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The Effect of Neighborhood Safety on Childhood Mental and Behavioral Health Problems

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Scholarship in Medicine Final Report (2023)

Abstract

The correlation between socioeconomic status (SES) and adverse childhood experiences (ACEs) with mental and behavioral health problems is well documented, however the connection between neighborhood safety and mental and behavioral health problems is not well understood. This study analyzes the impact of neighborhood safety on childhood mental and behavioral health outcomes. Data collected by the National Survey of Children's Health (NSCH) was used for this study and statistically analyzed using IBM SPSS software. A strong connection was found between poverty level and childhood mental and behavioral health outcomes, where those who were more impoverished had higher percentages of children experiencing mental and behavioral health problems, as well as less access to care than those who had higher SES status. In addition, children reported a higher prevalence of mental and behavioral health problems when the perceived level of neighborhood safety decreased. Interestingly, adults with higher levels of education reported feeling less safe in their neighborhoods. Additionally, children with more than one ACE reported receiving less care than children with one ACE. These findings show the impact that neighborhood safety has on a child's mental and behavioral health, while also providing an area for early intervention and prevention of childhood mental health disorders.

Introduction

Childhood neighborhood safety seems to have a correlation to adverse childhood experiences (ACEs) and mental health and behavioral outcomes. Depending on socioeconomic status (SES) and childhood safety, ACEs may be more prevalent and linked to worse mental health outcomes. Studies have shown that families that have a lower SES are more likely to have children with common mental health conditions. These conditions include

anxiety/depression, attention-deficit-hyperactivity disorder (ADHD), and/or disruptive behavior.¹

Adverse childhood experiences are defined as traumatic events that occur when a child is under the age of 18. These traumatic events may include experiencing physical abuse or neglect, sexual abuse, emotional abuse, or witnessing domestic violence, substance abuse, incarceration, or mental illness of a family member in the home.² The connection between neighborhood safety and ACEs, as well as their impact on the mental health of children has been understudied. Even though it has been estimated that one-half to two-thirds of individuals have experienced at least one ACE, those from disadvantaged groups have experienced an unevenly increased number of ACEs.² Children that experience ACEs are more susceptible to difficulties with behavioral development or mental health later in life.¹

There have been few studies on the relationship between the safety of a neighborhood relating to child mental health outcomes. One study showed that when a parent perceived low social support/trust of their neighborhood, their children had higher odds of having anxiety/depression or ADHD/disruptive behavior compared to children whose parents perceived higher social support/trust in their neighborhood.³

Our study aimed at understanding how a child's neighborhood safety impacts their mental health and behavioral development, how SES impacts access to mental health treatment, and how the number of ACEs correlates with the mental and behavioral outcomes of children. Additionally, we wanted to see if there was a connection between the highest education level of an adult in the home and neighborhood safety. If there are relationships

determined among neighborhood safety, socioeconomic status, ACEs, and mental and behavioral health outcomes, then there may be opportunity for early interventions to address these variables, which may lead to better childhood mental health outcomes in the future.

Research Questions

RQ1. What is the difference in mental health between children (ages 3-17) with lower socioeconomic status (SES) vs children (ages 3-17) with higher SES?

RQ2. What is the correlation between children's mental health and neighbor safety in 2021?

RQ3. What is the association between SES and access to mental health care for children (ages 3-17)?

RQ4. How does the number of ACEs predict mental health and behavioral developmental outcomes?

RQ5. What is the correlation between the highest education of adults in a household and the safety of the neighborhood in 2021?

Methods

Data Collection

The data we used is from the National Survey of Children's Health (NSCH). The NSCH is sponsored by and under the direction of the U.S. Department of Health and Human Services, Maternal and Child Health Bureau (MCHB), and Health Resources and Services Administration (HRSA). The United States Census Bureau conducts the National Survey of Children's Health. The questionnaires are conducted annually and may be completed online or by mail. The data collection provided the following instruments to increase responses: web instrument (English and Spanish), paper instrument (English and Spanish), telephone

questionnaire assistance and email questionnaire assistance. Participants were mailed an invitation to fill out an online survey if they had children 0-17 years of age in the household. From each eligible household a child was selected at random to have the topical questionnaire. Approximately 106,000 households were screened for age-eligible children and 62,010 children reported on completed screeners. The screeners included questions of age, sex, SES, race, and special healthcare needs. Of those children who reported, 50,892 child-level topical questionnaires were completed. There was a cash incentive of \$5.00 provided to 90% of those that received the initial screener questionnaire. This was to encourage completion of the survey.

Our variables include: adverse childhood experiences (ACEs), highest educational level of parents in the home, socioeconomic status, neighborhood safety, nationwide, and age. Inclusion data includes children ages 3-17. We have included data from 2021 and excluded data from outside of that year for consistency. We focused on national data and did not focus on a particular state or demographic.

Data Analysis

To answer RQ1, an unpaired t-test was implemented to determine the difference in mental health of children between lower and higher SES status. We have several pieces of literature that focus on stress and mental health relationships, which will help us explain how SES affects mental health. A chi-square test was used to answer both RQ2 and RQ3. This test helps determine whether there is a discrete correlation between two variables or if it is by chance. SES and access to mental health could be correlated or there could be something deeper to their connection, so a chi-square test is really useful in determining what variables are leading to the most impact. To answer question RQ4, an independent t-test was used.

This test will allow us to determine how the dependent variable (mental health and behavioral development) is impacted by ACEs. A Spearman correlation test was used to answer RQ5.

Results

To assess the relationship between socioeconomic status (SES) with childhood behavioral and mental health outcomes (RQ1), we performed an unpaired t-test. We found that there was a significant relationship ($t = -12.396, p = <.001$) between children not having an emotional, development, or behavioral problem, when the average of the Family Poverty Scale was taken, vs having 1 or more problems (see Table 1). The negative t value indicates that as those on the Family Poverty Scale increased, the number of children's health problems decreased.

Table 1: Children, Age 3-17 years, with a Mental/Behavioral Condition Compared to an Average of Family Poverty Ratio (range 50%-400%)

Child has:	n	Mean	SD
1 or more MEDB problem and/or qualifies on CHSHCN Screener emotional, behavioral, or development criteria	9584	271.6	122.3
No current emotional, behavioral, or developmental problems	27816	289.0	117.0

Abbreviation: SD, Standard Deviation

Children's mental health was then analyzed against neighborhood safety to determine if there was a trend (RQ2). A chi-square test was applied and the data was determined to be statistically significant ($\chi^2_{36328} = 172.22, p < .001$). We found that mental, behavioral, and

emotional health problems for children were higher when the level of neighborhood safety was lower. 23.9% indicated “definitely agree” to living in a safe neighborhood and having at least one MEDB problem, whereas 35.9% indicated “disagree” to living in a safe neighborhood and having at least MEDB problem.

We performed a chi-square test to assess the association between socioeconomic status and access to mental healthcare for children (RQ3). We found that between the two variables, there was a significant relationship ($\chi^2_{3,37400} = 38.960, p < .001$), where children that were 0-99% income based on federal poverty status, 13.3% of children age 3-17 years with a mental or behavioral health condition received treatment of counseling. Of the children that were 100-199% federal poverty level (FPL), 16.8% received treatment or counseling. Of the children that were 200-399% FPL, 30.3% of children received treatment or counseling, and of the children 400% FPL or greater, 39.7% received treatment or counseling.

Comparing the number of childhood ACEs to outcomes of children ages 3-17 years with a mental/behavioral condition who receive treatment or counseling (RQ4), we found that the prevalence decreased from 1.46 for one ACE to 1.42 for two ACEs ($t = 1.969, p = .049$) using an independent test (Table 1).

Table 2: Percent of Children, Age 3-17 years, with a Mental/Behavioral Condition Who Receive Treatment or Counseling

Number of ACEs	n	Mean	SD
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1	1374	1.46	0.498
2	862	1.42	0.493

Abbreviation: SD, Standard Deviation

^astatistically significantly different when more than one ACE was reported ($p < .001$)

When investigating the correlation between the highest education of adult in a household and the safety of the neighborhood in 2021 (RQ5), a Spearman correlation indicated a small but significant correlation ($r = -.121, p = .001$) where the highest education of adult in household did have an impact on neighborhood safety. A negative correlation was found between adult education and neighborhood safety, indicating that those with a lower education level perceived a higher level of neighborhood safety and vice versa.

Discussion

In our study, we wanted to identify how SES impacts the mental, behavioral, and emotional well-being of children. We found that poverty levels did have a significant impact on mental, behavioral, and emotional well-being. The Family Poverty Scale was averaged over a range of 6 implicates (ranging from 50%-400%). Being 400% on the poverty scale would indicate someone with much higher SES compared to those who were 50% on the poverty scale. When averaged, it was found that 27,816 children reported not having an emotional, developmental, or behavioral health problem compared to the 9584 that did. A negative t value of -12.396 was also found, indicating that the higher on the poverty scale the family was, the less likely a child would report a health problem. We also determined that there was a higher prevalence of children requiring mental health care when they were higher on the poverty scale and found a nice linear progression showing those lowest on the poverty scale had 16.8% of

children receiving treatment whereas those highest on the scale had 39.7% of children receiving treatment. These data indicate that the SES of a family does impact the mental, behavioral, and emotional well-being of children and is consistent with literature.¹ It is interesting to find that there are more children in treatment when they are higher on the poverty scale. This finding could indicate that those with higher SES are able to afford care for children than those lower on the SES.³ We had originally hypothesized that it would be more difficult for those on the poverty scale to receive treatment due to barriers in income, insurance, and transportation, and our data confirms this.³

In order to better understand these findings, we further investigated how exactly SES impacts children in regard to mental, emotional, and behavioral health. Adverse childhood experience has been shown to be strongly linked to psychiatric problems and found to be high for those lower on the SES level.⁴ The data also shows that those with more than one ACE were seeking treatment and counseling less (table 1). This seems to contradict the rational that with more ACEs, the need for mental health counseling becomes greater. The connection between ACEs and mental and behavioral problems is complicated by the fact there are numerous other factors that play into this connection. Thus, based on these findings, we wanted to focus more on the urban population since there is such a huge disparity in SES and neighborhood safety. It has also been shown that neighborhood safety and mental health problems are connected.⁵

We looked at the connection between neighborhood safety and childhood mental health. Our data indicates with significance ($\chi^2_{36328} = 172.22, p < .001$) that child mental, behavioral, and emotional health problems increase as the neighborhood level of safety decreases. 23.9% of those in safer living conditions stated they had mental and behavioral problems whereas

35.9% reported having mental and behavioral problems and disagreed to living in a safe neighborhood, which is consistent with literature.⁶ These data may help explain why treatment options were slightly, but significantly, less for those with more ACEs due to not feeling safe in their ability to get treatment.

Based on this finding, we looked further into how social factors could affect this feeling of neighborhood safety. Education of parents in the household has been shown to be connected to SES and those with less education have worse SES outcomes.⁷ Our data shows that those with higher levels of education actually had a lower perceived level of safety than those with lower levels of education ($r = -.121, p = .001$). This finding was not what we were expecting, since education is strongly connected to SES.⁷ What this finding could indicate is that higher levels of education allows one to know whether they are living in a safe neighborhood or not; it allows these individuals to educate themselves on what constitutes a safe neighborhood. Due to this finding, it could help explain why those with more ACEs would seek help less--it fortifies the idea that these individuals don't have the education on what access to care is available to them nor the security in pursuing treatment if they do not feel safe.

Conclusion

The study design limitations include having individual data. The surveys were completed primarily online 94% while some did complete a paper instrument. Therefore, if one did not have a computer or internet access, they may have been less likely to complete the survey. There were also limitations within the surveys themselves, as we relied on those answering the surveys to do so honestly. We would also like to consider that there may be children with undiagnosed mental health conditions which could be a result from lack of health insurance or access to mental

healthcare. The datasets that were used only included data collected for the year 2021 and only included children ages 3-17 years.

The study process limitations include not being able to identify causal relationships, particularly for research questions 2 and 3. We were able to identify trends in the data, however the exact cause for those trends were not able to be directly identified. For example, our results for research question 2 found a significant correlation between decreased neighborhood safety and increased mental and behavioral conditions among children. However, these data do not specifically say the direct cause of this. As with research question 3, the data is not able to provide specifics related to the cause of lack of treatment. We could interpret the data being due to having a lower SES increasing hardships which may contribute to increased mental health and behavioral conditions. However, the data does not provide enough information to define the specific cause.

Altogether, the findings present an interesting connection between neighborhood safety, SES, ACEs, and mental and behavioral health problems. We found that there is a connection between mental health problems and SES, but more strikingly how much neighborhood safety impacts individuals perceived access to care. Social factors, such as education, seem to play a big role in knowing what level of safety there is. This seems to impact a family's ability to know what resources they have and also to be educated on childhood ACEs/interventions to prevent mental and behavioral problems. This shows the need for more education and resources to support families and help educate them on early interventions that may prevent the prevalence of these problems. Future studies should look more into exactly how these social factors impact one's knowledge of resources and how this impacts mental and behavioral problems. In addition, testing may be performed to analyze different characteristics of a neighborhood, other than

safety, that may also be impacting the mental and behavioral outcomes of children. If a causal relationship can be determined from these variables and childhood mental health, then there is a possibility for early intervention and prevention of these issues.

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