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The Effects of Opioids Compared to Alternative Pain Relief Therapies

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Emily Q. Ferguson[1], Gabrielle H. Goodfellow[1], Jessica E. Shurety[1], Samuel P. Abraham[2*]

[1]Bethel University School of Nursing, Mishawaka, Indiana, USA

[2]Associate Professor of Nursing, Bethel University School of Nursing, Mishawaka, Indiana, USA*

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ABSTRACT

Opioid use in the United States has been a growing problem, with millions of people being addicted to some form of narcotic. Following major surgical procedures, many patients are prescribed opioids for use in the home setting to manage their pain, while others are only prescribed alternative pain relief methods. The number of narcotics, the method of pain relief, and the length of prescription time can all vary by provider and procedure. There is a lack of education related to safe storage, use, and disposal of opioids once providers prescribe them. **Purpose:** The purpose of this study was to explore the effect of prescribed narcotics on addiction, compared to the use of alternative pain relief methods. **Method:** This literature review was based on patient, intervention, comparison, outcome, and time (PICOT) question: Are patients who are prescribed opioids in the post-surgical period more likely to become addicted to narcotics, as opposed to patients who are only prescribed alternative pain relief methods? Systematic reviews and prospective studies were used to answer this question. **Findings:** Providers often over-prescribe opioids and a vast number of patients never finish the prescriptions that are written for them. Furthermore, this study revealed that there is a stark lack of education provided to patients about the safe use, storage, and disposal of opioids, which leads to these drugs being saved for later use and further fosters addiction. **Conclusion:** The prescription of opioids in the post-surgical period does influence addiction, and generally in a negative manner.

INTRODUCTION

Opioid addiction is a growing problem in the United States, with approximately 3 million people addicted to some form of narcotic in 2023 [1]. Opioids are frequently prescribed in the inpatient setting, but they are also prescribed for use in the home setting as well, specifically upon discharge of a post-surgical patient. Many patients are prescribed opioids for at-home use following surgical procedures, while others are only prescribed alternative pain relief methods. The purpose of this study was to explore the effect of prescribed narcotics on addiction, compared to the use of alternative pain relief methods.

Background

Opioid use first began in the 1800s to treat wounded soldiers fighting in the Civil War. These soldiers were treated with morphine, and many developed dependencies and addictions to the drug in the years following the war [2]. From the 1910s to the 1920s, the United States put restrictions on the use of opioids. They began requiring a written prescription for opioids, and in the 1970s the Controlled Substance Act was passed and divided opioids into groups based on the likelihood of abuse and the class of opioids being used. As of 2017, an average of 91 people died each day due to specifically opioid overdose [2].

The opioid epidemic has been a problem in the United States since the 1900s. The Centers for Disease Control and Prevention (CDC) notes that the opioid epidemic can be divided into three waves [3]. The first wave began in the 1990s with prescription opioid overdoses causing death. This wave has continued increasing since 1999. The second wave, which began in 2010, showed a fast increase in overdose deaths from heroin. The last wave started in 2013 and showed a significant rise in overdose deaths from synthetic opioids, specifically fentanyl. Current addiction problems, especially opioids given post-surgery have been a concern. This review addressed the question: Are patients who are prescribed opioids in the post-surgical period more likely to become addicted to narcotics, as opposed to patients who are only prescribed alternative pain relief methods?

2. METHOD

The method was a review of the literature on the effect of prescribed narcotics on addiction as opposed to alternative pain relief methods, especially in the post-surgical period. EBSCOhost and The National Center of Biotechnology (NCBI) are the two databases that were used for this review. The keywords used to find studies were opioid use, post-surgical, pain, addiction, alternative, and narcotics. Using the phrase opioid use in the post-surgical period EBSCOhost retrieved 2,432 studies and NCBI retrieved 3,358 studies published between 1993 and 2023. Published studies collected for this review were published between 2018 and 2023. The data from the studies included in this review were collected through interviews, prospective studies, retrospective studies, qualitative studies, and quantitative studies.

Figure 1 displays the levels of nursing evidence hierarchy used in this review, with level I being the highest and level VII being the lowest [4]. These levels are commonly referred to in nursing research. Studies in the top four tiers were primarily used in this study with supporting research coming from lower levels. Level I evidence is the highest, and is the most reliable evidence available, while level VII is the least reliable.

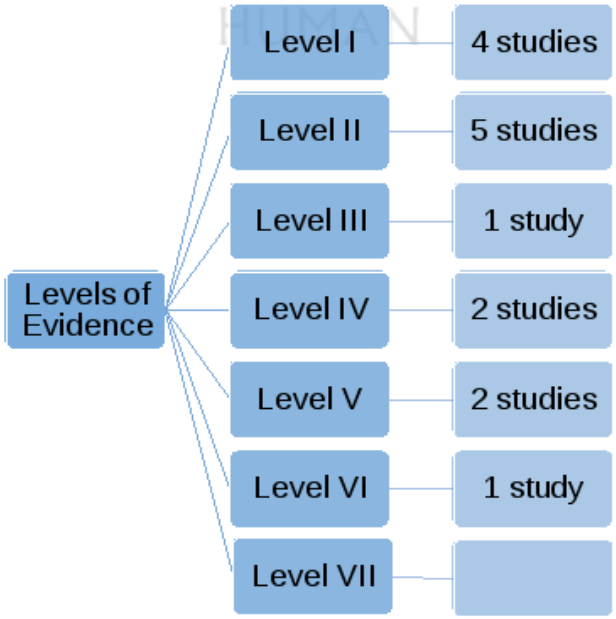

Figure No. 1: Evidence Hierarchy for Studies on Opioid Addiction in the Post-Surgical Period

A wide variety of research regarding opioid use and addiction in the post-surgical period was available. The 15 research studies chosen were selected because of their relevance to the impact of opioid use and abuse in the post-surgical period. The analysis included whether prescription opioids in the post-surgical period play a role in opioid addiction compared to alternative pain relief methods. Reasons that studies were excluded from consideration include the study being too broad or too narrow in focus, the study being published before 2018, or the study not being available in the English language (see Figure 2).

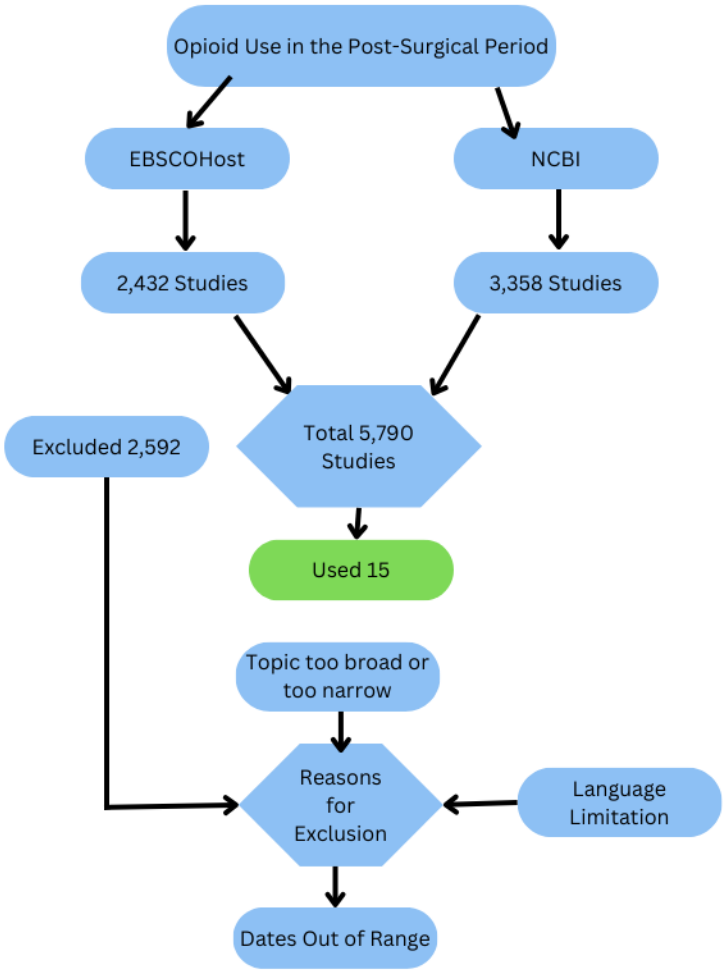

Figure No. 2: Inclusion and Exclusion Criteria for Opioid Use in the Post-Surgical Period

3. REVIEW OF THE LITERATURE

The purpose of this review was to determine the effect of opioid prescription on addiction as opposed to alternative pain relief methods in the post-surgical period. Fifteen studies relating to the impact of prescription narcotics on opioid addiction during the post-surgical period were collected and analyzed for this review. The following themes were identified and impact patient addiction potential to prescription narcotics. These themes were found in some of the studies; some of which contributed more heavily to the topic of opioid use in the post-surgical period than others.

Effect of Prescribed Narcotics on Addiction

The opioid epidemic has contributed to deaths nationwide and is associated with poor outcomes for chronic users. In 2014 there were 28,647 reported deaths related to overdose of an opioid. In 2016, the opioid epidemic contributed to approximately 42,000 deaths, with 40% of those involving a prescribed opioid. There continued to be an increase into 2017, with 47,600 reported deaths involving an opioid [5,6]. The general feeling among scholars is that setting reasonable expectations during the perioperative period about pain control reduces the number of opioids prescribed, required, and out in the public. Two weeks after outpatient foot and ankle surgery, only 12% of patients were still using their prescribed opioids, and by 6 weeks that number declined to 1.3% [8]. Despite this finding, however, the consensus is that long-term opioid use is increased by 44% if opioids are used to treat acute pain after surgery [5,8,9].

Opiates include opium, morphine, heroin, codeine, and fentanyl and its analogs, methadone, and meperidine [10]. Signs of intoxication include constricted pupils and, a decrease in respiration and blood pressure. Overdose can cause coma, convulsions, and death. Naloxone is the opiate antidote to save a life [11]. The CDC recommends nonsteroidal therapies to be at least as effective as opioids [12]. Clinicians should discuss with patients the realistic benefits and known risks of opioid therapy. Nonopioid therapies are preferred for subacute and chronic pain. Clinicians should consider opioid therapy only if the expected benefits for pain and function are anticipated to outweigh the risks to the patient [12].

Alternative Pain Relief Methods

While opioids are one of the most common methods of reducing pain in the post-surgical period, the literature indicates that there are other methods to relieve pain for these patients. Several literature reviews have revealed that medications such as acetaminophen and other non-steroidal anti-inflammatory drugs (NSAIDs) have been used for moderate pain relief [13,14,15,16]. Several other methods for pain relief did not involve opioid consumption.

Alternative methods such as music, aromatherapy, canine therapy, and virtual reality have been used to decrease pain and anxiety in post-surgical patients. Transitional pain service (TPS) is a program that manages acute postoperative pain, helps with opioid weaning, and hopefully lessens the number of opioid-related deaths that occur due to over-prescription of opioids. TPS was another effective alternative pain control method. These alternative pain relief methods are more cost-effective compared to opioids for treating post-surgical pain [13,14,15,16].

All these findings lead to the conclusion that there is a lack of provider or hospital buy-in for reducing the number of opioids prescribed. Institutions are reimbursed on how well the patients are treated, and this includes how well their pain is managed. Because there is a risk or fear that some alternative pain relief therapies will not be adequate, and thereby the hospital will not be reimbursed for that patient's stay, there is no rush to decrease or discontinue the use of opioids for the use of pain relief in the post-surgical period [17]. In other words, while providers acknowledge that alternative pain relief methods are a viable option for post-surgical pain management, they do not want to risk the chance that these methods might not work and cost the hospital money. It is important to note that this rule changed in 2018, and following this policy change, hospital reimbursement would no longer be based on how well patients' pain would be managed [17].

Narcotic Prescription Based on Provider and Procedure

The literature reveals that opioid use depends upon what surgical procedure the patient goes in for, and several other factors, including the provider's preference for the type and number of opioids prescribed. There is an increased risk of persistent opioid use in patients' post-coronary artery bypass graft, in younger patients, in females, in cases with chronic preoperative pain, in

patients with alcoholism, and in procedures that require preoperative benzodiazepines or muscle relaxants, those requiring antipsychotic medication, and in those discharged to a facility. Prescription of opioids should be individualized for these reasons; however, prescription may vary depending on the procedure. Furthermore, not only does it depend upon the provider and the procedure, but also the type of opioid prescribed [8,18,19].

Those prescribed 40 tablets of oxycodone, 5 mg, were at a higher risk for developing persistent opioid use 90-180 days after discharge, compared with other opioids [8,18]. Chronic opioid use is a band-aid solution for inappropriately managed chronic pain. As depicted in Figure 3, the initial opioid prescription is for pain in the postsurgical period, however, if re-prescribed then there is usually not a long-term plan in place, nor is there a plan in place to wean people from these prescriptions [14].

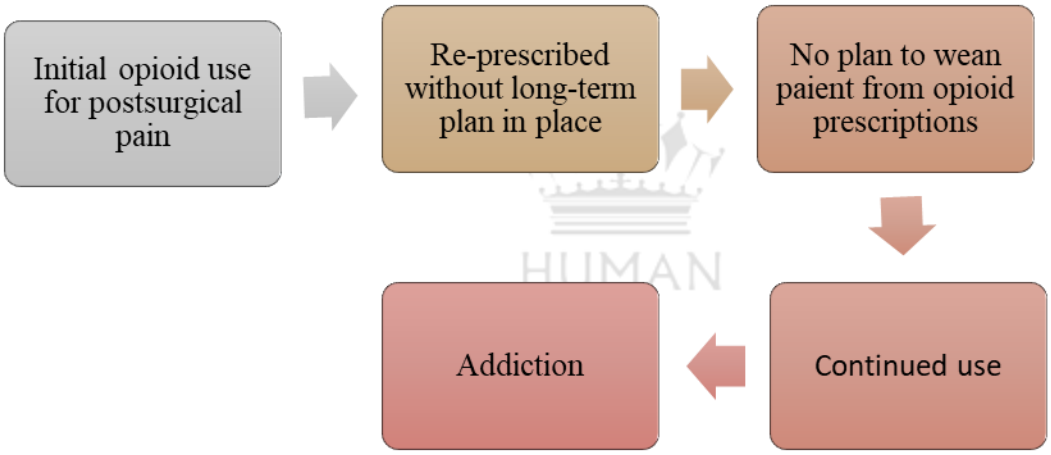

Figure No. 3: Opioid Prescription Leading to Addiction

Lack of Education Regarding the Safe Storage and Disposal of Opioids

Opioids are a commonly used substance for pain management, especially after a surgical procedure. However, the literature reveals that there is an astounding lack of education provided to patients about how they should handle their opioids. Several of the studies revealed that many patients do not finish their opioid prescriptions and do not know how to dispose of unused opioids [6,7]. Studies further revealed that providers do not always provide education about how

to properly dispose of unfinished opioids. This leads to the perpetual storage of these drugs, which cultivates extended use habits and addiction [6,7,20].

In several of the studies, researchers indicated that many patients would save their opioids to give to their families or use in the future [6,7]. As discussed earlier, opioid-related deaths have skyrocketed over the last two decades. Researchers also denoted that it is unlikely that all these deaths are patients who themselves were prescribed the opioid. Seventy-two percent of patients put their excess unused opioids in an unlocked location, and 94.5% of patients did not dispose of their unused opioids in community disposable boxes [7]. The literature notes that a contributing factor to opioid misuse is a failure to educate patients on proper storage and disposal methods of opioids [6,7].

Three of the studies concluded that there is a need for policy or at the very least, explicit education about how to properly dispose of opioids, largely because of the generic information provided to patients and their families, if any education is provided at all [5,6,17]. In other words, providers should be educating patients not only about the opioid itself but also about how it should be stored and disposed of appropriately. This education will help to decrease the number of patients who develop extended-use habits because they will know the appropriate way to handle their opioids once they have finished their prescription or feel that they no longer need the medication. Furthermore, providers educate patients on most other things in the hospital setting, so the prescription of opioids should not be any different, especially given that these are high-risk medications. On the contrary, there is no guarantee that patients will dispose of the unused medications appropriately even if they were educated on the possibility of addiction.

Overprescription of Post-Surgical Opioids

One major theme that appeared in this review was the sheer number of opioids that are being prescribed in the post-surgical period. Many of the studies concluded that opioids are being overprescribed by physicians, in both strength and quantity [5,7,8,17,18,21,22]. In other words, patients are being prescribed several opioids that they might not need and cannot finish because there are no restrictions on the number of days for which opioids should be prescribed [19]. This further facilitates the unsafe storage of opioids.

Furthermore, opioids have been the primary method of moderate and severe pain relief for a long time. They are overprescribed so frequently in the post-operative period because that is what is believed to be the best way to relieve post-surgical pain [15]. Moreover, there appears to be a belief that while alternative pain relief methods are available, they are not sufficient for relieving post-operative pain.

Summary of Findings

Multiple research studies were used to assess the effects of opioid use on addiction in the post-surgical period. The purpose of this study was to determine if opioid prescription following a surgical procedure contributes to extended opioid use and addiction. Five common themes were found: narcotic prescription does have a bearing on opioid addiction in good and bad ways; there are several viable alternative pain relief methods for the post-surgical period; narcotic prescription is heavily based on the provider and the procedure; there is a lack of education regarding the safe use, storage, and disposal of opioids; and there is a lot of over-prescription of narcotics during the postoperative period (see Figure 4).

Most of the studies came from the top four tiers of the evidence hierarchy, but some supporting studies came from levels five and six [4]. The overarching themes reflected that most of the studies indicate that there is a lack of education regarding opioids, mass overprescription, and very little buy-in from physicians regarding the use of alternative pain relief methods. This results in an increase in opioid addiction and a decrease in the likelihood of physicians prescribing fewer opioids and more alternative pain relief methods.

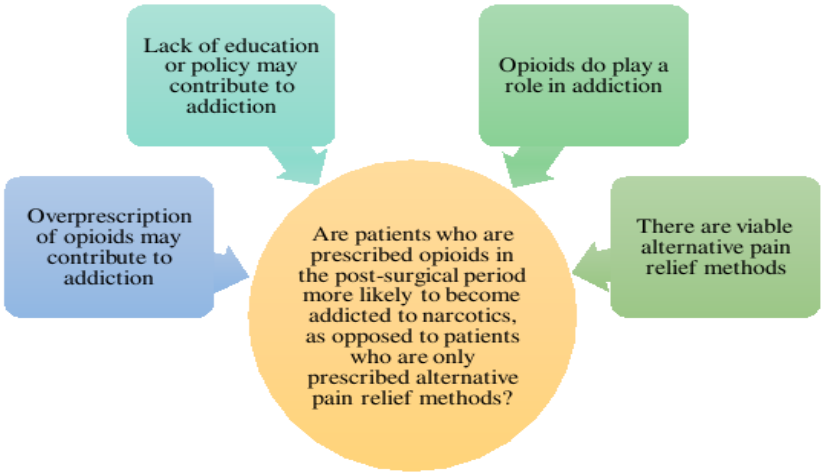

Figure No. 4: Emerging Themes of the Effect of Opioid Prescription on Addiction

Overall, the findings indicate that there is some controversy regarding the widespread use and over-prescription of opioids in the post-surgical period, coupled with a lack of education about how to handle and dispose of the prescriptions. Several of the studies indicate that providers are aware that they are contributing to the opioid epidemic with the number of pills they are prescribing or the lack of explicit education they give to patients [5,6,17].

However, other studies advocate that there is a lack of hospital and provider buy-in regarding the use of alternative pain relief therapies due to certain reimbursement policies, or lack of policy altogether. This further contributes to the extended use and abuse of opioids, especially in the post-surgical period [17]. Shackleford et al. [22] noted that after policies were put in place, opioid prescriptions in the post-surgical period decreased significantly, which in turn helped to reduce the likelihood of opioid use or misuse.

Since some of these studies have been published, policies have been created with guidelines for opioid prescription in the post-surgical period, which does aid in the decrease of post-surgical opioid prescription, and therefore the risk for addiction following a surgical procedure. Furthermore, these new policies increase the likelihood that physicians will try to use alternative pain relief methods before prescribing opioids. Since hospitals are no longer reimbursed based on the way a patient's pain is managed, alternative methods such as heat or cold therapy, music therapy, or therapeutic massage may be incorporated into post-surgical pain management interventions without fear of repercussion. Patient risk factors and comorbidities need to be

considered when opioids are prescribed so that the prescriptions are individualized and promote patient safety.

4. DISCUSSION

This literature review focused on the question: Does the prescription of opioids in the post-surgical period affect addiction, as opposed to the use of alternative pain relief methods? The results of this review indicated that the prescription of opioids in the post-surgical period does influence addiction as opposed to the use of alternative pain relief therapies. Most of the literature noted that the primary intervention that could be improved upon is educating the public about the effects of opioid overuse and abuse, alternative pain relief options, and how to properly discard unused, unwanted prescribed opioids [6,7]. It was found that post-surgical opioid prescriptions can result in long-term extended opioid use, which in turn contributes to the opioid epidemic [5,8,18]. The lack of education regarding the safe use, storage, and disposal of opioids is of concern. However, there is no guarantee that education alone will enforce compliance.

Overall, it was found that while opioids are the preferred method of pain relief in postoperative patients, they can be detrimental in the long run since the potential for addiction exists for both opioid-naive and opioid-experienced patients alike, especially since providers are over-prescribing [17-21]. Other viable alternative pain relief methods should be explored by physicians before resorting to opioids to manage pain.

In recent years, policies have been developed to help mitigate the number of opioids that are prescribed in the post-surgical period, but these policies vary by state and are not nationwide [9,22]. The conclusion here was that there needs to be a more widely regulated policy when it comes to the way that providers prescribe opioids. In other words, providers can prescribe any strength and any number of pills to a patient. They are not bound to a specific number based on a surgical procedure, which contributes heavily to the over-prescription of these drugs and extended-use habits in patients who have access to pills that they no longer need.

Because of previous policies that dictated hospital reimbursement based on patient pain management, providers tend to avoid using alternative pain relief therapies to manage postoperative pain [17]. However, these policies have since been overturned, meaning that hospitals can no longer receive reimbursement based on how well a patient's pain has been

managed. One might imagine that this would open the door for providers to start initiating alternative pain relief therapies, but this was a major gap in all the studies reviewed. While there is evidence in several studies that alternative pain relief methods are as effective as opioids in managing post-surgical pain, providers seem to be apprehensive about using these methods for fear that a patient's pain will not be well controlled [13,14,16].

Strengths of the Study

A strength of the study is that there was an extensive amount of research available for reference. Opioid abuse is a widely covered topic and has been a cause for national concern for decades. Another strength of this study was that healthcare workers and providers recognize the role they play in the opioid epidemic and are aware that overprescribing opioids in the post-surgical period is detrimental to the long-term well-being of their patients. Because of this, policies are being implemented to help regulate the number of opioids that are being prescribed during the post-surgical period. Furthermore, the amount of information available helps to further inform healthcare workers and the community about the gravity of the situation.

Weaknesses of the Study

One of the major weaknesses of this study was that few articles focus on effective alternative pain relief methods in the post-surgical period, and thus few studies investigate specific nonpharmacological pain relief methods and if they were successful in patients. Due to a lack of education about the alternative options to opioids, there is a lack of curiosity from the patients about other prescriptions or methods that may help their pain relief, and thus the providers are meeting resistance when attempting to avoid prescribing opioids, resulting in lower patient satisfaction scores, which then affects hospital funding. On top of a lack of information, because of previously implemented policies, which have since been changed, providers seem reluctant to prescribe alternative pain relief methods due to a fear that patient pain will not be well managed.

Recommendations

The first recommendation is to further explore the possible alternative pain relief methods available, and the success rate of each in the post-surgical period. The more studies that are done on pain relief methods excluding opioids, the more likely those methods will start to be utilized if they are resulting in successful pain management. For change to occur, providers must be

willing to try methods other than those they know to be tried and true. On top of this, patients need to be educated about what alternative methods are available to them, as well as how to implement these methods (see Figure 5). A level of reassurance is also necessary so that patients know pharmacological pain management is still an option if their pain is not sufficiently managed with alternative methods. They need to understand that their pain will not be neglected solely for the sake of avoiding opioid use.

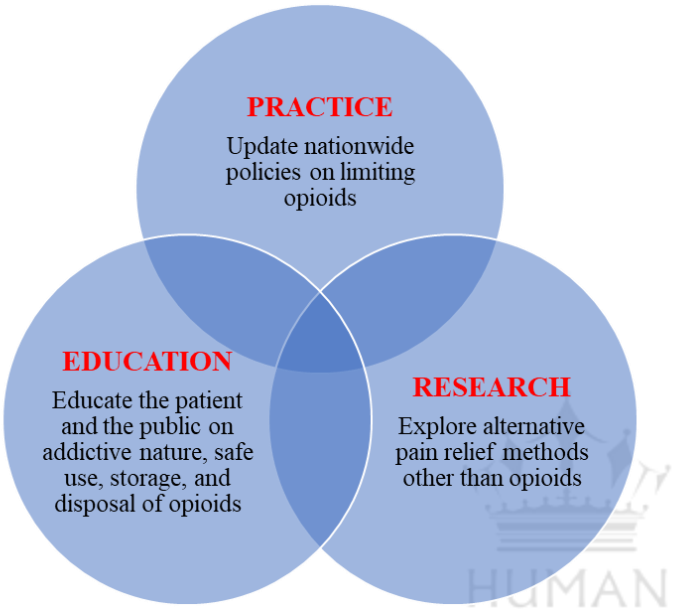

Figure No. 5: Application of Evidence-Based Practice for the Opioid Epidemic

Primarily, most of the literature found was from the perspective of the healthcare provider, and very limited literature was found from the perspective of a post-surgical patient on prescription opioids. A second recommendation is to have more inclusive information in the research from both the provider and the patient, especially when it comes to how much education is being given, and how well it is being received. Explicit education all around, including information about the safe use and storage of opioids, as well as how to properly dispose of them if they have pills left over.

The last recommendation based on this study is that the nationwide policies regarding the prescription of narcotics need to be updated. It is recommended that there should be policies limiting the number of opioids that providers prescribe to patients, and if there needs to be more

pain management following the conclusion of the opioids prescribed, then an inpatient visit should be conducted, and alternative pain relief methods must be tried before further narcotics are prescribed. It is recommended that nationwide education standards should be revised and that there needs to be key points focusing on the addictive nature of narcotics and the effects of overuse.

CONCLUSION

There are multiple studies regarding the prescription of opioids in the post-surgical period. Overprescription of post-surgical opioids can be linked to the increasing number of opioid-related deaths from overdose, as well as the number of opioids circulating in the public being misused. To change this, providers need to focus on educating the patient on appropriate opioid use and storage, and how to safely discard unused prescriptions. Furthermore, physicians need to implement the use of alternative pain relief methods before jumping right to opioids.

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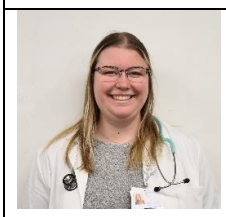
	**Emily Q. Ferguson** *Bethel University School of Nursing, Mishawaka, Indiana, USA*
	**Gabrielle H. Goodfellow** *Bethel University School of Nursing, Mishawaka, Indiana, USA*
	**Jessica E. Shurety** *Bethel University School of Nursing, Mishawaka, Indiana, USA*
	**Samuel P. Abraham– *Corresponding Author*** *Associate Professor of Nursing, Bethel University, 1001 Bethel Circle, Mishawaka, Indiana,*