

Predictors of Postnatal Depression in the Slums Nairobi, Kenya: A Cross-Sectional Study

Esther Wanjiku Kariuki (✉ kariukiesther@yahoo.com)

University of Nairobi

Mary Wangari Kuria

University of Nairobi

Fredrick Namenya Were

University of Nairobi



David Musyimi Ndeti

University of Nairobi

Research Article

Keywords: Postnatal depression, predictors, MCH, low-resource, slums

DOI: <https://doi.org/10.21203/rs.3.rs-688703/v1>

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Abstract

Background

Postnatal depression (PND) is a universal mental health problem that prevents mothers' optimal existence and mothering. Although research has shown high PND prevalence rates in Africa, including Kenya, little research has been conducted to determine the contributing factors, especially in low-resource communities.

Objective

This study aimed to investigate the PND risk factors among mothers attending Maternal and Child Health Clinics (MCH) in the slums, Nairobi.

Methods

This study is cross-sectional, which is a part of a larger study. A sample of 567 mothers of 6-10 weeks postnatal from two Maternal and Child Health (MCH) formed the study population. The Depression rate was measured using the original 1961 Beck's Depression Inventory (BDI). In addition, a sociodemographic questionnaire (SDQ) was used to collect hypothesized risk variables.

Results

The PND prevalence rate was 27.1%. Women with: unplanned pregnancy (AOR=1.87, 95% CI 1.02, 3.43), unemployed (AOR=4.43, 95% CI 1.01, 19.76), dissatisfied with body image (AOR=2.51, 95% CI 1.21, 5.19) and feeling fatigued (AOR=2.02, 95% CI 1.06, 3.85) had higher odds of developing PND.

Conclusion

This study builds upon scarce previous studies on PND from low-income countries. Identifying specific PND risk factors may help in devising targeted prophylactic and therapeutic strategies.

Background

Postnatal depression (PND) is a universal mental health problem(1) across countries and cultures(2). The depression prevalence rates are higher (5.2% and 74.0%) in developing countries compared to 1.9% to 82.1% in the developed countries(2). In Africa, a systematic review and meta-analysis reported an overall pooled PND prevalence of 16.84%. Published research studies conducted in Kenya report high PND prevalence rates(3), (4), (5) in different settings.

Symptoms of PND include depressed mood, anxiety, anhedonia(6), fatigue(7), sleep difficulties(8) and concentration problems(8). As a consequence, mothers parenting capacities get diminished(9), which in turn leads to child's poor: - physical health(10), growth(11), and poor mother-child relationship(12). As a consequence, leading to poor child's developmental outcomes(13).

Postnatal depression is caused by many factors: - psychosocial, socioeconomic, obstetric, and hormonal variables(14). Some of the main psychosocial risk factors include low: - maternal age(15), income(16), and education(17). Mothers experiencing stressful life events(18), lack of social support(19), poor marital relationship(20) and domestic violence(21) are also at risk for PND. Besides, infant characteristics like adverse birth and infant health outcomes(22), difficult temperament(23) and unwanted gender(24) are risk factors. Mothers with poor physical health (25), poor obstetric histories(26), unplanned pregnancy(27), and a history of psychiatric illness (28) are likely to have PND. Moreover, poor environmental conditions(29) and cultural practices(30), (31) are also PND predictors.

Although PND is a public health problem, African countries(32), including Kenya, have neglected it. Therefore, more research is needed due to the scarcity of published work in this area(22). Moreover, it is crucial to investigate and understand PND risk factors to devise targeted prevention and treatment strategies(33). This study aimed to investigate PND predictors in early postpartum period (6-10 weeks) in two low-resourced urban communities.

Methods

Participants and Procedures

This paper is a cross-sectional design and is a part of a longitudinal study (34) and investigated hypothesized risk factors for PND. Data was collected from Lang'ata and Riruta Health Centres- MCH clinics. Both are situated in Nairobi county and serve low-resource communities.

Mothers were recruited as they brought their infants for the first MCH clinic visit through continuous purposive sampling until the required sample was achieved(567 participants). The sampling method is published elsewhere (34). Informed consenting mothers filled up a self-administered Social-Demographic Questionnaire (SDQ) and an English version of the original (1961) Becks Depression Inventory (BDI).

We obtained ethical approval from Kenyatta National Hospital Ethical Committee, Office of the President through the Ministry of Higher Education Science and Technology and Medical Officer of Health (MOH), Nairobi County.

Data collection instruments

Sociodemographic questionnaire

A sociodemographic questionnaire to collect personal information and hypothesized PND risk factors that include: - mothers' age in years; educational level; marital status; monthly household income; suffering from chronic illness; satisfaction with body image; conflict with any close relatives; have a stressful life event; pregnancy planned; happy with infants' health; not able to work (fatigue) and age of the infant and gestational age.

Beck's Depression Inventory (BDI)

The original Beck's Depression Inventory (BDI), first published in 1961, was created by Dr Aaron T. Beck (Beck et al., 1961) and later revised in 1971. Beck's Depression Inventory is a self-administered report which takes approximately 10 minutes to complete with demonstrated consistent properties over time. It has a good Internal consistency, with a Cronbach's alpha coefficient of around 0.85 (Ambrosini et al. 1991). It is also positively correlated with the Hamilton Depression Scale (Brown et al., 1995) with a Pearson ratio of 0.71. The test was also found to have a high one-week test-retest with a Pearson value of 0.93 (Beck, Steer and Brown, 1996). A total score is calculated as the sum of the 21 items with a range of 0-63. The clinical cut-offs are 11-16 (mild mood disturbance), 17-20 (borderline clinical depression), 21-30 (moderate depression), 31-40 (severe depression), and 40-63 (extreme depression). The BDI has been used in Kenya and other countries (35–38). BDI is a self-administered report which takes approximately 10 minutes to complete.

Data analysis

Item means, standard deviations, frequencies and percentages were calculated for the sociodemographic, psychosocial related variables. The association between each independent variable and the dependent variable was assessed in bivariate analyses. Those independent variables with P-value <0.25 were entered into a multivariate logistic regression to control the cofounders and identify PND predictors using the enter method. P-value of <0.05 was used as the criterion for statistical significance, and an OR with a 95% confidence interval was used to indicate the strength of association. All analysis was conducted with IBM SPSS v 23.

Results

Of the total 591 eligible mothers, 575 participated in the study, which made a response rate of 97.3%.

Sociodemographics and other characteristics of the participants

Table 1 reports the characteristics of the participants in our sample. The mean age was 25.9 years and ranged from 18–40. The majority of the participants (45.1%) were aged between 18–24 years; 37.6% were aged between 25–30 years; 17.3% were aged between 30–40 years. A majority (89.8%) were married, more than half (53.4%) had a secondary level of education, nearly 36.5% had a primary education level, the rest, 10.1%, had a tertiary level of education. A majority (67.7%) of the participants were earning income below 20,000(196\$) per month. 5.1% of the women had been suffering from chronic illness, 86.9% were satisfied with their body, 11.6% had a conflict with their relatives, 28.4% had a stressful life event, 67.4% had planned their pregnancy, 66.7% were happy with baby's health, and 23.8% had work-related problems (fatigue). A majority (70.5%) had infants aged 7–10 weeks, while the rest had infants aged 6 weeks. About 9.3% had babies born before 37 weeks (Pre-term births).

Table 1
Characteristics of the Respondents

Variable	Category	Frequency (N = 567)	Percentage (%)
Age in Years	18–24 Years	256	45.1
	25–30 Years	213	37.6
	31–40	98	17.3
Age years	Mean, Range	25.9	18–40
Education Level	Primary	207	36.5
	Secondary	303	53.4
	Graduate and above	57	10.1
Marital Status	Currently married	509	89.8
	Currently not Married	58	10.2
Employment Status	Employed	85	15
	Self-employed	102	18
	Unemployed	380	67
Monthly Income	< 10,000	198	34.9
	10,000–19,000	186	32.8
	20,000–29,000	103	18.2
	30,000 and Above	80	14.1
Suffering from Chronic Illness	No	538	94.9
	Yes	29	5.1
Satisfied with body image	No	74	13.1
	Yes	493	86.9
Conflict with any close relatives	No	501	88.4
	Yes	66	11.6
Have a Stressful life Event	No	406	71.6
	Yes	161	28.4
Pregnancy Planned	No	185	32.6
	Yes	382	67.4
Happy with baby's Health	No	191	33.7

Variable	Category	Frequency (N = 567)	Percentage (%)
Have Work Problems(fatigue)	Yes	376	66.3
	No	432	76.2
Age of the infant	Yes	135	23.8
	6 Weeks	400	70.5
Gestation at birth	7–10 Weeks	167	29.5
	< 37 Weeks	53	9.3
	>=37 Weeks	514	90.7

Prevalence of Postpartum depression

Based on the original (1961) Becks Depression Index (BDI0 cut-off points, the scores as follows, Normal (0–10), (n = 414, 73.0%); Mild mood disturbance (11–16); (n = 65, 11.5%); Borderline clinical depression (17–20); (n = 30, 5.3%); Moderate depression (21–30); (n = 42, 7.4%); Severe depression (31–40); (n = 10, 1.8%) and Extreme depression (40+); (n = 6, 1.1%). Therefore, the PND prevalence is 27.0%. The mean BDI scores was 7.7, SD = 8.9 and ranged from 0–54.

Table 2
Prevalence of Depression among the respondents

Variable	Category	Frequency (N = 567)	Percentage (%)
Depression Levels (Beck Depression Inventory-BDI)	Normal (0–10)	414	73
	Mild mood disturbance (11–16)	65	11.5
	Borderline Clinical Depression (17–20)	30	5.3
	Moderate Depression (21–30)	42	7.4
	Severe Depression (31–40)	10	1.8
	Extreme depression (40+)	6	1.1
Depression status	Normal	509	89.8
	Elevated	58	27.1
Depression (Scores)	Mean ± SD	7.73	8.91

Factors associated with postnatal depression

Multivariate logistic regressions revealed; those who had an unplanned pregnancy were 1.87 times more likely to develop PND as compared to planned pregnancy (AOR = 1.87, 95% CI 1.02, 3.43), those who were

unemployed were 4.43 times more likely to develop PND as compared to those who were employed (AOR = 4.43, 95% CI 1.01, 19.76). Participants who were unsatisfied with their body image were 2.51 times more likely to develop PND as compared to those who were satisfied with their body image (AOR = 2.51, 95% CI 1.21, 5.19). Participants who had work-related problems (fatigue) were 2.02 times more likely to develop PND than those without work-related problems (AOR = 2.02, 95% CI 1.06, 3.85).

Table 3
Factors associated with postpartum depression

Variable	Category	Post-Partum Depression		O.R.(95% C.I)	p-value	aO.R.(95% C.I)	p-value
		No	Yes				
Age in Years	18–24 Years	221(86.3%)	35(13.7%)	2.06(0.88–4.80)	0.095	1.78(0.71–4.48)	0.222
	25–30 Years	197(92.5%)	16(7.5%)	1.06(0.42–2.66)	0.908	1.36(0.50–3.68)	0.549
	31–40	91(92.9%)	7(7.1%)	Ref.		Ref.	
Education Level	Primary	171(82.6%)	36(17.4%)	3.79(1.12–12.80)	0.032	1.82(0.49–6.79)	0.370
	Secondary	284(93.7%)	19(6.3%)	1.20(0.34–4.21)	0.771	0.75(0.20–2.85)	0.678
	Graduate and above	54(94.7%)	3(5.3%)	Ref.		Ref.	
Marital Status	Currently married	460(90.4%)	49(9.6%)	Ref.		Ref.	
	Currently not Married	49(84.5%)	9(15.5%)	1.72(0.80–3.72)	0.165	1.54(0.63–3.80)	0.344
Employment Status	Employed	83(97.6%)	2(2.4%)	Ref.		Ref.	
	Self-employed	98(96.1%)	4(3.9%)	1.69(0.30–9.48)	0.549	1.58(0.27–9.31)	0.615
	Unemployed	328(86.3%)	52(13.7%)	6.58(1.57–27.57)	0.010	4.43(1.01–19.76)	0.050
Monthly Income	< 10,000	169(85.4%)	29(14.6%)	4.40(1.30–14.90)	0.017	1.97(0.52–7.51)	0.318
	10,000–19,000	166(89.2%)	20(10.8%)	3.09(0.89–10.72)	0.075	2.02(0.53–7.63)	0.302
	20,000–29,000	97(94.2%)	6(5.8%)	1.59(0.38–6.55)	0.523	1.24(0.28–5.55)	0.781
	30,000 and Above	77(96.3%)	3(3.8%)	Ref.		Ref.	
Suffering from Chronic Illness	No	485(90.1%)	53(9.9%)	Ref.		Ref.	
	Yes	24(82.8%)	5(17.2%)	1.91(0.70–5.20)	0.208	1.57(0.49–5.07)	0.448
Satisfied with body image	No	60(81.1%)	14(18.9%)	2.38(1.23–4.60)	0.010	2.51(1.21–5.19)	0.013
	Yes	449(91.1%)	44(8.9%)	Ref.		Ref.	

Have a Stressful life Event	No	373(91.9%)	33(8.1%)	Ref.			
	Yes	136(84.5%)	25(15.5%)	2.08(1.19–3.62)	0.010	1.70(0.92–3.13)	0.090
Pregnancy Planned	No	157(84.9%)	28(15.1%)	2.09(1.21–3.62)	0.008	1.87(1.02–3.43)	0.043
	Yes	352(92.1%)	30(7.9%)	Ref.			
Have Work Problems (fatigued)	No	395(91.4%)	37(8.6%)	Ref.		Ref.	
	Yes	114(84.4%)	21(15.6%)	1.97(1.11–3.49)	0.021	2.02(1.06–3.85)	0.032
Age of the infant	6 Weeks	360(90.0%)	40(10.0%)	0.92(0.51–1.66)	0.780	n/s	
	7–10 Weeks	149(89.2%)	18(10.8%)	Ref.			

Discussion

The prevalence of PND was 27.1%. Published literature from Kenya shows high PND prevalence rates(3), (4), (5) in different settings. Research findings from other African countries also show a high PND prevalence rate: Rwanda 63.6%, South Africa (57.14%) (39) and (38.8%) (40), Nigeria 35.6% (19). Comparable to our finding, a systematic review and meta-analysis revealed a prevalence rate of 26% in Middle-East countries, while European countries had lower rates (8%) (41).

This study confirms that unplanned pregnancy is a risk factor for PND (42). Probably the unwanted pregnancy stressed the mothers due to the circumstances surrounding the pregnancy. For example, unplanned pregnancy has negative consequences that include; stigma, perceived loss of opportunities(43), poor health(44) and unhappiness(45).

Unemployed women had higher PND symptoms than the employed in this study, as other studies show(46), (47). A possible explanation is that unemployment could have exposed women to financial stress. A difficult financial situation may contribute to PND development(48). Besides, unemployed women are at risk of domestic abuse(49), which in turn may cause PND development(50).

Women who felt fatigued and unable to perform the usual household chores after giving birth were more depressed than those who did not. In a study correlating with our findings, Giallo et al. found that mothers in the high-risk depressive symptoms group were most likely to complain of fatigue (51). However, postnatal fatigue should be best understood as separate psychological constructs or experiences(52).

Limitations

The study participants resided in urban slums and therefore did not represent the rest of the city population. This study was a cross-sectional design and could not determine cause and effect.

Conclusion

This study builds upon scarce previous studies on PND from low-income countries. Identifying specific PND risk factors may help in devising targeted prophylactic and therapeutic strategies. More research is needed to determine the role of cultural factors in PND development.

Abbreviations

PND: Postnatal Depression

MCH: Maternal and Child Health

SDQ: Sociodemographic Questionnaire

BDI: Beck's Depression Inventory

MOH: Medical Officer of Health

Declarations

Ethics approval and consent to participate:

Approval was obtained from Kenyatta National Hospital Ethical Committee, Office of the President through the Ministry of Higher Education Science and Technology, the Medical Officer of Health (MOH) Nairobi County. All eligible study participants were explained; the nature and purpose of the study, their rights, procedures, potential risks and benefits of participation before they gave consent.

Consent for publication:

All authors agree for this article to be published.

Availability of data and material:

the data supporting the findings of this study are available within the article.

Competing interests:

The authors declare that they have no competing interests

Funding:

none

Authors' contributions:

This paper is part of a PhD thesis, University of Nairobi. E.W.K. conceived, designed the study and prepared the manuscript. M.W.K supported and gave guidance from the conception and design. F.N.W gave intellectual feedback. D.M.N worked as a senior supervisor and contributed to intellectual feedback. All authors read and approved the final manuscript.

Acknowledgements:

Not applicable

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Figures

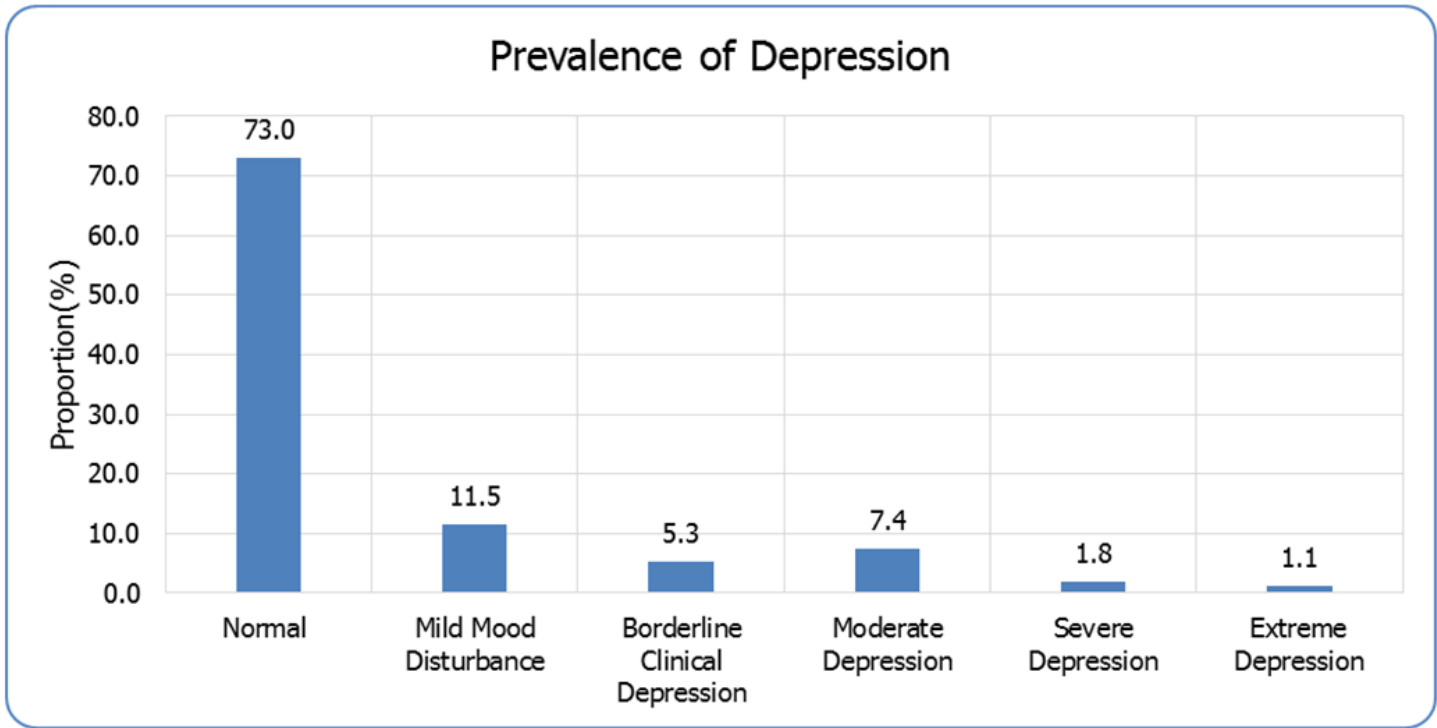


Figure 1

Prevalence of depression