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The Effectiveness of Take-Home Naloxone in Preventing Opioid-Related Deaths

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ABSTRACT

Background: This study is a review of the literature addressing the effectiveness of a wider availability of naloxone to the public in decreasing opioid overdoses resulting in death. **Purpose:** The purpose of this study was to ascertain whether take-home naloxone can be a solution to reduce or even eliminate deaths from opioid overdoses in communities that have a large population of opioid users. **Method:** This was a thorough review of the literature. The research question for this study was, for those struggling with addiction, how does the use of take-home naloxone affect the occurrences of opioid-related fatalities compared with seeking professional medical attention? To compile information, 15 studies were collected from the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and Google Scholar. The review included studies of the communities where opioid overdoses are more than the national average and the effectiveness of take-home naloxone, if already available, at reducing deaths. **Findings:** When analyzing the studies related to this topic, four themes emerged. The findings included education about take-home naloxone is important, accessibility of naloxone makes a big difference, administration of take-home naloxone is shown to work, and the stigma of opioids can affect how individuals suffering from addiction get help. **Conclusion:** Implementing take-home naloxone programs and appropriate use will help individuals avoid death from opioid overdose and hopefully move toward a path to true recovery.

INTRODUCTION

The improper use of opioids has been increasing steadily over the years. A report from the Centers for Disease Control and Prevention (CDC) indicated the number of deaths related to opioids was over six times the number of deaths in 2021 compared to the number of deaths in 1999 [1]. Due to this misuse of opioids, naloxone has become accessible to the public and intended for emergencies. Naloxone's classification is an opioid antagonist [1]. Due to its relevance, a review of the literature was conducted to better understand take-home naloxone. The purpose of the review was to collect data from multiple studies relating to naloxone use in opioid-related overdoses.

Background

Issues with opioids have been around for years and have become a nationwide problem. The US Department of Health announced the issue of opioid abuse as a nationwide public health threat [2]. Opioid abuse has led to many overdoses, which have also led to many fatalities. On average, in the United States, roughly 130 people died every day from unintentional opioid overdoses in 2018 [3]. Not only is this an issue in the United States, but in other countries as well. Sweden's most common cause of death is related to opioid overdoses [4]. Opioid overdoses are occurring more often, and as a result, more fatalities occur.

To attempt to overcome this issue, take-home naloxone has become a potential aid in hopes of reducing the number of opioid-related fatalities. Naloxone is used to reverse opioid overdoses. It works by binding to the *mu* receptors located in the nervous system, which then reverses the effects of opioids by preventing asphyxiation and cardiac arrest [2]. In efforts to reduce fatalities, take-home naloxone programs have been developed to make naloxone available to the public. The Department of Health and Human Services, along with the U.S. Surgeon General, has made laws that promote naloxone use by people in the community because the quicker it is administered the better the outcome [5]. Some barriers regarding take-home naloxone include education, accessibility, and stigma. Aside from this, many studies have been conducted to show the effectiveness of naloxone's use in the community. Rees et al. [6] found that adoption of a naloxone access law (NAL) was associated with a statistically significant 9-10% reduction in opioid-related mortality, although the negative association between NALs and opioid-

related mortality appears to be driven by early adopters, which were the states that passed legislation before 2011. For the current review, the research question was: For those struggling with addiction, how does the use of take-home naloxone affect the occurrences of opioid-related fatalities compared with seeking professional medical attention?

METHODS

The method of research used in this study was a review of the literature based on the effectiveness of take-home naloxone. Pertinent studies were compiled and ranked based on the nursing evidence hierarchy [7]. The evidence hierarchy is used to determine the quality of evidence in each study. There are seven levels, one being the best quality and seven having the lowest quality of evidence. Figure 1 shows the number of selected studies in each level of evidence.

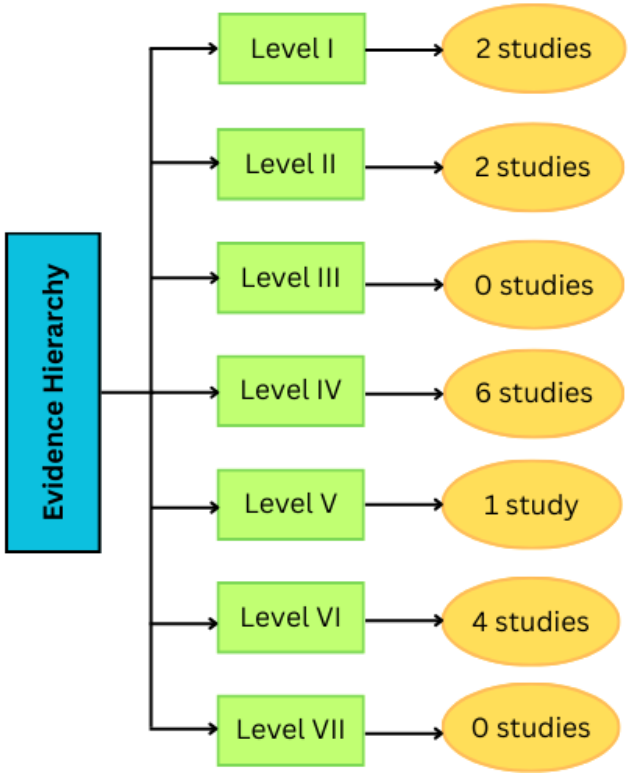

Figure No. 1: Evidence Hierarchy for Studies of Effectiveness of Take-Home Naloxone

Two databases, CINAHL and Google Scholar, were used to locate the studies for this review. The keywords used to find the studies include take-home naloxone studies, effectiveness of take-home naloxone, opioid and fatalities, and opioids and screening. Using the phrases take-home naloxone studies, and effectiveness of take-home naloxone in Google Scholar, brought up a total of 33,800 studies. Then using the phrases opioid fatalities and opioids and screening, in CINAHL, brought up a total of 1,617 studies. Figure 2 shows the total number of studies found, and the number used for the review.

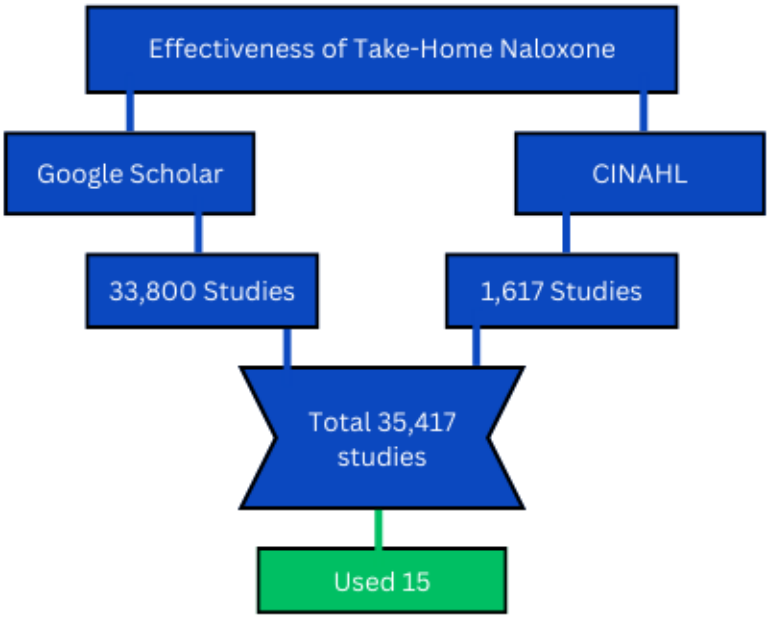

Figure No. 2: Inclusion Criteria for Studies on the Effectiveness of Take-Home Naloxone

The studies compiled include an assortment of interviews, cross-sectional studies, surveys, and cohort studies. Most studies were published between 2020 and 2023. Also, some articles did not contain information regarding naloxone being used in the public or in the home setting, which is the main idea of the research topic. Finally, the last exclusion criteria dealt with the population sizes in the studies. Studies with higher population sizes were selected to increase the quality of evidence. Figure 3 shows the exclusion criteria.

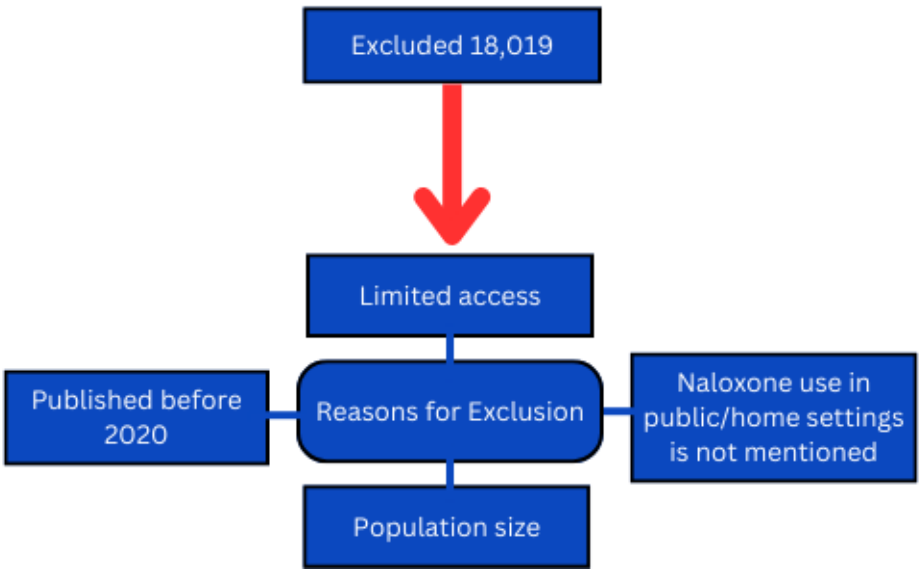

Figure No. 3: Exclusion Criteria for Studies on the Effectiveness of Take-Home Naloxone

LITERATURE REVIEW

The purpose of this review was to determine if take-home naloxone is effective in preventing opioid-related deaths. Fifteen studies were collected and analyzed that were related to the effects of take-home naloxone and opioid overdoses. Four themes were identified from the studies. The themes included proper education on take-home naloxone, the effects of non-medical personnel administering naloxone, having naloxone readily available, and the stigma behind naloxone and opioids. The following themes are expanded on showing their importance regarding the topic at hand.

Educational Requirements

In a study on take-home naloxone programs, Giglio et al. [8] found that naloxone used by non-medical professionals allowed for quicker treatment and, thereby, increased the likelihood of survival for those overdosing on opioids. However, it is crucial to provide education to those using the medication on proper technique and indication of administration to yield positive results and save lives. Lambdin et al. [9] identified a plan to increase education for non-medical personnel by creating a program that trains people to respond during overdose events and provides access to naloxone and directions for drug delivery. These programs have been referred

to as overdose education and naloxone distribution programs (OEND). The benefits of offering these programs at syringe service programs where those struggling with opioid addiction can exchange needles safely to prevent the spread of human immunodeficiency virus (HIV). Accompanying these two services allows important life-saving information to be delivered specifically to those who may need it most.

It is also important to note that education on naloxone administration is not just pertinent information to those who use opioids. Those who reside in communities with high levels of opioid addiction and want to help prevent deaths should have a baseline understanding of the nature of overdose, how to reverse the effects of opioids, and how to administer naloxone. When examining a community ridden with addiction, Schlosser et al. [10] identified that a quarter of respondents reported that they would be unable to recognize when a person is overdosing. This is not only important for the idea that people need to be educated on overdoses for naloxone administration purposes, but also for the reasoning that bystanders should at least know when to contact emergency services.

Commonly seen in other studies, Antoniou et al. [11] conceded that naloxone should at least be made available to the public through pharmacies. This allows pharmacists, who are particularly knowledgeable about medication indications, usage, and side effects, to be there to answer questions and counsel those coming to purchase naloxone for personal use. However, even though this ideally is a great idea from an educational standpoint, those struggling with opioid addiction may forego coming to public pharmacies for fear of retribution or judgment. The benefits of education do not amount to much towards preventing opioid-related deaths if people are not willing to obtain naloxone in the first place.

Non-Medical Personnel Administering Naloxone

Another theme identified was how non-medical personnel administering naloxone affect opioid-related death rates. Holmen et al. [4] advocated that making naloxone publicly available allows non-medical personnel to help administer the reversal agent to an opioid overdose. This is crucial as fatal opioid-related deaths have continued to increase, with an estimated 100,000 deaths in 2021 due to opioid overdose in America. This indicates a growing issue that calls for more attention to help prevent these deaths as there is a cure to these medications or drugs. In efforts to

cut down on these growing numbers, there was a study initiated in Sweden to monitor the effectiveness of accessible naloxone. In this study participant rates were high, and these contributors were required to go through a short education training session to highlight when to give and what to do after administration of medication. These participants had many refills that were used throughout 4 years, and a sizable proportion of possibly fatal overdoses were saved. This emphasizes how important it is to have naloxone on the scene as soon as possible. Even if this medication is given by a non-medical person the victim will still get the reversible effects that could save their life.

The opioid issue has become a popular topic and there have been several studies executed to examine the effectiveness of releasing naloxone to non-medical personnel. For example, Giglio et al. [8] found that programs made naloxone administration safe and successful for non-medical individuals. Implementing a short training course before disposal allows for key instruction to be given. Allowing non-medical personnel to administer naloxone allows for treatment of sequestered areas as over half of opioid overdoses occurred in a private space [4]. Having this prominent access to naloxone can help to prevent these fatalities. Additionally, Janssen et al. [2] also found that training non-medical individuals on how to administer naloxone was very effective for resuscitation. This data displays the effectiveness of spending time to train individuals in the administration of naloxone to save lives. Correspondingly, implementing teaching areas for non-medical personnel in high opioid use areas would be worthwhile to implement.

The Benefits of Increased Naloxone Availability on Society

Furthermore, the third theme that emerged is the impact of having naloxone readily available. It was found that having increased accessibility to naloxone for those in need would help prevent opioid fatalities from overdose [11]. An area that would benefit greatly from rapidly available naloxone in rural communities. This is because they, unfortunately, have less access to support services such as transportation, sober living, and employment attributable to geographic location [12]. As a result of this lack of attainability, it becomes harder to fight off this crisis. Having this increased access is key to helping those in need. Implementing telehealth or transportation

resources could help to bridge this gap of care [12]. Making these connections will help to reach out to those more obscure areas that are still in need of help.

Having access to naloxone cuts down on the number of opioid-related deaths. One way this can be executed is by standing orders from doctors [5]. Standing orders would allow for those with an opioid prescription to also automatically be prescribed naloxone. This has been proven to help decrease fatalities and target the population who have contact with opioids. Abouk et al. [13] also found that pharmacy-dispensed naloxone was effective in bringing down the number of opioid-related fatalities. Implementing policies like these in areas of greatest need would greatly impact this area and help this current drug epidemic. Treatment of a disease or illness depends on the accessibility of the treatment. This epidemic is no different, and making sure those who are struggling can receive the treatment they need can save many lives.

Mcauley et al. [14] noted that responding to an overdose using take-home naloxone is complex, both practically and emotionally, for those involved. Although protocols exist, a multitude of individual, social, and environmental factors shape responses. Despite these challenges, people generally conveyed a strong sense of therapeutic commitment to using take-home naloxone in their communities [14]. In a Canadian study, Yeung et al. [15] noted increased emergency room visits after community-based naloxone program implementation in urban Alberta. They observed an increase in urban opioid-related deaths**.** The results indicated differences exist between municipalities employing similar interventions. The results also indicated contextual variation; for example, illicit drug supply toxicity may modify the ability of a community-based naloxone program to prevent opioid overdose without a thorough public health response [15].

The Stigma behind Naloxone and Opioid Use

The final theme identified addresses the perception of the misuse of opioids. Multiple studies appear to have included how people felt about others who associate with opioids. The view of others influences how people act upon their decisions. Unfortunately, the stigma regarding opioids has frightened some individuals into not pursuing the help they need. Individuals struggling with opioid addiction tend to report fear of feeling judged and will avoid going to public places to receive available naloxone [11]. Feelings of shame and embarrassment override the need to seek help.

The community can easily affect how someone struggling with opioids would go about getting treatment. Some individuals believe that having a substance use disorder is a choice, and it can be stopped whenever one feels like they can stop using [10]. Some are unaware of the true struggles of addiction and tend to judge those individuals for their recurrent behaviors. There are individuals in communities who see those with substance use disorders as blameworthy, untrustworthy, and dangerous. As mentioned, the true issue relies on a lack of education on behalf of members of communities where opioid addiction is prevalent. Educating people about addiction is important. Sometimes they will not be accepting of it until it happens to somebody they care about and then they begin to realize the seriousness [12]. Based on this statement, it is hard for people to comprehend the hardships of those dealing with an addiction, but until they are stuck in the situation then they will start to understand the struggles. For this reason, implementing public awareness and education will help reduce the stigma and encourage those dealing with opioid addictions to get the help they need.

Summary of Results

Results identified were promising in terms of the effectiveness of take-home naloxone treatment in reducing opioid-related deaths. Specific themes, shown in Figure 4, that were repeatedly mentioned throughout the selected studies include a required educational factor with take-home naloxone, the benefits of non-medical personnel utilizing this drug, positive outcomes with rapid treatment, and the stigma behind obtaining take-home naloxone and opioid usage. There is a consensus among the chosen studies that receiving a naloxone prescription appears to be associated with an increased risk of subsequent opioid overdose [16]. Understanding this fact is important because, as a nation, the current driving force is how to treat opioid addiction and opioid overdoses rather than prevent them from the beginning in the first place.

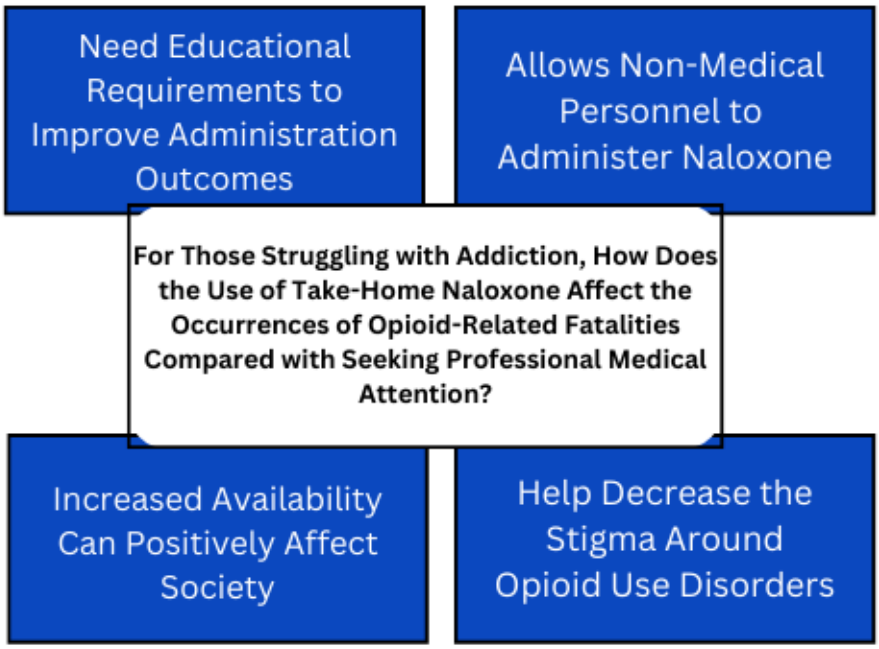

Figure No. 4: Emerging Themes in Studies on Take-Home Naloxone Usage

Concerning the process of preventing opioid-related deaths, Ericson et al. [17] attempted to collect information from the staff of a take-home naloxone program. Results showed that when reviewing the data they receive, it is preferred to receive electronic data rather than paper format. This is pertinent information for the establishment of future take-home naloxone programs across the nation. These programs have been shown to increase the availability, and access to naloxone therapy, and prevent opioid-related deaths by allowing timely treatment [8]. Identifying characteristics that have proven to be effective in program setup should be replicated to others to achieve mass efficacy.

Another concern with the implementation of take-home naloxone in a public environment is that it creates a safety net for those with opioid use disorder to continue using with less risk. In one of the studies, Kelly and Vuolo [18] found that there is no empirical evidence that implementation of naloxone access laws has adversely affected perceptions of the risk of heroin. This finding shows that take-home naloxone, on average, functions exactly as intended which is to be an emergency treatment for opioid overdose. Advocating for policy and law change is not working

toward aiding people struggling with addiction to keep their disorder, but instead focuses on plans to reduce the number of deaths from opioid use.

DISCUSSION

Based on the purpose of this literature review, it is found that increasing the availability of naloxone for public use has helped to lower the number of opioid-related fatalities. This conclusion was reached by using 10 research studies in the top four levels of evidence and 5 other sources that reinforce the claims made. This study also recognized that there are populations that are at a greater risk for these fatal overdoses as help is not convenient. One example of these populations is the homeless as they have a barrier to receiving health care in many ways. A way to assist these individuals is using transportation and access to technology [19]. Another population that is at risk is the rural community as there is a lack of resources for health care [12]. With both populations, enhancing the availability of naloxone could help to decrease the number of fatalities related to opioid overdoses.

Throughout this review, there were four major themes recognized: education requirements for naloxone administration, the effectiveness of non-medical personnel administering naloxone, the benefits of increased naloxone availability, and the stigma behind naloxone and opioid use. These themes give a broad focus on how implementing policies on naloxone availability can impact society. Allowing non-medical professionals to administer naloxone with education can greatly improve outcomes and help to decrease the stigma around opioid use disorders.

Recommendations

A general starting recommendation focuses on the control of opioid misuse before it develops into an addiction. This can be achieved by implementing emergency department screening for opioid use disorder to detect future misuse of prescriptions [20]. This would help allow providers to pursue alternative routes for pain management. Additional recommendations include further research as the implementation of interventions are made. The implementation of take-home naloxone is a recent intervention toward decreasing opioid-related deaths and should be routinely evaluated over time. Another area that could be investigated is the effectiveness of community engagement in the reception of education and administration of naloxone treatment (see Figure

5). Identifying whether positive attitudes and beliefs of the community positively affect death rates could help persuade members to offer their support if it helps to save lives.

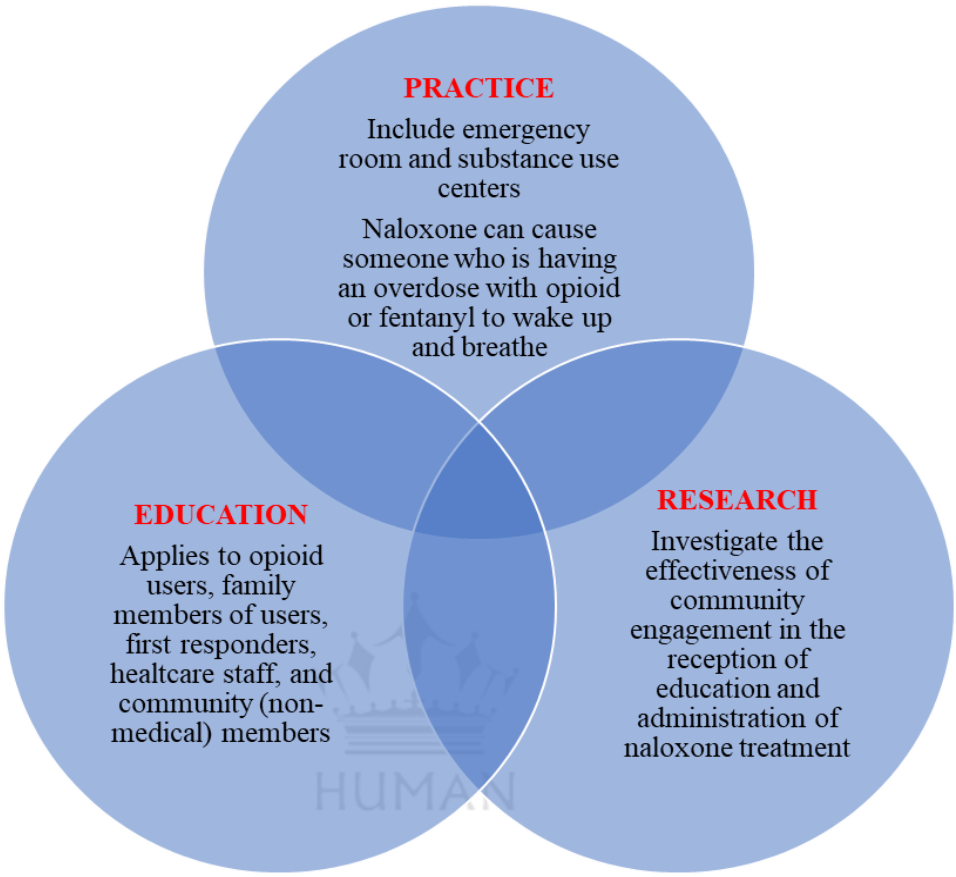

Figure No. 5: Application of Evidence-Based Practice for Take-Home Naloxone Use

Lastly, policy changes from both a state and federal level are monumental towards helping those with opioid use disorder and preventing opioid-related deaths. Stahler et al. [21] have identified the importance of instituting a collaborative approach among physicians, social services, and law enforcement to identify those struggling with addiction who would benefit from additional resources. In a study using a collaborative approach, Oreper et al. [19] identified different measures such as counseling, educational groups, connections to housing can help to prevent opioid addiction from occurring rather than treating it at a later date. Instituting these measures in communities around the nation in conjunction with overdose education and naloxone distribution will collectively work toward preventing opioid-related deaths.

CONCLUSION

Overall, the literature review has identified four recurrent themes concerning take-home naloxone effectiveness among the studies selected. These themes include the requirement of an educational component, the process of non-medical personnel administering naloxone, the benefits of increased naloxone availability, and the powerful stigma surrounding naloxone and opioid use. The consensus shown throughout the studies is that increasing the availability of naloxone to the public in a take-home format is beneficial and effective at preventing opioid-related deaths when education is included, and a collaborative approach is taken towards helping people to true recovery.

REFERENCES

1. Centers for Disease Control and Prevention. (2023, August 8). Understanding the opioid overdose epidemic. *Centers for Disease Control and Prevention*. https://www.cdc.gov/opioids/basics/epidemic.html
2. Janssen, A., Garove, B., & LaBond, V. (2020). Naloxone administration by nonmedical providers- A descriptive study of county sheriff department training. *Substance Abuse Treatment, Prevention, and Policy, 15*(86), 1-4. https://www.doi.org/10.1186/s13011-020-00327-w
3. Katzman, J. G., Takeda, M. Y., & Greenberg, N. (2020). Association of take-home naloxone and opioid overdose reversals performed by patients in an opioid treatment program. *Substance Use and Addiction, 3*(2), 1-10. https://www.doi.org/10.1001/jamanetworkopen.2020.0117
4. Holmen, E., Warnqvist, A., & Kaberg, M. (2023, April 22). Sweden's first take-home naloxone program: Participant characteristics, dose endpoints and predictors for overdose reversals. *Substance Abuse Treatment, Prevention, and Policy, 18*(24), 1-12. https://doi.org/10.1186/s13011-023-00533-2
5. Tabatabai, M., Cooper, R. L., Wilus, D. M., Edgerton, R. D., Ramesh, A., MacMaster, S. A., Patel, P. N., & Singh, K. P. (2023). The effect of naloxone access laws on fatal synthetic opioid overdose fatality rates. *Journal of Primary Care & Community Health, 14*, 1-12. https://doi:10.1177/21501319221147246
6. Rees, D. I., Sabia, J. J., Argys, L. M., Dave, D., & Latshaw, J. (2019). With a little help from my friends: The effects of Good Samaritan and naloxone access laws on opioid-related deaths. *Journal of Law and Economics, 62*(1), 1–27.
7. Schmidt, N. A., & Brown, J. M. (2022). *Evidence-based practice for nurses: Appraisal and application of research*. Jones & Bartlett Learning.
8. Giglio, R. E., Li, G., & DiMaggio, C. J. (2015, December). Effectiveness of bystander naloxone administration and overdose education programs: A meta-analysis. *Injury epidemiology, 2*(10), 1-9. https://doi.org/10.1186/s40621-015-0041-8
9. Lambdin, B. H., Bluthenthal, R. N., Wenger, L. D., Wheeler, E., Garner, B., Lakosky, P., & Kral, A. H. (2020, August 20). Overdose education and naloxone distribution within syringe service programs - United States, 2019. *Centers for Disease Control and Prevention, 69*(33), 1117-1121. http://dx.doi.org/10.15585/mmwr.mm6933a2
10. Schlosser, A., Habecker, P., & Bevins, R. (2022, March 4). Harm reduction in the Heartland: Public knowledge and beliefs about naloxone in Nebraska, USA. *BioMed Central, 19*(22) 1-7. https://doi.org/10.1186/s12954-022-00606-8
11. Antoniou, T., Pritlove, C., Shearer, D., Martins, D., Tadrous, M., Munro, C., & Games, T. (2021, February 7). A qualitative study of a publicly funded pharmacy-dispensed naloxone program. *International Journal of Drug Policy, 92*, 1-7. https://doi.org/10.1016/j.drugpo.2021.103146
12. Clark, A., Lanzillotta-Rangeley, J., & Stem, J. (2021). "If you could wave a magic wand": Treatment barriers in the rural Midwest. *Substance Abuse: Research & Treatment, 15*, 1–6. https://doi.org/10.1177/11782218211053343
13. Abouk, R., Liccardo Pacula, R., & Powell, D. (2019, June 1). Association between state laws facilitating distribution of naloxone and risk of fatal overdose. *JAMA Internal Medicine, 179* (6), 805-811. https://doi.org/10.1001/jamainternmed.2019.0272
14. Mcauley, A., Munro, A., & Taylor, A. (2018). "Once I'd done it once it was like writing your name": Lived experience of take-home naloxone administration by people who inject drugs. International Journal of Drug Policy, 58, 46–54. https://doi.org/10.1016/j.drugpo.2018.05.002

15. Yeung, M. E. M., Lee, C. H., Hartmann, R., & Lang, E. (2023). Opioid-related emergency department visits and deaths after a harm-reduction intervention: A retrospective observational cohort time series analysis. CMAJ Open, 11(3), E537–E545. https://doi.org/10.9778/cmajo.20220104
16. Qeadan, F., & Madden, E. F. (2022) Associations between naloxone prescribing and opioid overdose among patients with acute and chronic pain conditions. *Addiction, 117*(2), 457-471. https://doi.org/10.1111/add.15643
17. Ericson, O. B., Eide, D., Lobmaier, P., & Clausen, T. (2022, February 16). Staff preferences towards electronic data collection from a national take-home naloxone program: A cross-sectional study. *Substance Abuse Treatment, Prevention, and Policy*, *17*(13), 1-5. https://doi.org/10.1186/s13011-022-00440-y
18. Kelly, B. C., & Vuolo, M. (2021). Do naloxone access laws affect the perceived risk of heroin use? Evidence from National US data. *Wiley Online Library, 117*(3), 666-667. https://onlinelibrary.wiley.com/doi/10.1111/add.15682
19. Oreper, S., Bond, A., Bazinski, M., Tierney, M., Fang, M., Sankaran, S., & Rambachan, A. (2023). A focused screening and clinical intervention with streamlined outpatient linkage for hospitalized patients with opioid use disorder experiencing homelessness. *Substance Abuse: Research & Treatment*, *17*, 1–9. https://doi.org/10.1177/11782218231166382
20. Punches, B. E., Ali, A. A., Brown, J. L., Freiermuth, C. E., Clark, A. K., & Lyons, M. S. (2021). Opioid-related risk screening measures for the emergency care setting. *Advanced Emergency Nursing Journal*, *43*(4), 331–343. https://doi.org/10.1097/TME.0000000000000377
21. Stahler, G. J., Mennis, J., & Belenko, S. (2023). At the crossroads in the opioid overdose epidemic: will evidence-based "radical" but rational drug policy strategies prevail? *American Journal of Public Health*, *113*(7), 747–749. https://doi.org/10.2105/ajph.2023.307320

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