Postpartum Depression among Kenyan Adolescents

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Abstract

Risk of Postpartum Depression among Kenyan Adolescents

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Background: Adolescents may have elevated risks of postpartum depression compared to adults due to unique socioeconomic stressors. Hormonal contraception has been associated with higher risks of depression in adults and may also contribute to higher risks of postpartum depression in adolescents; however postpartum depression among adolescents in low and middle-income countries (LMIC) is largely understudied.

Methods: We enrolled adolescents (aged 14-21). attending a 9-month maternal child health visit at two clinics in the Nyanza Province in western Kenya. Postpartum depression was measured using the Edinburgh Postnatal Depression Scale and classified as a score of 12 or above.

Results: Among 498 adolescents, 50 (10%) had postpartum depression. The prevalence of postpartum depression in adolescents age 14-18 was 12%, while adolescents age 19-21 had a prevalence of 9%. In univariate analyses, sexual and relationship power (Odds Ration [OR] 11.55, 95% Confidence Interval [CI] 4.90-27.21), ever use of hormonal contraceptives (OR 2.26, 95% CI 1.25-4.10), pregnancy intention (OR 2.40, 95% CI 1.17-4.91), and household income (OR 4.72, 95% CI 1.31-17.02) were associated with higher risks of postpartum depression. Past ever use of hormonal contraception did lead to a higher risk of postpartum depression (OR 2.26 (1.25-4.10), although this may be a confounder for pregnancy intention.

Discussion: Prevalence of postpartum depression was moderate among postpartum adolescents, but similar between younger and older adolescents. These findings underscore the importance of screening and treatment for postpartum depression among adolescents in LMIC.

Background:

Postpartum depression affects 6-34% of women worldwide, with disproportionally higher rates among women in low-and middle-income countries (LMIC) [1]. Postpartum depression is an important public health problem in maternal and child health, leading to negative health outcomes for mothers and their children [2]. Mothers who are depressed are less likely to breastfeed or seek appropriate health care, and children have higher risks of poor behavioral, cognitive, and growth outcomes [3]. Typically, screening and diagnosis usually occur during pregnancy or in the four weeks following delivery; however, symptoms peak at 4-months postpartum and can appear up to 12 months after delivery [4,5].

Adolescent pregnancies are common in many LMIC, and the burden of depression may be higher among adolescent mothers than adults. [3,5,7,8,]. Adolescents undergo a unique set of social and economic challenges during motherhood, which may contribute to postpartum depression risk [3]. Pregnancy during adolescence can complicate development of identity and autonomy, and cause isolation from peers and family [3]. These changes that accompany pregnancy and motherhood may contribute to an environment and conditions for postpartum depression to develop [5]. While adolescents may share other risk factors for depression with adult women (i.e., unintended pregnancy and poverty), adolescents may find these social and economic stressors are more pronounced and be less equipped to cope with them [3]. As a result, adolescent mothers may face challenges and experience doubts about their perceived ability to care for their child. Yet, postpartum depression in adolescents in LMIC settings is largely understudied.

One additional factor that has been linked to depression in a few studies is the use hormonal contraception [9, 10, 11]. Hormonal contraception has been shown to increase risks of depression in some studies conducted in developed counties [9, 10], and with higher rates of depression among

adolescents using hormonal contraception compared to adults [11]; however, this association has not been extensively studied. Furthermore, women at risk for postpartum depression may be less likely to use contraception, increasing risks of unintended pregnancies for women who desire birth spacing or birth limiting. Thus, depression among adolescents may contribute to sub-optimal contraceptive use in the postpartum period.

Supporting adolescents at risk of postpartum depression may help prevent development of depression, and early diagnosis and treatment can optimize their own health and the health of their infants. Simple screening tools to identify adolescents who have elevated risks of depression could be one strategy to provide this upstream support. Similarly, adolescents who develop depression may require additional resources to use contraception and prevent unintended pregnancies. We conducted a cross-sectional survey of postpartum Kenyan adolescents to characterize postpartum depression in this population.

Methods:

Study population

Between February 2017 and April 2018, we conducted a cross-sectional study to measure contraceptive use in postpartum adolescents. Study participants were from the Nyanza region of Kenya and between the ages of 14-21. Adolescents were assessed for eligibility and recruited from two public hospitals, the Ahero County Hospital and Bondo Sub-County Hospital. Study nurses enrolled adolescents who were 8-10 months postpartum and attending 9-month maternal and child health visits. Ethical approval for the study was received from the Institutional Review Board at the University of Washington and the Kenyatta National Hospital/University of Nairobi Ethics and Research Committee. Participants provided written informed consent prior to study participation.

Data Collection

Study nurses collected data through structured surveys. The survey included questions on sociodemographics, partner characteristics, reproductive history, and contraceptive history and use.

Postpartum depression was measured using the Edinburgh Postnatal Depression Scale (EPDS) [12], a ten-question screening tool to determine the likelihood and potential severity of postpartum depression. The EPDS consists of 10 questions, and each response is given a score from 0 to 3 and scores ranging from 0-30. Women with scores ≥12 were classified as having postpartum depression in this analysis. [12, 13]. The EPDS scale has been validated in LMIC, including Kenya [14]. Relationship power was assessed using the Sexual Relationship Power Scale (SRPS), a 23-question screening tool that determines levels of relationship power. Overall scores for the SRPS range between 1 and 4 [15]. We calculated tertiles of SRPS scores and defined low sexual relationship power as a score <2.03.

Definitions and Statistical Analysis

We classified hormonal contraception as injectables, oral contraception, implants, and emergency contraception. Current contraceptive use is defined as using any method of contraception at the 9-month postpartum study visit; only modern methods of contraception (hormonal methods, intrauterine devices [IUDs] barrier methods, and fertility awareness [16]) were reported by study participants. Previous contraceptive use was defined using contraception prior to the most recent pregnancy.

All statistical analysis were conducted in Stata version 14.1 (College Station, TX). We identified correlates of postpartum depression among adolescents using logistic regression. Multivariate models were used to adjust for any potential cofounding. Age, marital status, and pregnancy intention were selected as *a priori* potential confounders in multivariate analysis based

on findings from previous literature. Logistic regression models were used to assess the relationship between postpartum depression, unintended pregnancy, and current family planning use.

Results:

Among 498 adolescents, the median age was 20 years (interquartile range [IQR] 18-20), and median years of education completed was 10 (IQR 8-12) (Table 1). Most (71%) adolescents had a male partner and half (51%) were married. Older adolescents (age 19-21) were more likely than younger adolescents to be married (64% vs 23%, respectively). One-third of adolescents had low sexual and relationship power scores (Median 2.55, IQR 1.77-2.86). Most (70%) were primigravida, and 64% had an unintended pregnancy. Unintended pregnancies were more common among younger adolescents (90%) than older adolescents (52%). Among all adolescents, 22% reported hormonal contraceptive use prior to pregnancy, while 53% used hormonal contraception following their most recent pregnancy.

Overall, 10% (n=50) of all adolescents had postpartum depression. While postpartum depression was more common among younger than older adolescents (9% and 12%, respectively), these differences were not statistically significant (Odds ratio [OR] 1.36, 95% Confidence interval [CI] 0.74-2.50) (Table 2, Figure 2). Adolescents who reported their last pregnancy was unintended and had low SRPS had higher risks of postpartum depression (OR 2.40, 95% CI 1.17-4.91; OR 11.55, 95% CI 4.90-27.2, respectively). While adolescents who had ever used hormonal contraception or family planning were twice as likely to have postpartum depression (OR 2.27, 95% CI 1.25-4.10; OR 2.49, 95% CI 1.38-4.50), hormonal contraceptive use prior to the most recent pregnancy and current family planning use were not associated with postpartum depression. There is confounding between pregnancy intention and previous hormonal contraception use, as

the number of adolescents also found that among 188 adolescents with available data, household income <10,000 Kenyan Shillings (KSH) was associated with a nearly 5-fold increased risk of postpartum depression (OR 4.72, 95% CI 1.31-17.02). There were also no differences in postpartum depression by age, marital status, or parity. Although marital status was not significant in the univariate analysis (OR 1.39, 95% CI 0.77-2.52), being married and reporting the last pregnancy as unintended was associated with an increased risk of postpartum depression (OR 2.40, 95% CI 1.23-4.69; OR 3.26, 95% CI 1.48-7.18). In an exploratory analysis among adolescents with male partners, we found 118 (33%) of adolescents had a low SRPS score, which was a significant risk factor for postpartum depression in both univariate and multivariate models (multivariate OR 10.54, CI 3.84-28.99; data not shown).

Almost two-thirds (60%) of postpartum adolescents were currently using family planning at the 9-month visit. Among family planning users 23% used implants, 19% used injectables, 15% used condoms alone, 5% used IUD and 4% used oral contraception, and 34% used dual methods (condoms and another method) (Figure 1). Current use of family planning was similar among adolescents with and without postpartum depression (56% vs 44%, respectively, p=0.52).

Discussion:

In our study of postpartum adolescents, we found moderate levels (10%) of depression reported at 9 months postpartum, and similar prevalence among older (9%) and younger (12%) adolescents. The prevalence we detected in our study is within the range of prior studies of adolescents in sub-Saharan Africa that found between 6% and 34% of postpartum adolescents had depression throughout the postpartum period. [3, 8]. Heterogeneity in prevalence of depression between studies may be attributed to differences in age ranges for adolescents, timing of assessment (early vs late postpartum), or scales used to measure depression.

We observed this association between unintended pregnancies and postpartum depression, which suggests that unintended pregnancies may be stressful events for young girls and women who have to navigate motherhood along with the usual stressors of adolescence [1]. Two studies in sub-Saharan Africa also found that unintended pregnancy is a risk factor for postpartum depression in adolescents [3,8]. Potential risks of depression as a result of unintended pregnancy may also be explained by the increased social isolation and economic burden associated with a pregnancy. Postpartum depression has shown to be higher among women with unintended pregnancies in high-income countries as well [6,18], which suggests that these results are generalizable to different geographic settings.

In our study, risk of postpartum depression was higher among adolescents who had ever used hormonal contraception or family planning in univariate analyses. The multivariate model suggests there is confounding between hormonal contraception and pregnancy intention, as well as family planning and pregnancy intention, which may impact the association with postpartum depression. Adolescents with high social support, economic stability, and an internal locus of control may be more likely to use hormonal contraception, and these factors may also be protective against postpartum depression. In contrast, postpartum depression was similar among adolescents who did and did not use hormonal contraception prior to the last pregnancy. Discrepancies between these results may be attributed to lack of power in the comparison of hormonal contraception prior to pregnancy and the aforementioned confounding.

Studies in high income countries have found contrasting results on the association between hormonal contraception use and postpartum depression [9,10,11]. Within adult women, some studies found implants and injectables to lead to a higher risk of postpartum depression [10,11], while a separate study found no relationship [11]. Although we have limited power, previously

using implants or oral contraception did not increase the risk of postpartum depression, while previously using injectables did significantly increase the risk of postpartum depression. Data from high-income countries has shown that the hormonal combination of oral contraceptives and implants can impact depression risk [9,10,11], and the scope of our study does not lend itself to examining individual hormone combinations. The increased risk of postpartum depression from family planning ever use in addition to the increased risk from hormonal contraception suggests that the increased risk of postpartum depression is not caused by biological factors. Additional research on hormonal contraception and depression is necessary to assess potential risks among adolescent populations, particularly since injectable and implant use is increasing in Kenya and other parts of sub-Saharan Africa [17].

Among women with male partners, we found risk of postpartum depression was higher if low SPRS scores were lower which may be explained by poor partner support and feelings of social isolation which are both key concepts captured in the SRPS [15]. Prior studies in sub-Saharan Africa have also found a relationship between postpartum depression and both partner support and social isolation [3,8]. In Uganda low social support (specifically from husbands) was associated with higher risk for postpartum depression [3], while in Zimbabwe postpartum depression was reported to be higher among women who were abandoned by the partner following conception [8].

Our study has some limitations. We were unable to assess temporality between potential risk factors and postpartum depression due to the cross-sectional design. The prevalence of postpartum depression from our study may be a conservative estimate, due to the late date of assessment as underlying postpartum depression may have been resolved by the time of assessment

However, it is also possible depression that accrues throughout the postpartum period is reflected in our estimate. Finally, our results may not be generalizable to other populations or settings.

The moderate rates of depression, and unique risks adolescent mothers may have for depression, supports the need for routine screening of adolescents for depression in the postpartum period. Early detection and linkage of mothers to care are critical to improve health outcomes for both mothers and their children. Future studies are needed to measure depression in adolescents both during and after pregnancy to develop strategies to both mitigate development of depression and link adolescents who experience depression to appropriate care and treatment.

Table 1. Characteristics of postpartum adolescents in Kenya.

	Median (IQR) or N(%)					
	All Participants N = 498		14-18 Years Old N = 158		19-21 Years Old N = 340	
	Total		Total		Total	
Sociodemographics						
Married	498	252 (51)	158	36 (23)	340	216 (64)
Household Income <10,000 KSH [1]	188	99 (52)				
HIV Status	493		77		277	
Positive		53 (10)		6 (7)		37 (13)
Negative		440 (89)		70 (92)		240 (86)
Unknown		4 (1)		1 (1)		3 (1)
Years of Education Completed	348	10 (8-12)	75	9 (8-11)	273	10 (8-12)
Relationship Characteristics						
Has a Partner	497	353 (71)	157	76 (49)	340	277 (81)
Lives with Partner	352	250 (71)	75	38 (51)	277	212 (77)
Partner HIV Status	352		76		276	
Positive		29 (8)		7 (9)		22 (8)
Negative		266 (76)		52 (68)		214 (78)
Unknown		57 (16)		17 (22)		40 (14)
SRPS Score [2]	352	2.55 (1.77-2.86)	75	2.55 (1.77-2.86)	277	2.55 (1.77-2.86)
Reproductive Health Characteristics						
Multiparious	498	123 (25)	158	13 (8)	340	110 (32)
Unintended Pregnancy	496	319 (64)	157	141 (90)	339	178 (52)
Previous Hormonal Contraception Use [3]	498	18 (4)	158	5 (3)	340	13 (4)
Prior Hormonal Contraception Ever Use [4]	498	162 (33)	158	39 (25)	340	123 (36)
Previous Family Planning Use [5]	496	170 (34)	156	60 (38)	340	110 (32)
Current Hormonal Contraception Use [6]	497	242 (49)	157	61 (39)	340	181 (53)
Current Family Planning Use [7]	497	299 (60)	157	70 (45)	340	229 (67)

1. Total monthly household income of less than 10,000 Kenyan Shillings. 2. Sexual and Reproductive Power Scale (SRPS) Score. 3. Previous hormonal contraception use is defined as hormonal contraception use prior to the most recent pregnancy. 4. Prior hormonal contraception ever use is defined as prior use of hormonal contraception at any point before the most recent pregnancy. 5. Previous family planning is defined as use of injectable, oral contraception, emergency contraception, condoms, IUDs, or implants at any time prior to the most recent pregnancy. 6. Current hormonal contraception use is defined as use of injectable, oral contraception, emergency contraception, or implants at the time of the survey. 7. Current family planning is defined as use of injectable, oral contraception, emergency contraception, condoms, IUDs, or implants at the time of the survey.

Table 2. Risk factors for postpartum depression.

	N (%)					
	No Postpartum Depression N= 448	Postpartum Depression [1] N= 50	Crude OR (95% CI)	*p*	Adjusted OR [8] (95% CI)	*p*
14-18 Years Old	139 (31)	19 (38)	1.36 (0.74-2.50)	0.32	1.32 (0.67-2.60)	0.41
Married	223 (50)	29 (58)	1.39 (0.77-2.52)	0.27	2.40 (1.23-4.69)	0.010**
Household Income <10,000 KSH [2]	85 (45)	14 (28)	4.72 (1.31-17.02)	0.018*		
<10 Years of Education	190 (42)	20 (40)	1.11 (0.61-2.01)	0.74		
Low SRPS Score [3]	177 (40)	37 (74)	11.55 (4.90-27.21)	0.000*		
Multiparious	105 (23)	18 (36)	1.84 (0.99-3.41)	0.053		
Previous Hormonal Contraception Use [4]	15 (30)	3 (6)	1.84 (0.51-6.60)	0.35		
Previous Hormonal Contraception Ever Use [5]	137 (30)	25 (50)	2.267 (1.25-4.10)	0.006*		
Previous Family Planning Use [6]	143 (32)	27 (54)	2.49 (1.38-4.50)	0.002*		
Current Family Planning Use [7]	271 (60)	28 (56)	0.82 (0.45-1.49)	0.52		
Unintended Pregnancy	279 (62)	40 (80)	2.40 (1.17-4.91)	0.02*	3.26 (1.48-7.18)	0.003**

10,000 Kenyan Shillings. 3. Low SRPS score is an overall score of less than 2.03 on the Sexual and Reproductive Power Scale (SRPS). 4. Previous hormonal contraception use is defined as hormonal contraception use prior to the most recent pregnancy. 5. Prior hormonal contraception ever use is defined as prior use of hormonal contraception at any point before the most recent pregnancy. 5. Previous family planning is defined as use of injectable, oral contraception, emergency contraception, condoms, IUDs, or implants at any time prior to the most recent pregnancy. 7. Current family planning use is defined as use of injectable, oral contraception, emergency contraception, condoms, or implants at the time of the survey. 8. Age, marital status, and pregnancy intention were included in the adjusted odds ratio. *P-values less than 0.05 are significant. **P-values of less than 0.01 in the multivariate regression are significant.

Figure 1

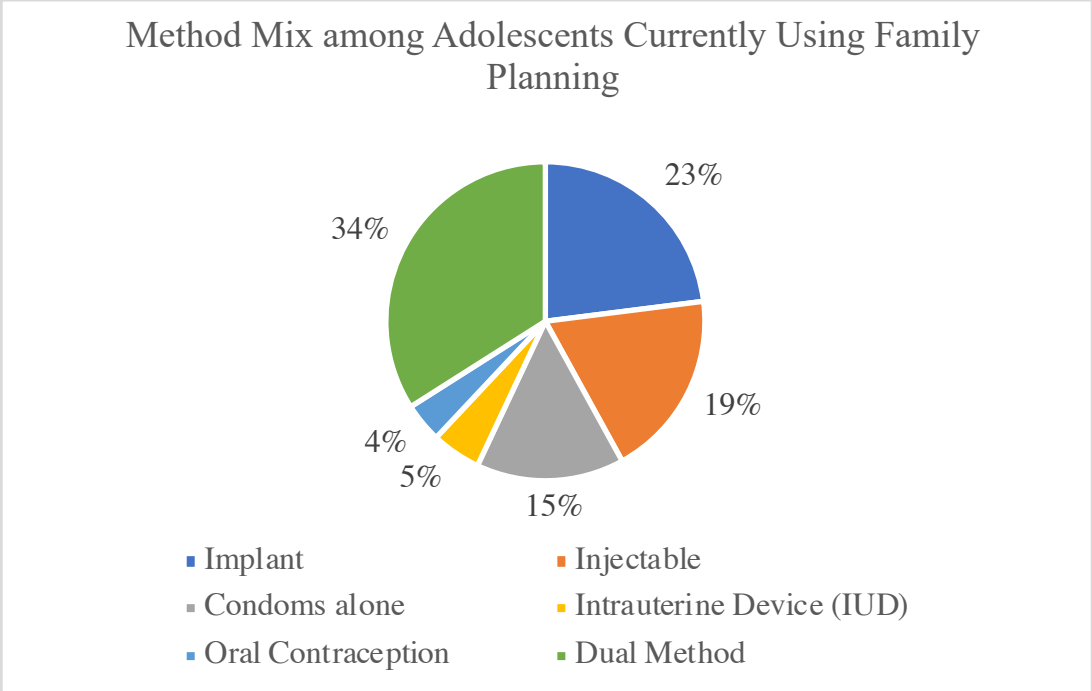
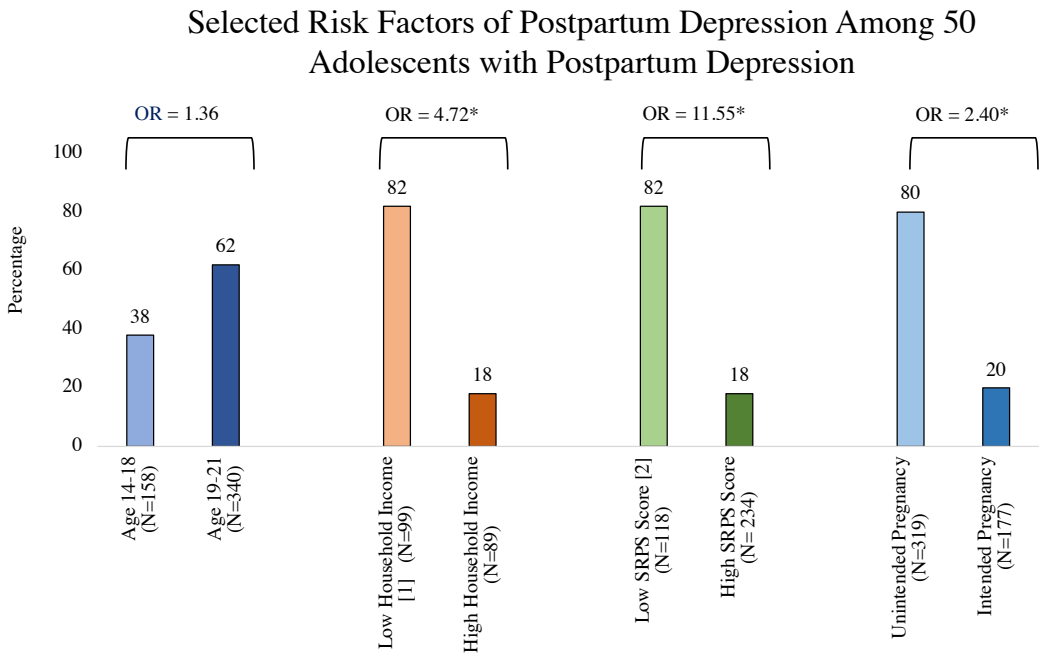


Figure 2



1. Low Household income is defined as adolescents with a total monthly income of less than 10,000 Kenyan Shillings. 2. Low SRPS score is an overall score of less than 2.03 on the SRPS.

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