# Is There a Causal Link Between Maltreatment And Adolescent Pregnancy? A Literature Review

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***CONTEXT:*** *Despite a sizable amount of research addressing the relationship between violence and women's reproductive health, it has not been shown whether there is sufficient evidence of a causal link between childhood maltreatment and subsequent adolescent pregnancy.*

***METHODS:*** *Three databases (Medline, PsychINFO and SocioFile) were searched for studies published between 1980 and 2000 relating maltreatment and adolescent pregnancy. The review was limited to empirical studies; theoretical articles and those with no women who were aged 21 or younger during the research period or when they experienced maltreatment were excluded.*

***RESULTS:*** *Fifteen articles on the topic were found. All were published after 1989; all but one were cross-sectional, were retrospective and relied on recall. All of the studies dealt with sexual maltreatment, either alone or in combination with other types of maltreatment; few covered emotional abuse or neglect. The studies lacked consistent definitions of the various types of maltreatment. Only one examined adolescent mothers' relationships with men, and none examined relationships with perpetrators. Few dealt with racial and ethnic differences related to violence. All lacked a specific theoretical approach. Ten of the studies supported a link between maltreatment and adolescent pregnancy, and five either did not support a link or qualified the relationship. Substance abuse, poor mental health and promiscuity were among the mediating variables examined.*

***CONCLUSIONS:*** *Because recent studies have reached conflicting findings, had methodological weaknesses and lacked theoretical grounding, whether a causal link exists between maltreatment and adolescent pregnancy remains an unanswered question.*

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The relationship between violence and women's reproductive lives is a relatively new line of inquiry. In June 1999, the Centers for Disease Control and Prevention convened a national conference on the topic, with three main objectives: to assess the state of the research, to increase awareness and understanding of the possible associations between violence against women and their reproductive lives, and to lay the groundwork for future research and action. The conference addressed the association between violence and such specific topics as pregnancy intentions, contraceptive use, pregnancy termination and pregnancy outcomes.

Research reported at the conference indicated that violence is present during 4–8% of all pregnancies. In addition, violence is implicated in inconsistent contraceptive use and unintended pregnancy. Finally, evidence about the relationship between violence during pregnancy and pregnancy outcomes, particularly the likelihood of delivering a low-birth-weight infant, is inconclusive. Beside research findings, several methodological recommendations emerged from the conference: to broaden study populations beyond women in battered women's shelters, and include those attending family planning, abortion, and HIV and sexually transmitted disease clinics; to refine data collection methods to improve disclosure of victimization; to obtain additional data on the relationship between violence and intervening variables; and to develop and evaluate more effective screening and intervention programs.[1]

Most research on violence and women's reproductive lives has focused on adults. Whether this research is generalizable to adolescents remains to be seen. Research on maltreatment and adolescent pregnancy has not been as widespread as research on maltreatment and adult pregnancy because of access issues.[2] First, access brings with it complex legal and ethical issues related to obtaining permission from parents or guardians for minor adolescents to participate in research. Maltreated adolescents are not likely to be residing in domestic violence shelters, because the permission of the parent or guardian may be required, and the parent or guardian may be the perpetrator or may have knowledge about the maltreatment that he or she does not want to disclose. Second, access brings with it complex legal and ethical issues related to researchers as mandated reporters of child abuse, incest and statutory rape. Third, access is an obstacle because adolescents may hide or deny maltreatment for fear of being removed from their homes, alienating their partners or being placed in foster care.

The overall goal of this study was to determine if there is sufficient research evidence to support a causal link be-

tween childhood maltreatment (including physical, sexual and emotional abuse) and subsequent adolescent pregnancy. To address this goal, we conducted an extensive literature review to answer the following questions: What types of maltreatment have been addressed? How have types of maltreatment been defined? What types of research designs have been used? To what extent do the findings conflict or agree? What research questions remain unanswered? What are the implications for future research?

## METHODOLOGY

For a study to be included in this literature review, it had to involve women who had become pregnant or given birth as adolescents. We limited the review to empirical studies that were published between 1980 and 2000. We excluded theoretical articles and those with no women who were 21 or younger during the cited research period or when they experienced maltreatment. Retrospective accounts from adult women concerning their maltreatment and pregnancies when they were 21 or younger were included. We examined three databases, covering three pertinent areas: medicine (Medline), psychology (PsychINFO) and sociology (SocioFile). One of the authors abstracted each article that met the criteria listed above, and a graduate student and a university faculty member in a related discipline reviewed each abstract for accuracy.

We found 15 empirical articles that addressed the relationship between maltreatment and adolescent pregnancy; all had been published since 1989. The sample sizes varied from fewer than 100 to more than 3,000 (Table 1, page 70). Sexual abuse was the dominant type of maltreatment of interest and was included in all 15 studies. Substance abuse, poor mental health and delinquent behaviors were often addressed as they related to maltreatment and pregnancy. No authors provided information about the perpetrator, and only four made comparisons between racial and ethnic groups in the prevalence or types of maltreatment.

## RESULTS

### The Studies

• Adams and East studied 100 females aged 12–24 who were attending a medical clinic.[3] Half of the women were pregnant; 23% were white, 34% were black, 25% were Mexican American and 18% were of some other race or ethnicity. A 186-item structured interview was used to elicit information about physical, sexual and emotional abuse.

Compared with adolescents who had not been maltreated, those who had been were more likely to report having been pregnant. In addition, the maltreated adolescents were more likely to report using alcohol and tobacco, not liking school, being involved in delinquent behavior, having suicidal thoughts, feeling depressed and not having a father in the home; they also had their first sexual experience at a younger age and had an older first partner. The three types of maltreatment (sexual, physical and emotional) were about equally prevalent across the four racial and ethnic groups. Finally, physical abuse was predictive of adolescent pregnancy, but sexual and emotional abuse were not.

• Boyer and Fine interviewed 535 pregnant or parenting females aged 13–21 from both urban and rural settings, to determine the extent of their sexual and physical abuse.[4] The types of sexual victimization that they had experienced ranged from noncontact molestation (e.g., being forced to view sexual films) to rape. Sixty-two percent had been molested or raped prior to their first pregnancy. Moreover, 67% had experienced at least one of the following types of physical abuse: being hit with an object, being thrown against a wall or being hit with a closed fist. When experiences related to both sexual and physical maltreatment (other than spanking) were included, the proportion of youth who had been victimized rose to 71%.

Adolescents who reported having been maltreated were more likely than were other adolescents to have exchanged sex for money (14% vs. 2%), for a place to stay (14% vs. 1%) or for drugs (11% vs. 1%). Furthermore, the children of maltreated mothers were more likely to have been maltreated than were the children of other women (7% vs. 2%). Twenty-one percent of the maltreated mothers said that they had been reported to child welfare authorities for allegedly abusing their children, compared with 8% of the others.

• In Butler and Burton's exploratory study, 41 young mothers were interviewed about their experiences, ranging from sexual coercion to rape.[5] Twenty-two reported a total of 37 incidents of maltreatment. The prevalence of sexual maltreatment in this sample was twice as great as the national estimate for the general population of females aged 18 or younger.

The authors proposed six possible links between early sexual maltreatment and adolescent pregnancy: The pregnancy might have resulted directly from maltreatment; it might have resulted from dysfunctional family patterns; it might have been related to gender and sexual socialization that teaches females that their worth is tied to their sexuality; it might have been the result of low self-esteem, feelings of powerlessness and poor mental health; it might have been planned, so the adolescent could escape an abusive situation; or it might have been related to an interruption in cognitive and emotional development caused by trauma.

• Chandy, Blum and Resnick used a nationally representative database to identify 1,011 females in grades 7–12 who reported that they had been sexually maltreated; a comparison group of 1,011 young women who did not report having been maltreated was randomly selected from the same data set.[6] The maltreated girls were more likely to have been pregnant and more likely to disclose the following adverse outcomes: poor school performance, thoughts about or attempts at suicide, eating disorders and substance use. Factors that were protective against maltreatment included a greater degree of religiosity, perceived good health, caring from adults, living with both biological parents, and having a clinic or nurse present at the school. Risk factors included perceiving that peers use substances in school, mother's use of alcohol, family stress during the last year and worry about sexual coercion.

***TABLE 1. Selected characteristics of studies addressing maltreatment and adolescent pregnancy, 1990–2000***

| Authors/year | Sample | Type of maltreatment | Additional variables | Methodology/ design |
|---|---|---|---|---|
| Adams and East, 1999[3] | N=100; ages 12–24 (mean, 16.5) | Physical (e.g., Have you been hit or beat up?)<br>Sexual (e.g., Has anyone forced you to have sex?)<br>Emotional (e.g., Have you felt worthless or bad?) | Age at first coitus; age at first pregnancy; delinquency; depression; race/ethnicity | 186-item structured interview |
| Boyer and Fine, 1992[4] | N=535; ages 13–21 (mean, 17.6) | Sexual (molestation, coercion, attempted rape, rape)<br>Physical (hit, thrown against wall) | Sex for place to stay; drug or alcohol use | Questionnaire |
| Butler and Burton, 1990[5] | N=41; ages 16–25 (mean, 19) | Sexual (coercion, attempted rape, rape) | Attitudes about sexuality, self-esteem; reasons for pregnancy | Interview |
| Chandy, Blum and Resnick, 1996[6] | N=2,022; grades 7–12 (mean age, 15.3) | Sexual (yes/no) | School performance; suicidal behaviors; eating disorders; substance abuse; pregnancy risk | Secondary analysis using nationally representative database |
| Esperat and Esparza, 1997[7] | N=111; ages 13–20 | Sexual (yes/no) | Feelings about self; sexuality; men; being a parent | Four-item open-ended interview |
| Fiscella et al., 1998[8] | N=1,026; mean age, 18 | Sexual (yes/no)<br>Physical (yes/no; amount of early violence)<br>Emotional (warmth from caregiver/ parent) | Age at first coitus; age at first pregnancy | 33-item structured interview |
| Kenney, Reinholtz and Angelini, 1997[9] | N=1,937; ages 18–22 | Sexual (molestation, coercion, attempted rape, rape) | Race/ethnicity; educational level; marital status | 20-page questionnaire |
| Nagy, DiClemente and Adcock, 1995[10] | N=3,124; 76% were aged 14–16 | Sexual (yes/no) | Truancy; sexual history and behaviors; substance use; violence; mental health | Questionnaire |
| Rainey, Stevens-Simon and Kaplan, 1995[11] | N=200; ages 13–18 (mean, 16.2) | Sexual (yes/no) | Feelings about pregnancy; age at first intercourse; frequency of sex; number of sexually transmitted diseases; frequency of contraceptive use; desirability of pregnancy; fear of infertility; delinquent behaviors | 40-item questionnaire |
| Romans, Martin and Morris, 1997[12] | N=477 adults | Sexual (nongenital contact, nonpenetrative genital contact, penetrative genital contact, penetrative intercourse) | Parental marital relationship; parental health; physical punishment; nonnuclear family; childhood confidante; parent-child relationship | Two stages: mailed survey; interview |
| Roosa et al., 1997[13] | N=2,003; ages 18–22 (mean, 19.9) | Sexual (molestation, coercion, attempted rape, rape) | Social class; race/ethnicity; age at first sex; partner abuse; smoking; prostitution; contraceptive use | Questionnaire |
| Smith, 1996[14] | N=249; grades 7–8 | Substantiated cases of four types of maltreatment before age 12, divided for analysis into any maltreatment, single type of maltreatment, multiple types maltreatment | Family structure; family disadvantage; education; substance use; intimacy issues | Structured interview |
| Stevens-Simon and McAnarney, 1994[15] | N=127; ages 12–18 (mean, 16.1) | Sexual and physical abuse combined into one variable (yes/no) | Substance abuse; social support; stress; depression; prior maltreatment; infant health | Structured interview |
| Stock et al., 1997[16] | N=3,128; grades 8, 10 and 12 | Sexual (yes/no)<br>Physical (yes/no) | Race/ethnicity; parental supervision; education; substance use; suicidal ideation; body image, sexual history; contraceptive use | 120-item questionnaire |
| Widom and Kuhns, 1996[17] | N=1,196; mean age, 28 | Sexual (yes/no)<br>Physical (yes/no)<br>Neglect (yes/no) | Social class; age; promiscuity; prostitution | Two-hour structured interview; prospective matched cohort design |

*Note:* Superscript numbers refer to the reference list (see page 74).

• Esperat and Esparza conducted qualitative open-ended interviews with 111 adolescent mothers and discussed their relationships with men and their feelings about being parents.[7] When maltreated mothers were compared with those who were not maltreated, the former were more negative and confused about their relationships with men (particularly with older men) than were the latter, were equally positive about parenthood and were more fearful for their children.

• Fiscella and coauthors used a 33-item structured interview with 1,026 pregnant black females (whose mean age was 18) to measure childhood sexual, physical and emotional abuse.[8] The research question addressed the effect of childhood abuse on the women's age at first intercourse and age at first pregnancy. Only sexual abuse predicted age at first pregnancy; sexual abuse and the number of incidents of physical abuse predicted age at first intercourse.

• Kenney, Reinholtz and Angelini studied 1,937 white (non-Hispanic), black, Mexican American and Native American women aged 18–22.[9] More than one-third of the women had been sexually maltreated. Compared with their peers who had not been maltreated, the women who had been coerced into sex or raped were more likely to have had an adolescent pregnancy. Minority women were more likely than white women to have been coerced into sex, but less likely to have been raped.

• Nagy, DiClemente and Adcock surveyed 3,124 females, 76% of whom were aged 14–16.[10] The young women who reported previous sexual maltreatment were more likely than those who did not to have been pregnant. In addition, they initiated sex at a younger age and were more likely to have consumed illegal substances, to have been depressed and to have considered suicide. Young women who had been sexually maltreated were more likely than others to report having been assaulted during the last year.

• In a study of pregnancy risk among 200 women aged 13–18, Rainey, Stevens-Simon and Kaplan found no differences in age at first voluntary intercourse, frequency of intercourse or consistency of contraceptive use between those who had been sexually maltreated and those who had not.[11] However, maltreated females were more likely to report having wanted to become pregnant, having boyfriends who wanted them to become pregnant and fearing infertility because of gynecologic and obstetric problems resulting from repeated sexual abuse. The authors concluded that childhood maltreatment could put girls at higher risk of adolescent pregnancy by fostering a desire to be pregnant to erase fears of abuse-related infertility.

• Romans, Martin and Morris used surveys and interviews with a random sample of 252 adult women who reported they had been sexually maltreated as children or had been pregnant as adolescents and 225 who said they had had neither of these experiences.[12] Women who reported having been sexually maltreated were significantly more likely than the others to have been pregnant as adolescents. Moreover, as the severity of maltreatment increased (from nongenital contact to penetrative intercourse), the likelihood of pregnancy increased. Four factors predicted adolescent pregnancy, regardless of whether the adolescent was maltreated: living in a nonnuclear family, having parents who argued or fought, being physically punished after age 12 and not having had a confidante during childhood. Only severe sexual maltreatment (rape) predicted adolescent pregnancy independent of these four variables.

• Roosa and colleagues, who surveyed 2,003 women aged 18–22, found that sexually maltreated women were significantly more likely to have been pregnant as adolescents than were their counterparts who had not been maltreated (36% vs. 21%).[13] Forty percent of the women who had had intercourse before age 16 had an adolescent pregnancy, regardless of whether they had been maltreated. Women who had been victimized and had then had early sexual intercourse had the highest adolescent pregnancy rate (50%).

The authors also reported that regardless of whether the women were maltreated, those who became pregnant before age 18 were more likely than those who did not to be of low socioeconomic status; to have smoked as an adolescent; to have exchanged sex for alcohol, drugs or money during adolescence; to have had sex on the first date; to have used no contraceptive method at first intercourse; and to have had two or more partners in the year after first sexual intercourse. Maltreated women were more likely than others to have consumed alcohol and had sex with a stranger as an adolescent.

• Smith interviewed 249 urban adolescent females every six months for four years.[14] All were in seventh or eighth grade when the study began. They were asked about their experiences with four types of maltreatment (including sexual) and pregnancy. A higher proportion of adolescents who had been maltreated than of those who had not been maltreated became pregnant (62% vs. 40%). The risk for pregnancy did not seem to be related to the type of maltreatment, but rather to whether the young women experienced multiple types of maltreatment. The author attributed the link between maltreatment and adolescent pregnancy to educational disadvantage, early substance use, disorganized family structure and an early search for sexual intimacy. Smith reported that a multiplicity of types of abuse, rather than severity of abuse, predicted adolescent pregnancy.

• Stevens-Simon and McAnarney, who interviewed 127 pregnant black 12–18-year-olds, found that 33% reported having been physically or sexually maltreated prior to becoming pregnant.[15] Those who had been maltreated had higher stress and depression scores, rated their families as less supportive and reported more alcohol and drug use during pregnancy than did those reporting no maltreatment. There were no differences between groups in weight gain during pregnancy or in the amount of prenatal care received. However, maltreated adolescents were significantly more likely to have had low-birth-weight and gestationally immature babies.

• Stock and coauthors asked 3,128 young women in grades eight, 10 and 12 to complete a 120-item written sur-

vey about their experiences with sexual and physical maltreatment and about the number of times they had been pregnant.[16] Respondents who had been either sexually or physically maltreated were twice as likely as others to have been pregnant. The youth who had experienced both types of maltreatment were four times as likely to have been pregnant as were those who had not been maltreated.

In addition, compared with those who did not report sexual maltreatment, young women who had been sexually maltreated reported less parental supervision, more physical maltreatment, more school absenteeism, less involvement in extracurricular activities, lower grades, more thoughts about dropping out of school, fewer plans to attend college, greater alcohol and drug use, more thoughts about or attempts at suicide, poorer body images, earlier sexual intercourse, less contraceptive use at their last sexual encounter and more sexual partners.

• Widom and Kuhns studied the relationship between childhood victimization and subsequent risk for promiscuity, prostitution and teenage pregnancy.[17] Between 1989 and 1995, the authors interviewed 676 females (average age, 28) who had been victims of substantiated cases of childhood physical or sexual maltreatment or neglect between 1967 and 1971. The maltreated females were matched with a comparison group of 520 who reported no maltreatment. There were no differences between groups in promiscuity or in the rate of adolescent pregnancy. However, women who had been maltreated were more likely to have engaged in prostitution than were those who had not been maltreated, regardless of the type of maltreatment. In addition, none of the specific types of maltreatment predicted promiscuity or pregnancy.

### Types of Maltreatment Addressed

An issue that emerged while we conducted this review involved the difference between how a variable was operationalized during data collection and how it was handled during data analysis. Because of small sample sizes, two authors had to pool data across types of maltreatment in their analyses. Smith gathered data on substantiated cases of four types of maltreatment, but then entered three dichotomous variables (ever maltreated, experienced single type of maltreatment and experienced multiple types of maltreatment) into the statistical analyses.[18] Stevens-Simon and McAnarney used a similar process when they combined data on sexual and physical abuse into one dichotomous variable labeled "maltreatment."[19] We do not know if other authors pooled data prior to reporting, using a dichotomous variable such as "sexually abused" or "not sexually abused." The following discussion about the types of maltreatment addressed in each study is based on the statistical handling of the variables.

Sexual abuse was studied most often, appearing as a variable in all of the analyses except those in which data were pooled. In eight studies, sexual abuse was the only type of maltreatment addressed.[20] Physical abuse was examined in five analyses.[21] Two studies included emotional abuse,[22] and one covered neglect.[23] Two targeted both sexual and physical abuse;[24] two covered sexual, physical and emotional abuse;[25] and one examined sexual and physical abuse, as well as neglect.[26] None of the studies analyzed all four types of maltreatment.

### Definitions of Types of Maltreatment

Because sexual abuse was the dominant form of maltreatment addressed, we categorized the studies according to three approaches to defining sexual abuse. In the first category are studies that relied on records of sexual abuse cases. Two sets of authors selected samples on the basis of records of substantiated cases of sexual abuse before age 11 or 12.[27]

The second category comprises studies for which the investigators adapted an existing survey instrument. Four research groups chose this strategy to screen for sexual abuse: One used Rew's Childhood Sexual Experiences Scale to classify women as sexually abused;[28] this scale is a seven-item checklist that covers both noncontact and contact sexual abuse experienced by the woman prior to age 18.[29] The other three adapted the Sexual Experiences Survey, by Koss and Oros, to categorize study participants.[30] This survey contains 13 items that assess four levels of sexual abuse: contact molestation, coercion, attempted rape and rape.[31] All three authors used the four levels in their analyses.

In the third category were studies for which the researchers developed new questions or did not specify the source of the questions, which varied along a continuum of specificity. At the end of the continuum with the most open-ended approach, one set of researchers asked participants if they recalled experiencing any event that they considered to be sexual abuse.[32] On the other end of the continuum, five groups of researchers further divided sexual abuse into sublevels, from molestation or nongenital contact to rape or penetrative intercourse.[33]

### Research Designs

One study was longitudinal,[34] and all of the rest were retrospective and cross-sectional. Data were collected through written surveys (seven studies[35]), interviews (seven studies[36]) or a combination of a written questionnaire and an interview (one study[37]). Only three studies used comparison groups; these either were drawn randomly from adolescents in the same database who had not been maltreated[38] or were drawn from county health department and school records and matched on the basis of sex, race and age with the maltreated adolescents, who were randomly selected for participation.[39]

### Conflicts and Agreement in Findings

Conflicting research results added to the complexity of establishing a link between maltreatment and adolescent pregnancy. First, 10 of the studies reported a link between maltreatment and adolescent pregnancy,[40] while five cast doubt on or qualified the existence of such a link.[41]

Of the latter group, Adams and East[42] and Fiscella and coauthors[43] found conflicting results as to what type of

abuse is most likely to predict adolescent pregnancy. While both used convenience samples in medical clinics and adapted their instruments from the same source,[44] Adams and East found that the strongest predictor of pregnancy was physical abuse, while Fiscella and colleagues reported it to be sexual abuse. Further, Romans, Martin and Morris reported that with the exception of rape, sexual abuse did not predict adolescent pregnancy.[45] In contrast, Smith found that adolescent pregnancy was predicted not by type of abuse, but by a combination of multiple types of abuse.[46] And Widom and Kuhns reported no differences between maltreated women and those who had not been maltreated in rates of promiscuity or pregnancy, and concluded that no specific type of maltreatment had greater power in predicting pregnancy.[47] These five studies were able to make complex assessments because they involved more than one type of maltreatment or more than one level of sexual or physical abuse.

In addition, Roosa and coauthors found that only a small proportion of young women who were sexually maltreated became sexually precocious,[48] contradicting previous research by Butler and Burton.[49] These researchers also reported that precocious behavior alone was a strong predictor of pregnancy, as was victimization when it was combined with sexual precocity. Only a minority of those who were sexually maltreated became sexually precocious.

Moreover, Rainey, Stevens-Simon and Kaplan found no difference between maltreated teenagers and others in their age at first voluntary intercourse, frequency of intercourse or consistency of contraceptive use.[50] These findings appear to conflict with those of four other studies that linked previous maltreatment with earlier sexual intercourse or promiscuity.[51]

## DISCUSSION

Our first research question involved the types of maltreatment addressed in the studies examined here. Many authors asked about maltreatment in general or assessed types of maltreatment as dichotomous variables. Because they pooled data, they were unable to address critical questions about how different types of abuse may affect an adolescent's likelihood of becoming pregnant. For example, treating sexual abuse in a dichotomous manner implies that being forced to view sexual films and rape are equally abusive and influential. Treating any type of maltreatment as a dichotomous variable reduces the likelihood of finding a significant relationship with teenage pregnancy.[52]

We observe here that there is a dearth of research on links between nonsexual abuse (e.g., emotional abuse or neglect) and adolescent pregnancy. It is difficult to determine whether past emotional abuse or neglect is also a risk factor for adolescent pregnancy. It is not known if emotional abuse and neglect are risk factors that are separate from sexual and physical abuse. This may be related to the difficulty of operationalizing and documenting nonsexual abuse.

Evidence of emotional abuse and neglect is often not available from government or social service databases because they are not reported as often as physical or sexual maltreatment. However, given the comorbidity of various types of maltreatment, valid and reliable assessment tools are needed to help determine more precisely the roles of various types of maltreatment in predicting adolescent pregnancy.

Our second research question involved how various types of maltreatment were defined. One issue in studying the relationship between maltreatment and adolescent pregnancy is the varying definitions of maltreatment used by different researchers. Here we focused on the definition of sexual abuse because sexual abuse was included in all 15 studies and because it lacks a universal definition.[53] Notably, many studies relied on two instruments that have been shown to be adequate psychometrically (the Childhood Sexual Experiences Scale and the Sexual Experiences Survey). However, both scales require a large enough sample to use a categorical continuum of abuse, from voyeurism or fondling to rape.

Our third research question concerned study design. The overrepresentation of retrospective and cross-sectional studies is a weakness in the research that we reviewed here. Self-reported data on this topic are of questionable validity and reliability, because they depend on recall from traumatized individuals. As the literature that we reviewed pointed out, maltreated women are more likely than others to experience poor mental health, posttraumatic stress syndrome, self-destructive behaviors, repeated victimization, sexual disturbance and substance abuse.

Likewise, the validity and reliability of data gathered by government and social service agencies are questionable, because of the tendency for adolescents to underreport victimization and because of the lack of substantiation of reports of maltreatment.[54] Other potential design problems were small samples, the use of convenience samples, a lack of theoretical underpinnings, absence of a consistent protocol for assessing types of maltreatment, inconsistent definitions of various types of maltreatment, a lack of qualitative and longitudinal research, and a failure to ensure racial and ethnic diversity in study samples.

Although all but one of the studies were cross-sectional and retrospective, several made unique contributions. Adams and East included emotional abuse and made racial and ethnic comparisons in both the frequency of abuse and pregnancy experience.[55] Chandy, Blum and Resnick involved adolescents as young as those in seventh grade, used a large nationally representative sample and used a randomly selected comparison group.[56] Uniquely, Esperat and Esparza addressed adolescent mothers' relationships with men;[57] they stated that relationships with men are often ignored in traditional adolescent pregnancy prevention curricula and programs. Rainey, Stevens-Simon and Kaplan found that some sexually maltreated adolescents desire pregnancy to reassure themselves that their fertility has not been compromised.[58] Such attitudes have been overlooked as an explanation for adolescent pregnancy. Finally, Smith's study was the only one with a longitudinal design, with data collected every six months for four years.[59]

***. . . valid and reliable assessment tools are needed to help determine more precisely the roles of various types of maltreatment in predicting adolescent pregnancy.***

We also asked about conflicting findings. Methodological weaknesses and the lack of specificity and consistency in definitions of various types of maltreatment probably contributed to the lack of consensus on what violence-related phenomena may predict adolescent pregnancy. The differences described above can also be attributed to variations in sample sizes, sample characteristics and the ways in which researchers handled confounding variables during analysis.

Our fifth and sixth questions asked about two related topics: unanswered research questions and implications for future research. Before the many unanswered questions in this area can be addressed, methodological changes are needed, including a broadening of the types of maltreatment addressed; an increase in the racial, ethnic and cultural diversity of study samples; the inclusion of more qualitative and longitudinal research designs; and a discussion in the literature about the most efficient theoretical models, from a variety of disciplinary perspectives, to be applied to this line of inquiry.

A number of questions have yet to be adequately explored: What is the impact of emotional abuse on adolescent pregnancy? What is the impact of neglect on adolescent pregnancy? Is it possible that sexual maltreatment and adolescent pregnancy result from common risk factors? What theoretical models might provide guidance for prevention, intervention or treatment? What methodological advances might improve the quality of the research in this area? And what roles do cultural and ethnic attitudes toward violence play in the link between maltreatment and adolescent pregnancy?

## CONCLUSION

Because of the methodological limitations described above, we cannot conclude that a direct relationship exists between maltreatment and subsequent adolescent pregnancy. It is difficult to generate implications for prevention and practice until there is more support for a causal link. There are a myriad of critically important reasons to screen girls for evidence of maltreatment, but preventing adolescent pregnancy may or may not be one of them. Whether preventing early maltreatment will emerge as a primary prevention strategy for preventing adolescent pregnancy has yet to be determined. Before such a strategy can be put forward, we need more specificity on the types and characteristics of maltreatment that most closely predict adolescent pregnancy, as well as on the roles that mediating variables play in the relationship.

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