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ACEs in Relation to PICU Admissions

**Adverse Childhood Experiences and Social Determinants of Health in Relation to Pediatric
Intensive Care Unit Admissions**

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Abstract

This literature review was conducted in order to examine the correlation between adverse childhood experiences (ACEs), social determinants of health and pediatric intensive care unit (PICU) admissions. Oftentimes, those admitted as patients in the PICU come from homes in which social determinants of health, such as poverty and lack of access to healthcare, and ACEs, such as abuse and neglect, are prevalent. Systematic studies of existing literature and experience in the hospital setting revealed the ways in which these conditions often cause children to reach such poor health conditions that they must be admitted to the PICU. In order to reduce the rate of hospitalizations due to ACEs and social determinants of health, more research needs to be done pertaining to this particular topic, as it is broad and a relatively new study. To begin, however, the public must be educated on the importance of healthcare and ways they can begin to practice preventive medicine in their daily lives in order to identify ACEs and negative social determinants of health so that action may be taken before these situations become so dire that a child must be hospitalized.

Adverse Childhood Experiences and Social Determinants of Health in Relation to Pediatric Intensive Care Unit Admissions

Introduction

The purpose of this review is to better understand the impact adverse childhood experiences and social determinants of health have on pediatric intensive care unit admissions. Children who face these struggles, including lack of access to healthcare, education, and a safe environment often are admitted to the pediatric intensive care unit due to the inability to access adequate healthcare whether by fault of a knowledge deficit or lack of financial ability to afford said necessary healthcare.

Thirty-one percent of patients admitted to the pediatric intensive care unit have experienced at least one adverse childhood experience or adverse social determinant of health (Cheung et al., 2021). Stays in the pediatric intensive care unit for patients who have experienced some sort of adverse social determinant of health tend to be longer, pricier, and end in higher rates of death than those patients who are admitted without having experienced these events (Cheung et. Al 202). An adverse childhood experience (ACE) is defined as childhood events that negatively impact a child's health (Kalmakis, Meyer, Chiodo, Leung, 2015). This damage can be physical, mental, or otherwise and often are reoccurring with long term effects. These events are often present in conjunction with certain social determinants of health, which are factors in the child's life ranging from socioeconomic status, access to healthcare, access to education, environment, and community context. A child coming from an impoverished home with abusive or neglectful parents with limited to no access to healthcare is significantly more likely to be admitted to the PICU than a child with wealthy parents who care appropriately for the child and have ease of access to healthcare. Adverse childhood experiences and social determinants of

ACEs in Relation to PICU Admissions

health not only put the child's physical health in a more vulnerable position, but also can have lasting negative impacts on the child's mental and sociologic well-being.

Healthcare workers and those with a knowledge of primary prevention strategies can play an essential role by assisting in educating both parents and children who live with adverse social determinants of health. Education should include ways to implement techniques into their daily lives that can help prevent admission into the pediatric intensive care unit. Education acts as a primary intervention by which the public can prevent serious illness and therefore hospitalizations (Yeh, Wu, Tung 2017). This education can come in many different forms, ranging from flyers hung in impoverished communities to sessions provided at elementary schools in less financially stable neighborhoods. It is also important to ensure that individuals working with or around children are educated on their role as a mandated reporter to report and suspicion of abuse or neglect of a child.

While informing the public and especially those at risk of primary prevention strategies would play a significant role in the reduction of pediatric intensive care unit admissions, there is still a gap in research pertaining to how to reduce these PICU admissions related to abusive or neglectful home. For patients who come from homes with little healthcare knowledge, teaching could help to close the knowledge gap and reduce the risk of the development of a serious or life-threatening illness. However, a child who is abused or neglected not only lacks the knowledge necessary to obtain adequate healthcare and prevent hospitalizations, but also lacks the resources to do so. . Mandated reporting requires individuals involved in the care of the child outside of the patient's immediate family to report suspicions of abuse or neglect in order to protect the child in a way that he or she is unable to. Mandated reporting is typically not performed until the issue at hand is unable to be ignored. This is the point at which the child will end up hospitalized or

ACEs in Relation to PICU Admissions

worse; however, if the necessary steps had been taken to identify and take action on the early indicators of abuse or neglect, the child likely would have never gotten to the point of hospitalization. It is necessary for preventative steps to be taken to ensure that the prevalence of hospitalizations due to ACEs will be significantly reduced. Theoretically, once reporting has occurred, the child will have an advocate and increased resources to better overcome their adverse circumstances. Further research must be done in order to fully understand such a broad topic as definite connection between adverse childhood experiences and social determinants of health can be difficult to prove on a case-to-case basis.

Methods

Study Design

In order to complete a study on the aforementioned topic, various works of literature were reviewed in depth. The literature reviewed to gather these results were focused on different types of adverse childhood experiences and social determinants of health and how they correlated with pediatric intensive care unit admissions. These included abuse, neglect, lack of access to healthcare, and lack of education. In PICU admissions, how do ACEs and social determinants of health in children compared to children who do not face these struggles affect the rate of admission within the hospital systems today?

Inclusion Criteria

To begin, a search was completed using the CINAHL database as well as Google Scholar. To find articles pertaining to this study, searches of “PICU admissions due to ACEs”, “Adverse childhood events”, and “Social determinants of health” were completed. The articles selected to be used in this literature review were selected by their use of certain key words: social determinants of health, adverse childhood experiences, and pediatric ICU admissions. These

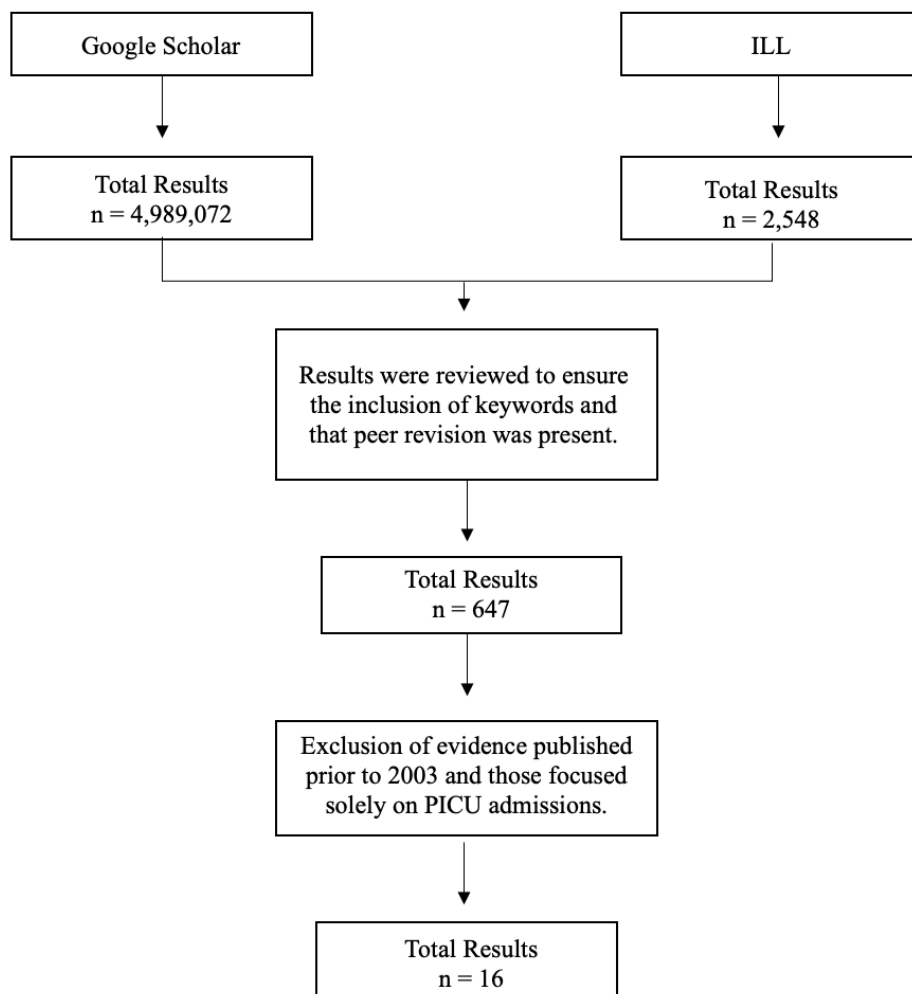
ACEs in Relation to PICU Admissions

were chosen in order to gain a better understanding of these three topics independently to then gain a more thorough understanding of how they related to one another.

Search Results

From these searches, 647 articles were found on both Google Scholar and ILL that contained the aforementioned keywords and pertained to the purpose of this study, finding the relationship between ACEs and social determinants of health and PICU admissions. This was then reduced to 16, excluding articles whose main purpose did not have strong enough correlation to the topic being studied here.

Figure 1



Results

Abuse and Neglect

Child abuse is a common occurrence in the United States with emotional, physical, and financial consequences for the individual suffering from the abuse and the community in which this individual lives (Zeanah, Humphreys 2018). According to one study, while abuse victims only make up 1.4% of pediatric intensive care unit admissions these patients contribute to 17% of all deaths on said unit (Zeanah, Humphreys 2018). This indicates that the mortality rate of abused children when compared to patients who have not been abused is extremely high. The damage done is not always apparent and requires screening of the individual and his or her caretaker(s). This being said, sometimes victims of abuse are not always identified as such, so it is likely that this percentage would be slightly higher if it were possible to identify all children who have been abused in one way or another.

Other researchers found that 31% of all patients in the pediatric ICU were screened positive for at least one adverse social determinant of health, with over half of that 31% screened positive for two or more (Cheung et al. 2021), indicating that there is a disproportionately high percentage of children being admitted to the pediatric intensive care unit due to factors relating to neglect.

Childhood neglect has no concise definition that is accepted universally but can be described as a failure on behalf of a child's caretaker to provide said child with adequate emotional and health support, supervision, and essential components to life such as food, water, and shelter (Scott, 2014). Hospitalizations for children who face ACEs often come with delays in discharge as well as higher costs of hospital stays due to the severity of their illness or injury (Lee et al. 2017) leading to excessive financial strain on their families or caregivers. This, in

ACEs in Relation to PICU Admissions

turn, leads to higher levels of stress, which leads to an exacerbation of these ACEs and therefore higher likelihood of readmission: a vicious, hard-to-break cycle.

Poverty: Lack of Access to Healthcare and Education

Poverty alone contributes to 59% of pediatric intensive care unit admissions (Andrist et al., 2017). Poverty impacts a family's access to essential life functions such as healthcare and education, and oftentimes these families live in impoverished areas with high crime rates. Children growing up in these environments are at risk of being injured due simply to existing in these environments, but are also at risk of getting injured due to involvement in criminal activities. Poverty is also associated with longer pediatric intensive care unit stays due to the severity of the living conditions (Slain et al. 2018).

Lack of access to healthcare and education are often present as a result of financial instability or poverty. This becomes an issue pertaining to families with lower socioeconomic status as they are less likely to seek healthcare when necessary either due to the lack of ability to pay or a lack of the knowledge of healthcare's importance when certain signs and symptoms present in their children. This becomes relevant to pediatric intensive care unit admission when the child's condition develops and worsens, and they require the care only an intensive care unit can provide (Hughes, Tucker 2018).

Moving forward, it is imperative that both the public and healthcare professionals who care for or work with children with ACEs be educated on ways to prevent these detrimental occurrences. Something as simple as providing community outreach programs pertaining to signs of child neglect or abuse could mean the difference between a life-threatening conditions and PICU admission, or the correction of the issue before it progresses to such a dire stage (Doyle, Ward, Early, 2019). Through empowering these individuals to feel confident in screening for

ACEs in Relation to PICU Admissions

these ACEs in children, there will be a decline in PICU admissions as the issues will be caught much sooner. There is only so much that can be done by a small group of individuals; however, the participation in prevention by the public is a highly necessary aspect in terms of working towards ending ACEs all together.

Figure 2

| Author(s) | Year of Publication | Study Type | Summary of Study's Purpose | Level of Evidence |
|--|---------------------|--------------------|---|-------------------|
| Andrist, E., Riley, C., Brokamp, C., Taylor, S., Beck, A. | 2019 | Systematic Review | Studies the correlation between children living in poverty and the rate at which these individuals are admitted to the PICU | Level 5 Evidence |
| Boullier, M., Blair, M. | 2018 | Systematic Review | Exploration of adverse childhood experiences in terms of long term effects as well as prevalence | Level 5 Evidence |
| Braveman, P., Gottlieb, L | 2014 | Systematic Review | Studies causes leading to ACEs and social determinants of health; attempts to better understand the causes of the causes | Level 5 Evidence |
| Cheung, C., Count, S., Jarvis, J., McClusky, C., O'Leary, D., Gunn, S., Hall, A., Schneck, J. Fink, E | 2021 | Systematic Review | Explores the prevalence of ACEs in families that have at least one child suffering from critical illness. | Level 5 Evidence |
| Colville, G. | 2021 | Systematic Review | Psychosocial risk factors associated with ACEs and Social Determinants of Health | Level 5 Evidence |
| Derek, J., October, T | 2020 | Longitudinal Study | ACE screening in the PICU | Level 4 Evidence |
| Enrione, M. | 2003 | Systematic Review | Studies the prevalence of injuries as a result of neglect and abuse in | Level 5 Evidence |

ACEs in Relation to PICU Admissions

| | | | | |
|---|------|--------------------|--|------------------|
| | | | children admitted to the PICU | |
| Finkelhor, D. | 2017 | Longitudinal Study | How to screen for ACEs effectively in children and what do with the information gathered | Level 4 Evidence |
| Hendricks, C., McKerrow, N., Hendricks, R. | 2016 | Systematic Review | Factors alluding to abuse or neglect of children upon admission to the PICU | Level 5 Evidence |
| Hughes, M., Tucker, W. | 2018 | Systematic Review | Looks at the relationship between poverty as a social determinant of health and the long terms effects of low socioeconomic status on children living in poverty | Level 5 Evidence |
| Kalmakis, K., Meyer, J., Chiodo, L., Leung, K. | 2015 | Systematic Review | Defines a relationship between health issues and adverse childhood experiences. | Level 5 Evidence |
| Lahn, S., Schlapbach, L., Yong, G., Bray, J., Millar, J., Slater, A., Alexander, J., Finn, J. | 2015 | Systematic Review | Trends in admitting factors of patients in the PICU | Level 5 Evidence |
| Lee, M., Bachim, A., Smith, C., Camp, E., Donaruma-Kwoh, M., Patel, B. | 2017 | Systematic Review | Monetary effects of delayed discharges due to the legal complications associated with abuse and neglect | Level 5 Evidence |
| Nasir, H., Ghannam, S., Gill, S., Pestak, K., Davalla, N., Gill, A. | 2019 | Systematic Review | PICU patients at risk for deterioration while admitted due to the effects of ACEs | Level 5 Evidence |
| Patel, M., Travers, C., Stockwell, J., Numur, E., Geller, R., | 2018 | Systematic Review | Recurrent PICU admissions due to poisoning, often due to neglect on behalf of parents | Level 5 Evidence |

ACEs in Relation to PICU Admissions

| | | | | |
|--|------|-------------------------------|--|---------------------|
| Kumat, P., Grunwell, J. | | | | |
| Patel, N., Khofi-Phiri, I., Mathiva, L., Grieve, A., Loveland, J., Nethathe, G. | 2017 | Systematic Review | Studies the rate of trauma related admissions to the PICU as well as how to determine whether the root cause of admission was trauma | Level 5 Evidence |
| Scott, D. | 2014 | Systematic Review | Explores the meaning and implications of neglect on children and allows readers to better understand this topic. | Level 5 Evidence |
| Yeh, M., Wu, S., Tung, T. | 2018 | Cross- Sectional Survey | Explores the goals and outcomes that coincide with patient empowerment | Level 4 Evidence |
| Zeanah, C., Humphreys, K. | 2018 | Systematic Review | Explores the different types of abuse and the wide variety of effects that said abuses force upon the victims | Level 5 Evidence |

Discussion

Summary of Main Findings

The results of this study align with predictions prior to research both from the literature reviewed in this study and my clinical experience in the pediatric intensive care unit. There is a strong correlation between adverse childhood experiences/social determinants of health and pediatric ICU admissions as evidenced by the size and number of the studies conducted. As mentioned above, there are various ways in which the wide range of these events can affect the children living in these conditions, whether it be physically or mentally. Children facing adverse childhood experiences and social determinants of health are more likely than those who are not to be admitted to the pediatric intensive care unit, especially those facing the specific challenges of poverty, abuse, or neglect.

Study Limitations and Gaps in the Literature

This study also revealed some shortcomings of the research in that due to the broad nature of the topics being discussed, there is a difficulty in determining exact correlation and causation between the two. While the correlation is present, it is difficult to prove that the reason for admission directly relates to abuse or neglect in most cases. Parents of abused or neglected children are often defensive when asked, and nurses and other healthcare providers are unable to see the child in their day-to-day environments to gauge their quality of life; this means the only information they have access to is the information presented before them.

Implications for Nursing Practice

As nurses, it is imperative that community health outreach programs be initiated, especially in impoverished areas as these children are more likely to suffer from ACEs and be negatively impacted by social determinants of health. Education is a powerful tool that could significantly impact the lives of those struggling with these conditions. Educating the parents of children of the importance of seeking healthcare, educating the children on the importance of reporting any conditions in which they feel unsafe, and educating other professionals on how to watch for signs and symptoms of abuse and neglect in children can all prevent admission of children to the pediatric intensive care unit.

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