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More than Poverty—Teen Pregnancy Risk and Reports of Child Abuse Reports and Neglect

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Abstract

Purpose—To compare risk for teen pregnancies between children living in poverty with no Child Protection Services (CPS) report history, and those in poverty with a history of CPS report.

Methods—Children selected from families in poverty, both with and without CPS report histories were prospectively followed from 1993–2009 using electronic administrative records from agencies including child protective services, emergency departments, Medicaid services and juvenile courts. A total of 3281 adolescent females were followed until age 18.

Results—For teens with history of poverty only, 16.8% had been pregnant at least once by age 17. In teens with history of both poverty and report of child abuse or neglect, 28.9% had been pregnant at least once by age 17. While multivariate survival analyses revealed several other significant factors at the family and youth services levels, a report of maltreatment remained significant (about a 66% higher risk).

Conclusions—Maltreatment is a significant risk factor for teen pregnancy among low income youth even after controlling for neighborhood disadvantage, other caregiver risks and indicators of individual emotional and behavioral problems.

Keywords

Unplanned pregnancy; child abuse and neglect; health disparity; prospective study; poverty

Introduction

Teen birth rates reached a 40 year low in 2013, with a rate of 26.6 births per 1000 for females ages 15 through 19. Despite this progress, the United States continues to have the highest teen birth rate of any developed country.¹ Reduction in teen pregnancy rates remain a priority for multiple reasons. The public cost of teen pregnancy amounted to \$9.4 billion in 2010 alone.² Evidence shows both infants and their teenage mothers have increased risk of poorer health and well-being.³ Adolescent mothers are more likely to leave school and less likely to attend secondary education, which impacts economic opportunity.⁴

Certain subpopulations of youth with histories of trauma seem to be at increased risk of pregnancy. For example, youth in foster care have persistently higher rates of adolescent pregnancy, as much as twice that of the general population.⁵ Retrospective findings suggest that even youth suspected of being victims of maltreatment face increased risk. In a study using linked birth and Child Protective Services (CPS) records in California, Putnam-Hornstein and colleagues demonstrated that adolescent mothers had higher rates of both alleged and substantiated maltreatment reports.⁶ Studies show that a range of childhood adversities significantly contribute to the risk of teen pregnancy, abortion, and rapid repeat pregnancy.^{7,8,9} Males with adverse childhood experiences are more likely to father children born to teenage mothers; this association was found over four successive birth cohorts.¹⁰ Thus far, however, there is little prospective work to guide our understanding of the unique role of adversity in the context of other behavioral and environmental factors that may moderate or mediate the association between parenthood and child abuse and neglect. In contrast, the association of poverty with teenage pregnancy has been well described. Poverty has been identified as both an outcome and a correlate of teen pregnancies¹¹ and is associated with higher rates of multiple child maltreatment reports.¹²

Teen pregnancy risks are complex and multifactorial. While the federal government could spend up to eight times current spending levels to break even with the costs of teen pregnancy, targeted programs addressing teens with the greatest risk factors would have the highest yield.¹³ This study helps to fill the gaps in our understanding of the prospective relationship between child maltreatment and later teen pregnancy taking into account poverty as well as the other indicators of non-sexual risk behaviors that can be used to better target prevention and intervention.

Method

Study Sample

Data for this analysis was drawn from a larger longitudinal administrative data study that tracked a range of service system involvement and outcomes for children with histories of poverty or poverty and maltreatment during childhood. The larger study consisted of three groups of participants (one child randomly selected per family) born 1980–1994: those with a report of child abuse and neglect (CAN), children with families who receive Aid to Families with Dependent Children (AFDC), and children with both CAN and AFDC (n=12409).

The sampling window was 1993–1994. All children age birth through age 11 with a first report of alleged child abuse or neglect were matched to contemporary AFDC files. This created a group with a recent history of family poverty and also a report of maltreatment. One child was randomly selected per family and matched by birth year and city or county residence to children with similar histories of family poverty but no report of maltreatment. It should be noted that data were also available prior to the sampling period for (1) the index child's birth, (2) parental arrest and corrections from the late 1970's on; (3) previous Medicaid files from 1987–1994 for the parent and the child, and (4) parent history of Medicaid reimbursed mental health (87–94). At the close of the parent study, subjects ranged in age from 16 to 27 years. The present study was restricted to female youth who were age 17 by June 2009 to insure complete coverage of health records of pregnancy prior to adulthood (n=4935). The present analyses are limited to the AFDC and the CAN and AFDC groups (n=3337). Finally a small number of subjects had records of pregnancy prior to age 10. While technically possible, this is both outside the range of statistical reports for teen births and less likely to be associated with contact outside the family so these subjects as well as any subject who died prior to age 10 were also dropped from analyses (n=56) for a final sample size of 3281.

Data Sources

All children were followed prospectively through 2009 using electronic administrative records from (1) income maintenance (AFDC then TANF), (2) Children's Division (includes CAN reports, report disposition, record of in-home services, records of foster care), (3) Missouri Medicaid 1993-on, (4) all ER records not limited by payment type (1997 on), (5) juvenile court (1993 on), (6) highway patrol, (7)births, (8) death, (9) special education (matched in 2003 and again in 2006), (10) department of mental health for parent and child (1999 on). Case file data were included from the three largest providers of runaway services in 2006. Addresses at baseline were geocoded and linked to census data at the tract level. There are no gaps in coverage of data with the exception of the runaway shelters where we only have occurrence in 2006 or before. Although data are collected retrospectively, exact dates associated with system contacts with the child protection system, health, income maintenance, juvenile justice, mental health, runaway shelters and special education are used.

Data were linked using a common state level identifier when possible, with matching on identifiers used and cross-checked with other data as well as any estimates of overlap available in the literature. Data cleaning was done by comprehensive review of data entry procedures and uses for each contributing agency (Department of Health, Mental Health, Social Services, Juvenile Court, Special Education) as well as reference to existing literature. Social services data included addresses which were geocoded to link to tract level US Census information. All identifying information was removed prior to providing the data for analysis. Further all results are aggregated at a sufficient level to provide an additional protection against accidental identification. Human subject approval was granted by XXX (removed for blind review) and each participating agency.

Variables

Dependent variable: The dependent variable for the present study is a record of health care provided for pregnancy and/or a record of live birth prior to age 18.

Independent variable: The independent variable for this study is subject's history of childhood maltreatment. Childhood victimization of maltreatment was indicated by any report (substantiated or unsubstantiated) of child abuse or neglect prior to age 17. This is common practice due to the number of studies showing that unsubstantiated and substantiated cases are at similar risk of negative future outcomes.^{14,15,16}

Control variables: Control variables included family and community and subject demographic variables. Subject demographic variables included age and race (recoded as 'White' v 'Non-white' because the demographics of the region at the time of sampling did not allow for more detailed categories). Family variables included information regarding caregiver's high school graduation at study start, mother's age at the birth of the child, parent's history of mental health treatment, period of receipt of starting income assistance (family poor at subject's birth but no income assistance later, childhood only not poor at birth, both (AFDC and later TANF)). Community variables examined included % of children in tract who were below poverty level from the 1990 US census data.

Potential moderating variables: Moderating variables are conceptualized as indicators of behaviors or special needs that may impact teenage pregnancy separate from or combined with maltreatment. Service contact variables included information on various kinds of services the subjects received for school, health, mental health or behavioral concerns prior to age 18. Variables included receipt of Special Education services by disability type, other health records indicated cognitive delay, mental health intervention as noted by ICD-9 code for mental health (Department of Mental Health or Health records), record of juvenile court status offense petition, illicit substances, or delinquency, runaway, health care record for a sexually transmitted infection(proxy for high risk sexual behavior). Dates of contact were used to identify service contacts that occurred prior to early pregnancy or the end of the study for females who did not become pregnant.

Data Analysis

All data cleaning and analyses were completed using SAS 9.4. Descriptive analyses included χ^2 and bivariate survival analyses. Lifetables and survival curve analyses were used both to suggest important variables for multivariate analyses and to help assess for proportionality issues. Time was programmed in years since birth to event (early pregnancy) or end of the study period (non-event). An interaction term between a nonproportional variable and time was created if needed to adjust for nonproportionality in the multivariate model¹⁷ For multivariate analyses, Cox regression models using the SURVEYPHREG option to control for clustering by geographic unit. Terms which were significant or non-significant but impacted the overall model fit, were retained in the final model. Significant risk ratios larger than 1 indicate increased risk, and those less than 1 indicate decreased risk of the outcome.

Results

The final sample consisted of 3281 young women, of whom, 1343 (40.9%) had a history of poverty only and 1938 (59.1%) had histories of both CAN and poverty. Among subjects with a history of at least 1 report of abuse or neglect, 28.9% had a record of at least one pregnancy from ages of 10 through 17 compared to 16.8% for the poverty only group. This difference remained significant in bivariate analyses controlling for time from birth to the end of the study period (see table 1). Mean age at first pregnancy was 14.9 years. The mean age at first pregnancy did not vary by history of a maltreatment report.

Bivariate analyses indicated significant differences between females who became pregnant at the individual, family and community levels (see Table 1). The youth service variables were used as predictors rather than comorbid factors so each was adjusted to occur prior to the event of interest or the end of the study period. Interactions between time of first delinquency and time of first STD treatment were significant indicating a change in risk during the early teen years. An interaction between time and cognitive delay was retained because of its impact on model fit and the main effect but was not significant.

Variables were entered in three stages to check for indications of mediation. Since there were no significant changes in effects by model only the final model is discussed here. It should be noted, however, that there was a significant improvement in model fit as indicated by the Wald (sandwich) chi-square values (see Table 2). White females were about 20% less likely to be among the early pregnancy females compared to Black females in our sample. Poverty in the community and childhood periods of family receipt of income maintenance along with a history of maltreatment were associated with increased risk of later early pregnancy. Females with a history of at least one report of maltreatment had about a 66% increased risk of being among the early pregnancy group. Females in families that received income maintenance in childhood but not at birth had about a 20% increased risk compared to those with records of poverty at birth only. Females born into poverty with continued record of poverty in later childhood were over 40% more likely to have an early pregnancy. Having had a caregiver who completed high school decreased the risk of later pregnancy by nearly 25%.

Youth service contacts

Females who also had a record of treatment or service for a mental health disorder were less likely to be among those pregnant (about 36% less likely) while the opposite was true for those with a history of runaway (88% greater risk). Females with records of cognitive delay or learning disability had over 60% higher risk of early pregnancy. The effects of delinquency or treatment for an STD cannot be interpreted without considering the timing of these events. Subjects with delinquency records prior to age 14 had no higher or lower risk of pregnancy, but those with first delinquency records after age 14 were much more likely to have a record of pregnancy prior to age 18 (about 2.5 times higher each year). A similar pattern existed for STD treatment although the higher risk emerged a year later (about age 15). In other words, females who began treatment for a STD prior to age 15 did not appear more likely to have an early pregnancy but the risk associated with diagnosis escalated sharply each year after age 15.

Discussion

This study contributes to our understanding of why some youth continue to face higher pregnancy rates while the general population pregnancy rate declines. With a growing body of literature linking adversity in childhood to poor adult outcomes, studies such as this one that determine relative risks of adversity exposures are important. This study adds to the understanding of adolescent pregnancy risk by controlling for poverty as a confounder. The prospective data findings that even a single maltreatment report independent of poverty is associated with higher risk of pregnancy is consistent with the retrospective findings reported by Putnam-Hornstein.⁶ Older teens living in high poverty areas with histories of maltreatment may be a particularly essential target for pregnancy prevention efforts. This clearly underscores the importance of preventative measures for child abuse and maltreatment but also the important role of CPS and other interventions in addressing pregnancy prevention with families regardless of income. While this is important for all children, maltreated populations should be given particular support with regard to screenings and intervention.

Even within a low income sample, females who resided with a more functional caregiver (higher education level and no record of MH disorder) during childhood fared better in our study. This finding is consistent with literature demonstrating the multitude of causal factors involved in intergenerational poverty transmission¹⁸. Support services provided to parents or caregivers as well as the females children themselves residing with less functional caregivers should be explored further, as increased stability to young females may holistically improve outcomes. While CPS and other services may provide support for families generally, specific policies targeting maltreated children and young adults should also reflect the higher risk of females who live with less functional parents or caregivers. Supportive services and policies must extend throughout young women's lives in order to improve outcomes for young women as they age. The authors are unaware of literature that links services to mothers to improve education and mental health outcomes to later pregnancy in offspring. Future research should explore this outcome.

While record of STD treatment was conceptualized as a proxy for high risk sexual behaviors, the interaction with time suggests an interesting possibility. It is possible that females who are treated for STDs at a younger age receive services that may offset risk of continued unprotected sex. Similarly females who have known and treated mental health disorders may have improved outcomes compared to those with undiagnosed conditions. These ideas are not testable with the data available but may be promising areas of investigation related to timing and service platforms for pregnancy prevention efforts. The association of developmental delay as well as runaway behavior with higher risk of pregnancy is consistent with the literature on other high risk sexual behaviors^{19,20}

Limitations

There are several limitations to consider. The use of administrative data does not take into account all the relevant behaviors that may have occurred in the study population such as substance abuse, mental health issues, or risk behaviors that were not identified by public services. While services may be protective, diagnosis or system contact alone is not an

indicator of the quality or type of service provided. For example, in the parent study from which data were obtained, data sharing agreements did not allow for obtaining prescription information. Nor is it possible to identify protective factors like school performance. At the time the study was conducted there was no centralized data system that collected high school graduation information at the individual level. It was not feasible to attempt to obtain transcripts for each student. It is also not possible to measure compliance behaviors with any treatment provided for health or mental health issues. Nor is it possible to know whether the early STDs may have been associated with sexual abuse although the STD treatment records did not include a notation of abuse in the diagnostic codes. The use of administrative data also does not account for maltreatment and trauma that may have been occurring in the study population but not documented. This study also does not differentiate between types of child maltreatment. This may be relevant based on a recent meta-analysis that showed increased risk for pregnancy with history of physical and sexual abuse but not neglect or emotional abuse.²¹ Our sample population reflected the demographics of Missouri with only Caucasian and African American subjects because of small sample size among other racial groups. Results may not be generalizable to other races and ethnicities as well as other regions of the country. We did not include males because at the time there was no requirement to list fathers on birth records.

Conclusion and Implications

Despite its limitations, this study has multiple implications for prevention of pregnancy in high risk populations. Our study supports initiatives to target and enhance pregnancy prevention for youth who have experienced childhood abuse and/or neglect. In addition, it is important for interventions to address cognitive delays and learning disabilities within this at risk population. The increased risk associated with runaway history suggests that screening for sexual risk behaviors as a part of juvenile court or shelter processes followed by effective intervention may be another target of opportunity. This study reinforces the importance of access to health care for children in foster care, a point which is especially salient given the findings in the Office of Inspector General's 2015 report which demonstrated that one-third of children in foster care who were enrolled in Medicaid did not receive at least one required health screening.²² Finally, this study supports the growing body of evidence regarding the implications of child abuse over one's lifespan, as well as the importance of child abuse prevention through investment in evidence-based interventions such as the nurse-family partnership.²³

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List of Abbreviations

CPS Child Protective Services

CAN	Child Abuse and Neglect
POV	Poverty
AFDC	Aid to Families with Dependent Children
TANF	Temporary Assistance for Needy Families
STD	Sexually Transmitted Disease

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Table 1

Bivariate Results for Teenage Pregnancy by Subject, Family, and Youth Services

Variable	N size (n=3281)	Pregnancy (n=906) %	Log-Rank statistic (p-value)
Subject			
Race			
Non-white	2602	25.4	.0002
White	679	18.4	
Childhood history of maltreatment			
None known	1343	16.8	<.0001
At Least 1 Report	1938	28.9	
Subject's Family During Childhood			
Lived in High Poverty Census tract			
< 40% child poverty	1703	27.0	.002
40% + child poverty	1578	21.7	
Poverty (Govt Paid birth) no			
Poverty at Birth	1584	19.9	<0.0001*
Poverty (Govt assistance) early only			
Adolescence	1674	31.8	<0.0001
Caregiver History of Mental Health Tx			
Yes	218	38.5	<0.0001*
Caregiver HS Graduate			
Yes	1494	29.7	<0.0001
Yes	1787	19.9	
Subject's Child/Adolescent Service System Records			
Mental Health Tx (Incl: Emo. Dist. Sped)			
Yes	2475	24.3	NS
Yes	806	22.9	
Health Tx for STD			
Yes	3118	23.7	NS*
Yes	163	28.2	
Drug arrest or drug tx			
Yes	3083	23.6	NS*
Yes	198	29.8	
Delinquency Record (not drug)			
Yes	2638	21.2	<0.0001*
Yes	643	34.5	
Runaway Record			
Yes	3197	23.4	<0.0001*
Yes	84	45.1	
Other Disability (Cog Health or Sped)			
Yes	2623	23.0	.006
Yes	658	27.8	

* = bivariate analyses indicated potential issues with proportionality

Table 2

Cox Regression Model of Early Pregnancy

	Model 1 H.R. (95% CI)	Model 2 H.R. (95% CI)	Model 3 H.R. (95% CI)
<i>Race(Black)</i>			
White	0.78 ^b (.64–.96)	0.75 ^b (.61–.92)	0.79 ^c (0.64–0.97)
<i>Child Poverty in Tract</i>			
Per % unit increase	1.01 ^b (1.0–1.01)	1.004 ^c (1.0–1.01)	1.004 ^c (1.0–1.01)
Wald Chisq=24.9 (2) p<.0001			
<i>Report of Maltreatment (None)</i>			
Yes		1.65 ^a (1.41–1.94)	1.66 ^a (1.41–1.96)
<i>Caregiver HS Grad (None)</i>			
		0.76 ^b (0.66–0.88)	0.76 ^b (0.66–0.88)
<i>Caregiver MH Tx (None)</i>			
		1.43 ^b (1.14–1.80)	1.46 ^c (1.15–1.84)
<i>Family Govt Assist (per increase compared to birth only)</i>			
<i>Child and Teen</i>			
All stages		1.23 ^a (1.14–1.34)	1.21 ^a (1.11–1.32)
Wald Chisq=158.13 (6) p<.0001			
<i>Youth MH Tx (None during risk period)</i>			0.73 ^b (0.62–0.87)
<i>Youth Runaway Hx (None during risk period)</i>			1.89 ^b (1.33–2.69)
<i>Youth Tx for STD (None during risk period)</i>			0.44 ^b (0.25–0.77)
<i>Youth Delinq Hx (None during risk period)</i>			NS
<i>Youth Cog Delay or Disability (none known)</i>			1.69 ^c (1.01–2.84)
<i>Time interactions</i>			
<i>Youth Del* time at risk (per year after age 14)</i>			2.55 ^a (1.79–3.61)
<i>Youth STD* time at risk (per year after age 15)</i>			3.21 ^a (1.65–6.25)
<i>Youth Delay* time at risk (continuous)</i>			NS
Wald Chisq=281.80 (14) p<.0001			

* Time is measured in years since birth

Comparison groups are identified in italics and HR for these = 1.0

^a p<.0001

^b .0001 < p < .01

^c₀₁<p<=.05

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