarding opioid-stigmatizing topics. The researchers found that facilitating open discussion regarding the opioid epidemic and addressing student's previous beliefs could also result in a decrease in stigmatizing attitudes.

The researchers also focused on how to examine self-efficacy regarding Naloxone among nursing students by exploring student confidence in their capacity to identify an individual experiencing an overdose and their confidence in administering the medication. Future research may add to the literature by examining the disparities between nursing students pursuing a Bachelor's degree and an Associate's degree, as well as other education and simulation-based interventions aimed at enhancing nursing students' understanding of and attitudes toward Naloxone (Carter et al., 2020).

Carter et al. (2020) discussed the impact of nursing student knowledge and attitudes surrounding Naloxone on the opioid epidemic. The current research project is focused on college student knowledge of Naloxone and opioid overdose, in the hopes that the findings would help to increase knowledge level and encourage increased accessibility of Naloxone on college campuses.

Doughty et al. (2022) performed a study for the purpose of determining the impact of training on community member's knowledge and attitudes regarding opioid overdose and Naloxone administration. With an estimated 47,600 opioid-related deaths reported in 2017, the number of opioid overdose deaths in the United States (US) has more than quadrupled since 2002. The US Surgeon General and the Department of Health and Human Services (HHS) (DHHS) have designated naloxone as a high-priority intervention for lowering opioid overdose mortality. Naloxone is an antidote that reverses the effects of an opioid overdose. Programs for naloxone training help people with drug use disorders, and their families learn more about opioid overdoses and how to administer Naloxone. Additionally, training programs teach community people, law enforcement officials, college students, and first responders how to successfully give Naloxone in an

overdose situation. The significant problem addressed in this study includes the barriers outside of the actual administration of the antidote that have prevented its accessibility and use, including stigma and misconceptions. The researchers proposed that Naloxone training, increased Naloxone knowledge, and improved attitudes could provide an opportunity to reduce stigma and improve community attitudes and awareness.

Doughty et al. (2022) sought to provide Naloxone educational training programs for the improvement of knowledge and attitudes toward opioid overdose, and Naloxone accessibility among individuals if needed. The researchers questioned whether the Naloxone educational training could provide increased knowledge and attitudes toward opioid overdose and Naloxone administration. A critical detail of the research purpose the researchers sought to assess whether or not the evaluation would address community perception, misconception, and stigma surrounding opioid use disorder. In addition to that, they specifically focused on the accessibility of Naloxone in reducing opioid overdose deaths.

Doughty et al. (2022) conducted their study at the School of Pharmacy and Pharmaceutical Sciences at Binghamton University, located in Binghamton, New York. The study included a total of 105 participants 18 years and older. The participants were recruited from a medium-sized university who completed assessments between August and December 2019. Prior to implementation, this study received Institutional Review Board (IRB) approval from the university. Participants were required to undergo a standard 30-minute naloxone training course with a member of the research team after giving their consent. The training program was developed by the authors in collaboration

with student, university, and community stakeholders, and with guidance from the state health department (Doughty et al., 2022).

The Opioid Overdose Knowledge Scale (OOKS) and Opioid Overdose Attitudes Scale (OOAS) were used to evaluate participant knowledge and attitudes before, immediately following, and three months after the conclusion of the naloxone training program. The OOKS consists of 45 questions about how to use Naloxone correctly. The questions are provided in a "yes/no", "true/false", and "don't know" response format. Total OOKS scores range from 0 to 45, with higher scores reflecting greater antidote knowledge. The OOAS consists of 28 measures that evaluate participant attitudes toward naloxone using a 5-point Likert scale. Total OOAS scores range from 28 to 140 points, with higher scores suggesting attitudes toward addressing an opioid overdose that are more positive and confident. To incorporate the nasal spray Naloxone, which wasn't widely accessible when the scales were created, both scales underwent modest revisions. The median difference between the baseline and post-naloxone training total OOKS and OOAS scores served as the primary goal. The median change in OOKS and OOAS scores from baseline to three months after training as well as from immediately following training to three months after training were secondary objectives. The Mann-Whitney U test was used to assess continuously varying variables. The Kruskal-Wallis test was then used to assess the variables with significant differences to find differences between groups at survey time points. All statistical analyses were performed using SPSS Version 25 (IBM SPSS Statistics, Armonk, NY) with a 2-tailed test and a p-value of .05. Based on previously published effect size data, it was found that a minimum sample size of 68 participants was required to obtain a power of 0.80 with $\alpha = 0.05$ (Doughty et al., 2022).

The study included 105 participants who were enrolled and baseline assessments were collected from all participants prior to Naloxone education. The three-month post-assessment was completed by 55 (52.4%) individuals and the immediate post-assessment by a total of 72 (68.6%) participants. Participants were equally split between graduate and undergraduate students at the university, with 63% of them being female and 51% of them being Caucasian. Eleven participants had already taken part in a Naloxone education program. Both the participants' knowledge and attitudes improved statistically between the two frames examined. Despite the fact that none of the participants reported using the antidote during the three months, 48 of them (87%) said they had trained or talked about Naloxone with at least one other contact. Participants explicitly mentioned telling 240 contacts that they had the antidote and educating an additional 52 connections. The change in knowledge showed improvement from the baseline median OOKS score of 31 points pre-training to 38 points (22.4%). The median change from baseline score remained increased at 34 points (9.7%) at three months post-training. The change in attitude showed improvement from baseline to immediate post-training and three months post-training. The baseline median OOAS score improved from 96 points pre-training to 117.5 points (22.6%). For future programs, the authors suggested that community input would be a great source that would increase overall Naloxone knowledge and attitudes. Overall, as shown by the changes in their OOKS and OOAS scores both after training and during the follow-up, participants' knowledge and attitudes improved as a result of the Naloxone education program. The researchers found that Naloxone education can influence participants' knowledge and attitudes about opioid overdose and Naloxone

administration in a positive way and that the change in knowledge and attitudes endures after the training window (Doughty et al., 2022).

Doughty et al. (2022) offered recommendations for future research to include opportunities to improve community attitudes and increase Naloxone knowledge. The research questions that were addressed included whether the Naloxone educational training would provide increased knowledge and attitudes toward opioid overdose and Naloxone administration. This study supported the current research in that education, spreading awareness, and positive attitudes were effective in reducing fatal opioid overdoses.

Graylee et al. (2023) performed a market research study for the purpose of determining naloxone accessibility in pharmacies in the state of Mississippi under the state standing order. The study offered a valuable investigation into the accessibility and affordability of naloxone, a critical opioid overdose reversal medication, within Mississippi. The study adopts a robust census design, surveying all community pharmacies in Mississippi, which bolsters the generalizability of its findings. The employment of mystery shoppers and telephone-based surveys effectively replicated the patient experience, minimizing response bias and offering insights into real-world access challenges. It focuses on Mississippi, a state grappling with distinct socioeconomic disparities and health issues, and contributed to filling gaps in the literature concerning naloxone access in the southeastern US. Additionally, the researchers discussed the implications of FDA approval for over-the-counter naloxone, potential interventions for improving access, and the necessity for future studies to explore pharmacist attitudes in

the region. Lastly, the adherence to reporting guidelines underscored the transparency and methodological rigor of this research.

The primary measures of interest in this study were the availability of naloxone under Mississippi's state standing order and the out-of-pocket expenses associated with the available naloxone formulations. In this study, 591 open-door community pharmacies were examined with a 100% response rate. The most prevalent pharmacies were the independent pharmacies accounting for 328 out of 591, followed by chain pharmacies at 147 out of 591, and grocery store pharmacies at 116 out of 591. Analyzing the results of the surveys, 36.55% had naloxone in stock and accessible under the state standing order. In other pharmacies, approximately 40.95% were not willing to provide naloxone under the state standing order. This article analyzed several basic questions regarding naloxone accessibility at pharmacies throughout the state of Mississippi under the standing order. Questions proposed asked if the pharmacies had naloxone in stock and the type. (Gravlee et al., 2023, p. 3).

If asked by a pharmacy staff member, volunteers were without a prescription for naloxone and were uninsured. Responses to the survey were recorded by project volunteers in Qualtrics survey software.²¹ This study was not considered human subjects research by The University of Mississippi institutional review board and was exempt from review. Informed consent was not obtained because the study was not considered human participant research.

The American Association for Public Opinion Research (AAPOR) reporting guidelines were followed in this study. This was a mystery-shopper census survey of Mississippi community pharmacies conducted over the phone. Notably, a census design

indicates that the study attempted to reach 100% of the sampling frame. From February to August 2022, 22 volunteers collected data. The majority of volunteers (21 [95.45%]) came from The University of Mississippi School of Pharmacy student body, which is mostly made up of in-state residents. The majority of volunteer callers were female (19 [86.36%]). According to the survey flow, volunteers called pharmacies to collect survey data. Volunteers were asked by a pharmacy staff member if they had a prescription for naloxone and if they were insured (Gravlee et al., 2020).

Gravlee et al. (2020) concluded that Mississippi had a naloxone standing order, but less than half of the pharmacies had it readily available for consumers under the state standing order. The proportion of pharmacies with naloxone available in the census was much lower than other studies. Research has shown that independent pharmacies across the state of Mississippi had the lowest proportion of naloxone available. Findings attributed to the fact that chain pharmacies implemented organizational policies to encourage naloxone stocking. Despite the implementation of standing orders, naloxone availability was limited in the survey of open-door community pharmacies. Findings have shown significant implications from the legislation's effectiveness in preventing opioid overdose in the Mississippi region. Researchers have concluded that pharmacies are reluctant to dispense naloxone and the implications of this lack of availability for additional naloxone access interventions (Gravlee et al. 2020).

Dworkis et al. (2022) focused on improving public access to Naloxone targeting college campuses. Drivers for this study included the growing concern of opioid misuse and overdose, with over 130 Americans dying daily from opioid overdoses. The hope was that improving public access to Naloxone kits would help to prevent the number of

deaths from opioid overdoses. Blue Light Phones (BLPs) are outdoor call boxes that are highly visible and easily accessible for emergencies throughout college campuses. Over 90% of 4-year college campuses use the BLP network to improve the safety of all individuals who live on college campuses. The researchers believed that adding naloxone kits would be beneficial to improve safety and decrease the risk of death associated with opioid overdoses. The overall goal would be to have naloxone physically available for all who require it along with willing individuals around them to administer the drug. These researchers hypothesized that positioning naloxone kits at existing BLP locations would increase public access to life-saving tools on university campuses (Dworkis et al., 2022).

Dworkis et al. (2022) performed a geospatial analysis of the overall accessibility to the BLP on a single college campus in Los Angeles, California. There were no specific time parameters for this study. Six students were highlighted to assist in conducting the research. Their ages ranged from first-year students to graduate students who both lived and studied on campus. The individuals would have firsthand knowledge of the likely habits of not only themselves but also other surrounding students. Knowing that there are many factors in the decision-making process, this research sought out to eliminate the “traveling distance” required to seek initial emergency medical assistance. Apple technology was used by using the iPhone (iOS 12.2) to mark specific locations of the BLPs. Coordinates were obtained through Google Maps and then the borders of the actual campus and individual parking structures were identified. After obtaining data, manipulation of data along with the geospatial analysis was performed using an R programming language along with the “sp”, “tidyverse”, “rgeos”, “SDraw” and “Tmap” packages. The underlying data from the standard map was obtained from

“OpenStreetMap” and Stamen. Using these data collection methods allowed the researchers to easily view, map, and track distances from each BLP in relation to the general population on campus (Dworkis et al., 2022).

With the help of geospatial analysis, researchers were able to determine that 100m seemed to be a substantial distance to scatter the BLPs throughout the campuses. With this metric, 91% of the campus was within 100m of a BLP whether that was while the individuals were in class, in the dorm rooms, or even in the parking lots. Certain ends of the campus did not allow for the 100m distance due to sports fields, facilities management areas, and stadiums. In these areas, it was found that most BLPs were able to be accessed within a 200m distance. Even more specifically, it was found that campus coverage at the 100m to 120m distance ranged from 82.7% to 96.6%. In reviewing all findings from data collection, it was found that 100% of this campus was within 200m of a BLP and 50% of the campus was within 47.5m of a BLP (Dworkis et al., 2022).

Utilizing the existing BLP emergency network system on college campuses allows for the widespread placement of naloxone. This is vital to the application of current research because, in essence, we can provide ample amounts of education to the general public, but if they cannot physically access the drugs in their time of need, the education cannot be put to use. In an emergency, the hope would be to physically put the life-saving tools/drugs in the hands of the individuals who are witnessing or have witnessed an opioid overdose. With widespread physical availability, the goal is to reduce the amount of opioid misuse and overdosing scenarios that frequently play out on college campuses. All with the goal of these life-saving drugs becoming accessible to all on-

campus personnel, students, and visitors. With 130 Americans dying every single day from an opioid overdose, the time is now (Dworkis et al., 2022).

Opioid Overdose

Johnson et al. (2020) performed a study identifying the correlation between college students' baseline knowledge of opioid misuse and their perceptions after an educational intervention. The group specifically wanted to identify how beneficial a brief intervention would influence the ability to change the overall perception of this group's thoughts of opioid use and misuse. This information was essential because recreational/non-medical use of prescription opioid drugs (NMUPOD) has been responsible for over 47,000 deaths from the late 1990s to 2017. The hope was that educating college students on the perceived risks involved could have an impact on NMUPOD misuse and decrease the number of negative outcomes.

Many colleges have educational programs in place for alcohol abuse and sexual assault that have been effective in reducing occurrences, but they lack education on NMUPOD. The popularity of NMUPOD in college settings had increased due to the fact they were easy to obtain. It was reported that young adults can obtain an opioid from family or friends and do not think twice about sharing or with others. The decreased perceived risk associated with opioid use or misuse may be due to a lack of education. In the Youth Opioid Study in 2015, 1151 young adults were surveyed and over half did not know that sharing an opioid was considered illegal. The lack of education on the legal aspect and reasons for opioid use validated the researchers' implementation of a plan to assess the knowledge and perception of NMUPOD among college students. The

researchers hypothesized that an educational intervention would increase the perceived risk of opioids and reduce NMUPOD use and misuse (Johnson et al., 2020).

Johnson et al. (2020) used a sample of 242 participants in a college classroom. The instructor submitted questionnaires to students in three separate classes at the end of class. The questionnaires were optional and those who did not want to participate could leave. The students were informed the questionnaire was anonymous and there would be no identifying components. The questionnaires were numbered to be paired with consecutive questionnaires to compare the pre-and post-answers. The first questionnaire gathered demographic information, previous opioid use, and knowledge of acquaintances who had addictions to a prescription opioid drug. There was also a list of opioids to choose from listing brand and generic names. Another portion of the questionnaire was 3 visual analog scales (VAS) where students would draw a line on a 100 mm continuum which would determine the likelihood of avoiding activities and intrinsic control of musculoskeletal pain. Each end of the VAS was the opposing agreement (e.g., “I always avoid activities when in pain” versus “I never avoid activities when in pain”) (Johnson et al., 2020, p. 368). After the questionnaire was complete a summary was given to the class along with a real-life scenario of how acute pain turned into chronic pain results in a prescription for an opioid (Johnson et al., 2020).

The first questionnaire was then given to the participants which offered 10 questions about their thoughts, feelings, and hypothetical NMUPOD. They were asked to rate how likely they would request a prescription for an opioid or alternative therapies. Once the data was collected an educational session was provided. The topics discussed were risks related to prescription opioids such as opioid abuse cost, negative

consequences associated with addiction, overdosing including death, and moderate to serious side effects of commonly abused drugs along with alternative methods to relieve pain such as physical therapy and acupuncture. After the session, they submitted the third questionnaire, identical to the second one, for comparison of pre-education and post-education answers. The second questionnaire was then given to students and the first question asked if any of their original answers on the VAS had changed and if answered “no” the questionnaire was complete. If the answer was “yes” then they changed the answer to reflect their changes and how they were influenced. This tool was used to determine if the educational intervention influenced their previous answers (Johnson et al., 2020).

Johnson et al. (2020) reported of 242 individuals 53% were prescribed painkillers and 34% knew at least one person who had become addicted to a prescribed medication. The educational intervention showed an increase in positive changes in understanding risks and choosing alternative options in pain management. Before the intervention, 75% agreed with risks, and following the intervention 81% agreed which breaks down to 21% moving to a neutral response and 25% changing to an agreeing response. The researchers interpret the findings as significant and successful in changing the thoughts and opinions regarding risks associated with prescribed opioid drugs in college students after an educational intervention.

Johnson et al. (2020) suggested that the college campuses’ use of education as part of a harm reduction strategy can be beneficial. Highlighting the legalities of opioid use and misuse along with what addiction can look like can help college-age students safely and effectively identify at-risk individuals. The education also aims to highlight

alternatives to opioids entirely. The study revealed that education can influence college students and can change their perspective. Education cannot combat this crisis alone, a plan for action needs to be in place as well.

One limitation of the study was that the investigation could not directly determine if the educational intervention caused the change in responses meaning influenced the student to choose a more positive answer. Another limitation is the honesty of answers due to the legal implications of drug use and sharing a drug with others. Also, this study was limited to one college campus and there were demand and social desirability biases. The strength of the study is educating students on alternatives to drug therapy. Another strength is the way the study was conducted in a classroom setting and was completed in one session which increased the consistency of pre- and post-testing. The recommendations for future research are to sample a larger and more diverse group of participants (Johnson et al., 2020).

Thorough education on topics like opioid use and misuse is vital to decreasing negative outcomes such as death. These researchers have proven that through education, the perception of these college-aged students has changed. This fact was demonstrated by the increase in positive answers in the post-questionnaire. Adding this element of education to reach those students every year will allow students to make an educated decision about the risks and potential complications of opioid use and abuse. Implementing opioid overdose and naloxone education would emphasize the statistical numbers of deaths related to opioid misuse, not just in college settings but also in North America (Johnson et al., 2020).

Stover et al. (2019) performed a study to determine college students' understanding of overdose and misuse of opioids within the US. More specifically, the researchers focused on solutions for overdose by placing emphasis on misunderstandings of naloxone use for possible overdose among college students. The researchers intended to determine the understanding of opioid overdoses in an area with abundant overdose deaths. It dealt with an important public health matter, as opioid misuse amongst college students has increasingly become a major problem in the US. The article explored the significant subject of naloxone knowledge and its potential to prevent opioid-related deaths amongst this population. The study also attempted to measure college students' knowledge related to the administration of naloxone for a possible opioid overdose, which could likely save countless lives.

Stover et al. (2019) emphasized the opioid crisis in America and the large number of fatalities from overdosing, particularly among college students. The researchers stressed the requirements for naloxone as a beneficial solution to counter the consequences of an opioid overdose. That led them to debate the misunderstanding of naloxone and opioid overdose among college students, which can be linked to increasing casualties. The authors proposed that enhancing naloxone awareness among this population could save lives while decreasing overdose deaths, as well as lobbying colleges and universities to elevate their efforts in teaching students about naloxone and opioid overdose protection.

Stover et al. (2019) stated a clear research question, asking what level of knowledge college students have of opioid overdose prevention and naloxone use. The researchers also investigated factors linked to knowledge of naloxone, such as prior

overdose experiences and drug misuse. The researchers do not specifically make hypotheses but aim to understand college students' knowledge about naloxone and its possible role in opioid overdose incidents. Overdose incidents provided essential information on improving education and awareness about these issues. The survey examined the participants' knowledge of naloxone and opioid overdose. The study's dependent and independent variables were knowledge of naloxone and opioid overdose-related to demographic characteristics as well as personal drug misuse history. The study sampled the majority of a Caucasian population, over 72% consisted of females averaging between the age of 24-25 years of age. This study resulted in over 50% of the sampled population having a direct history of opioid prescriptions. Additionally, 6.5% reported witnessing an overdose in the past year, and 15.9% previously received naloxone training. It also used validated instruments, such as the Opioid Overdose Knowledge Scale and the Alcohol, Smoking, and Substance Involvement Screening Test (Stover et al., 2019).

Stover et al. (2019) found that most participants studied had minimal understanding of naloxone and opioid overdose, which signified a deficiency of awareness. The study showed a direct correlation between college students' personal history of opioid misuse and proficient knowledge of naloxone use. Those with prior experiences of overdoses showed higher levels of naloxone awareness. Students who previously witnessed an overdose had a total mean OOKS score of 34.2 (SD=4.40) compared to 30.9 (SD=5.4) for students who had never witnessed an overdose which was statistically significant to the research. Stover et al. (2019) stressed the need to educate individuals in college environments about the misuse of drugs including prescription

medications. This reinforced the possible effect of naloxone distribution and instruction programs in reducing opioid-linked deaths among college pupils.

Stover et al. (2019) demonstrated the importance of issuing policies surrounding opioid abuse among college students. In addition, the researchers showed how influential drug misuse was to naloxone knowledge and accessibility. The study was beneficial to the current research project in that it provided an understanding of the significance of naloxone comprehension among young adults and how that related to initiatives to combat fatal opioid overdoses. The previous researchers determined the effects of naloxone literacy on opioid misuse or overdose among college students and found a direct correlation between opioid overdose, prevention, and education among college students.

Hill et al. (2020) explored the correlation between overdose prevention and education with the goal of improving outcomes of opioid overdoses among college students. The topics of education highlighted overdose symptoms, opioid misuse, opioid reversal agents, and prevention of overdoses. Drug overdoses were highlighted as the number one cause of death in Americans under the age of 50. Precisely researched, college-aged adults have been found to be more likely than any other group to engage in the misuse of opioids. Hill et al. (2020) sought to show that increasing the amount of education associated with overdose misuse and overdose prevention decreased the number of negative outcomes.

In the past, community-based distribution of naloxone, a life-saving opioid reversal agent, resulted in more than 26,000 lives saved from 1996-2014. Hill et al. (2020) questioned if appropriately educating individuals on and around college campuses

on the dangers associated with both opioid misuse and overdose would decrease the number of negative outcomes, such as death or other life-altering events. This group consisted of leaders from various groups from the Center for Students in Recovery. These groups also included college pharmacy personnel, mental health center staff, police department members, active residents of the college campus, the entire School of Social Work, members of the student government, and the Texas Overdose Naloxone Initiative (TONI). TONI joined the task for COSSUP. This group came together to “address substance abuse safety and overdose prevention in the UT community through public health and harm Reductive Framework.” (Hill et al., 2020, p. 224).

TONI was a vital member of the collaborative model because they were allowed to collect reports of opioid misuse along with outcomes associated with each opioid misuse case. TONI was then able to provide overdose response training through education and actively distributing naloxone where it was needed. Without this group, the university would not be able to accurately identify the at-risk populations and areas due to patient privacy laws and the leerness of patients and their families to openly report overdoses and deaths. The findings varied based on the area in focus. The most significant data was obtained from the off-campus students. There were 3 reported successful opioid reversals of suspected opioid overdose. from the study were different in each area that was educated (Hill et al., 2020).

Hill et al. (2020) revealed that education and distribution played a role in the outcomes of opioid misuse. It was vital for the high-risk groups along with their friends and family to be educated on identifying and initiating treatment of opioid misuse and overdose. Education both on and off campus along with accessibility to Naloxone was

necessary for positive outcomes. There were 3 reported successful reversals of suspected overdose reported to the College of Pharmacy by the attendees of their 10 training sessions off campus. There was no other statistical data reported. One of the most significant findings was that three lives were essentially saved because the responding individuals were educated and armed with life-saving medications.

Education and accessibility were the key factors in this overdose prevention plan. The knowledge of not only the staff and personnel but also the students on and off campus played a huge part in overdose prevention. In the time of an emergency, the most important factors are undoubtedly education and accessibility to the reversal agent naloxone and this study solidifies those facts. Implementing the findings of this research alone has the potential to lessen the number of deaths and negative outcomes associated with opioid misuse and overdose. Studies such as the research mentioned previously, programs have been implemented to reinforce education on opioid misuse and naloxone distribution to aid in preventing drug-related deaths (Hill et al., 2020).

Programs that provide overdose education and naloxone distribution (OEND) are important for preventing drug-related deaths. These initiatives have provided basic information regarding counteraction, acknowledgment, and reaction, as well as preparation for those who may see an excess. However, with the proliferation of stronger synthetic drugs, such as fentanyl, in illicit drug suppliers, there are gaps in appropriate naloxone administration and patient education. The basis of the following study was how to properly implement OEND programs to prevent overdose and drug-related deaths (Razaghizad et al., 2021).

Razaghizad et al. (2021) performed a systematic review including questions related to overdose education. Each year, 60,000 fatalities in North America have been attributed to opioid use. The researchers wanted to ensure that the study of how to treat opioid deaths with specific programs was not biased and evidence-based to work. Researchers have gained knowledge of opioid overdose and naloxone correlation by implementing various methods such as surveys to compare data over the past years.

Razaghizad et al. (2021) used questions to analyze one's beliefs in reference to programs such as OEND to elicit a direct correlation in reducing the incidence of death from drug-related causes. According to this study, in order to prevent harm, OEND programs that significantly lower drug-related mortality should be implemented widely in high-risk populations. The study proved the effectiveness of ONED programs. 8119 citations were found during the literature search. 491 full-text articles on any medication addressing the opioid crisis were found among them.

Razaghizad et al. (2021) provided various citations/references of research from an umbrella review. It basically ensured that there was a broad approach to ensuring that the ONED programs actually worked. As opposed to going to a personable approach, it decided to collect data in a more technical way. It did not ask how ONED made the program participants feel and how long it took. It just showed the effectiveness of the study on a Pass/Fail basis. The ONED program's success rate can be applied to modern day practice by recommending the program to patients with substance abuse. A recommendation would be maybe a pamphlet and ensuring the patient understands the importance of the programs and the success rate behind them. If a person was already

suffering from substance abuse related relapse, it is important to communicate the effectiveness of the study.

Razaghizad et al. (2021) wanted to ensure that the study of how to treat opioid deaths with specific programs was not biased and evidence-based. In fact, the umbrella review that was used had the proper statistics. 83% of the review statistics used in the umbrella review were unbiased and had proper evidence to prove the efficiency of the programs being used to treat opioid overdoses and deaths. Because of this, the programs that were selected to treat the issue by means of prevention were effective and tested to be the right methodologies to treat this severe issue. The researchers concluded that opioid overdose statistics have shown an increase when compared to a lack of knowledge of naloxone.

Shelton et al. (2023) conducted a study with the aim of exploring the obstacles and aids in introducing training on opioids and naloxone in college settings. The authors presented a detailed overview of the study, emphasizing the urgent public health issue of opioid overdose fatalities among colleges. They asserted that implementing training initiatives for opioid and naloxone use has the potential to preserve lives and mitigate harm. A consolidated framework was used by the researchers. Focus groups were formed by the Consolidated Framework for Implementation Research (CFIR) to query perceptions and resources related to opioid and other substance use, and naloxone administration training.

The central research question identified the obstacles and drivers involved in implementing opioid and naloxone training programs, particularly within college settings. This research was carried out across various college campuses between March 2019 and

October 2019. The authors offer insights into the sampling techniques, which encompassed purposive sampling and snowball sampling for key informants. Data collection entailed interviews with the nine focus groups identified, which is a suitable method for amassing qualitative data (Shelton et al., 2023).

Shelton et al. (2023) pinpointed diverse hindrances and drivers related to the introduction of opioid and naloxone training initiatives on college campuses, including factors such as stigma, institutional support, and resources. They accentuated the necessity for comprehensive strategies to tackle the opioid crisis among college students. Implementation barriers included a perception that the use of other (non-opioid) substances was more prevalent than opioid use on campus and thus a greater priority to colleges; student schedules were heavy in academic and extracurricular activities, making it a challenge to deliver convenient training; barriers related to campus communication preventing students from receiving knowledge of access to substance use related resources.

Shelton et al. (2023) offered a strong foundation for future research in that the researchers delved into the execution of opioid and naloxone training programs on college campuses, a subject closely related to the current research interests. The researchers imparted valuable insights into the hindrances and drivers involved in implementing opioid and naloxone training on college campuses. Among these, was the student recommendation for directly addressing the opioid-related stigma surrounding naloxone training and clarifying policies directly related to instances when naloxone may be used, including amnesty/Good Samaritan laws.

Summary

Innumerable articles have begun to place emphasis on specifically the necessity of including overdose awareness and reversal training, beginning with medical students. Current researchers have found that education regarding opioid misuse and abuse shows a direct correlation between increased numbers of deaths related to misunderstanding of naloxone and its use among college students. It is important to have a wide diversity among the survey population, whether it be age, educational level, ethnicity, living arrangements, and personal history of opioids. Based on surveys and research, there are various options related to opioid misuse and naloxone, but misconception and knowledge among college students have been greatly affected. Having knowledge of opioid misuse and overdose has proven to decrease opioid-related deaths among college-level students. The goal is to bring awareness to the issue while working to find a resolution that will change one's misconception of opioid use related to naloxone education within college settings. By completing training programs, educational seminars, and elective courses about opioid misuse, opioid overdose, and naloxone, individuals will have the opportunity to advance their level of education with hopes of decreasing the number of opioid-related deaths on college campuses.

Chapter III

Methodology

The purpose of this study was to analyze the knowledge of Mississippi college students regarding naloxone and its use in opioid overdoses. Knowledge is a crucial factor in the recognition of opioid overdose and the administration of treatment to decrease overdose incidents on college campuses. It is imperative that students know how to recognize someone who has overdosed and the steps to reverse it. This section will discuss the design, setting, population, and data collection and analysis methods. Researchers used a survey to identify the baseline knowledge of college students.

Design of the Study

Researchers used a descriptive, quantitative design to assess student knowledge regarding opioid overdose and naloxone administration. Data was collected from a convenience sample of students ages 18 and older and was organized via a Qualtrics survey. The survey consisted of 7 knowledge and 5 demographic questions. Knowledge was assessed as evident by a score of 50% or greater on questions 9-17 on the knowledge section of the questionnaire. Five behavior questions were asked on the survey. These were questions 6, 7, 8, 9, and 11. The questions asked about the respondents' experiences and projected future behavior regarding opioid overdoses.

Setting for the Research Project

The study was conducted across multiple college campuses, including both universities and community colleges, across Mississippi. Surveys were delivered electronically utilizing a QR code via a mass email send out and flyers with the QR code

posted throughout the campuses. The surveys were organized and conducted via anonymous surveys using the Qualtrics platform.

Population and Sample

This research study included Mississippi college students enrolled in both universities and community colleges. The researchers targeted age groups 18 and older, with no specific age cap.

Methods of Data Collection

The researchers obtained approval from the Mississippi University for Women IRB, prior to data collection, and other required institutional review boards to conduct the survey via student email list serves and campus flyers. The survey was emailed to all students enrolled at the universities and community colleges, using their student email addresses and a link to the survey Qualtrics. Additionally, a QR code was sent to personal emails of known college students. There was a goal of 300 students to participate in the survey from February 2024 to April 2024, with a maximum number of participants set at 300. The letters sent to recruit participants, including the script (Appendix A) were outlined in emails sent to college students. The link to the anonymous Qualtrics survey was immediately after the script. Surveys were submitted at the convenience of the participants. No identifiable information was requested on the surveys. Once data was analyzed and the study was complete the completed surveys were shredded and discarded along with computer files were destroyed by overwriting the saved data. Once the data was completed the results of the study were shared with the participating colleges, in hopes of encouraging the colleges to implement institution approved naloxone education for students, staff, faculty, and community leaders.

Methods of Data Analysis

Data was collected and organized using Microsoft Word Excel. Following the collection and organization of data, the data was then analyzed using descriptive and quantitative statistics. A passing score for the survey of 50% or greater for knowledge questions 9-17 is considered knowledgeable. The total number of passing scores out of 300 participants will be indicative of the percentage of students who are knowledgeable about naloxone and opioid overdose. This information will be displayed as a pie chart comparing those scoring less than 50% and those scoring greater than or equal to 50%.

The methodology was determined by location, population, data collection, and analysis regarding the knowledge of students and naloxone. The process allowed student's knowledge of naloxone to be measured in a detailed way to determine the significance of the data. This data will be used to prove the validity of the research collected.

Chapter IV: Results of the Study

Overdose deaths among college students are on the rise due to the opioid epidemic. Notably, the 18-24 age bracket has the highest opioid misuse in Mississippi. The significant problem addressed in this study was the lack of education, resources, and availability of life-saving interventions needed to help combat fatal opioid overdoses on college campuses. The purpose of this study was to determine Mississippi college student's awareness of opioid overdose signs and symptoms, their knowledge regarding Naloxone, and its use in opioid overdoses. The researchers conducted a descriptive, quantitative design to assess the student's knowledge regarding opioid overdose and naloxone administration. Data was collected from a convenience sample of students ages 18 and older and was organized via a Qualtrics survey. The survey consisted of 7 knowledge and 5 demographic questions. Knowledge was assessed as evident by a score of 50% or greater on questions 9-17 on the knowledge section of the questionnaire. Five behavior questions were asked on the survey. These were questions 6, 7, 8, 9, and 11. The questions asked about the respondent's experience and projected behavior future behavior regarding opioid overdoses. Data was first compiled in Microsoft Excel. Subsequent analyses were performed using IBM SPSS statistical software, version 29. The subjects of the study were rather diverse, representing the demographic of Mississippi's colleges. The study targeted college students' comprehension level, their strengths and weaknesses about Naloxone and opioid overdose, and their preparedness to act. Results of this study could prove to be invaluable in decreasing the incidence of opioid overdose on college campuses in Mississippi. information needed to decrease the incidence of opioid overdose on college campuses. This chapter will discuss the data collected from the

surveys, as well as answer the research questions in statistical terms with summaries in charts and graphs.

Profile of Study Participants

A total of 104 students participated in the study, of which 101 questionnaires met inclusion criteria. The majority (79. 2% of 80) attended a university, with 8% (n=21) of the participants attending a junior college (Table 1). The vast majority (75.2%) were aged 18-24. Despite the 45+ group (n=7) having the highest mean score (6.14), there was no significant difference in knowledge scores across age groups (Table 2). The study population was predominantly female (88. 1%, n=89). Despite males having a slightly higher mean score (6.00), there was no significant difference in knowledge scores based on gender (Table 3). The largest ethnic group represented in the study (77. 2%, n=78) self-identified as Caucasian (Table 4). The largest student classification group was seniors (27. 7%, n=28), followed by freshmen (20. 8%, n=21), juniors (19. 8%, n=20), graduate students (16. 8%, n=17), and sophomores (14. 9%, n=15). There was no significant difference in knowledge scores across student classification, despite seniors having the highest mean score of 5.89 (Table 5).

Sociodemographic Questionnaire and Sociodemographic Influence on Knowledge Score

Table 1. College Type

Which is your college?

Category	Frequency (n=101)	Percent	Knowledge score (mean)	Std Deviation	Anova Result
Junior College	21	20.8%	5.52	1.569	F(1,99) = 0.194 p = 0.660
University	80	79.2%	5.66	1.201	99.0

Most participants (79.2%) were from universities.

Table 2. Age

What is your age?

Category	Frequency	Percent	Knowledge	
			score (mean)	Std Dev
18 – 24 years old	76	75.2	5.63	1.176
25 – 35 years old	11	10.9	5.36	1.629
36 – 45 years old	7	6.9	5.57	2.149
>45 years old	7	6.9	6.14	0.690
Total	101	100.0		

The vast majority (75.2%) were aged 18-24. Despite the 45+ group (n=7) having the highest mean score (6.14), there was no significant difference in knowledge scores across age groups.

Table 3. Gender*What is your gender?*

Gender	Knowledge			
	Frequency	Percent	Score	Std Dev
Female	89	88.1	5.58	1.313
Male	9	8.9	6.00	1.000
Other	3	3.0	Not Provided	Not Provided
Total	101	100.0	100.0	

The study population was predominantly female (88.1%). Despite males having a slightly higher mean score (6.00), there was no significant difference in knowledge scores based on gender.

Table 4. Race/Ethnicity*Which is your race?*

Ethnicity/Race	Knowledge			
	Frequency	Percent	Score	Std Dev
African-American	17	16.8	5.41	1.734
Caucasian	78	77.2	5.68	1.190
Hispanic	3	3.0	5.33	1.528
Native American	3	3.0	6.00	0.000
Total	101	100.0	100.0	

The majority (77.2%) were Caucasian. Despite some variation in mean scores, there was no significant difference in knowledge scores across racial/ethnic groups.

Table 5. Student Classification

Category	Frequency	Percent	Knowledge	
			score (mean)	Std Dev
Freshman	21	20.8	5.33	1.317
Sophomore	15	14.9	5.67	1.543
Junior	20	19.8	5.55	0.887
Senior	28	27.7	5.89	1.343
Graduate	17	16.8	5.65	1.320
Total	101	100.0	100.0	

Seniors were the largest group (27.7%). Despite seniors having the highest mean score, there was no significant difference in knowledge scores across student classifications.

Overall Interpretation

The participants in the study are young people aged between 18-24 years (75. 2%), female (88. 1%), and Caucasian (77. 2%) with most being university students (79. 2%). The seniors' category emerged as the biggest group in the study (27. 7%). Surprisingly, none of the demographic characteristics of participants, including the type of institution, age, gender, race, or academic year, had a bearing on the level of knowledge gained. This parity indicates that the methods employed by Mississippi's college in framing this

fundamental aspect of the opioid quandary is equitable across demography, thereby creating an even foundation for students from all demographics to combat this menace.

Statistical Results

Five behavior questions were asked on the survey. These were questions 6, 7, 8, 9, and 11. The questions asked about the respondents' experience and projected behavior regarding opioid overdoses.

Research Question 1: Are Mississippi college students aware of the signs and symptoms of opioid overdose?

The following tables present the data for the five awareness behavior-type questions. Question 6 addressed the percentage of college students who have witnessed anyone using an opioid.

Table 6. Have you ever witnessed anyone using an opioid?

Question	Response	Frequency	Knowledge	
			Score	Percent
	Yes	31	5.41	30.7
	No	68	5.68	67.3
Total		101		

A large majority of participants (67.3%) reported never having witnessed the use of an opioid.

Question 7 addressed the response to an unresponsive person.

Table 7. Would you know what to do if you witnessed someone unresponsive?

Question	Response	Knowledge		
		Frequency	Score	Percent
	Yes	73	5.41	72.3
	No	28	5.68	27.7
Total		101		

A substantial majority (72.3%) of Mississippi college students report knowing what to do if they witness someone unresponsive, suggesting a high level of general awareness about handling potential overdose situations.

Question 8 addressed the willingness to seek help for an overdosing friend.

Table 8. Would you seek help if you thought a friend was overdosing?

Question	Response	Frequency	Percent
	Yes	98	97.0
	No	3	3.0
Total		101	

Nearly all students (97%) would seek help if they thought a friend was overdosing. This high percentage suggests that not only are students aware of overdose signs, but they are also willing to act on this awareness, which is a critical behavioral indicator.

Question 9 addressed the willingness to administer nasal spray.

Table 9. Would you administer a nasal spray that could reverse overdose symptoms if you had access to the medication?

Question	Response	Frequency	Percent
	Yes	94	93.1
	No	7	6.9
Total		101	

A very high percentage (93.1%) would administer a nasal spray to reverse overdose symptoms. This indicates that students not only recognize overdose signs but are also willing to directly intervene, further supporting their awareness and understanding of appropriate responses.

Question 11 addressed the awareness of campus Naloxone availability.

Table 10. Do you know if your college campus has Naloxone/Narcan readily available?

Question	Response	Frequency	Percent
	Yes	12	11.9
	No	89	88.1
Total		101	

Despite high knowledge about Naloxone, only 11.9% know if it's available on their campus. This stark contrast highlights a critical gap between theoretical knowledge and practical access awareness.

Overall Interpretation for Research Question 1: Awareness of Opioid Overdose Signs and Symptoms

Mississippi college students demonstrate a thorough and practical understanding of opioid overdose indicators to varying degrees, as identified by several parameters of the study. About 72% said they learned how to handle a situation where a person might not respond, and this shows that the training covered basic knowledge. This understanding continues to enhance knowledge, where the correctness of understanding key symptoms that require Naloxone is at 87%. Most impressively, their awareness translates into readiness for action: The results of the study reveal a typical college student's willingness to not only receive help but also offer it: almost all the respondents (96%) said they would seek help in an overdose situation, and over 93% said they would personally intervene. This willingness to act is further supported by a clear comprehension of the steps involved in the process, and nearly all the participants possess a complete understanding of the full intervention sequence, including the post-administration process. The consistency of these findings, based on various levels of knowledge, from general knowledge about the signs of overdose to the knowledge of their own readiness to act in case of an overdose, the intent to act in this situation, and understanding of the process, demonstrates that, indeed, Mississippi college students are well-informed and well-prepared to intervene in case of an overdose.

Statistical Results

Seven knowledge questions were asked on the survey: Questions 10, 12, 13, 14, 15, 16, and 17. The questions had a correct and incorrect answer. If frequencies for a question do not sum to 101, it is due to a participant leaving a question blank.

Research Question 2: Are Mississippi college students knowledgeable of naloxone and its use in opioid overdose?

The following tables present the data for the seven knowledge questions.

Question 10 addressed Narcan as a life-saving medication.

Table 11. Narcan is a life-saving medication that can reverse an opioid overdose.

Question	Response	Frequency	Percent
	True	98	97
	False	3	3
Total		101	

Almost all students (97%) correctly identify Narcan as a life-saving medication for opioid overdoses, showing near-universal knowledge of its primary function.

Question 12 addressed Naloxone Usage for Overdose Symptoms.

Table 12. You can give Naloxone for one or more of the following symptoms: shallow breathing, limpness, cold, pale/blue skin or lips, or unconsciousness.

Question	Response	Frequency	Percent
	True	87	86.1
	False	13	12.9
Total		101	

An even higher percentage (86.1%) correctly identified the specific symptoms that warrant the use of Naloxone, indicating a strong awareness of the signs and symptoms of opioid overdose.

Question 13 addressed Naloxone's effect on Fentanyl.

Table 13. Narcan can reverse the effects of Fentanyl.

Question	Response	Frequency	Percent
	True	74	73.3
	False	26	25.7
	No response	1	1.0
Total		101	

About three-quarters (73.3%) know that Narcan can reverse Fentanyl overdoses. While this shows good knowledge, there's room for improvement given Fentanyl's high potency and prevalence.

Question 14 addressed Narcan's side effects misconception.

Table 14. Administration of Narcan can cause an adverse effect if given to someone who has not taken an opioid.

Question	Response	Frequency	Percent
	True	61	60.4
	False	39	38.6
	No response	1	1.0
Total		101	

Only 38.6% correctly know that Narcan doesn't cause adverse effects if given unnecessarily. This misconception is a critical gap in knowledge that needs addressing.

Question 15 addressed the need for emergency services after Naloxone administration.

Table 15. Even when Naloxone has been administered, emergency services should still be called.

Question	Response	Frequency	Percent
	True	96	95.0
	False	4	4.0
	No response	1	1.0
Total		101	

An overwhelming 95% understand the need to call emergency services even after administering Naloxone, showing excellent knowledge of post-administration protocol.

Question 16 addressed the knowledge of repeat dosing.

Table 16. If there is still no response 2-3 minutes after administering intranasal Narcan, another dose can be administered.

Question	Response	Frequency	Percent
	True	77	76.2
	False	23	22.8
	No response	1	1.0
Total		101	

About three-quarters (76.2%) know that another Narcan dose can be given if there's no initial response, indicating a good understanding of its application.

Question 17 addressed the steps after Narcan administration.

Table 17. The steps following Narcan administration include checking for responsiveness, calling 911, and staying with the person until help arrives.

Question	Response	Frequency	Percent
	True	98	97.0
	False	2	2.0
Total		101	

Almost all students (97%) correctly identified the steps to take after administering Narcan. This demonstrates that their awareness extends beyond just recognizing symptoms to understanding the full process of responding to an overdose, including post-intervention steps.

Table 18. Overall Knowledge Score

Statistic	Value
Range	1 to 7 points
Mean	5.63
Standard Deviation	1.278
Most Common Score	6

A total score was calculated for each respondent. One point was assigned for each correct answer on the seven knowledge questions. As such, total scores could range from 0 points (no correct answers) to 7 points (all correct answers). For the respondents, scores ranged from 1 to 7, with an average of 5.63 and a standard deviation of 1.278. On a 7-point scale, students scored an average of 5.63, with most achieving a score of 6. This indicates a high level of overall knowledge about Naloxone and its use in opioid overdoses.

Table 19. Knowledge Score by College Type

Category	Std		Anova Result
	Mean	Deviation	
Junior College	5.52	1.569	F(1,99) = 0.194 p = 0.660
University	5.66	1.201	

No significant difference in Naloxone knowledge between junior college and university students, suggesting consistent education across institution types.

Overall Interpretation for Research Question 2: Knowledge of Naloxone and Its Use

The knowledge of Naloxone among Mississippi college students is certainly quite strong as the testing pool emerged with an impressive mean score of 5.4, which corresponds with 63 on a 7-point scale. The students pass the knowledge test with flying colors when it comes to general knowledge about Narcan (97%); the post-Narcan management procedure (95-97%); while they have satisfactory levels of knowledge about

specific applications such as repeat dosing (76%). Though there are shortcomings in terms of side effects, only 39% of respondents answered correctly and only 73% of participants were aware of Fentanyl's efficacy. Most significantly, even though 86% students reported that they have desirable theoretical knowledge about substance abuse, only 12% of them were aware of the availability of Naloxone on campus which is a niche that depicts a severe knowledge–practice disparity. These findings are congruent for all types of institutions and point toward the necessity of enhancing the gap between theory, on the one hand, and practice and accessibility in the situation of opioid overdose on the other.

Summary of Data Analysis

The study examined Mississippi college students' awareness of opioid overdose signs and knowledge about Naloxone. Analysis of 101 survey responses revealed high awareness: 72.3% know how to respond to an unresponsive person, 86.1% recognize overdose symptoms, and over 93% would intervene in an overdose situation. Students also demonstrate strong Naloxone knowledge, scoring an average of 5.63 on a 7-point scale. Nearly all (97%) understand Narcan's function and post-administration steps. However, critical gaps exist only 38.6% know Narcan doesn't cause adverse effects if given unnecessarily, and a mere 11.9% are aware of its campus availability. Demographic factors like age, gender, and college type don't significantly affect knowledge scores. Overall, Mississippi college students show a high theoretical understanding of opioid overdoses and Naloxone, but misconceptions and lack of awareness about campus access need to be addressed to ensure effective real-world application.

Chapter V

Summary and Conclusion

According to the Mississippi State Department of Health (MSDH), there was a 49% increase in drug overdoses in just one year from 2019-2020, with death rates from synthetic opioids such as fentanyl more than doubled. In 2021, more than 106,000 people died from drug-involved overdoses, including prescription opioids and illicit drug use. The number of opioid overdose deaths in the United States has more than quadrupled since 2002. The opioid epidemic has led to an increase in overdose deaths among college students, particularly college-aged adults who are more likely to engage in opioid misuse (MSDH, 2023).

The goal of this research study was to determine the knowledge of Naloxone and opioid overdoses on college campuses, which may help reduce the number of overdoses due to opioid drug use. Studies have shown that Naloxone is inaccessible to college students, which may contribute to the number of deaths related to opioid overdose. Addressing this knowledge deficit may potentially decrease overdose numbers.

Current researchers surveyed 101 participants 18 years and older from multiple junior colleges and universities in Mississippi to compare participants' awareness of the signs and symptoms of opioid overdose and knowledge of naloxone and its use in opioid overdoses. The majority of participants were from universities, aged 18-24, of female gender, Caucasian race, and Senior classification. Research studies, previously reviewed in Chapter 2, showed that education regarding opioid misuse and abuse shows a direct correlation between increased numbers of deaths related to a misunderstanding of Naloxone and its use among college students.

This chapter is a discussion of the findings and the limitations of this research study, including interpretations of the results. Furthermore, this chapter discusses the implications to support future research, nursing education, and practice implications.

Discussion of the Findings

The purpose of this study was to determine Mississippi college students' awareness of opioid overdose signs and symptoms, their knowledge regarding Naloxone, and its use in opioid overdoses. The primary focus of the descriptive quantitative research was to increase the awareness and understanding of signs and symptoms of overdosing and naloxone use within the college-aged population in Mississippi. The convenience sample survey questions were asked to assess the overall knowledge and awareness. The survey addressed general awareness of the signs and symptoms of overdose along with more specific questions to try to determine the likelihood of these students using the available naloxone as a resource to save lives. Overall, the research is beneficial for college campuses and their overdose prevention programs.

Overdose awareness is an important part of preventing overdose death. The survey found that over 30% of students had witnessed someone using an opioid and 72% had witnessed someone unresponsive. The students also stated that 97% would seek help if they thought a friend was overdosing. Stover et al. (2019) showed a direct correlation between college students' personal history of opioid misuse and proficient knowledge of naloxone use. Those with prior experiences of overdoses showed higher levels of naloxone awareness. This concluded that the more previous knowledge a student had the more likely they would respond to someone experiencing an overdose. Therefore, it

demonstrates the importance of targeting education to college-aged students who are identified in this study.

Brown et al. (2023) performed a study to determine student education regarding overdose prevention, how to identify and respond to an opioid overdose, the proper use of Naloxone, and the implementation of expanding access to Naloxone on college campuses. The problem addressed in this study was the lack of access to Naloxone on college campuses and the increasing fatal opioid overdoses among college students. Hill et al. (2020) demonstrated that education and accessibility were key factors in an overdose prevention plan. The knowledge of not only the staff and personnel but also the students on and off campus, played a huge part in overdose prevention. In the time of an emergency, the most crucial factors are undoubtedly education and accessibility to the reversal agent naloxone and Hill et al. (2020) study solidifies those facts. Implementing the findings of this research alone has the potential to lessen the number of deaths and negative outcomes associated with opioid misuse and overdose. Studies such as the research mentioned previously, programs have been implemented to reinforce education on opioid misuse and naloxone distribution to aid in preventing drug-related deaths. Both Brown et al. (2023) and Hill et al. (2020) research are similar to the current study involving naloxone accessibility being an obstacle. Although 93% of students were willing to administer nasal spray to reverse symptoms, only 11.9% were aware of where to find the antidote on campus. This indicated the imperativeness of students being aware of the location of naloxone and the resources available to administer it in a time of need.

Knowledge of how and when to administer naloxone was another factor addressed in the current survey. The students surveyed were found to be knowledgeable of naloxone, when and why it needs to be administered. There was a knowledge gap identified regarding naloxone related to when to call, how to administer, and if it is safe to repeat treatment. The survey identified positive data in over 90% of students surveyed who administered naloxone would call emergency services and would stay with the person until help arrived. According to the data, most students would be willing to give the medication. However, 76% knew how to administer it.

In summary, the research reveals that most college-age students can recognize a person with symptoms of overdosing. The gap lies in the awareness of the location of naloxone along with the proper administration techniques. The promising part of this data is that over 90% of students indicated they would seek emergency help and be willing to administer naloxone if available. Education is vital in being proactive in an emergency. Preparing students as early as orientation day is key to reducing the number of overdose-related deaths throughout the school year.

Limitations of the Study

The limitations determined in the research included the distribution, timing of distribution, and interest of the survey to college students. The distribution was limited by the mode of school email and common areas. The college IRB approvals for the use of student school email were time-consuming and difficult to obtain approval promptly with the research time limitations. This dilemma decreased the number of participants in the survey. The timing of survey distribution was also a limitation. The distribution occurred during spring break and through final exams which decreased the survey interest. Another limitation considered in the research was the lack of interest or hesitancy to

answer questions related to a controversial subject. As a result, the projected maximum number of participants goal was not achieved.

Conclusion

The goal of this research study was to determine Mississippi college student's awareness of opioid overdose signs and symptoms, their knowledge regarding Naloxone, and its use in opioid overdoses. The researchers determined that students who attended a junior college had a knowledge deficit compared to students who attended a university. Overall, a large percentage of students were aware and knowledgeable of Naloxone and the signs and symptoms of an opioid overdose. Results also showed that 97% of students would seek help if a friend was experiencing an overdose and 93.1% would administer a nasal that would reverse overdose symptoms if access was available. However, results showed an overall low percentage of 11.9% awareness regarding whether Naloxone was readily available on their college campus. It is evident that Mississippi college students are aware and knowledgeable of Naloxone but lack the resources and life-saving interventions needed to help combat fatal opioid overdoses. Past research suggests that if educational programs provided even a subtle increase in Naloxone distribution, this would indicate Naloxone access for students to decrease potential fatal opioid overdoses among Mississippi college students.

Implications

If college campuses do not intervene, Mississippi college students will continue to be at risk of opioid overdoses. Studies have shown that Naloxone is inaccessible to college students. Additionally, Mississippi college students need to be made aware that Naloxone is or is not available on the college campus in which they attend. The current researchers presumed that providers of Mississippi have the potential to disperse

awareness and continued education regarding opioid overdoses and the use of Naloxone. Providers can ensure patient education is taken into account based on their previous experiences. This study was guided by Nola Pender's Health Belief Model which discusses factors that could hinder or influence one's health. The Health Belief Model entails a framework that gives guidance to promote healthy behaviors. Mississippi colleges can apply this model to provide Naloxone to meet the behaviors and unique needs to save the lives of potential overdose victims. Future implications could be centered toward gender-specific efforts such as surveying women and men separately to determine the statistical difference in their knowledge base.

Recommendations

Based on the outcomes of this study, the following recommendations were made:

Future Research

1. Continued research by performing a more thorough study with a larger number of participants over a longer period on more college campuses and various college groups.
2. Future researchers could also determine the number of students interested in serving as an advocate or providing education to incoming students such as peer-to-peer education. College peer presentations rather than faculty or authority figures will provide an open opportunity for discussion.
3. Future research could focus on how to prevent stigma for the use and purchase of naloxone on campus or keep it on hand as a first aid tool. Provide naloxone on campus in sorority, fraternity, dorm halls, and locker rooms, or have it accessible to purchase in bookstores.

4. Future research could provide a survey using general ways to gather data such as social media, personal email, or general QR codes with specific questions to eliminate those not applicable to data for the survey.

Practice

1. Educate students on opioid prevention and how to use naloxone on college campuses as part of orientation.
2. Implement easy access to naloxone and emergency services on campus. Provide students with the tools to get help if needed.
3. Educate community leaders and educators on the importance of incorporating education into all students to decrease the mortality rate on campus and student overdose deaths. Provide education on the location of naloxone on college campuses.

Summary

The current researchers revealed that Mississippi college students are knowledgeable of Naloxone, its use, and the signs and symptoms of an opioid overdose. However, a large percentage of Mississippi college students are unaware of Naloxone access on their college campuses. Recent studies have proven that Mississippi college campuses lack Naloxone access to students. Mississippi college students are without proper resources if they ever experience an opioid overdose. Researchers conclude that increasing Naloxone access among Mississippi college campuses will save lives in situations that involve opioid overdoses.

Appendix A



Good morning, Dr. Groves

Research Title: Awareness of Opioid Overdose and Naloxone Knowledge among Mississippi College Students

The Mississippi University for Women IRB Committee has determined that your research is exempt under 45 CFR 46.101 (b)(4). The research obtains data using a survey and the identity of the human subjects cannot be readily ascertained.

If any changes are made to the study, the Committee must be notified. If the project is still running twelve months after the date of this memo, please be advised that we will need an update for our files.

Best wishes with your research!

Dr. Candy Grant, IRB Chair

DATE: April 5, 2024
TO: Dr. Alena Groves
FROM: Dr. Candy Grant, IRB Chair C.G.
CC: Chesley Alias, Kaylea Byrd, Kundriay Spencer

Research Title: Awareness of Opioid Overdose and Naloxone Knowledge among Mississippi College Students

Thank you for notifying the Mississippi University for Women IRB Committee about the expansion of your data collection to other Mississippi colleges/universities using LISTSERV and a QR code to your survey. The MUW IRB Committee has determined that your research is still exempt under 45 CFR 46.101 (b)(4). The research obtains data using a survey and the identity of the human subjects cannot be readily ascertained.

If any additional changes are made to the study, the Committee must be notified. If the project is still running twelve months after the date of this memo, please be advised that we will need an update for our files.

Best wishes with your research!

Appendix A
Letter to Survey Participants

Dear Potential Participants,

We are graduate students from Mississippi University for Women. We are reaching out to you for assistance with our research project regarding the awareness of opioid overdose and Naloxone knowledge among Mississippi college students. You must be enrolled in a Mississippi college and 18 years of age or older to participate in this survey. It would be of utmost importance if you could please provide us with a moment of your time to complete the attached survey. All responses and participants will remain anonymous. Your participation in this survey will serve as consent. It will take approximately 5-10 minutes to complete the survey. Please respond to each question/statement. If you have any questions regarding the survey or our research, please contact our Principal Investigator, Chesley Alias (662-571-5053), or Dr. Alena Groves, Chair (662-299-2985). Thank you for your participation.

Sincerely,

Chesley Alias, Principal Investigator, Graduate Student

Kaylea Byrd, Investigator, Graduate Student

Kundriay Spencer, Investigator, Graduate Student

Appendix B

Survey Questions:

1. What age group do you fall under?
 - a. 18-24
 - b. 25-35
 - c. 36-45
 - d. 46+

2. What is your gender?
 - a. Female
 - b. Male
 - c. Other

3. Are you currently enrolled in college?
 - a. Yes
 - b. No

4. What is your race/ethnicity?
 - a. Caucasian
 - b. African American
 - c. Hispanic
 - d. Other

5. What is your current college classification?
 - a. Freshman
 - b. Sophomore
 - c. Junior
 - d. Senior
 - e. Graduate

6. Have you ever witnessed anyone using an opioid?
 - a. Yes
 - b. No

7. Would you know what to do if you witnessed someone unresponsive?
- Yes
 - No
8. Would you seek help if you thought a friend was overdosing?
- Yes
 - No
9. Would you administer a nasal spray that could reverse overdose symptoms if you had access to the medication?
- Yes
 - No
10. Narcan is a life-saving medication that can reverse an opioid overdose.
- True
 - False
11. Do you know if your college campus has Naloxone/Narcan readily available?
- Yes
 - No
12. You can give Naloxone for one or more following symptoms: shallow breathing, limpness, cold, pale/blue skin or lips, or unconsciousness.
- True
 - False
13. Narcan can reverse the effects of Fentanyl.
- True
 - False
14. Administration of Narcan can cause an adverse effect if given to someone who has not taken an opioid.
- True

b. False

15. Even when Naloxone has been administered emergency services should still be called.

- a. True
- b. False

16. If there is still no response from a person experiencing an overdose 2-3 minutes after administering intranasal Narcan, another dose of Narcan can be administered.

- a. True
- b. False

17. The steps following Narcan administration include: checking for responsiveness, calling 911, and staying with the person until help arrives.

- a. True
- b. False

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