



**MONTCLAIR STATE**  
UNIVERSITY

Montclair State University  
**Montclair State University Digital  
Commons**

---

Department of Social Work and Child Advocacy  
Faculty Scholarship and Creative Works

Department of Social Work and Child Advocacy

---

5-1-2017

## A Social Ecology Analysis of Childbirth among Females Emancipating from Foster Care

Svetlana Shpiegel

*Montclair State University*, [shpiegels@mail.montclair.edu](mailto:shpiegels@mail.montclair.edu)

Michele Cascardi

*William Paterson University*

Michael Dineen

*Cornell University*

Follow this and additional works at: <https://digitalcommons.montclair.edu/social-work-and-child-advocacy-facpubs>



Part of the [Social Work Commons](#)

---

### MSU Digital Commons Citation

Shpiegel, Svetlana; Cascardi, Michele; and Dineen, Michael, "A Social Ecology Analysis of Childbirth among Females Emancipating from Foster Care" (2017). *Department of Social Work and Child Advocacy Faculty Scholarship and Creative Works*. 8.

<https://digitalcommons.montclair.edu/social-work-and-child-advocacy-facpubs/8>

This Article is brought to you for free and open access by the Department of Social Work and Child Advocacy at Montclair State University Digital Commons. It has been accepted for inclusion in Department of Social Work and Child Advocacy Faculty Scholarship and Creative Works by an authorized administrator of Montclair State University Digital Commons. For more information, please contact [digitalcommons@montclair.edu](mailto:digitalcommons@montclair.edu).



ELSEVIER

---



---

 JOURNAL OF  
 ADOLESCENT  
 HEALTH
 

---



---

www.jahonline.org

Original article

## A Social Ecology Analysis of Childbirth Among Females Emancipating From Foster Care

Svetlana Shpiegel, Ph.D.<sup>a,\*</sup>, Michele Cascardi, Ph.D.<sup>b</sup>, and Michael Dineen, M.A.<sup>c</sup><sup>a</sup> Robert D. McCormick Center for Child Advocacy and Policy, Montclair State University, Montclair, New Jersey<sup>b</sup> Department of Psychology, William Paterson University, Wayne, New Jersey<sup>c</sup> National Data Archive on Child Abuse and Neglect, Cornell University, Ithaca, New Jersey

Article history: Received May 25, 2016; Accepted September 7, 2016

Keywords: Childbirth; Foster care; Adolescents; Emancipation; Risk factors

---

 A B S T R A C T

**Purpose:** No research has examined childbirth from a national perspective among females emancipating from foster care. The present study fills this gap by: (1) documenting the rates of initial and repeat births among females ages 17 and 19 in a national prospective study and (2) identifying risk and protective factors at age 17 that predict childbirth between ages 17 and 19.

**Methods:** This study used data from the National Youth in Transition Database and Adoption and Foster Care Analysis and Reporting System to identify risk and protective factors associated with childbirth in a national sample of transition-age female youth (N = 3,474).

**Results:** The cumulative rate of childbirth by age 19 was 21%, with higher rates reported between ages 17 and 19 (17%; n = 602) compared with age 17 or earlier (9%; n = 313). In logistic regression analysis, black race and Hispanic ethnicity, placement with relatives, runaway status, trial home visit placement, early emancipation from foster care, and lifetime incarceration histories were associated with increased likelihood of childbirth. In contrast, school enrollment and employment skills were associated with decreased likelihood of childbirth. The multivariate odds of childbirth between ages 17 and 19 increased 10-fold if youth already had a child by age 17.

**Conclusions:** Sexual health and pregnancy prevention programs should specifically target youths who already have children. Increased attention should be paid to adolescents placed with biological families and those with histories of criminal involvement.

© 2016 Society for Adolescent Health and Medicine. All rights reserved.

---

 IMPLICATIONS AND  
 CONTRIBUTION

Female youth emancipating from foster care are at substantial risk for childbirth. Ethnic and racial minority status, placement type, early emancipation from foster care, a history of incarceration, educational and vocational attainment, and prior childbirth all uniquely contributed to childbirth between ages 17 and 19. Public health and educational interventions to identify at-risk young women emancipating from foster care may reduce childbirth rates and optimize parenting outcomes.

Despite a steady decline over the past two decades, the United States continues to have the highest rates of teen births in the industrialized world [1], with approximately 25 per 1,000 births among females aged 15–19 years [2]. Females placed in foster

care are especially vulnerable to parenthood in their teens, exhibiting childbirth rates that are two to three times higher than peers in the general population [3–5]. Of even greater concern, the likelihood of childbirth doubles during the period of transition to adulthood (i.e., ages 18–21) [3,6–8] and childbirth before age 18 substantially increases the likelihood of repeat childbirth by age 21 [6]. According to one study, about 40% of girls in the California foster care system reported repeat childbirth by age 20 [7]. In other work, nearly half of girls in three Midwestern states reported repeat pregnancies by age 19 [3]. Identifying risk and protective factors associated with childbirth during the period of transition to adulthood is of crucial

**Conflicts of Interest:** The authors have no conflicts of interest to disclose.

**Disclaimer:** The collector of the original data, the funder, the Archive, Cornell University and their agents or employees bear no responsibility for the analyses or interpretations presented here.

\* Address correspondence to: Svetlana Shpiegel, Ph.D., Robert D. McCormick Center for Child Advocacy and Policy, Montclair State University, 1 Normal Ave., Dickson Hall, Room 370, Montclair, NJ 07043.

E-mail address: shpiegel@mail.montclair.edu (S. Shpiegel).

importance to reduce pregnancy and parenthood rates. However, no research has examined childbirth from a national perspective among females emancipating from foster care. The present study fills this gap by: (1) documenting the rates of initial and repeat births among females aged 17–19 years in a national prospective study and (2) identifying risk and protective factors at age 17 that predict childbirth during the high-risk period between ages 17 and 19.

Adolescent parenthood has been linked to a variety of adverse consequences for mothers, including educational and vocational difficulties, financial instability, inadequate social support, and high parenting stress [9–11]. The children of teen mothers also experience multiple challenges, such as low birth weight, severe neonatal conditions, poorer cognitive and emotional functioning, and involvement in risky behaviors later in life [12,13]. For these reasons, adolescent parenthood represents a significant public health concern, and strategies to delay childbirth are crucial to prevent multiple adverse consequences. Research on risk and protective factors associated with childbirth may help identify youths who are especially vulnerable to early parenthood and point toward intervention strategies to reduce this outcome.

Social-ecology theory was originally conceived by Bronfenbrenner to define and explain environmental influences on individual development [14]. This model provides a framework for understanding the interaction among societal, community, and individual factors that increase the risk for adverse outcomes or encourage resilience [14,15]. Adolescents in foster care are embedded in complex societal and community systems which may be linked to increased risk for or protection against childbirth. At a societal level, certain demographic characteristics, such as racial or ethnic identity, may influence the likelihood of pregnancy and childbirth. Racial and ethnic minority youth are disproportionately in out-of-home placements, and available evidence suggests that racial and ethnic minority status may be a risk factor for adolescent parenthood [5,7]. Cultural norms (e.g., respect for parenthood) and religious beliefs (e.g., anti-abortion views) may contribute to the increased representation of minorities among pregnant and parenting foster youth [5].

Factors within the community, such as experiences in the child welfare system, may also contribute to increased risk for childbirth. Child welfare factors, such as emancipation from foster care by age 19 [3] and placement instability [7], have been linked to increased pregnancy and childbirth in prior research. Moreover, in one study, placement in congregate care settings was associated with reduction in pregnancy [3], suggesting that this type of placement may be protective. Increased supervision and connection to child welfare staff have been suggested to explain these findings. It is plausible that certain placements may be protective, whereas others increase risk, due to variations in supervision and supportive services provided by the child welfare system.

At the individual level, risky behaviors, such as substance use [5,8], delinquency, [5,8] and homelessness [5], have been linked to pregnancy and parenthood among foster youth. In contrast, factors such as educational and vocational attainment may be protective against early parenthood [5]. Notably, the most salient risk factor for pregnancy and childbirth during the period of transition to adulthood appears to be prior pregnancy or birth [3,8]. This is not surprising as prior childbirth may account for other risk factors within the social ecology [5].

Although knowledge about adolescent pregnancy and parenthood among foster youth has expanded in recent years,

existing research has been limited by cross-sectional designs [5], samples restricted to individual states [7,8,16], and infrequent consideration of childbirth, as compared with pregnancy [8]. The needs of parenting foster youth may be more complex, challenging, and require specialized interventions than youth whose pregnancies do not result in live birth [6]. There is also a compelling need to increase understanding of risk and protective factors during the particular vulnerable period of transition to adulthood. To meet this need, this study provides a longitudinal, national perspective on childbirth at ages 17–19 in a cohort of females emancipating from foster care. The present study has two major aims: (1) examining the rates of childbirth (i.e., initial and repeat) at ages 17 and 19 and (2) identifying risk and protective factors at age 17 that predict childbirth between ages 17 and 19. Risk and protective factors were represented at different levels of the social ecology, including societal (e.g., demographics, such as race and ethnicity), community (e.g., child welfare factors, such as placement type and stability), and individual (e.g., delinquency, homelessness, prior childbirth).

## Methods

### Data set and procedure

This research is based on a secondary analysis of data from the National Youth in Transition Database (NYTD). Created by the John H. Chafee Foster Care Independence Program, NYTD is designed to track various services provided through Chafee Foster Care Independence Program and collect certain outcome measures to assess the effectiveness of the program. All 50 states and the District of Columbia are required to submit information to NYTD during designated reporting periods [17]. The NYTD data set consists of two separate components: (1) service-related information and (2) youth self-reported outcomes. Only the outcomes component was used in the present investigation; outcome data collection began in federal fiscal year (FFY) 2011. Approval for the present analysis was granted by the Montclair State University Institutional Review Board (exemption due to secondary analysis of publicly available data).

The outcome component of NYTD is collected in three ways: a baseline interview with youth who are in foster care at age 17 and two follow-up interviews, the first at age 19 and the second at age 21. To date, baseline and first follow-up interview data (i.e., ages 17 and 19) are available from the first cohort established in FFY 2011. The national response rates for the baseline and follow-up interviews were 53% and 50%, respectively. A weighting procedure was implemented by the Children's Bureau to correct for possible nonresponse bias. However, because we restricted our analyses only to females and merged the NYTD data file with data from the Adoption and Foster Care Analysis and Reporting System (AFCARS, see details below), we have concerns about how use of the weights in our selected sample might bias results in systematic and unintended ways. Therefore, analyses were conducted using the unweighted data. For detailed information about the NYTD design and procedures, see NDACAN [17].

Data on youths' out-of-home placement histories were retrieved from the AFCARS for FFY 2011. AFCARS is a federally mandated data collection system that provides case-level information on all children for whom child welfare agencies have responsibility for placement and supervision. Data include episode-level information, such as placement

types and number of previous placements. All states are required to submit information to AFCARS on a semi-annual basis [18].

### Sample

The sample consisted of all females in the NYTD FFY 2011 cohort who completed both baseline and first follow-up interviews and for whom information on child welfare variables was available in AFCARS. Females from all states were represented in the final sample, with the exception of Connecticut, which was excluded due to incompatibilities in the format of unique identifiers, preventing the merge of NYTD and AFCARS data sets. The final sample consisted of 3,474 females; 44% non-Hispanic white ( $n = 1,537$ ), 30% African-American ( $n = 1,044$ ), 18% Hispanic (irrespective of race;  $n = 633$ ), and 8% other (i.e., American-Indian/Alaska Native; Asian; Native Hawaiian/other Pacific Islanders;  $n = 260$ ). Compared with the overall population of females in the NYTD database, our sample included a slight overrepresentation of non-Hispanic whites (44% vs 41%), and females of “other” races (8% vs 6%), and a slight underrepresentation of Hispanic (18% vs 21%) and African-American (30% vs 32%) females.

### Measures

Three sets of variables were included in the present study: (1) demographics; (2) child welfare factors; (3) general well-being indicators (including data on childbirth). Information about demographics and general wellbeing indicators was obtained from the baseline NYTD survey. Information about child welfare variables was obtained from AFCARS FFY 2011, collected approximately at the same time as the NYTD baseline data. Information on childbirth was obtained from NYTD baseline and first follow-up interviews.

**Demographics.** Youth's race and ethnicity were coded as following: non-Hispanic white; black; Hispanic (of any race); and “other” race (Native-American/Alaska Native, Asian, Native Hawaiian/other Pacific Islander).

**Child welfare factors.** Child welfare risk and protective factors included placement type at age 17; emancipation status at age 19; and number of placements during the current foster care episode. Placement type at age 17 was coded as: (1) preadoptive placement; (2) nonrelative foster home; (3) relative foster home; (4) congregate care (group home or institution); (5) supervised independent living; (6) runaway; and (7) trial home visit. Emancipation status at age 19 was coded as: (0) still in foster care or (1) legally emancipated. Number of placements was coded as following: (1) 1–2 placements; (2) 3–5 placements; and (3) 6 or more placements.

**General wellbeing indicators at age 17.** Three risk and three protective indicators were included in this analysis—school enrollment, employment skills, connection to a supportive adult (protective factors) and lifetime histories of homelessness, substance abuse referrals, and incarceration (risk factors).

**Employment skills.** Youth responded “yes” or “no” to having completed an apprenticeship, internship, or other on-the-job training, either paid or unpaid, during the past year.

**School enrollment.** Current school enrollment was defined as attending high school, general education development classes, postsecondary vocational training, or college at the time of the baseline interview.

**Supportive adult.** Participants were asked if they knew at least one adult whom they could go to for advice or guidance for decision-making or problem-solving or for companionship when celebrating personal achievements. This included adult relatives, parents and foster parents, and excluded spouses, partners, boyfriends or girlfriends, and current caseworkers.

**Homelessness.** A history of homelessness was assessed by asking if the youth ever had no regular or adequate place to live, such as living in a car, on the street, or staying in a homeless or other temporary shelter.

**Substance abuse referral.** Youth were asked if they had ever been referred for an alcohol or drug abuse assessment or counseling, including either a self-referral or a referral by a social worker, school staff, physician, mental health worker, foster parent, or another adult.

**Incarceration.** Participants were asked if they had ever been confined in a jail, prison, correctional facility, or juvenile or community detention facility in connection with allegedly committing a crime (a felony or a misdemeanor).

**Childbirth.** To determine childbirth status at age 17, participants were asked if they had ever given birth. At age 19, participants were asked the same question about childbirth in reference to past two years only (i.e., since the baseline interview).

### Analytic strategy

Univariate, bivariate, and multivariate analyses were conducted in SPSS, version 22.0. First, we calculated the proportion of females reporting childbirth at each time period (i.e., before age 17 and between ages 17 and 19), as well those reporting childbirth at both assessment points. Bivariate analyses (chi-square tests) were conducted to evaluate differences on risk and protective factors between girls reporting childbirth at ages 17–19 and those not reporting childbirth during this period. To reduce the likelihood of committing a type I error due to multiple comparisons, the Bonferroni correction was applied to adjust the family-wise error rate, and a  $p$  value less than .005 (.05/10 comparisons) was used. Binary logistic regression analyses were used to examine the unique contribution of demographics, child welfare factors, general wellbeing indicators, and prior childbirth to youth's childbirth status at age 19.

## Results

### Sample characteristics

As shown in Table 1, most youths identified as white or black race, followed by Hispanic ethnicity regardless of race. The most common placement type at age 17 was nonrelative foster home, followed by congregate care (i.e., group home or institution) and relative foster home. Over two thirds of youth legally

**Table 1**

Descriptive statistics for the overall sample and rate of childbirth for each demographic, child welfare and general wellbeing indicator

	Total (N = 3,474)	Childbirth 17–19 years (n = 602)
<b>Race and ethnicity, % yes (n)</b>		
White, non-Hispanic	44.2 (1,537)	14.9 (299)
Black	30.1 (1,044)	19.8 (207)
Hispanic	18.2 (633)	20.1 (127)
Other	7.5 (260)	15.0 (39)
<b>Child welfare factors, % yes (n)</b>		
Placement at age 17 years		
Preadoptive	1.5 (52)	3.8 (2)
Relative FH	13.6 (473)	18.2 (86)
Nonrelative FH	47.0 (1,634)	14.8 (242)
Congregate care	25.8 (898)	16.7 (150)
Supervised IL	4.1 (144)	23.6 (34)
Runaway	3.6 (126)	37.3 (47)
Trial home visit	4.2 (147)	27.9 (41)
Emancipated by 19 years	67.6 (2,347)	18.7 (438)
Number of placements <sup>a</sup>		
1–2 placements	33.5 (1,164)	15.8 (184)
3–5 placements	31.6 (1,097)	16.7 (183)
6 or more placements	34.9 (1,213)	19.4 (235)
<b>Wellbeing indicators at age 17 years, % yes (n)</b>		
Employment skills	21.7 (755)	13.9 (105)
School enrolled	96.1 (3,337)	16.8 (560)
Supportive adult	95.3 (3,310)	17.0 (564)
Homeless	17.8 (619)	18.6 (115)
Substance abuse referral	22.7 (790)	20.8 (164)
Incarcerated	23.0 (798)	23.6 (188)
Childbirth ≤ 17 years	9.0 (313)	61.0 (191)

FH = foster home; IL = independent living.

<sup>a</sup> Refers to the latest removal episode only.

emancipated from foster care by age 19. Approximately, one third reported 1–2 placements, 3–5 placements, and 6 or more placements during the latest foster care episode. The vast majority of youths were enrolled in school and had a supportive adult at age 17. About one in five had employment skills, and a similar proportion reported ever experiencing homelessness, substance abuse referral, or incarceration.

### Childbirth information

The cumulative rate of childbirth by age 19 was 21% (n = 724). Participants were more likely to report childbirth between ages 17 and 19 (17%; n = 602) compared with age 17 (9%; n = 313). Of those youth reporting childbirth at age 17, over 60% (n = 191) reported repeat birth by age 19.

Females of black race and Hispanic ethnicity had higher childbirth rates between ages 17 and 19 than females of white race and those of “other” races. Females defined as runaway, those placed in a trial home visit and those residing in a supervised independent living arrangement also had relatively high rates of childbirth. In contrast, childbirth rates tended to be lower among females placed in preadoptive homes, as well as those placed in nonrelative foster homes (see Table 1).

### Bivariate analyses: childbirth at age 19

In the sections that follow (i.e., bivariate analyses and multivariate analyses) childbirth at age 19 refer to childbirth between age 17 and 19 only and do not include childbirth prior to age 17.

**Table 2**

Bivariate comparison of demographic, child welfare factors, and wellbeing indicators

	% No childbirth 17–19 years (n = 2,752)	% Childbirth 17–19 years (n = 575)	Statistic	
<b>Race and ethnicity, % yes (n)</b>				
White, non-Hispanic	45.5 (1,308)	38.0 (229)	<b>X<sup>2</sup>, df = 3, 15.17*</b>	
Black	29.1 (837)	34.4 (207)		
Hispanic	17.6 (506)	21.1 (127)		
Other	7.7 (221)	6.5 (39)		
<b>Child welfare factors, % yes (n)</b>				
Placement at age 17 years				
Preadoptive	1.7 (50)	.3 (2)	<b>X<sup>2</sup>, df = 6, 64.81*</b>	
Relative FH	13.5 (387)	14.3 (86)		
Nonrelative FH	48.5 (1,392)	40.2 (242)		
Congregate care	26.0 (748)	24.9 (150)		
Supervised IL	3.8 (110)	5.6 (34)		
Runaway	2.8 (79)	7.8 (47)		
Trial home visit	3.7 (106)	6.8 (41)		
Emancipated by 19 years	66.5 (1,909)	72.8 (438)		
Number of placements <sup>a</sup>				
1–2 placements	34.1 (980)	30.6 (184)		X <sup>2</sup> , df = 2, 5.74
3–5 placements	31.8 (914)	30.4 (183)		
6 or more placements	34.1 (978)	39.0 (235)		
<b>Wellbeing indicators at age 17 years, % yes (n)</b>				
Employment skills	22.6 (650)	17.4 (105)	X <sup>2</sup> , df = 1, 7.88	
School enrolled	96.7 (2,777)	93.0 (560)	<b>X<sup>2</sup>, df = 1, 17.68*</b>	
Supportive adult	95.6 (2,746)	93.7 (564)	X <sup>2</sup> , df = 1, 4.10	
Homeless	17.5 (504)	19.1 (115)	X <sup>2</sup> , df = 1, .82	
Substance abuse referral	21.8 (626)	27.2 (164)	<b>X<sup>2</sup>, df = 1, 8.40*</b>	
Incarcerated	21.2 (610)	31.2 (188)	<b>X<sup>2</sup>, df = 1, 28.06*</b>	
Childbirth ≤ 17 years	4.2 (122)	31.7 (191)	<b>X<sup>2</sup>, df = 1, 458.42*</b>	

Bold values refer to statistically significant effects,  $p < .005$ .\*  $p$  value  $< .005$  (.05/10).

FH = foster home; IL = independent living.

<sup>a</sup> Refers to latest removal episode only.

As shown in Table 2, females who reported childbirth were significantly more likely to be of minority race or ethnicity and experience different types of placement than those who did not report childbirth. However, there were no significant differences for number of placements during the latest removal episode. Females enrolled in school at age 17 were less likely to report childbirth, whereas those disclosing substance abuse referral and incarceration histories, as well as those reporting early emancipation from foster care (i.e., before age 19), were more likely to report childbirth. Employment skills, presence of supportive adults, and a history of homelessness were unrelated to childbirth status.

### Multivariate analysis: childbirth at age 19

Binary logistic regression analysis was used to examine the unique contribution of risk and protective factors to childbirth between ages 17 and 19. As shown in Table 3, black race and Hispanic ethnicity, relative placement, runaway status, trial home visit placement, early emancipation from foster care, and a history of incarceration each significantly increased the likelihood of childbirth. In contrast, school enrollment and employment skills significantly decreased the likelihood of childbirth. Childbirth by age 17 was the strongest predictor of childbirth between ages 17 and 19, with over 10-fold increase in the odds ratio.

**Table 3**

Logistic regression: predicting childbirth between 17 and 19 years from demographics, risk and protective factors and prior childbirth (N = 3,327)

Variable	$\beta$ (SE)	Exp( $\beta$ )	95% CI	
			Lower	Upper
<b>Race and ethnicity<sup>a</sup></b>				
Hispanic	.32 (.13)	<b>1.38*</b>	1.06	1.81
Black	.29 (.12)	<b>1.34*</b>	1.06	1.69
Other	.05 (.20)	1.05	.70	1.56
<b>Child welfare factors</b>				
Placement at age 17 <sup>b</sup>				
Preadoptive	−1.42 (.74)	.24	.05	1.04
Relative FH	.33 (.15)	<b>1.40*</b>	1.04	1.88
Congregate care	−.09 (.12)	.90	.70	1.16
Supervised IL	.44 (.23)	1.55	.99	2.44
Runaway	1.03 (.21)	<b>2.80***</b>	1.82	4.30
Trial home visit	.85 (.21)	<b>2.35***</b>	1.54	3.59
Emancipated by 19 years	.23 (.11)	<b>1.27*</b>	1.01	1.58
Number of placements <sup>c</sup>				
2–5 placements	.05 (.12)	1.05	.82	1.34
6 or more placements	.18 (.12)	1.20	.94	1.53
Wellbeing indicators at age 17				
Employment skills	−.27 (.12)	<b>.76*</b>	.59	.97
School enrolled	−.46 (.21)	<b>.62*</b>	.41	.95
Supportive adult	−.22 (.21)	.79	.52	1.20
Homeless	.06 (.12)	1.06	.82	1.36
Substance abuse referral	.16 (.12)	1.17	.93	1.49
Incarcerated	.30 (.11)	<b>1.35*</b>	1.07	1.70
Prior childbirth $\leq$ 17 years	2.31 (.13)	<b>10.10***</b>	7.81	13.07

Bold values refer to statistically significant effects.

CI = confidence interval; FH = foster home; IL = independent living; SE = standard error.

\* $p < .05$ ; \*\*\* $p < .001$ .

<sup>a</sup> Non-Hispanic white serves as a reference category.

<sup>b</sup> Nonrelative foster care serves as a reference category.

<sup>c</sup> One to two placements serve as a reference category; refer to latest removal episode only.

## Discussion

The present study is the first prospective study to examine risk and protective factors for childbirth between ages 17 and 19 in a national sample of female foster youth. Findings reveal that childbirth is relatively common among females emancipating from foster care. About one in five females reported any childbirth by age 19, which represents a substantially higher rate compared with females in the general population [2]. Consistent with prior research [3,6–8], the period between ages 17 and 19 was characterized by a significant increase in childbirth. At age 17, nearly 10% of females had children, however, by age 19, childbirth rates approximately doubled, which has also been reported in state-specific investigations [3,7]. Females reporting childbirth by age 17 were at highest risk for additional childbirth between ages 17 and 19, suggesting that sexual health and pregnancy prevention programs should specifically target adolescents who already have children.

### Demographic differences

Childbirth rates were particularly high among black and Hispanic females in this sample. This is consistent with research on youths in the general population [2,19] and prior studies of foster youth [20]. Although the reasons for increased representation of minorities among pregnant and parenting youth are not well understood, explanations may include cultural norms that bestow respect for parenthood; antiabortion attitudes that may

be promoted in some communities; and co-occurring risk factors, such as low socioeconomic status [11,21]. Among youths placed in foster care, high rates of childbirth may, at least partially, relate to disproportionate representation of minorities in the US child welfare system [6].

### Child welfare factors

Females who identified as runaways, and those placed in trial home visits or with relatives, were more likely to report childbirth between ages 17 and 19. Although not examined in the present study, other research demonstrates that runaway youth experience sexual exploitation and higher rates of unprotected sexual contact, which may result in unintended pregnancies and births [22]. Research also shows that placement with biological families may contribute to negative outcomes among some foster youth, especially if caregivers struggle with issues such as addiction, poverty, and mental health problems [23]. There is substantial evidence that exposure to Adverse Childhood Experiences (ACEs, e.g., child abuse, parental incarceration, parental mental illness) is associated with increased risky sexual behaviors and higher rates of pregnancy and childbirth [23–27]. Placement with biological families (e.g., trial home visit, relative placement) may be associated with an increase in ACEs, heightening the risk of initial and repeat births.

Furthermore, placements characterized by a decreased involvement of the child welfare system may have a risk effect on childbirth. This is further reinforced by the finding that females who emancipate from foster care by age 19 (thereby losing existing sources of support and supervision provided by the child welfare system) are at higher risk for childbirth between ages 17 and 19. Although it is possible that early emancipation was the result of pregnancy, rather than its cause, findings from prior research point to the latter [3]. It is suggested that remaining in extended foster care has a protective effect, particularly if such involvement is linked to greater participation in extracurricular activities and the ability to form close relationships with supportive peers and/or adults (e.g., caseworkers, mentors, foster parents, etc.) [28].

Interestingly, placement instability was unrelated to childbirth in our analysis, contrary to prior studies describing the risk effects of unstable placements [29–31]. Additional research is needed to better understand the relationship between placement instability and adolescent pregnancy and childbirth, including interactions between types of placement and their stability.

### General wellbeing indicators

Among general wellbeing indicators, incarceration history represented a risk factor for childbirth, while school enrollment and employment skills had a protective effect. These results are consistent with prior research, indicating that delinquency may elevate the risk for adolescent pregnancy [8], while educational and vocational attainment may have an opposite effect [6,9]. The benefits conferred by educational and vocational attainment are consistent with studies indicating that setting educational goals and carrying out plans for the future are linked to decreases in teen pregnancy and childbirth [28]. The importance of promoting schooling and career experiences as a means by which early parenthood can be avoided has been emphasized in several investigations and should be incorporated in interventions targeting foster youth [32].

Surprisingly, the presence of supportive adults and history of homelessness were unrelated to childbirth in both bivariate and multivariate analyses. In studies of high-risk youth, homelessness was predictive of adolescent pregnancy and childbirth [33,34], whereas the presence of supportive adults was thought to be protective in this regard [35]. It is not clear why these findings were not replicated in our study although it is possible that definition issues played a role. For instance, a lifetime history of homelessness assessed at age 17 may have included experiences which happened years ago and had little bearing on youths' current situation. Moreover, about 95% of youths reported having supportive adults at age 17, which may partially explain the absence of significant impact.

#### *Implications, limitations, and future directions*

There are a number of potential implications of this work. Overall, childbirth rates in this population are disproportionately high, reinforcing the need for pregnancy prevention programs specifically targeting foster youth [3]. Minority youth appear to be especially vulnerable to adolescent childbirth, and given the protective effects conferred by school enrollment and employment skills, minority youth, in particular, may benefit from programs that increase educational opportunities and career expectations. In addition, increased understanding of the risks associated with certain placement types, such as trial home visits or kinship care, would be beneficial to improve support and communication about risky sexual behaviors for youths in these settings. When considered within the broader literature on the influence of ACEs, these results also underscore the importance of addressing the traumatic effects of child abuse and neglect, as well as other adverse experiences. Attention to these concerns in the context of comprehensive sexual health education to these youth, especially if they already have children, may be effective for preventing subsequent pregnancies and births. Furthermore, encouraging youth to remain in extended foster care (if permitted by the state legislation) may decrease the likelihood of early childbirth.

The results of this study should be interpreted in light of its limitations. First, although the present sample included youth from 49 states and the District of Columbia, response rates were highly variable across states. Reasons for nonresponse are not entirely clear although it is possible that the most vulnerable youths are more difficult to locate for NYTD interviews. This limit to generalizability is partially offset by the large, national sample, and a prospective research design. Second, the NYTD variables do not provide detailed information about important constructs. For instance, it is not known how many children participants had, or whether or not they were residing with or actively parenting their children. The extent of their involvement in various risky behaviors is also not known.

Future research examining adolescent parents in foster care should focus on exploring the reasons for repeat childbirth among youths who already have one child, with an emphasis on the role of trauma and engagement in risky behaviors, such as delinquency. Evaluating the availability and use of long-acting contraception methods is particularly important. Furthermore, research is needed on the risk for pregnancy and childbirth among youths placed with biological families to better understand this effect. Future studies should also examine the impact of receiving Chafee services on the likelihood of childbirth, particularly between ages 18 and 21. Finally, mixed-methods

designs may reveal potential obstacles of foster youth at risk for adolescent childbirth to accessing health literacy and appropriate healthcare arrangements.

#### **Acknowledgments**

The data used in this publication were made available by the National Data Archive on Child Abuse and Neglect, Cornell University, Ithaca, NY and have been used with permission. Data from the National Youth in Transition Database (NYTD) were originally collected by the states and provided to the Children's Bureau.

#### **Funding Sources**

Funding for the project was provided by the Children's Bureau, Administration on Children, Youth and Families, Administration for Children and Families, US Department of Health and Human Services.

#### **References**

- [1] Omar HA, Fowler A, McClanahan KK. Significant reduction of repeat teen pregnancy in a comprehensive young parent program. *J Pediatr Adolesc Gynecol* 2008;21:283–7.
- [2] Martin JA, Hamilton BE, Osterman JK, Curtin SC, Mathews TJ. Births: Final data for 2013. National Vital Statistics reports. Hyattsville, MD: National Center for Health Statistics; 2015.
- [3] Dworsky A, Courteny ME. The risk of teenage pregnancy among transitioning foster youth: Implications for extending care beyond age 18. *Child Youth Serv Rev* 2010;32:1351–6.
- [4] Shaw TV, Barth RP, Svoboda DV, Shaikh N. *Fostering safe choices: Final report. School of social work, Ruth H. Young Center for families and children.* Baltimore, MD: University of Maryland Baltimore; 2010.
- [5] Shpiegel S, Cascardi M. Adolescent parents in the first wave of the National Youth in Transition Database. *J Public Child Welf* 2015;9:227–98.
- [6] Svoboda DV, Shaw TV, Barth RP, Bright CL. Pregnancy and parenting among youth in foster care: A review. *Child Youth Serv Rev* 2012;34:867–75.
- [7] Putnam-Hornstein E, King B. Cumulative teen birth rates among girls in foster care at age 17: An analysis of linked birth and child protection records from California. *Child Abuse Negl* 2014;38:698–705.
- [8] Matta Oshima KM, Carter Narendorf K, McMillen JC. Pregnancy risk among older youth transitioning out of foster care. *Child Youth Serv Rev* 2013;35:1760–75.
- [9] Boden JM, Fergusson DM, Horwood LJ. Early motherhood and subsequent life outcomes. *J Child Psychol Psychiatry* 2008;49:151–60.
- [10] Barnett B, Liu J, DeVoe M. Double jeopardy: Depressive symptoms and rapid subsequent pregnancy in adolescent mothers. *Arch Pediatr Adolesc Med* 2008;162:246–52.
- [11] Haight W, Finet D, Bamba S, Helton J. The beliefs of resilient African-American adolescent mothers transitioning from foster care to independent living: A case-based analysis. *Child Youth Serv Rev* 2009;31:53–62.
- [12] Jaffee S, Caspi A, Moffitt TE, et al. Why are children born to teen mothers at risk for adverse outcomes in young adulthood? Results from a 20-year longitudinal study. *Dev Psychopathol* 2001;13:377–97.
- [13] Levine JA, Emery CR, Pollack H. The well-being of children born to teen mothers. *J Marriage Fam* 2007;69:105–22.
- [14] Bronfenbrenner U. *The ecology of human development.* Cambridge, MA: Harvard University Press; 1979.
- [15] Corcoran J. Ecological factors associated with adolescent pregnancy: A review of the literature. *Adolescence* 1999;34:603–19.
- [16] Putnam-Hornstein E, Hammond I, Eastman AL, et al. Extended foster care for transition-age youth: An opportunity for pregnancy prevention and parenting support. *J Adolesc Health* 2016;58:485–7.
- [17] National Data Archive on Child Abuse and Neglect. National youth in transition database: Outcome file. User's guide FY 2011. Ithaca, NY: Bronfenbrenner Center for Translational Research, Cornell University; 2014.
- [18] National Data Archive on Child Abuse and Neglect. Adoption and foster care analysis and reporting system. User's guide FY 2011. Ithaca, NY: Bronfenbrenner Center for Translational Research, Cornell University; 2013.

- [19] Russell ST, Lee FH. Practitioners' perspectives on effective practices for Hispanic teenage pregnancy prevention. *Perspect Sex Reprod Health* 2004; 36:142–9.
- [20] King B, Putnam-Hornstein E, Cederbaum JA, Needell B. A cross-sectional examination of birth rates among adolescent girls in foster care. *Child Youth Serv Rev* 2014;36:179–86.
- [21] Berry EH, Shillington AM, Peak T, Hohman MM. Multi ethnic comparison of risk and protective factors for adolescent pregnancy. *Child Adolesc Social Work J* 2008;17:79–96.
- [22] Thompson SJ, Bender KA, Lewis CM, Watkins R. Runaway and pregnant: Risk factors associated with pregnancy in a national sample of runaway/homeless female adolescents. *J Adolesc Health* 2009;43:125–32.
- [23] Taussig HN, Clyman RB, Landsverk J. Children who return home from foster care: A 6-year prospective study of behavioral health outcomes in adolescence. *Pediatrics* 2001;108:1–7.
- [24] Brown MJ, Masho SW, Perera RA, et al. Sex and sexual orientation disparities in adverse childhood experiences and early age at sexual debut in the United States: Results from a nationally representative sample. *Child Abuse Negl* 2015;46:89–102.
- [25] Madigan S, Wade M, Tarabulsky G, et al. Association between abuse history and adolescent pregnancy: A meta-analysis. *J Adolesc Health* 2014;55: 151–9.
- [26] Sickel AE, Dillard DM, Trickett PK, et al. Post trauma moderators. *Int J Childbirth Educ* 2014;29:10–20.
- [27] Chung EK, Nurmohamed L, Mathew L, et al. Risky health behaviors among mothers-to-be: The impact of adverse childhood experiences. *Acad Pediatr* 2010;10:245–51.
- [28] Ahrens KR, Spencer R, Bonnar M, et al. Qualitative evaluation of historical and relational factors influencing pregnancy and sexually transmitted infection risks in foster youth. *Child Youth Serv Rev* 2016;61:245–52.
- [29] Ryan JP, Testa MF. Child maltreatment and juvenile delinquency: Investigating the role of placement and placement instability. *Child Youth Serv Rev* 2005;27:227–49.
- [30] Rubin DM, O'Reill LA, Luan X, Localio AR. The impact of placement stability on behavioral wellbeing for children in foster care. *Pediatr* 2007;119: 336–44.
- [31] Stott T. Placement instability and risky behaviors of youth aging-out of foster care. *Child Adolesc Social Work J* 2012;29:61–83.
- [32] Kapinos KA, Yakusheva O. Long-term effect of exposure to a friend's adolescent childbirth on fertility, education, and earnings. *J Adolesc Health* 2016;59:311–317.e2.
- [33] Greene JM, Ringwalt CL. Pregnancy among three national samples of runaway and homeless youth. *J Adolesc Health* 1998;23:370–7.
- [34] Ensign J, Gittelsohn J. Health and access to care: Perspective of homeless youth in Baltimore City, USA. *Soc Sci Med* 1998;47:2087–99.
- [35] Love L, McIntosh J, Rosst M, Tertzakian K. *Fostering hope: Preventing teen pregnancy among youth in foster care*. Washington, DC: National Campaign to Prevent Teen Pregnancy; 2005.