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Prevalence and Predictors of Depression among Postpartum Mothers in the Limbe Health District, Cameroon: A Cross-Sectional Study

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Authors' contributions

This work was carried out in collaboration between all authors. Authors GG and GEHE designed the study, wrote the protocol and the first draft of the manuscript. Authors PFN, JNP and JA managed the literature searches, data entry and made important contributions in the first draft of the manuscript. Authors FNM and DSN analysed the data. All authors read and approved the final manuscript.

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ABSTRACT

Depression is a debilitating mood and mental disorder affecting approximately 13% of postpartum mothers worldwide with a prevalence of 25%-60% in low and middle income countries. The prevalence is yet to be published in Cameroon.
Aim: This study was carried out to determine the prevalence, severity and risk factors of depression among postpartum mothers in Limbe Health District (LHD), Cameroon.

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Study Design: It was a cross-sectional, analytic community-based survey. A non- probability convenient sampling method was used to recruit four hundred participants in eight communities in the LHD. Postpartum mothers with infants aged 1-12 months constituted the study population. Data collected using the Patient Health Questionnaire-9 (PHQ-9) and a structured questionnaire was analyzed using Epi-Info version 3.5.4. A p-value of less than 0.05 was considered statistically significant for variables.

Results: The prevalence of depression among participants was 61.8% based on PHQ-9 depression scale. The severity of depression varied from mild 54.7%, moderate 43.3% to severe2.0%. Socio-demographic factors associated with depression were: unemployment [OR=2.02;95% CI:(1.35-3.86), *p*=0.002], unsatisfactory support or assistance for care of baby [OR = 4.89; 95% CI: 2.25-10.612), *p* = < 0.001], marital conflict [OR = 0.44; 95%CI: (0.23-0.82), *p* = 0.009] and serious financial problems [OR = 0.31; 95% CI: (0.18-0.54), *p* =0.002]. Unplanned pregnancy was the only obstetric factor associated with depression [OR=2.02; 95% CI: (1.24-3.29), *p*= 0.004].

Conclusion: The prevalence of depression among postpartum mothers in the LHD was high. Unemployment, unsatisfactory assistance for child care, marital conflicts, financial difficulties and unplanned pregnancy were risk factors for postpartum depression.

Keywords: Depression; post-partum; PHQ-9 scale; Cameroon.

1. INTRODUCTION

Postpartum depression (PPD) or postnatal depression (PND)is a mood disorder that begins before or within the first year of childbirth [1]. Depression is the mostcommon mental illness associated with child bearing and a leading complication of childbirth [2]. The annual incidence of a major depressive episode is 1.89% for women and is three fold higher during the first five weeks of childbirth [3].

Postpartum depression is a global and serious public health problem with a great variation in prevalence rates worldwide. The prevalence ranges from 4.4%-85% across the globe, depending on the scale used for measurement and geographical location of the population studied [4,5]. Averagely, about 13% of postpartum mothers suffer from depression worldwide [6,7]. Depression can begin at any time within the first year of childbirth, but its incidence is highest during the first 12weeks after giving birth. The clinical presentations of depression among postpartum mothers are not different from those outside the postpartum period [2,8]. The exact cause of postpartum depression is not known but it is a multifactorial disorder with biological, psychosocial, interpersonal, socio-demographic, cultural and perinatal risk factors [9,10,11].

Postpartum depression is not only under-diagnosed [2] but under-treated [12] despite its devastating long term effects on the mother's health, mother-child interaction, infant nutrition/ development and family harmony [6,8]. Depression is the leading cause of disability in women during the childbearing years [13]. Postpartum depression can be effectively prevented or treated with antidepressants and psychosocial therapy if data were available to help policy makers as well as health care workers to increase the index of suspicion and diagnosis of postpartum depression.

Although postpartum depression is a leading cause of disability [14,15,16] and a serious public health issue of contemporary concern [8], no study has been published in Cameroon to determine prevalence and magnitude of this maternal mental health illness. This study therefore seeks to determine the prevalence, severity and risk factors of depression among postpartum mothers in LHD.

2. METHODS

2.1 Study Design

This was an observational, cross sectional analytic community based study.

2.1.1 Study setting

The study was carried out in the Limbe Health District. The LHD is in Fako Division of the South- West Region of Cameroon. It is located at the foot of Mount Cameroon and bounded to southwest by the Atlantic Ocean with a hot or temperate climate. It comprises eight health

areas with a population of 210,000 inhabitants [17].

The research was conducted in eight communities in the Limbe Health District. These communities were randomly selected from a list of most populated communities in three health areas of the Limbe Health District. The communities included were Middle Farms, Gardens, Mbonjo, Dockyard I, New Town East and West, Mabetta New Layout and Isokolo. The number of study participants recruited per community depended on the population of eligible mothers with infants aged 1-12 months in the study setting.

2.2 Sampling of Study Population

The target population of this research was postpartum mothers and the study population was mothers with infants aged 1-12 months.

2.2.1 Sampling method

A non-probability convenient simple survey method was used to recruit participants. The researcher went to the communities in search of postpartum mothers. The presence of napkins in a compound, participants and community members were used to identify homes of postpartum mothers in the communities. Any mother seen with an infant aged 1-12 months and who gave formal consent was enrolled in the study.

Mothers whose infants were younger than one month (to rule out postpartum blues), or had impaired mental judgment or mental illness before pregnancy, bereaved for reasons not related to childbirth, were non-biological mothers taking care of infants, alcoholic or those known for drug use in the aforementioned recruitment age group were excluded. There was however no documented data on the patients with depression in the study setting.

2.2.2 Sample size calculation

The sample size was calculated using the formula for calculating the sample size for a prevalence study with an infinite population [18]. A standard design effect of 2 was not used in calculating the sample size because a simple community survey design was employed and not the cluster survey. The estimated sample size was three hundred and eighty (380) assuming a standard prevalence of 50%, since such a study has not been published in Cameroon.

2.3 Data Collection

Data was collected using the validated Patient Health Questionnaire-9 (PHQ-9) use in screening for depression, and a structured questionnaire. The PHQ-9 was scored from 0-27 points. The questionnaires were completed in the homes of participants. In most cases, these questionnaires were completed in a room or parlour that was convenient for the participant. Furthermore, this procedure was done when the child was sleeping or when there was somebody to care of the child. In cases where the child was crying, the interview was postponed to another day.

Using PHQ-9 scale, a score of 5 points and above was indicative of a depressive state [19,20].

2.4 Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board (IRB) of the Faculty of Health Sciences, University of Buea, and administrative approval from the Regional Delegate of Public Health, District Medical Officers as well as quarter heads of the community. The study respondents consented by signing a consent form prior to participation into the study.

2.5 Data Management and Analysis

Based on the PHQ-9 score, depression was classified as mild (≥5≤9), moderate (≥10≤19) and severe (≥20) [21]. The PHQ-9 is a validated questionnaire which consist of nine qualitative questions each scored on 0-3 points. It is extensively used in many countries due to its good sensitivity, specificity and high positive predictive values. It has a validated sensitivity of 74% and specificity of 91% in primary care population study [22,23].

Each question on the depression scale was scored on three points depending on the response of the participant. A total score of five points and above on PHQ-9 scale was classified as participants with depressive symptoms. If a simple cut-off were chosen, it is recommended that a score of 10 or greater, which has a sensitivity of 88% and a specificity of 80% be used to have a positive likelihood ratio of 7.1. A

cut-off point of 5 and 10 were used in our study to detect the mild and severe forms of post-partum depression respectively. Participants with a total score of ≥10 on PHQ-9 suggestive of depression were referred to a medical doctor or psychiatrist for further assessment and management.

The data were cross-checked by the researcher at the end of each day for correctness and completeness. It was coded and 100% verified by the second investigator to ensure proper data entry. A total score on 27 on the depression scales were calculated for each participant. Data was transcribed in Epi-Info version 3.5.4 database and analyzed. The data was stored in a password protected computer to ensure confidentiality. Univariate analysis was done to obtain frequencies and proportions of mothers with depressive symptoms as well as those with mild, moderate and severe postpartum depression respectively. A bivariate analysis using Chi-Square test enabled comparison of proportions of depression among the various categories of each socio-demographic/obstetric variable since each category had more than five participants. Odds ratios and p-values were also calculated. A p-value of <0.05 was considered statistically significant factor. Furthermore, a p-value cut-off point of <0.25 was considered for any variable to be included in a multivariate analysis. This was done to enhance purposeful selection of variables so as to detect all variables that appeared to have an association with depression and to include them in the multiple logistic regression analysis.

Multivariate logistic regression was done to determine the relationship between depression and socio-demographic/obstetric factors adjusting for confounders.

3. RESULTS

Four hundred participants were enrolled for the study. The prevalence of postpartum depression in the study population was 61.8% based on the PHQ-9 depression scale.

3.1 Description of Socio-Demographic Characteristics of Participants

The mean age of participants was 27.1 years (SD=5.4 years). The age group most affected by depression in this study was 41- 45. This age range accounted for 0.01% of all participants with 100% being depressed. However, we considered age group 21-25 more prone to depression in the study because this group constituted 29.3% of all participants and 66.7% of them were depressed. Majority (72.8%) of the participants were married. Three hundred and forty-two (342) participants (85.5%) were women who had attained at least secondary level of education and more than 64.5% of them had a source of income either from business or other employment. Three hundred and thirteen (78.25%) of the mothers received some assistance for the care of baby. Furthermore, 83.5% expressed satisfaction with the level of support/assistance received for baby care. Marital conflicts (12.5%) and financial difficulties (38.5%) were the most frequent sources of stress among participants. A summary of other socio-demographic characteristics is shown in Table 1 with the percentages of depression in various categories of patients.

3.2 Obstetric Characteristics of Participants

Two hundred and forty–seven (62%) of the participants were multiparous women, but only 231 (57.7%) had a planned pregnancy. The majority 372 (93%) of participants had normal vaginal deliveries with more than 98.7% of the babies delivered at term. During pregnancy, about 42.2% of them desired to have female babies and 52.8% actually had female babies at birth. The proportions of participants with depressive symptoms in each category are represented in Table 2.

3.3 Severity of Depression among Participants

The severity of depression varied from mild to severe depression based on the participants score on PHQ-9 depression scale. One hundred and thirty-five (54.7%) of the participants presented symptoms of mild depression, 107 (43.3%) moderate depression and 5 (2.0%) severe depression (Table 3).

3.4 Relationship between Socio-Demographic Characteristics and Depressive Symptoms among Participants

A variable was considered as having an association with depression, when $p \leq 0.25$ in the bivariate analysis or $p \leq 0.05$ in a multivariate analysis. In the bivariate analysis four socio–demographic variables appeared to have an

association with depression. These variables were: secondary school level of education, unemployment, unsatisfying or no support for baby care and stressful life events in the past six months specifically serious marital conflicts and unplanned pregnancy. The odds ratios were: [OR=0.55; 95% CI: (0.36-0.83), p=0.005], [OR=2.02; 95% CI: (1.30-3.13), *p*=0.002], [OR=4.89; 95% CI: (2.25-10.63), *p*= <0.001] and [OR=2.42; 95% CI: (1.07-5.50), *p*= 0.035] respectively (Table 4).

In the multivariate analysis, after controlling for potential confounding variables (level of educations, marital status, stressful life events, economic status social support), only three variables were statistically significant association with depression (Table 5). These were: unemployment, unsatisfying or no support for care of baby and stressful life events (marital conflicts and serious financial difficulties) for the past six months. The odds of being depressed were; [OR =2.28; 95%CI: (1.35 - 3.86), *p* = 0.002], [OR = 4.24; 95% CI: (1.96-9.17)], [OR=0.43; 95% CI: (0.23 - 0.82), *p*= 009] and [OR= 0.31; 95% CI: (0.18-0.54), *p*= 0.002] respectively (Table 5).

3.5 Obstetric Correlates of Depression among Participants

For a variable to be considered as having an association with depression, it had a p ≤ 0.25 in the bivariate analysis and *p*≤ 0.05 in a multivariate analysis. In the bivariate analysis two variables appeared to have an association with depression. These variables were: an unplanned pregnancy and a previous cesarean section (Table 6). The odds of being depressed in participants who had unplanned pregnancy were 1.4 times [OR=1.37; (95%CI: 0.91-2.07), *p*= 0.12] than that in participants who planned their pregnancy. The odds of being depressed among participants who delivered through cesarean section were 1.9times [OR=1.93; (95%CI: 0.80-4.66), *p* = 0.13] than that in participants who had normal vaginal deliveries.

In the multivariate analysis, after adjusting for possible confounding variables such as age, marital status, economic status, education and mode of delivery, only one variable (having unplanned pregnancy) was statistically significant (*p*= 0.004) with association to depression (Table 7). The odds of being depressed among participants who had unplanned pregnancy were 2.02 times [OR=2.02; (95% CI: 1.24-3.29), *p* = 0.004] than that among participants who planned their pregnancies.

Table 1. Socio-demographic characteristics of depressed participants

Characteristic	Total (%)	Number of depressed (%)
Age		
15-20	47 (11.8)	29 (61.7)
21-25	117 (29.3)	78 (66.7)
26-30	149 (37.3)	91 (61.1)
31-35	59 (14.8)	31 (52.5)
36-40	26 (6.5)	16 (61.5)
41-45	2 (0.005)	2 (100)
Marital status		
Married	291 (72.7)	175 (60.3)
Single	102 (25.5)	65 (63.7)
Divorced	4 (1.0)	4 (100)
Widow	3 (0.8)	3 (100)
Education*		
None	18 (4.5)	12 (66.7)
Primary	125 (31.2)	63 (50.4)
Secondary	217 (54.3)	146 (67.3)
Tertiary	40 (10.0)	26 (65.0)
Economic status		
Unemployed	142 (35.7)	104(73.2)
Employed	79 (19.3)	52 (65.8)
Business	179 (45.0)	91 (50.8)
Support of any sort		
None	87 (21.7)	61 (70.1)
Yes	313 (78.3)	186 (59.4)
Support provided		
Not satisfactory	66 (16.4)	57 (86.4)
Satisfactory	257 (64.3)	168 (65.4)
Very satisfactory	77 (19.3)	22 (28.6)
Stressful life events		
None	129 (32.3)	75 (58.1)
Loss of dear one	53 (13.3)	30 (56.6)
Loss of job	14 (3.5)	12 (85.7)
Serious marital problems	50 (12.4)	45 (90.0)
Serious financial problem	154 (38.5)	85 (55.2)

***None: No formal education; N: Number; % = Percent;*

4. DISCUSSION

We determined the prevalence of depression using PHQ-9 depression scale, assessed the severity of depressive symptoms and identified socio-demographic / obstetric determinants of depression among postpartum mothers during the first twelve months in LHD. The goal of the

study was to create awareness, improve postpartum care and mental health of mothers and their babies in order to reduce maternal and infant morbidity/mortality which is still high in Cameroon.

Table 2. Obstetric characteristics of depressed participants

Characteristic	Total (%)	Number depressed (%)
Parity		
≤ 2children	249 (62.2)	150 (60.2)
≥ 3children	151 (37.8)	97 (64.2)
Pregnancy		
Unplanned	169 (42.2)	97 (57.3)
Planned	231 (57.8)	150 (64.9)
Mode of delivery		
Vaginal delivery	372 (93.0)	227 (61.0)
Cesarean section	28 (7.0)	21 (75.0)
Gestational age		
≥ 37 weeks gestation	395 (98.7)	244 (61.7)
< 37 weeks gestation	5 (1.3)	3 (60.0)
Desired gender		
Female	169 (42.2)	105 (62.1)
Male	142 (35.5)	91 (64.0)
Either sex	89 (22.3)	51 (57.3)
Sex of child		
Female	212 (53.0)	136 (64.2)
Male	188 (47.0)	111 (59.0)

4.1 Prevalence of Depressive Symptomatology

The prevalence of depressive symptomatology was 61.8% on PHQ-9 depression scale. This prevalence is very high compared to the prevalence of 34.4% and 16% of depressive symptoms identified in a similar study populations in South Africa and Uganda respectively, but lower than an 80% prevalence rate reported in Tanzania [11]. Although the prevalence of depression obtained in this study was very high, it is consistent with the depressive symptomatology range of 4.4%-73.7% reported by Warren et al in postpartum mothers across the world especially in Sub-Saharan Africa [4,12]. The prevalence is also consistent with findings (0.5%-60%) of Pearlstein et al across non-Western settings [8]. A systematic review on treatment and prevention of postpartum depression conducted by Corey and Thapa, revealed a worldwide prevalence of 13% and an estimated prevalence of postpartum depression between 25%-60% in low income countries particularly in Sub-Saharan Africa [12]. The fact that this study was a community-based survey may account for the high prevalence of depressive symptomatology registered, as opposed to facility based cross sectional study where depressed mothers who do not come to the health facility for services are missed. The study was conducted in an urban town where the cost of living is relatively high and if the mothers are unable to meet the basic needs of the family, it may be a source of depression. The prevalence of 61.8% of depressive symptoms among mothers during the first year postnatal period is of great public health importance. Taking cognizance of the fact that postpartum depression has devastating effects on the mother, child and family harmony as a whole [15], the depressed mother is less responsive to her needs (physical, emotional and psychological) and those of her child. This might greatly affect early child development which is a great determinant in the child's academic success and productivity in adulthood [24]. Infants of depressed mothers suffer from delayed cognitive development (mental retardation, delay in developmental mile stones), impaired social development as well as relationship difficulties, and are also at a higher risk of developing mental or mood disorders [25]. Furthermore, depressed mothers are less likely to properly feed their babies. It is challenging to them to sustain exclusive breast feeding for six months as expected by the WHO. This may lead to malnutrition which accounts for more than 56% of infant mortality in low resource countries [26]. Mothers with depressive symptoms frequently use a health facility for other comorbidities which affect their regularity and productivity at their work places [7]. The financial burden for medical care is high, which might affect family income and standards of living. The prevalence of postpartum depression is a pointer that mental illness is a problem that needs attention in our society. This might be one of the reasons why the numbers of street or delinquent children are on the increase in Cameroon. A high prevalence of mental illnesses like depression among mothers will minimize the possibilities of realizing the MDG 4 and 5 which seek to reduce maternal and child morbidity and mortality [27]. The prevalence rate will serve as baseline data for enacting policy to improve the quality of maternal mental health. Postpartum depression can be

prevented or managed effectively with either psychotherapy or medication, depending on the severity of the depressive symptoms [12].

4.2 Severity of Depression among Participants

The severity of depression obtained in this study varied from mild (54.7%), moderate (43.3%) to severe (2%). This finding is consistent with that of a previous study conducted among Arabic Muslims in Jordanian military women except for the prevalence of severe depression that is much lower than that obtained in their study [27]. In most cases, women are under-diagnosed and untreated despite the fact that untreated severe depression may lead to suicide and even infanticide [16,28]. Knowing the severity of depression will serve as a guide for clinicians to determine the type of management approach to use. Based on the high prevalence and severity of depression obtained, there is need for preventive and therapeutic management. Components of management as proposed by Miller and LaRusso [28] will include interpersonal psychotherapy (which focuses on the support needed by the depressed individual), cognitive-behavioral therapy that focuses on stress management, relaxation, problem-solving skills, education about perinatal physical activity and lactation support.

Table 3. Distribution of participants by severity of depression on PHQ-9Scale

Score on depression scale	Severity depression	Number.	Percentage (%)
≥5≤9	Mild	135	54.7%
≥10≤19	Moderate	107	43.3%
≥20	Severe	5	2.0%

Table 4. Relationship between socio-demographic characteristics and depression among participants

Characteristic	No depressed (%)	Depression			P-value
		X^2	OR	95% CI	
Age		0.09			
15-20	29 (11.4)		1		
21-25	78 (31.6)		1.24	0.01-2.51	0.55
26-30	91 (36.8)		0.97	0.50-1.91	0.94
31-35	31 (12.6)		0.67	0.32-1.50	0.35
36-40	16 (6.5)		0.99	0.37-2.66	0.99
41-45	2 (0.8)		3644.65	0.00->0.001	0.97
Marital status		1.17			
Married	175 (70.9)		1		
Single	72 (29.1)		1.29	0.81 - 2.05	0.28
Education		7.99			
None/primary	75 (30.4)		1		
Secondary/tertiary	172(69.6)		0.55	0.36 - 0.83	0.005
Economic status		9.85			
Employed/Business	143 (57.9)		1		
Unemployed	104 (42.1)		2.02	1.29 -3.132	0.002
Social support		3.29			
Received support	186 (75.3)		1		
Did not received support	61 (23.7)		0.62	0.37 - 1.04	0.06
Support provided		18.74			
Satisfactory	190 (76.9)		**1**		
Not satisfactory	57 (23.1)		4.89	2.25- 10.63	0.001
Stressful life events		8.65			
None	75 (30.1)		1		
Loss of job/loved one	42 (17.0)		0.81	0.43-1.53	0.53
Marital conflict	45 (18.2)		2.42	1.06-5.49	0.035
Financial difficulties	85 (34.4)		0.66	0.39 - 1.09	0.11

OR; Unadjusted odd ratio; CI; Confidence interval, %; Percentage depressed; No; Number depressed

Table 5. Relationship between participants' socio-demographic predictors and depression after adjusting for confounders

Characteristic	No (%)	Depression		*p*-value
		aOR	95% CI	
Economic status				
Employed/Business	143 (57.9)	1		
Unemployed	104 (42.1)	2.28	1.35-3.86	0.002
Support provided				
Satisfactory	190 (76.9)	1		
Not satisfactory	57 (23.1)	4.24	1.96-9.17	<0.001
Stressful life events				
None	75 (30.4)	1		
Loss of job/loved one	42 (17.00)	2.25	0.90-5.67	0.082
Marital conflict	45 (18.2)	0.43	0.23-0.82	0.009
Financial difficulties	85 (34.4)	0.31	0.18-0.54	<0.002

aOR: Adjusted for all other covariates in the table; prev; prevalence, CI: confidence interval

Table 6. Relationship between obstetric variables and depression among participants

Predictors	No (%)	Depression			P-value
		X^2	OR	95% CI	
Parity		0.32			
≤ 2	150 (60.7)		1		
≥3	97 (39.3)		0.89	0.58 -1.34	0.57
Pregnancy		2.34			
Planned	150 (60.7)		1		
Unplanned	97 (39.3)		1.37	0.91-2.07	0.12
Mode of Delivery		2.22			
Vaginal birth	226 (91.5)		1		
Cesarean Section	21 (8.5)		1.93	0.80-4.66	0.13
Maturity of baby*		0.01			
Term	244 (98.8)		1		
Pre-term	3 (1.2)		1.07	0.18-6.50	0.46
Child sex		1.15			
Male	111 (44.9)		1		
Female	136 (55.1)		0.80	0.53-1.20	0.28

OR: Unadjusted odds ratio; CI: Confidence intervals, prev: Prevalence, Maturity of baby, term: Gestational age ≥ 37 weeks, pre-mature: gestational age ≤36 weeks or birth weight <2.5 kg

Table 7. Association of obstetric factors with prevalence of depression among participants - multivariate analysis

Predictor	No (%)	Depression		P-value
		aOR	95% CI	
Pregnancy				
Planned	150 (60.7)	1		
Unplanned	97 (39.3)	2.02	1.24 -3.29	0.004

aOR: Adjusted for all other covariates in table; CI: Confidence interval, No: Number depressed, %: Percentage of depressed

It is obvious from the result that postpartum depression is under-diagnosed and under-treated in Cameroon like elsewhere despite its implications on maternal and infant morbidity / mortality. However, a high index of suspicion for diagnosing depression can only be achieved by creating awareness in the general population especially in women of reproductive age and health care workers of the existence of signs and symptoms, risk factors and options of management for depression.

The moderate and severe forms of depression can be managed effectively with antidepressants [29]. Interventions for management of depression have the potential to reduce the burden of depression by 10% to 30% [16].

4.3 Socio-Demographic / Obstetric Risk Factors of Depression among Participants

Postpartum mothers within the 21-25 year age group were the most affected by depression in this study, probably because these mothers were schooling and so it was stressful to take care of a child and meet academic obligations. Most mothers within this age group were primiparous which is consistent with other findings where it was shown that first time mothers are at higher risk of depression [9]. Unlike other studies, pregnancy in young mothers was not significantly associated with depression probably because women in this region in Cameroon get married at younger ages and having children at such an age is not associated with stigma. Though marital status was not a significant risk factor, single mothers were at higher risk of depression. This may be due to the fact that most of them lack financial autonomy and satisfactory social support. Unplanned pregnancy was the lone obstetric factor that had significant association with depression. Those who had unplanned pregnancies were twice more likely to be depressed than their counterparts. The finding was similar to that documented in previous studies conducted in other low resource countries probably because Cameroon shares similar characteristics with them [9,11].

The mode of delivery was not a risk factor for depression in our study unlike previous studies probably because the sample size of those who had cesarean section was small. This therefore did not permit a comprehensive analysis. Socio-demographic factors (economic status, level of social support and stressful life events specifically marital conflict and serious financial problem within the past six months) identified as being associated with depression in this study are consistent with the findings of other studies on the risk factors of depression in different communities in low resource countries [8,10,11]. Mothers in low resource countries share similar economic status, stressful life events as well as lack of satisfactory support for baby care because culturally, it is believed that caring for children is the responsibility of mothers. This study was conducted in Limbe which is an urban town with a very high cost of living; therefore not having enough money to take care of basic needs might increase the risk of developing postpartum depression. Furthermore, the presence of a child in a family necessitates additional financial expenses to cater for the needs of the baby and the absence of sufficient funds is risk factor for the mother to become depressed. Unemployment among mothers is a real problem because nowadays, some men are unwilling to provide financial support to their spouses, an act that might trigger depressive symptoms in the partner [28]. Most of the mothers receive little support for care of the baby from their husbands who believe that it is the responsibility of the women to take care for her children [8,9,11].

The economic status, unsatisfactory assistance received by participants for the care of their babies and stressful life events (marital conflict, and financial hardship) [30] were the significant predictors for depression among our research participants. This is consistent with the risk factors of depression in previous studies [7,10,31]. It highlights how the social context of this vulnerable group can play an important role in precipitating this serious mental disorder.

4.4 Study Limitations

The impact of depression on the mother and infants' well-being was not assessed in this study as it was a cross-sectional analytic community survey design and a causal relationship could not be established. The non-specificity of symptoms of depression could also influence the quality of data collected. Furthermore, the fact that this was a one-time design, transitory adjustment reactions in this group of participants could not be ruled out.

5. CONCLUSION

The prevalence of depression was high among postpartum mothers in the Limbe Health District. Unemployment, lack of social support and stressful life events (marital conflicts and serious financial problems) were the socio-demographic risk factors of postpartum with depression. Unplanned pregnancy was the lone obstetric factor that was associated with depression. To decrease the consequences of this under-diagnosed condition in our setting, policy makers and health providers should enact policies that will ensure routine screening and management of cases of postpartum depression.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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