Maternal Childhood Experiences and Rapid Repeat Pregnancy in a Low-Income, Urban Cohort

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Research article

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Abstract

Background

Rapid repeat pregnancy (RRP; < 18 months between pregnancies) is associated with higher risk of adverse maternal and child health outcomes. Drawing from attachment theory, we sought to examine the association between maternal childhood neglect and RRP as well as identify a protective childhood experience—caregiving—that reduces the impact of childhood neglect for RRP.

Methods

Data for the current study came from a prospective clinic-based cohort study conducted in 2017–2018 in a South-Central U.S. state. The sample includes 111 pregnant women (ages 17–38) who had been pregnant more than once. Poisson regression analysis was used to examine the associations between maternal childhood experiences and number of RRP.

Results

On average, participants reported 1.02 RRP. Approximately 35% of the sample reported experiencing neglect during childhood. Controlling for sociodemographic, psychological, and childhood characteristics, childhood neglect was positively associated with RRP, whereas caregiving responsibilities during childhood was negatively associated with RRP. Interaction results indicate that the association between childhood neglect and RRP only holds for those who did not have caregiving responsibilities during childhood.

Conclusions

Study findings highlight the importance of childhood experiences for RRP. Further research is needed to explore the moderating effect of caregiving and its implications for (1) treatment of childhood neglect and (2) prevention of RRP.

Background

Rapid repeat pregnancy (RRP; < 18 months between pregnancies) increases risks for adverse birth outcomes for both mothers and babies including preterm delivery, stillbirth, and maternal and infant morbidity and mortality [1-3]. Typically, the shorter the interpregnancy interval (IPI), the higher the risk for poor birth outcomes [4-6]. According to the 2006-2010 National Survey of Family Growth, more than one-third of second and higher order pregnancies are RRP [7].
Prior studies have identified sociodemographic risk factors for RRP, including younger age, unmarried status, lower income or educational status, and history of violence [1, 8-9]. Inconsistent contraceptive use and lack of family planning also predict short IPI [10]. Yet despite the public health risks associated with RRP, the underlying processes surrounding closely spaced pregnancies remain under-studied [11-12].

In this study, we consider the role of maternal childhood experiences—both positive and negative—in birth spacing outcomes. Although research on this topic is scant, evidence suggests that mothers who experienced interpersonal violence in childhood are more likely to experience RRP [13-14]. Childhood adversity is common in the U.S.; nationally, approximately one in ten children have experienced three or more Adverse Childhood Experiences (ACEs) [15] before reaching the age of 18 [16]. Childhood neglect, the most common form of child maltreatment [17], is associated with long-term adverse consequences for social, emotional, and behavioral well-being [18]. Although childhood abuse and neglect are often co-considered when examining consequences, they differ in a potentially meaningful way for pregnancy; childhood neglect is associated with both more severe psychological problems and ability to form secure attachments in close relationships [19-20]. Attachment refers to the human ability to form bonds of affection and love towards significant others [21]. The majority of children who experienced childhood neglect are classified as having insecure or disorganized attachment [22] and are particularly at risk for an anxious-ambivalent attachment style [19-20]. Those with an anxious-ambivalent attachment style tend to highly desire intimacy but fear rejection and separation [23]. Childhood neglect, therefore, may result in higher risk for RRP because although mothers who experienced neglect are seeking love and affection, their inability to form secure attachments with their infants may lead them to have additional children in a short period of time. This hypothesis is supported by prior research indicating the experience of childhood neglect is associated with greater risk of adolescent pregnancy [24].

Of course, not all childhood experiences are negative. Less studied, however, is the role of protective factors that can buffer the impact of childhood adversity for later life outcomes [25]. As our focus is the identification of a positive childhood experience that may buffer the impact of childhood neglect, we examined the impact of caregiving roles during childhood. Caregiving during childhood is common; approximately 1.4 million children or adolescents provided caregiving for a family member in 2005 [26]. Sibling care is the most common form of family caregiving; older siblings provide care for younger siblings across cultures [27]. Sibling care often entails activities such as monitoring to keep younger siblings from harm, assisting with feeding, getting siblings ready for school, and helping with homework [28]. Studies on the consequences of family caregiving during children are mixed; some evidence suggests that when responsibilities are excessive (e.g., more than 20 hours per week for several years), children report higher stress and academic difficulties [29-31]. Yet there is considerable research highlighting the benefits of family caregiving, particularly among disadvantaged youth [30, 32]. Among adolescents experiencing disruption and hardship in their own lives, the act of caregiving for others fosters feelings of closeness with others and positive self-identity [33].

No studies, to our knowledge, have examined whether childhood experiences are associated with RRP. The current study addressed these gaps by examining the impact of childhood neglect on number of RRP
in a low-income, urban sample of women recruited from two university-affiliated perinatal clinics. Additionally, we examine the moderating effect of caregiving during childhood.

**Materials And Methods**

Data for the current study came from a longitudinal clinic-based cohort study conducted in 2017–2018 involving 177 pregnant women (ages 16–38) recruited from two perinatal clinics in a metropolitan area in a South-Central U.S. state. The participating clinics serve a racially diverse, socioeconomically disadvantaged, and medically-underserved patient population. The sample for the current study was restricted to the 111 participants who have been pregnant more than once and responded to the first two survey waves, conducted in the first and second trimester of pregnancy. Most variables for the current study were assessed in the first wave, though childhood caregiving was assessed in the second wave. The study received approval from the Oklahoma State University Institutional Review Board. All participants provided written informed consent.

**Measures**

The dependent variable, *number of rapid repeat pregnancies*, is a count variable summing the number of times the respondent has been pregnant within 18 months of a prior pregnancy.

The primary independent variable, *childhood neglect* was measured with two questions indicating an absence of love and caretaking: “When you were growing up, during your first 18 years of life, did you often feel that: (1) No one in your family loved you or thought you were special?; and (2) You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?” Responding “yes” to either question was coded as neglect = 1; “no” responses were coded as 0. *Childhood caregiving* was coded as a dichotomous variable based upon two questions: (1) “While you were growing up were you responsible for taking care of your siblings, or other children that lived with you?” and (2) “While you were growing up, did you provide unpaid help or care to anyone in your household who had a chronic illness, disability, was frail or elderly?” “Yes” responses to either question were coded as 1; “no” responses were coded as a 0.

A number of control variables associated with childhood neglect, caregiving responsibilities, and/or attachment style were included in the analysis. Because children who experience at least one type of adversity, such as neglect, are more likely to experience other types (Wilkins), we included an indicator variable for *ACE score above the mean* (1 = above the mean; 0 = below the mean), drawing from the 10-item ACE questionnaire [15]. Because insecure early attachment [34] and childhood neglect [35] are associated with mental health, we also included an indicator for *mental health problems* coded such as 1 = a diagnosis of a mental health problem and 0 = no diagnosis of a mental health problem. As women with no or fewer siblings during childhood would have fewer caregiving responsibilities, we controlled for *number of siblings*. Because marital status is associated with caregiving during childhood [30], we included an indicator variable for whether or not the respondents’ *parents were married* (1 = ever married;
We also included demographic controls of participant age (coded as a continuous variable) and race (1 = non-Hispanic white; 0 = race/ethnicity other than non-Hispanic white).

**Analysis**

We used Poisson regression analysis to examine the association between childhood neglect, caregiving responsibilities, and number of rapid repeat pregnancies. Poisson is an appropriate regression method when the dependent variable based on count data may have a large number of zeros and a low arithmetic mean (< 10) [36]. Model 1 includes all study variables, and Model 2 includes the interaction between childhood neglect and caregiving.

**Results**

Table 1 presents descriptive statistics for study variables for the full sample and by childhood neglect. Approximately 35% of our sample reported experiencing childhood neglect (physical and/or emotional). Overall, the sample reported about one rapid repeat pregnancy (M = 1.02), with the neglect group reporting marginally more RRP than the no neglect group (M = 1.11 vs. M = .96), though the difference was not significant. Significantly more participants in the neglect group reported having caregiving responsibilities during childhood than those who did not experience neglect (62% vs. 41%; p < .05). Mean ACE scores also differed significantly by group; 87% of those who experienced neglect reported an ACE score above the mean, compared to 17% of those who did not experience childhood neglect (p < .001).

No additional study variables differed by neglect status. Nearly a quarter (24%) of the sample had been diagnosed with a mental health problem. The average age of the sample was 26.73. The average number of siblings reported by participants was 3.12. Approximately 38% of the sample reported non-Hispanic white as their racial/ethnic identity, and 57% of the sample reported that their parents had ever been married.

Associations between childhood experiences and RRP are shown in Table 2. Findings suggest that experiencing childhood neglect was marginally associated with having more RRP (b = .53; p < .10), whereas being a caregiver during childhood was marginally associated with fewer RRP (b = -.43; p < .10). A mental health problem diagnosis was marginally associated with having more RRP (b = .40; p < .10) and having more siblings during childhood was associated with having more RRP (b = .09; p < .01).

Adding an interaction term between childhood neglect and caregiving during children to the model revealed a buffering effect of caregiving (b = -.91, p < .05). To visually depict the interaction, Fig. 1 shows the predicted count of RRP by neglect and caregiving status. Notably, the values of predicted count are negative for three of the four groups. The only group with a positive prediction of RRP are the group that is comprised of participants who experienced childhood neglect and were not responsible for caregiving during childhood.

**Discussion**
Maternal childhood experiences are associated with RRP. We focused on childhood neglect as well as childhood caregiving because both have been associated with adult attachment [20, 30]. We hypothesized that women with insecure or disorganized attachment would have higher rates of RRP because although they desire love and attachment, they have more difficulty in achieving them. We found marginal support for childhood experiences independently; women who experienced childhood neglect had marginally more RRP whereas women who provided care during childhood had marginally fewer RRP. When considered together, however, we found that women who experienced childhood neglect and did not provide care for others during childhood reported significantly more RRP than other women.

Previous studies have not considered insecure or disorganized attachment styles as a predictor of RRP, though a prior study of pregnant couples found that adults with high levels of anxious-ambivalent attachment styles were more likely to report their pregnancies as unplanned [37]. Typically, RRP studies focus on factors associated with contraceptive knowledge or access [10], particularly among adolescents [38–39]. Yet, this neglects the role that emotions play in reproductive or childbearing behaviors. Even when pregnancies are reported as unintended, they are not always unwanted. For example, adolescents at greatest risk for an unintended pregnancy are those who believe that having a baby would improve their lives [40–41]. Integrating attachment theory into the study of reproduction therefore has the potential to explain some of the high rates of unintended or rapid repeat pregnancies in the U.S. This study uniquely contributes to our understanding of RRP not only because we examine the role of both positive and adverse childhood experiences but also because we posit that lacking a history of secure attachment relationships explains our finding that RRP are more common among women who experienced childhood neglect in the absence of caring for others. Lacking love and secure attachments with other family members during childhood results in anxious-avoidant attachment during adulthood, which is associated with fear of intimacy and abandonment despite a strong desire for closeness [42].

This study has several limitations. First, we relied on retrospective reports of childhood experiences, which are subject to recall error and under-reporting of adverse experiences [43]. Such under-reporting is likely to have led to conservative estimates of the association between childhood neglect and RRP, however. Second, children who are less adjusted are less likely to be asked to provide care and less likely to volunteer than children who are more well-adjusted [30], so it may be that the association of family caregiving responsibilities is more due to individual differences such as resilience or emotion regulation. Further, our study did not include a measure of amount of time spent in a caregiving role. There is a curvilinear effect of the amount of time spent caregiving; the benefit is highest for children who spend a moderate amount of time providing care [30]. To overcome these study limitations, prospective data spanning several decades from early childhood into adulthood and additional measures related to childhood neglect and caregiving would be necessary.

Conclusions

Despite limitations, the current study's findings provide evidence that maternal childhood experiences are associated with RRP and is the first known study to suggest that this association may be due to the far-
reaching consequences associated with a lack of secure attachment relationships during childhood. The implications of this study are profound; reducing exposure to adverse childhood experiences such as neglect is critically important for maternal and child well-being. Women who were exposed to neglect during childhood and did not have compensatory protective experiences such as care provision of siblings or other family members may be at heightened risk for RRP because they are attempting to fill their needs for close attachment relationships. Unfortunately, because childhood neglect is more common to occur for children who were born closely spaced with their siblings [44], this cycle is likely to continue to perpetuate without intervention.

List Of Abbreviations

RRP: Rapid Repeat Pregnancy; IPI: Inter-Pregnancy Interval; ACE: Adverse Childhood Experiences

Declarations

Ethics approval and consent to participate: The Oklahoma State University Institutional Review Board (IRB) approved this study (#HS-18-17).

Consent for publication: Not applicable.

Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author upon request.

Competing interests: The authors declare that they have no competing interests.

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Authors’ contributions: KS conceptualized the study, supervised data collection, and wrote the majority of the manuscript. CJ wrote the first draft of the background section of the manuscript. ST analyzed the data and interpreted the results. All authors read and approved the final manuscript.

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Tables
Table 1. Descriptive Statistics by Childhood Neglect Status among Women who have been Pregnant More than Once.

|                                      | Total (n=111) | No Childhood Neglect (n= 72) | Childhood Neglect (n= 39) | Range | p<sup>a</sup> |
|--------------------------------------|---------------|------------------------------|---------------------------|-------|---------------|
|                                      | M/% SD        | M/% SD                       | M/% SD                    | Min   | Max           |
| Experienced childhood neglect        | 35%           |                              |                           |       |               |
| Total number of RRP                  | 1.02 1.12     | .96 1.09                     | 1.11 1.17                 | 0     | 4             |
| Caregiver during childhood           | 48%           | 41%                          | 62%                       | 0     | 1 *           |
| ACEs score above sample mean         | 41%           | 17%                          | 87%                       | 0     | 1 ***         |
| Mental health problem diagnosed      | 24%           | 18%                          | 35%                       | 0     | 1             |
| Age                                  | 26.73 5.40    | 26.26 5.16                   | 27.60 5.80                | 17    | 38            |
| Total number of siblings             | 3.12 2.53     | 3.35 2.86                    | 2.68 1.73                 | 0     | 18            |
| White                                | 38%           | 34%                          | 46%                       | 0     | 1             |
| Parents ever married                 | 57%           | 54%                          | 61%                       | 0     | 1             |

<sup>a</sup>p-values based on chi-square for categorical variables and t-test for continuous variables.

* <i>p < 0.05</i>, ** <i>p < .01</i>, *** <i>p < .001</i>.
Table 2. Poisson Regression Models Estimating Total Count of Rapid Repeat Pregnancies.

|                                      | (1)     | (2)     |
|--------------------------------------|---------|---------|
| Experienced childhood neglect        | .53*    | .92**   |
|                                      | (.28)   | (.36)   |
| Caregiver during childhood           | -.43*   | -.10    |
|                                      | (.24)   | (.31)   |
| ACEs Score Above Mean                | -.39    | -.73*   |
|                                      | (.30)   | (.36)   |
| Mental Health Problems               | .40*    | -.12    |
|                                      | (.23)   | (.38)   |
| Neglect X Caregiver                  |         | -.91*   |
|                                      |         | (.46)   |
| Age (years)                          | -.03    | -.02    |
|                                      | (.02)   | (.02)   |
| Total Number of Siblings             | .09**   | .10**   |
|                                      | (.03)   | (.04)   |
| White                                | .18     | .19     |
|                                      | (.25)   | (.25)   |
| Parents ever married                 | .00     | .08     |
|                                      | (.24)   | (.25)   |
| Constant                             | .42     | .08     |
|                                      | (.54)   | (.58)   |

N  111  111

Standard errors in parentheses.
+ p < 0.10, * p < 0.05, ** p < .01, *** p < .001.
Figure 1

Predicted Count of Rapid Repeat Pregnancies by Childhood Neglect and Caregiving Responsibilities.