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Housing Instability and Birth Weight among Young Urban Mothers

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Abstract

Objectives. To identify determinants of housing instability and to explore the association between housing instability and birth weight among pregnant teens and young mothers.

Methods. Participants included pregnant women ages 14-21 from fourteen community hospitals and community health centers in New York City (N=623). Data were collected via structured survey during the second trimester of pregnancy (14 to 24 weeks gestation, $M=19.35$, $SD=3.20$). Birth weight was obtained through labor and delivery logs. Housing instability was operationalized as ≥ 2 moves within the past year.

Results. More than one in four (28.5%) pregnant teens and young women in this sample reported housing instability. Factors that protected against housing instability were school enrollment, living with parents, parents as their main source of financial support, living in a single family home or apartment, food security, and not smoking during pregnancy (all $p<.05$). Even after adjusting for important clinical, behavioral and demographic factors typically associated with lower birth weight, housing instability was an important predictor of lower birth weight ($P=.02$).

Conclusions. Teens and young mothers with housing instability have lower birth weight infants. Future interventions should ensure that women are housing secure before, during and after pregnancy. Policies that are geared towards providing affordable housing are a major concern.

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Table 1. Demographic and Clinical Characteristics of 613 Pregnant Women by Housing Instability Status^a

Characteristic	Housing Instability		p ^c
	Yes (N = 175) ^b	No (N = 438) ^b	
<i>Demographic Characteristics</i>			
Age (years)	18.6±1.7	18.7±1.7	.727
Race/ethnicity			.359
Latina	101 (57.7)	280 (63.9)	
Black, non-Latina	67 (38.3)	143 (32.7)	
White or other, non-Latina	7 (4.0)	15 (3.4)	
Enrolled in School	67 (38.3)	220 (50.3)	.007
Born Outside US	53 (30.3)	118 (26.9)	.404
Currently employed	31 (17.7)	101 (23.2)	.139
Source of Financial Support			.014
Parent or Guardian	52 (29.9)	177 (40.6)	
Other: Self, husband/boyfriend, other relatives, government	122 (70.1)	259 (59.4)	
Living Situation			<.001
Single family home/Apartment	156 (89.1)	429 (98.0)	
Street or Shelter/Group home	19 (10.9)	9 (2.1)	
Living With Parents	68 (38.9)	291 (66.7)	<.001
Currently in a Relationship	143 (81.7)	353 (81.5)	.956
Food Insecurity	91 (52.3)	165 (38.0)	.001
<i>Clinical and Behavioral Characteristics</i>			
Pre-pregnancy body mass index	24.6±6.7	24.0±6.0	.234
Gestational Age (Days)	271.4±18.6	273.2± 15.4	.257
Drinking During Pregnancy	14 (8.0)	29 (6.6)	.551
Smoking During Pregnancy	15 (8.6)	17 (3.9)	.019

^a Table values are mean ± SD for continuous variables and n (column %) for categorical variables.

^b Numbers may not sum to total due to missing data, and percentages may not sum to 100% due to rounding.

^c P-value is for t-test (continuous variables) or χ^2 test (categorical variables).

Table 2. Association between Housing Instability and Birth weight

Characteristic	Unadjusted		Adjusted	
	B (SE)	p	B (SE)	p
Housing Unstable	-127.79(42.61)	.003	-83.96 (35.47)	.018
<i>Demographic Characteristics</i>				
Maternal Age			13.08 (12.33)	.289
Race/ethnicity			Reference	---
Latina				
Black, non Latina			-96.78 (28.38)	.001
White or other, non Latina			85.46 (88.70)	.335
Enrolled in School			13.54 (53.34)	.800
Born Outside US			-10.85 (36.72)	.773
Currently Employed			29.20 (40.77)	.474
Financial Support By Parents			21.88 (19.45)	.261
Single Family Home/Apartment			-114.64 (98.42)	.244
In a Relationship			-44.57 (22.43)	.047
Food Insecurity			72.49 (27.74)	.009
Nutrition			-6.30 (1.65)	.001
<i>Clinical & Behavioral Characteristics</i>				
Pre Pregnancy BMI			5.57 (2.35)	.018
Gestational Age			27.39 (1.09)	<.001
Drinking During Pregnancy			74.66 (51.74)	.149
Smoking During Pregnancy			-141.37 (65.68)	.031
Nulliparous			-60.76 (53.97)	.260

Introduction

Variations in birth weight, even within normal range of weight, have a significant effect on health and social outcomes.¹⁻³ Social conditions during pregnancy, such as housing stability, have a strong influence on maternal and child health.⁴ Of course, housing stability is associated with socioeconomic status (SES).⁵ Women of low socioeconomic status are more likely to live in poor housing conditions and have other severe stressors that together may adversely affect birth outcomes.⁶

The US Department of Health and Human Services has defined housing instability as having high housing costs (>30% of a household's monthly income), poor housing quality, unstable neighborhoods, overcrowding, or homelessness.⁷ Other parameters of housing instability include frequent moves, or doubling up with relatives and friends.⁸ There are no validated methods in measuring housing instability and there are limited data on prevalence. National and state estimates vary from 5 to 72 percent.⁷ These variations are due to the range in individuals meeting criteria for housing instability, geographic location and study sample.

Recently, there has been an increase in studies aimed at understanding how housing instability adversely influences health.⁹⁻¹¹ Among children, multiple moves have been associated with fair or poor child health, greater developmental risk, and lower weight for age.¹⁰ Among adults, research has shown that homelessness is associated with higher rates of mortality,¹² morbidity¹³ and poor mental health and distress symptoms.¹⁴

To date, research has been limited on the effects of housing instability during the perinatal period. Stein revealed that being homeless predicted low birth weight among a sample of 237 women in Los Angeles.¹⁵ However, less is known about the challenges of housing stability during the perinatal period. Moreover, no studies to date have examined these effects

among pregnant teens and young women. The purpose of this study is to (1) identify factors associated with housing instability (defined as 2 or more moves in the past year) among pregnant teens and young women, and (2) to examine the impact of housing instability on birth weight. It is hypothesized that housing instability will be associated with lower birth weight. Infants born with lower birth weight are not only more likely to have health problems as newborns, but are at an increased risk of having high blood pressure, diabetes, and heart disease across the life span.¹⁶

Methods

Study Participants

Pregnant women ages 14-21 were enrolled in a randomized controlled trial of a group prenatal care intervention at fourteen community hospitals and community health centers in New York City. This is a cluster randomized controlled trial, wherein clinical sites were randomized to deliver the group prenatal care intervention or standard of prenatal care. For these analyses, data were utilized from the seven delayed intervention clinical sites only to remove possible effects of confounding from participating in the group prenatal care intervention.

Inclusion criteria were pregnant women (1) between the ages of 14-21 years old, (2) <24 weeks pregnant at entry to prenatal care, (3) speak Spanish or English, (4) no medical problems requiring individual care as a high-risk pregnancy and (5) willingness to be randomized. Of the 1,549 women eligible for the trial, 1,233 enrolled in the study (80%). In the seven delayed intervention sites, there were 623 women enrolled. There were no differences in age, race/ethnicity or other indicators of social class between the two study conditions. Ten women were excluded in this analytic sample because they had incomplete information on housing status.

Procedure

Data come from the baseline interview that was conducted during the second trimester (14 to 24 weeks gestation, $M=19.35$, $SD=3.20$). Structured interviews were conducted with Audio-Handheld-Assisted Personal Interview (A-HAPI). Participants listen through headphones to pre-recorded questions that were also shown on the computer screen.

Sixteen percent of the women in the analytic sample chose to complete interviews in Spanish as their preferred language. Interviews were translated and back-translated by independent Native Spanish speakers to ensure that language would be appropriate for women from different countries and that the meaning was consistent with the original survey. Survey data were supplemented with review of medical records and labor and delivery logs at participating hospitals and health centers. Participants were paid \$20 for each interview.

Measures

Primary Predictor

Respondents were asked the following question: “How many times have you moved in the past year?” Based on previous research by Cutts et al., housing instability was defined as those who moved two or more times in the past year.¹⁰

Covariates

Sociodemographic characteristics. Sociodemographic and background characteristics were obtained via self-report from the structures interviews. Questions were developed for this study based on our prior research with this population.¹⁷ Maternal age, race/ethnicity, schooling status, country of origin, employment status, source of financial support, living situation, relationship status and food insecurity were obtained by questionnaire. Race/ethnicity was divided into three mutually exclusive categories: Latina, Black (non-Latina), and White or other

(non-Latina). Source of financial support was obtained through “What is your main source of financial support?” Women were only able to respond with one choice: own job, husband or boyfriend, parent or guardian, other relatives, government or state, drug dealing, sex work, or other. Those who responded with own job, husband or boyfriend, other relatives, government or state, drug dealing, sex work, and other were collapsed together and compared to those who responded with parent or guardian. Living situation was obtained from the following question: “Where do you currently live?” Women were able to respond with single family home, apartment, street or a shelter, group home, rehab, health facility, or jail/prison. Those who indicated they lived in a single family home or apartment was combined while street, shelter, or group home was grouped together. Food insecurity was gathered from the question “Do you ever run out of money or food stamps to buy food?” Respondents who indicated “yes” were classified as food insecure.

Nutrition was derived from the modified version of REAP/WAVE that quickly assessed the participant’s diet.¹⁸ Participants respond to eleven questions with either one of the five answer choices: Never, 1-2 Days, 3-4 Days, 5-6 Days, or Every Day. Participants are asked how often they skip breakfast, eat meals out, eat fried foods, eat chips, eat whole grain products, eat fruits and vegetables, add butter or margarine to foods, eat yogurt, cheese or drink milk, eat sweets and drink regular soda. Items were recoded to range from 0-4, with “never” receiving a score of 0 and “every day” receiving a score of 4. Questions asking how often participants eat whole grain, eat fruits and vegetables, eat yogurt, cheese or drink milk were reverse scored. Responses were then summed to create a composite score ($\alpha=.86$). Higher scores indicated poorer nutrition.

Clinical characteristics. Clinical characteristics included pre-pregnancy BMI, drinking

status, smoking status, nutrition, parity and gestational age. Pre-pregnancy BMI was calculated from self-reported weight and height before they were pregnant. Drug use during pregnancy has been associated with adverse birth outcomes and was therefore included in analyses. To determine drinking status the following questionnaire question was used: “Did you use alcohol, including wine, beer or liquor since you have been pregnant?” If women responded “yes” then they were coded as ‘drinking during pregnancy’. Similarly smoking status was acquired similarly through “did you smoke cigarettes since you have been pregnant?” Parity was obtained from the question “How many other times in your life have you been pregnant (not including this pregnancy)?” Individuals who responded with 0 were coded as nulliparous.

Medical Record Review. Birth weight measured in grams was the main outcome variable. Study staff obtained birth weight data from labor and delivery information from hospitals and health centers. Gestational age¹⁹ was taken from labor and delivery records. Gestational age was estimated through ultrasound records when available or last menstrual period.

Data analytic strategy

Frequency distributions were conducted by housing stability status to illustrate the prevalence of selected variables. Bivariate associations were tested using chi square tests. A multiple linear regression model predicting birth weight was constructed, controlling for relevant clinical, behavioral and demographic characteristics. Analyses were conducted using SAS 9.2 (SAS Institute, Cary, NC).

Results

Factors Associated with Housing Instability

More than one-quarter (28.5%) of pregnant teens and young women in this study sample are unstably housed. Women who were housing secure were significantly more likely to be (Table 1): currently enrolled in school, have their parents as their main source of financial support, live in a single family home or apartment, live with their parents, have food security, and not smoke during pregnancy compared with housing insecure women (all $p < .05$). There were no differences in age, race/ethnicity, country of origin, relationship status, or drinking during pregnancy.

Association between Housing Instability and Birth Weight

A multivariate linear regression model predicting birth weight indicated that housing instability was a risk factor for lower birth weight. On average, those who had unstable housing had a birth weight 84 grams less than those with secure housing (Table 2). Even after adjusting for important demographic, behavioral and clinical factors typically associated with low birth weight — age, race, enrollment in school, country of origin, employment status, financial support, living situation, relationship status, food, nutrition, pre-pregnancy body mass index, gestational age, drinking and smoking during pregnancy, and parity—housing instability was associated with lower birth weight ($P = .02$). In addition, multiple linear regression analyses indicated that relationship status, smoking during pregnancy and nutrition were independently associated with lower birth weight.

Discussion

We explored the association between housing instability and lower birth weight among pregnant teens and young women in a large prospective study. Study participants received standard prenatal care from community hospitals and community health centers in New York City.

This study illustrates the importance of participants living with their parents or having their parents as their main source of financial support. This finding is consistent with previous research that indicates the grandmother as being the main source of support.²⁰ Young women in the study ranged from ages 14-21; therefore, it is expected that many of the participants would be living with their parents. Living with parents had a protective effect against being housing insecure. Caldwell & Antonucci reported that a majority of teenage mothers live with their mother for up to five years after giving birth, and that grandmothers are a primary source of housing, childcare assistance and financial support.²¹ Living with the grandmother has been associated with increased educational attainment, stable employment as well as financial support.²²

These results reveal that those with housing instability have lower birth weight infants. This is consistent with prior research that shows that homeless women were more likely than non-homeless women to have low-birth weight infants.²³ Although homelessness is a more severe type of housing instability, it is important to recognize that even housing instability, defined as multiple moves, had effects on birth weight in this sample.

According to data from the U.S. Census for 2011, 20.9 percent of individuals in New York were living in poverty showing that limited funds is a widespread concern in these economic times.²⁴ For a single person, poverty is defined as having an income of less than

\$11,500 annually and for a family of four an income of \$23,021. This is an inherent issue as there is a high cost of living in New York City and therefore grossly underestimating the amount of individuals who are struggling financially. Moreover, individuals with limited income are more likely to have issues with housing. The mechanism of the association between multiple moves and lower birth weight may be through stressful life events.²⁵ Those who had housing instability were also more likely to be food insecure. This could potentially provide issues of its own as food instability has been linked with negative health aspects that were however not examined in the present study.²⁶

Limitations and Strengths

This study has certain limitations. Our measure for housing instability was based on how many times the participant moved in the past year, it does not capture other aspects of housing instability such as doubling up, affordability, overcrowding, housing safety, or neighborhood quality.⁷ Therefore, housing instability is likely underestimated in this sample of young urban mothers. Another potential limitation is that baseline interviews were conducted during the second trimester of pregnancy, and we are unsure of when and why the housing moves took place or whether or not they were planned (e.g., since pregnant, deciding to move in with their own parents, father of the baby or his family). This study utilized a sample that was predominately comprised of women of color, with 96.5% identifying as either Latina or Black, typical of urban clinical populations. However, results are likely not generalizable to all women. Lastly, some social class variables such as income were not included.

Despite these limitations, there are strengths worth noting. First, we were able to demonstrate that those with housing instability have lower birth weight infants. Past research has focused on homelessness in adults. We studied a less severe form of housing instability and

demonstrated that housing instability itself is an important indicator of birth weight. Second, we were able to identify protective factors that may be important as we consider future clinical and social interventions aimed at improving birth outcomes for young urban women.

Conclusions

More than one in four young pregnant women in this study reported housing instability. Housing instability during the perinatal period can present numerous challenges for women as they struggle with other pressing stressors related to poverty or daily living. Results from this study indicate that housing instability is an important predictor of birth weight even after controlling for important clinical, behavioral and demographic factors. To support healthy pregnancy, future interventions must ensure that women are housing secure before, during and after pregnancy.

Prior research has demonstrated the increased risk of mortality, morbidity and depressive symptoms among homeless individuals.¹²⁻¹⁴ However, this study focused on a less severe aspect of housing instability. There is a need for further research on how housing instability in terms of multiple moves affects other birth outcomes such as preterm birth or other adverse birth outcomes. Cutts and colleagues found that multiple moves had a stronger association with food insecurity and fair/poor child health than crowding, suggesting that multiple moves are a more severe form of housing instability than crowding.¹⁰ More individuals may experience multiple moves than homelessness and therefore research should examine their effects on pregnancy and subsequent birth outcomes. Future research should examine possible mechanisms of this association between multiple moves and birth outcomes.

One possible explanation is that stressful life events (i.e. moving) around the time of pregnancy contribute to the adverse birth outcomes. Policies that are geared towards providing

affordable housing are a major concern. The New York City Housing Authority (NYCHA) states that they provide affordable housing for low- and moderate-income residents in the five boroughs. While this is a great opportunity for those needing assistance in obtaining affordable housing as families pay no more than 30% of their family income for rent, there is still a need as applicants needing public housing often have to wait months or even years to be matched.²⁷ Also, as of December 2009, NYCHA no longer accepts new Section 8 applications, a federally funded subsidy housing program for low-income families.²⁸

Housing stability should be a public health concern, as young urban mothers who may also have other stressors, should not feel the need to move constantly. This may require addressing other aspects of poverty. Results reveal that living with a parent or having parents as a main source of financial support is beneficial. It is necessary to note that living with parents or guardians should not be encouraged when living in abusive environments or those that are not conducive to the health of the mother or infant.

Housing stability during the perinatal period is critical. Housing instability presents a challenge that can unfavorably affect birth weight. Given the basic necessity of secure housing and the health impact of lower birth weight across the life span, identifying effective policy in ensuring that young women have secure housing remains critical even for both maternal and child health.

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