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Examining the associations between social support and postpartum depression symptoms among adolescent mothers in Nairobi, Kenya

Luwam T. Gebrekristos[1*], Anthony Idowu Ajayi[2], Allison K. Groves[3] and Caroline W. Kabiru[2]

Abstract

Background Globally, adolescent mothers are at increased risk for postpartum depression (PPD). In Kenya, 15% of adolescent girls become mothers before the age of 18. While social support can buffer a mother's risk of PPD, there are gaps in knowledge as to whether—and which types—of social support are protective for adolescent mothers in Kenya. Understanding the associations between support and postpartum depression symptoms among adolescent mothers can inform mental health interventions.

Methods Cross-sectional data of adolescent mothers ≤ 1 year postpartum (aged 14–19 years old) in an informal settlement in Nairobi, Kenya (N = 193) were used in analyses. Participants with scores ≥ 10 on the Patient Health Questionnaire-9 were classified as having postpartum depressive symptoms. To fully examine the different ways that social support might matter for adolescent mothers, we examined several domains of social support: child's father support during pregnancy, parental support during pregnancy, parental support of girl's education, membership in a social club, having a good female friend and having a supportive female adult one can turn to for help. We used bivariate and adjusted modified Poisson regression with robust standard errors to examine the associations between support measures and depressive symptoms, controlling for relevant covariates.

Results One-quarter of participants experienced postpartum depressive symptoms (24.9%). Adolescent mothers who reported their mothers or their fathers as being very supportive of girls' education had a lower risk of depressive symptoms (ARR 0.35, 95% CI 0.20–0.61; ARR:0.34, 95% CI 0.13–0.90, respectively) than those whose mothers or fathers were less supportive. Adolescent mothers who had a good female friend to confide in had decreased risk of depressive symptoms (ARR 0.61; 95% CI 0.37–0.99).

Conclusions Having a mother or father being very supportive of girls' education and having a good female friend reduced risk of depressive symptoms. With the unique challenges of early childbearing and high adolescent birth rates in Kenya, interventions which increase parental and peer support during pregnancy and the postpartum period could improve adolescent mothers' mental health.

Keywords Adolescent mothers, Postpartum depression, Support, Education, Mental health

*Correspondence:
Luwam T. Gebrekristos
lg526@drexel.edu
Full list of author information is available at the end of the article

Plain English summary

Adolescent mothers are at increased risk for postpartum depression (PPD) as compared to older mothers. In Kenya, 15% of adolescent girls give birth before the age of 18. Social support can reduce a mother's risk of PPD. Yet no studies focus on understanding whether social support reduce adolescent mothers' risk of PPD symptoms in Kenya. Understanding the associations between support and postpartum depression symptoms among adolescent mothers can help in developing mental health interventions. We used data from 193 adolescent mothers ≤ 1 year postpartum (aged 14–19 years old) in an informal settlement in Nairobi, Kenya. Our analysis shows that 24.9% of adolescent mothers experienced depressive symptoms. Depressive symptoms were lower for adolescent mothers who reported that their mothers or their fathers were very supportive of girls' education. Also, adolescent mothers who had a good female friend to confide in had lower depressive symptoms. In sum, having a mother or father being very supportive of girls' education and having a good female friend reduced risk of depressive symptoms. Interventions that increase parental and peer support during pregnancy and the postpartum period could improve adolescent mothers' mental health.

Introduction

Adolescent pregnancy and motherhood are significant public health concerns, particularly in sub-Saharan Africa, where adolescent birth rates are more than double the global rate [1]. In Kenya, 15% of adolescent girls become mothers before the age of 18 [2]. Empirical evidence indicates that adolescent childbearing can lead to negative physical health outcomes [3–5].

Moreover, early pregnancy can give rise to adverse mental health outcomes for the adolescent mother, such as postpartum depression (PPD) [6–9]. PPD is a type of mood disorder that occurs within a year of childbirth [10–12]. Symptoms of PPD include loss of appetite, tiredness, feeling sad, disturbed sleep, being unable to enjoy things that used to bring pleasure, thoughts of hurting self and/or baby, and poor memory or attention span [13, 14]. Several studies globally have shown that the risk of postpartum depressive disorder is higher for mothers younger than 24 years as compared to older mothers [6–9, 15].

Though the postpartum period can be a challenging time for mothers of all ages, the transition to motherhood during adolescence is often accompanied by unique stressors. Adolescent mothers, due to their age, limited support networks, and low access to healthcare services may face heightened vulnerability to poor health outcomes [16–26]. Two qualitative studies on pregnant adolescents and adolescent mothers in Kenya revealed that adolescent mothers faced the following challenges, many of which are unique to pregnancy during adolescence and due to societal norms that view adolescent pregnancy as a problem: stress around the pregnancy, being forced out of or running away from home, financial distress, limited educational or livelihood opportunities after delivery, being abandoned by the child's father, and being stigmatized by family, friends, and community [20, 25]. Experiencing these challenges may result in poor mental health outcomes among adolescent girls, including depression and anxiety, feeling defeated and sad regarding their pregnancy, worried about their future, and unsupported in caring for their child [25]. Given that many unique challenges that adolescent mothers face during pregnancy and postpartum period are the result of inadequate support from family, friends, and/or community [20], measuring the association between support and PPD could aid in the development of interventions.

Despite adolescent mothers' increased risk of PPD, few empirical studies in Kenya focus on adolescents' postpartum mental health. A clinic-based study in Nairobi estimated the prevalence of moderate depression at 29.7% among adolescent mothers [27]. However, this convenience sample excluded adolescent mothers who did not seek healthcare services, leading to issues of generalizability. Further, there are gaps in knowledge of the association between social support and PPD for adolescent mothers in Kenya. Much of the literature in Kenya focuses on adolescents' risk factors for depressive symptoms while pregnant [28–30], which often ignores the unique vulnerabilities that adolescent mothers experience throughout their pregnancy and during the postpartum period that can impact their postpartum mental health outcomes. One cross-sectional study found that absence of social support, having an HIV diagnosis, and experiencing a stressful life event were associated with a depression diagnosis during pregnancy among adolescents [29]. In another study, adolescent girls' negative attitudes toward their child's father was associated with depressive symptoms during pregnancy [28].

Considering the negative implications of early childbearing and the challenges that accompany adjusting to motherhood in adolescence, it is critical to understand which support factors buffer adolescent mothers' risk of postpartum depressive symptoms. Protective factors, like parental support, may assist adolescent mothers in

coping with the challenges they face during pregnancy and the postpartum period. Staying in school can provide a social network for adolescent mothers, an additional source of support, and future economic opportunities, which can consequently impact adolescent mothers' mental health outcomes [31–34]. School dropout is a common consequence of adolescent childbearing [35]. Having a parent(s) who supports girls' education may enable adolescent mothers to continue their education postpartum (e.g., return to school postpartum) and, thus, benefit from the protective effects of schooling. A Malawian study showed that support from family, partners, and friends were associated with decreased risk of postpartum depression among adolescent mothers [36].

The prevalence and protective factors for PPD have been underexplored in Kenya. This manuscript seeks to address the gaps in current research by estimating the prevalence of postpartum depressive symptoms and examining the association between support measures and postpartum depressive symptoms among adolescent mothers in Kenya.

Methods

Study design

Data for the analyses comes from a cross-sectional study that aimed to explore the lived experiences of pregnant and parenting adolescents in a Kenyan urban informal settlement. The study site, Korogocho, is an informal settlement located within the Nairobi metropolitan area and comprises of nine villages. Korogocho, like other informal settlements, is characterized by overcrowding, poor infrastructure and limited access to water and sanitation as well as education and employment.

Data collection took place in November and December 2022. Adolescent girls aged 10 to 19 were eligible to participate in the parent study if they were pregnant or had a biological child, mentally competent to provide consent or assent (for those younger than 18 years), and could respond to questions in English or Kiswahili. A household listing was conducted to develop a sampling frame for eligible adolescent girls. A total of 678 were identified and 594 (88%) were interviewed. The rest could not be reached after three call backs to the household either because they had migrated outside the settlement (n = 39), decline to participate (n = 10), were ineligible based on their age or enrolment in boarding school (n = 28), were away at work (n = 6) or had died (n = 1). For the current study (to examine factors associated with postpartum depression), we excluded adolescent mothers who gave birth more than 1 year before the survey (n = 274), did not report child's age (n = 17; we could not ascertain postpartum timing) or who were currently pregnant (n = 110) yielding an analytic sample of 193. Our eligibility criteria is based on standard clinical definitions of postpartum depression [37–39]. Field assistants administered the quantitative survey tool to participants in a secure and private space within the study site. Study activities were approved by the Amref Health Africa Ethical and Scientific Review Committee and the National Commission for Science, Technology and Innovation. Further information on study details are published elsewhere [40].

Measures

The dependent variable in this study was whether the participant reported depressive symptoms in the last 2 weeks. Participants completed the 9-item Patient Health Questionnaire-9 (PHQ-9) [41] PHQ-9 is moderately accurate at diagnosing PPD.[42] PHQ-9 items were scored on a 4-point Likert scale with higher scores indicating more severe depressive symptoms. Scores for the 9 items were summed with total scores ranging from 0 to 27. A cutoff score of 10 has been used to indicate moderate depressive symptoms among pregnant adolescents in Kenya [30]; therefore, participants with scores ≥ 10 were coded as having postpartum depressive symptoms. Those with scores less than 10 were coded as having no postpartum depressive symptoms.

Based on the existing literature, we included several support measures as independent variables [31–34, 43–49]. Support measures focused on several different providers of support, including the father of the adolescent mother's child (hereafter referred to as the child's father), the adolescent mother's parents, and other key figures in the adolescent mother's broader network. Measures also asked about support for different domains in adolescent girls' lives (e.g., education). *Child's father support during pregnancy*: participants were asked to describe the support they received from their child's father during their pregnancy (good support; fair support; poor or no support). *Parental support during pregnancy*: adolescent mothers were asked to describe the support they received from their parents during their pregnancy (good support; fair support; poor support, no support, or no parent). *Parental support of girl's education*: for each parent, participants were asked how supportive the parent is of girls' education (very supportive; somewhat supportive; no support, parent is not alive or did not know). *Member of a social club*: participants were asked if they were a member of nine different social groups or clubs (e.g., sport clubs, religious group). Those who reported they were a part of at least 1 group were coded as 1; those who were not a part of any social club were coded as 0. *Has a good female friend*: participants were asked two questions about whether they had a good female friend who 1. they could turn to for help if they had a problem and 2. they

meet with regularly to discuss problems and joys. Those who reported yes to either question were coded as 1; those who reported no to both questions were coded as 0. *Has a supportive female adult*: participants were asked the same two questions about a female adult (not their mother or teacher). Those who reported yes to either question were coded as 1; those who reported no to both questions were coded as 0.

We controlled for the following relevant covariates: [6–8, 15, 43, 49–53] age (in years), current marital status (married or cohabiting versus separated, divorced, single), education status (currently in school versus not in school), currently working for pay (yes versus no), parity, and time since most recent delivery (in months).

Data analysis

We first described sociodemographic characteristics and support measures. Next, we generated risk ratios using bivariate and multivariable modified Poisson regression with robust standard errors models to explore the associations between each support measures with postpartum depressive symptoms [54, 55]. All analyses were conducted in R [56, 57].

Results

One in three (34.2%) participants were married or cohabiting; and less than one in ten (6.7%) were currently in school (Table 1). Close to two-thirds (61.7%) of adolescent mothers reported that their mother is very supportive of girls' education, whereas less than one quarter (21.8%) reported that their father is very supportive. Approximately one-half (54.9%) reported that their parents provided good support during their pregnancy. More than a third (44.0%) of adolescent mothers reported that their child's father provided good support during pregnancy. Approximately three-fourths (70.5%) of adolescent mothers had a good female friend and less than two-thirds (60.1%) had a female adult to confide in who was not their mother or teacher. Approximately two in five (40.4%) were members of a social club.

One out of four (24.9%; 95% CI:18.9%-31.6%) adolescent mothers experienced postpartum depressive symptoms. As seen in the bivariate associations shown in Table 2,adolescent mothers who reported their mother (RR 0.34, 95% CI 0.20–0.60) or their father (RR 0.35, 95% CI 0.13–0.91) was very supportive of girls' education had a lower risk of postpartum depressive symptoms compared to adolescent mothers who reported experiencing no support, those whose mother or father were not alive, or who were unsure of the level of support. Further, having good support from their parents during pregnancy was associated with a lower likelihood of postpartum depressive symptoms compared to those who had poor or no support during pregnancy (RR 0.54; 95% CI 0.30–0.97). Having good support from their child's father during pregnancy (RR 0.56; 95% CI 0.31–1.02) and a good female friend to confide in (RR 0.64; 95% CI 0.39–1.04) were marginally associated with postpartum depressive symptoms. Being a member of a social club (RR: 1.05; 95% CI: 0.64–1.73) and having a female adult to confide in (RR 0.72; 95% CI 0.44–1.18) were not associated with postpartum depressive symptoms.

Table 2 also illustrates the multivariable results. Adolescent mothers who reported their mother as being very supportive of girls' education had a 65% reduction in risk of having postpartum depressive symptoms compared to adolescent mothers who reported experiencing no support, mother not alive, or unsure of support level (Table 2; ARR: 0.35, 95% CI 0.20–0.61). Similarly, adolescent mothers who reported their father as being very supportive of girls' education had a 66% reduction in risk of having postpartum depressive symptoms compared to adolescent mothers who reported experiencing no support, father not alive, or unsure of support level (ARR: 0.34, 95% CI 0.13–0.90). Having good support from their parents (ARR: 0.58; 95% CI 0.33–1.03) or the child's father (ARR: 0.57; 95% CI 0.30–1.09) during pregnancy was marginally associated with decreased risk of postpartum depressive symptoms compared to those who reported having poor or no support. Being a member of a social club was not associated with postpartum depressive symptoms (ARR: 1.04; 95% CI 0.65–1.67). Adolescent mothers who had a good female friend to confide in had a decreased risk of postpartum depressive symptoms compared to those who did not have a female friend (ARR 0.61; 95% CI 0.37–0.99). Having a female adult to confide in was marginally associated with postpartum depressive symptoms (ARR 0.75; 95% CI 0.46–1.21).

Discussion

This study aimed to measure the prevalence of postpartum depressive symptoms and explore the association between different forms of social support and postpartum depressive symptoms. In this study, one-quarter of adolescent mothers experienced postpartum depressive symptoms. In multivariable analyses, parental support for girls' education and having a good female friend to confide in were associated with a decreased risk of experiencing postpartum depressive symptoms. Further, parental support and support from the child's father during pregnancy were marginally associated with a decreased likelihood of experiencing postpartum depressive symptoms.

Few empirical studies on maternal mental health in Kenya focus on adolescents. Despite this, the magnitude of PPD symptoms is relatively consistent across

Table 1 Characteristics of study participants (N = 193)

	Overall (N = 193)	No depressive symptoms (N = 145)	Depressive symptoms (N = 48)
Demographic characteristics			
Age (in years)			
Mean (SD)	18.0 (1.11)	18.0 (1.09)	17.8 (1.18)
Marital status			
Married/cohabiting	66 (34.2%)	52 (35.9%)	14 (29.2%)
Separated/divorced/single	127 (65.8%)	93 (64.1%)	34 (70.8%)
Currently in school			
Yes	13 (6.7%)	11 (7.6%)	2 (4.2%)
No	180 (93.3%)	134 (92.4%)	46 (95.8%)
Currently working for pay			
Yes	30 (15.5%)	19 (13.1%)	11 (22.9%)
No	163 (84.5%)	126 (86.9%)	37 (77.1%)
Number of births			
Mean (SD)	1.24 (0.52)	1.26 (0.52)	1.21 (0.50)
Number of months postpartum			
Mean (SD)	6.22 (3.64)	6.37 (3.63)	5.75 (3.66)
Measures of support			
Mother supports girls' education			
Very supportive	119 (61.7%)	102 (70.3%)	17 (35.4%)
Somewhat supportive	26 (13.5%)	15 (10.3%)	11 (22.9%)
Not support/not alive/I don't know	48 (24.9%)	28 (19.3%)	20 (41.7%)
Father supports girls' education			
Very supportive	42 (21.8%)	38 (26.2%)	4 (8.3%)
Somewhat supportive	17 (8.8%)	10 (6.9%)	7 (14.6%)
Not support/not alive/I don't know	134 (69.4%)	97 (66.9%)	37 (77.1%)
Parental support during pregnancy			
Good	106 (54.9%)	87 (60.0%)	19 (39.6%)
Fair	45 (23.3%)	30 (20.7%)	15 (31.3%)
Poor/no support/no parent	42 (21.8%)	28 (19.3%)	14 (29.2%)
Child's father support during pregnancy			
Good	85 (44.0%)	71 (49.0%)	14 (29.2%)
Fair	33 (17.1%)	21 (14.5%)	12 (25.0%)
Poor/no support	75 (38.9%)	53 (36.6%)	22 (45.8%)
Member of a social club			
Yes	78 (40.4%)	58 (40.0%)	20 (41.7%)
No	115 (59.6%)	87 (60.0%)	28 (58.3%)
Has a good female friend			
Yes	136 (70.5%)	107 (73.8%)	29 (60.4%)
No	57 (29.5%)	38 (26.2%)	19 (39.6%)
Has a good female adult			
Yes	116 (60.1%)	91 (62.8%)	25 (52.1%)
No	77 (39.9%)	54 (37.2%)	23 (47.9%)

studies, especially when considering variability in timing of measurement (i.e., pregnancy and postpartum versus postpartum only) and differences in tools used to measure PPD (i.e., Edinburgh postnatal scale and Beck's Depression Inventory,). Specifically, our prevalence estimate was consistent with a clinic-based study in Nairobi estimating the prevalence of moderate depression at 29.7% among adolescent mothers

Table 2 Bivariate and multivariable associations between support measures and postpartum depressive symptoms

Models	RR (95% CI)	p-value	ARR (95% CI)[a]	p-value
Model 1: Mother supports girls' education				
Very supportive	0.34 (0.20, 0.60)	< 0.0001	0.35 (0.20, 0.61)	< .0001
Somewhat supportive	1.02 (0.58, 1.78)	0.96	1.00 (0.58, 1.72)	0.99
Not support/not alive/i don't know	Ref.		Ref.	
Model 2: Father supports girls' education				
Very supportive	0.35 (0.13, 0.91)	0.03	0.34 (0.13, 0.90)	0.03
Somewhat supportive	1.49 (0.79, 2.80)	0.21	1.57 (0.85, 2.91)	0.15
Not support/not alive/i don't know	Ref.		Ref.	
Model 3: Parental support during pregnancy				
Good	0.54 (0.30, 0.97)	0.04	0.58 (0.33, 1.03)	0.06
Fair	1.00 (0.55, 1.81)	0.99	1.11 (0.62, 1.96)	0.73
Poor/no support/no parent	Ref.		Ref.	
Model 4: Child's father support pregnancy				
Good	0.56 (0.31, 1.02)	0.06	0.57 (0.30, 1.09)	0.09
Fair	1.24 (0.70, 2.20)	0.46	1.22 (0.69, 2.17)	0.49
Poor/no support	Ref.		Ref.	
Model 5: Member of a social club	1.05 (0.64, 1.73)	0.84	1.04 (0.65, 1.67)	0.86
Model 6: Reports having a good female friend	0.64 (0.39, 1.04)	0.07	0.61 (0.37, 0.99)	0.04
Model 7: Reports having a good female adult	0.72 (0.44, 1.18)	0.19	0.75 (0.46, 1.21)	0.24

[a] Model adjusted for age, marital status, education status, work status, parity, time since delivery

at 6 weeks postpartum or less [27]. Our estimate was also consistent with another study in Kenya, which recruited pregnant adolescents and adolescent mothers within one year postpartum and reported a 24% prevalence of moderate depression across the entire time period [58].

In line with our hypothesis and consistent with literature among adult women, having support was protective against postpartum depressive symptoms [59–61]. To our knowledge, this study is the first to examine the association between support and postpartum depressive symptoms among adolescent mothers in Kenya. Relatedly, this study is the first to examine whether parental support of girls' education is linked to postpartum depressive symptoms. School dropout is a prevalent cause and consequence of adolescent motherhood and negatively impacts the adolescent mother's future social and economic opportunities [31–35]. In this study, regardless of adolescent mothers' school enrolment, having parents who support girls' education decreased the likelihood of postpartum depressive symptoms. Parental support of girls' education could provide adolescent mothers with coping strategies for academic and personal challenges, which can in turn positively impact adolescent mothers' mental health [62, 63]. Our finding underscores the influence of parental attitudes and the importance of promoting girls' education (e.g., through enhancing return to school) to improve adolescent mothers' mental health.

Due to the limited literature on support and PPD among adolescent mothers, there are several directions for future research. Although we examined support from adolescent mothers' parents, the child's father, and close friends, adolescents could also receive support from other avenues (e.g., teachers, and/or digital media). Future research should examine whether and how different types of support (independently and collectively) reduce PPD for adolescent mothers. Such research may be particularly relevant given the growing interest in interventions which provide support via digital media technologies [64–66]. Future research should examine whether support via digital media is feasible in diverse contexts and whether such support is protective against PPD among adolescent mothers.

Based on our findings, there are intervention and policy implications. Having a mother and/or father being very supportive of girls' education was the strongest protective factor of PPD. Developing and implementing interventions aimed at increasing parental support for girls' education may lessen adolescent's PPD risk. Recognizing the protective effect of having a close female friend against postpartum depressive symptoms, implementing peer support programs for adolescent mothers may mitigate their risk of PPD. Further, in our previous study, one-third of adolescent mothers who delivered at a hospital reported physical abuse, verbal abuse or stigma and discrimination from healthcare providers [40]. Given

that experiencing abuse, stigma and discrimination are barriers to engaging in care, the provision of adolescent-friendly services could bolster access to maternal mental health screenings and services. Finally, considering the stigma that is commonly associated with adolescent pregnancies, interventions that aim to mitigate depression in this population must simultaneously address the challenges that come with adolescent childbearing.

Our study has several limitations. First, our cross-sectional study design precludes us from establishing temporality. For example, it is possible that PPD leads to disengaging from friends and social clubs [20]. This may be particularly relevant in this study since less than 10% of participants were currently in school. Future longitudinal studies (and mediation analyses) may further elucidate whether and how support protects adolescents from depression during the transition to parenthood. Second, our outcome is self-reported. Though it does not replace a clinical diagnosis of PPD, the PHQ-9 is a validated measure for predicting clinical diagnosis of postpartum depressive symptoms [67]. Further, there are limitations in how depressive symptoms were measured. Specifically, the reference period for depression was the prior 2 weeks, which may underestimate the true prevalence of PPD. Another limitation is the small analytic sample size, which may preclude our ability to detect small effect sizes due to inadequate power. Studies with larger sample sizes are needed to conclusively examine the associations between social support measures and postpartum depressive symptoms. However, this study has many strengths. Our study focuses on an overlooked population in maternal mental health research—adolescent mothers. Further, this study is the first to examine whether support impacts postpartum depressive symptoms among Kenyan adolescent mothers.

Conclusions

In summary, this study expands our understanding of adolescent postpartum mental health by estimating the prevalence and the associations between various support measures and postpartum depressive symptoms. Consistent with other studies [27, 58, 68–70], our findings show that PPD is a burden among adolescent mothers, with one-quarter of adolescent mothers reporting postpartum depressive symptoms. Further, having parental support in girls' education and having a good female friend to confide in were associated with a decreased risk of experiencing postpartum depressive symptoms. Given the high adolescent birth rates and unique challenges of early childbearing in Kenya, mental health prevention approaches bolstering parental and peer support during pregnancy and the postpartum period could play a critical role in decreasing adolescent mothers' risk of PPD.

Abbreviations

PPD Postpartum depression
PHQ-9 Patient Health Questionnaire-9

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Author contributions

LTG, AIA, AKG and CWK conceptualized the study. LTG conducted the analysis and developed the initial draft of the manuscript. LTG, AIA, AKG, and CWK contributed to interpreting the results and editing the manuscript, reviewed, and approved the manuscript submission.

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Availability of data and materials

Data will be made available through the APHRC microdata portal http://microdataportal.aphrc.org/index.php/catalog.

Declarations

Ethics approval and consent to participate

The Amref Health Africa Ethics and Scientific Review Committee (ESRC) approved the study (ESRC P1175-2022; September 19, 2022). The National Commission for Science, Technology and Innovation authorized the study (License No: NACOSTI/P/222116). Written and verbal consent were obtained from parents of minors and adolescent mothers aged 18 and over. For adolescent mothers under 18 years of age, verbal and written assent were obtained. Prior to soliciting consent and/or assent, field assistants informed participants of their rights to privacy, confidentiality, respect, anonymity, and voluntary participation.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

[1]Department of Epidemiology and Biostatistics, Drexel University Dornsife School of Public Health, 3215 Market St., Philadelphia, PA, USA. [2]Sexual, Reproductive, Maternal, Newborn, Child and Adolescent Health (SRMNCAH) Unit, African Population and Health Research Center, Nairobi, Kenya. [3]Department of Community Health and Prevention, Drexel University Dornsife School of Public Health, Philadelphia, PA, USA.

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