



Original article

## Social Discrimination, Stress, and Risk of Unintended Pregnancy Among Young Women



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### ABSTRACT

**Purpose:** Prior research linking young women's mental health to family planning outcomes has often failed to consider their social circumstances and the intersecting biosocial mechanisms that shape stress and depression as well as reproductive outcomes during adolescence and young adulthood. We extend our previous work to investigate relationships between social discrimination, stress and depression symptoms, and unintended pregnancy among adolescent and young adult women.

**Methods:** Data were drawn from 794 women aged 18–20 years in a longitudinal cohort study. Baseline and weekly surveys assessed psychosocial information including discrimination (Everyday Discrimination Scale), stress (Perceived Stress Scale), depression (Center for Epidemiologic Studies–Depression Scale), and reproductive outcomes. Multilevel, mixed-effects logistic regression and discrete-time hazard models estimated associations between discrimination, mental health, and pregnancy. Baron and Kenny's method was used to test mediation effects of stress and depression on discrimination and pregnancy.

**Results:** The mean discrimination score was 19/45 points; 20% reported moderate/high discrimination. Discrimination scores were higher among women with stress and depression symptoms versus those without symptoms (21 vs. 18 points for both,  $p < .001$ ). Pregnancy rates (14% overall) were higher among women with moderate/high (23%) versus low (11%) discrimination ( $p < .001$ ). Discrimination was associated with stress (adjusted relative risk ratio, [aRR], 2.2; 95% confidence interval [CI], 1.4–3.4), depression (aRR, 2.4; CI, 1.5–3.7), and subsequent pregnancy (aRR, 1.8; CI, 1.1–3.0). Stress and depression symptoms did not mediate discrimination's effect on pregnancy.

**Conclusions:** Discrimination was associated with an increased risk of mental health symptoms and unintended pregnancy among these young women. The interactive social and biological influences on reproductive outcomes during adolescence and young adulthood warrant further study.

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### IMPLICATIONS AND CONTRIBUTION

Social discrimination was associated with stress, depression, and unintended pregnancy among these young women. Findings offer insight into the roles of social context in the pathways leading to unintended pregnancy, accounting for different dimensions of health, well-being, and social disadvantage that have been understudied in adolescent reproductive health research.

**Conflicts of Interest:** None declared.

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Unintended pregnancy during adolescence and young adulthood has significant health and social consequences for young women, their families, and society [1–3]. Increased risk of maternal and infant morbidity and mortality, antenatal and postpartum depression, domestic violence, rapid repeat unintended pregnancy, interrupted education, reduced employment

opportunities, and substantial health care costs are among the many adverse outcomes for pregnant young women, their offspring, and health systems worldwide [1–3]. In the United States, unintended pregnancy and its sequelae are disproportionately high among poor and minority young women [4,5].

Although disparities in unintended pregnancy point to the role of sociodemographic factors such as race/ethnicity and socioeconomic status (SES) [4–7], the mechanisms through which these distal determinants influence reproductive outcomes are not fully clear. Research on the interrelationships between social context and health (i.e., biosocial), including Geronimus' "Weathering Hypothesis," suggests that chronic social stressors differentially experienced by socially disadvantaged women, and specifically discrimination and marginalization, can lead to ongoing psychological (e.g., mental distress) and physiological (e.g., immune/inflammatory dysfunction, higher allostatic load, and accelerated cellular aging) stress burden to influence health outcomes (e.g., depression, chronic disease, and mortality) and shape health disparities [8–12]. Social discrimination and its biosocial processes, however, have been given relatively little attention in reproductive health research [13]. Racial and socioeconomic disparities in adverse perinatal outcomes, such as miscarriage and stillbirth, are believed to at least partially stem from the biological and psychological "wear and tear" that chronic exposure to discrimination triggers [14–18].

Discrimination and its biosocial processes (i.e., mental and physical weathering) may also help explain disparities in unintended and early pregnancy among socially disadvantaged women, although this has not been widely studied. Our prior research highlighted the influence of young women's mental health on the proximate determinants of unintended pregnancy—sex and contraceptive behaviors [19–21]. Using data from a representative longitudinal study of nearly 1,000 women aged 18–20 years, we described the effects of stress and depression symptoms on women's contraceptive nonuse, misuse, less-effective method use, increased sexual activity, and rates of pregnancy over 1 year [19–21]. Although this work and that of others have identified links between mental health and unintended pregnancy [22–24], young women's adverse social circumstances, and notably, experiences with discrimination, have not been considered but may concurrently contribute to negative mental and reproductive health outcomes, especially for poor and minority young women [13].

We investigated relationships between social discrimination, mental health, and pregnancy among a population-based cohort of adolescent and young adult women not desiring pregnancy. We hypothesized that women who perceived discrimination would experience higher rates of stress and depression symptoms and pregnancy and that mental health would mediate relationships between discrimination and pregnancy. We further hypothesized that rates of discrimination, mental health symptoms, and pregnancy would be higher among poor and minority women than among their socially advantaged counterparts.

## Methods

### Sample and design

Data were drawn from a longitudinal population-based cohort study of women aged 18–20 years [19–21]. Young women were sampled from a racial/ethnically and socioeconomically diverse county in the Midwestern United States between March 2008

and March 2009. Names and contact information were randomly selected from state driver's license and personal identification card registries to identify eligible women (ages 18–20 years and a county resident). Of the women contacted by mail or in-person and asked to participate, 84% enrolled at baseline and 99% of those agreed to participate in the longitudinal study, resulting in a final sample of 992 women. The Institutional Review Board of the University of Michigan approved this study.

After informed consent, women completed a 60-minute in-person baseline survey interview on sociodemographics, relationship characteristics, reproductive and contraceptive histories, and mental health. Nearly all participants (98%) stated at baseline that they had no intentions but rather strong desires to avoid pregnancy. Women then participated in a 2.5-year study of weekly surveys (online or by phone) that collected information on relationship dynamics, sexual and contraceptive behaviors, and pregnancy outcomes; 75% of the sample completed 18 months or more of surveys. We also administered a series of quarterly surveys assessing additional psychosocial characteristics, including social discrimination.

For our analysis, we included women who were not pregnant, completed more than one weekly surveys, and completed at least one quarterly survey with a discrimination scale measurement. The analytic sample includes 794 women who completed 36,809 weekly surveys, including 2,417 quarterly discrimination surveys, over the first 18 months of study.

### Measures

**Social discrimination.** In quarterly surveys, we administered the Everyday Discrimination Scale (EDS), the most commonly used measure of perceived social discrimination in studies of health and well-being [25,26]. On a five-point Likert response scale (5, almost everyday; 4, at least once a week; 3, a few times a month; 2, a few times a year; or 1, less than once a year), women responded to nine items assessing how often they experienced discrimination in their day-to-day lives: "You are treated with less courtesy than other people;" "You are treated with less respect than other people;" "You receive poorer service than other people at restaurants or stores;" "People act as if they think you are not smart;" "People act as if they think you are dishonest;" "You are called names or insulted;" "People act as if they are better than you are;" "You are threatened or harassed;" and "You are followed around in stores." Responses are summed for a total score (range, 5–45 points), with higher scores denoting greater perceived discrimination.

On average, women completed four quarterly discrimination scales (standard deviation [SD], 1.6; range 1–7). We examined time-variant, survey-level discrimination scores (intraclass correlation and reliability coefficients .7 and .9 respectively, suggesting little variance across woman's survey-level scores). We then created a summary indicator, a woman-level average discrimination score.

To assess different "levels" of discrimination (i.e., low, moderate, and high scores), we created sets of bivariate and categorical indicators using score cutoffs on the basis of the sample distribution. We applied a cutoff of 24.5 points ( $\geq 1$  SD above the sample mean, the top 20th percentile) to create a bivariate discrimination indicator denoting women with moderate/high versus low discrimination scores. We conducted sensitivity analyses to test different discrimination score cutoffs. All results were the same for a 25.5-point cutoff (15th percentile). Discrimination score means and proportions with moderate/

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