PREVALENCE AND ASSOCIATED FACTORS OF POSTNATAL DEPRESSION AMONG POSTPARTUM WOMEN IN JIMMA UNIVERSITY MEDICAL CENTER, JIMMA TOWN,JIMMA ZONE,OROMIA REGION,SOUTH WEST ETHIOPIA

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JIMMA, ETHIOPIA

JIMMA UNIVERSITY

INSTITUTE OF HEALTHCOLLEGE OF MEDICAL SCIENCESDEPARTMENT OF OBSTETRICS AND GYNECOLOGY

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Abstract

Background:Postpartum depression is a common occurrence which is often undiagnosed when symptoms are not severe and may progress into severe or chronic state if unrecognized and untreated. Being the most frequent form of mental illness in the postpartum period, it can begin as early as two weeks after delivery.

Objectives: The aim of this study was to assess the prevalence of postpartum Depression and its associated factors among postpartum women who were attending atJimma University medical center, Jimmatown,southwest EthiopiaFebruary 18 /2019- March 18/ 2019.

Method and material: A study population was selected by consecutive sampling technique. Mothers were interviewed using a structured questionnaire. Magnitude of Postpartum Depression was determined by using Edinburg Postpartum Depression Scale. Those women who scored ≥8 was considered as having Postpartum Depression and <8 considered as no Postpartum Depression. Chi squire, bivariate binary logistic regressions and multivariate binary logistic regression were used to determine the independent predictors of post-partum depression. Associated factors of Postpartum Depression were identified by Adjusted Odd Ratios (AOR) with 95% CI.P value less than 0.05 was considered statically significant.

Result: Complete data was collected from all respondants (147) with 100% response rate. The magnitude of Postpartum Depression among Women was 44.2 %. The maximum EPDS score was 23 (0, 23). Predictors of post-partum depression were: Age of the mother 24-29 year than age of mother 30 -38year (AOR: 0.31, 95%CI: 0.10-0.92); having history of previous depression (AOR: 5.83, 95%CI: 1.38-24.64) and satisfactory help and support from husband were more likely to develop PPD than those who have said very good (AOR: 10.71, 95%CI: 2.35-48.68).

Conclusion: The current study finding revealed that post-partum depression was44.2 %o which was too high. Age of the mother, help and support from husband and previous history of depression were independent predictors of post-partum depression among mothers who give birth within the past 12months.

Key words: Postpartum depression, Edinburg postnatal depression scale, JUMC

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Table of Contents **Page**

List of Figures

Lists of Tables

ACRONYMS AND ABBREVATIONS

OD	Odd Ratio
EPDS	Edinburgh Postnatal Depression Scale
ETB	Ethiopian Birr
JU	Jimma University
JUMC	Jimma University Medical Center
OBGYN	Obstetrics and Gynecology
PPD	Postpartum Depression
SPSS	Statistical Package for Social Science
DSM-IV	Diagnostic and Statistical Manual of Mental Disorder 4^{th} Edition
AUROC	Area under the receiver operating characteristics

CHAPTER ONE: INTRODUCTION

1.1. Background Information

The term post-partum depression (PPD) refers to a non-psychotic depressive state that begins in the post-partum period, after the child birth [11-13]. PPD is a mood disorder that can occur at any time during the first year after delivery [14,15]. Approximately 10-15% of women in the childbearing age experience this common complication of PPD [14]. PPD affects the health of not only the mother, but also of her children, especially mother-child bonding and the relationships among family members [16]. At present, PPD is not classified as a separate disease but diagnosed as an affective or mood disorders, according to the in Statistical Manual of Mental Disorders (DSM-IV) (17,18). Several sign and symptoms that define PPD are low self-worth and interest, tiredness, sadness, disturbed sleep and appetite , problem in concentrating and making decision, feeling of unworthy to live, having negative thought about the baby, feeling of guilt and shame(19).

A meta-analysis of 59 studies from North America, Europe, Australia and Japan, found an overall prevalence rate of post-partum depressive symptoms of 13% (13). The prevalence of postpartum depression in African American women ranges from 10 to 15% (22). A range of prevalence rates of postpartum depressive symptoms among post-partum women has also been found in developing countries, including India and Pakistan from 11 to 40%(20,21). Despite the fact that postpartum depression is the major maternal mental health problem following childbirth, little was known about the magnitude of the problem and contributing factors in Ethiopia in general and it was not investigated in the study area in particular; therefore, this study will aimed to fill this gap.

Multiple risk factors for postpartum depression have been suggested as no single cause has been identified. Research studies have consistently shown that the following risk factors are strong predictors of postpartum depression: depression or anxiety during pregnancy, stressful recent life events, poor social support and a previous history of depression. Moderate predictors of postpartum depression are childcare stress, low self-esteem, maternal neuroticism and difficult infant temperament. Small predictors include obstetric and pregnancy complications, negative cognitive attributions, single marital status, poor relationship with partner, and lower

socioeconomic status including income. No relationship was found for ethnicity, maternal age, level of education, parity, or gender of child (in Western societies)(10).

It is possible to identify women with increased risk factors for PPD, but the unacceptably low positive predictive values of all currently available antenatal screening tools make it difficult to recommend them for routine care. Several postpartum screening tools exist but the optimal time for screening and their applicability to multicultural populations are not yet established(10).A screening tool permits formal evaluation of changes in somatic functioning (sleep, appetite, weight). The Edinburgh Postnatal Depression Scale (EPDS) is a 10 item self-report questionnaire designed specifically for the detection of depression in the postpartum period (23). It has been validated (24,25) , computerized [26], and translated into more than 12 languages. Responses are scored 0, 1, 2, or 3, with a maximum score of 30; scores ≥12 or 13 identify most women with postpartum depression. Women who report depressive symptoms without suicidal ideation or major functional impairment (or score between 5 and 9 on the EPDS) are reevaluated within one month to determine the state of depression(27).

Validation studies of the Edinburgh Postnatal Depression Scale and Kessler Scales were conducted for detecting postnatal common mental disorders in Addis Ababa, Ethiopia. The optimal cut-offs for the EPDS, K6 and K10 were 7/8, 5/ 6 and 7/8 respectively against criterion of DSM-IV major or minor depressive disorder. At these cut-off points all the three instruments had high sensitivities(84.6%) and moderate specificities(75.9% to 80.5%). Positive predictive value for the EPDS, K6 and K10 were 35.5% , 39.3% and 34.4% respectively. Negative predictive value for the EPDS, K6 and K10 were 97.1% 97.2% 97.1% respectively. Misclassification rate for the EPDS, K6 and K10 were 22.0% 19.0% 23.0% respectively. AUROC for the EPDS, K6 and K10 were 0.86 (0.78–0.94) , 0.91(0.84–0.98),0.91 (0.84–0.98) respectively(43).Metaanalysis of depression screening programs generally conclude that depression screening must be combined with systemic paths for referral of cases and well defined and implemented care plans to achieve out come benefits(10). Unfortunately PPD remains under diagnosed and undertreated. Research suggests that PPD is amenable to the same treatment interventions as general depression but few randomized controlled trials exist to guide practice and policy for this population(10).

1.2. Statement of the problem

Postnatal depression (PND) is a global public health issue. It is the most common complication of childbearing and as such represents a considerable public health problem affecting women and their families. The effects of postnatal depression on the mother, her marital relationship, and her children make it an important condition to diagnose, treat and prevent (28). Postpartum Depression (PPD) encompasses several mood disorders that follow childbirth. It affects 10-15% of new mothers, but many cases of PPD remain undiagnosed. Thus, prevalence rates in the developing world range from being equal to almost double that of developed countries.

The studies found that postnatal depression was associated with high degrees of chronicity, disability and disturbances of mother infant relationship(29). Postpartum common mental disorders such as depression and anxiety are increasingly recognized for their burden in low resource countries such as Ethiopia. However; the magnitude of postpartum depression in Ethiopia is not well established so identifying magnitude of postpartum depression and associated factors in our country is essential to minimize mental illness that is related to mothers who give birth. Estimates for depression during and after pregnancy have range from 9% to 20%, and for postpartum common mental disorder, the estimates have been as high as 33%, even if these problems are there, there is no good awareness and satisfactory intervention especially for those who live in remote area from the health center(30).

Multiple risk factors for postpartum depression have been suggested as no single cause has been identified. Personal vulnerability, personal traits and social factors such as unplanned pregnancy, occupational instability, single parenthood and marital discord have been cited. Screening for postpartum depression would improve the ability to recognize these disorders and hence necessitate enhanced care that ensures appropriate clinical outcomes (32). Untreated postpartum depression can have adverse long term effects. For the mother, the episode can be the precursor of chronic or recurrent depression. For her children, a mother's ongoing depression can contribute to emotional, behavioral, cognitive and interpersonal problems in later life.If postpartum depression is to be prevented by clinical or public health intervention, its risk factors need to be reliably identified, however, numerous studies have produced incomplete consensus on these(31). A prospective study enrolled pregnant women and followed the mother-child dyads (n >800) for up to five years after birth (41). The analyses suggested that postnatal maternal

depressive symptoms were associated with offspring physical health problems (eg, asthma, colic, diabetes and/or diarrhea), independent of antenatal maternal depressive symptoms. One study included infants of women with postpartum depression (n = 120) and infants of nondepressed women (n = 122); the two groups were matched for potential confounding factors (eg, birth weight, gestational age at birth, and socioeconomic status) and the infants were assessed six months after birth (42). Compared with infants of nondepressed mothers, infants of depressed mothers were more likely to score below the 5^{th} percentile for weight (13 versus 3 percent of infants) and length (13 versus 4 percent)

This research is relevant because the prevalence of PPD and its associated factors are not well known as well as there is no proper intervention. Determining the prevalence of PPD is critical to manage and prevent further complication. It will also help to identify its impacts on mother and child. The purpose of this study is to evaluate the prevalence of PPD and associated factors; it is expected to sensitize the health care professionals and policy makers on the importance of maternal mental health and the need for routine screening for postpartum depression by disseminating the result of the research at Jimma university medical center.

CHAPTER TWO

2.1. Literature Review

Similar study conducted among 346 post-partum Nepalese mothers who visited the child immunization clinic at a period of at 6 to 10 weeks after delivery reveals that the prevalence of post-partum depressive symptoms among mothers was 30%. Mothers aged 20 to 29 years were less likely to have depressive symptoms (adjusted odds ratio (AOR) = 0.40; 95% CI: 0.21-0.76) compared to older mothers. Similarly, mothers with a history of pregnancy-induced health problems were more likely to have depressive symptoms (AOR = 2.16; CI: 1.00-4.66) and subjective feelings of stress (AOR = 3.86; CI: 1.84-4.66) than mothers who did not [7].

Study done in Hanoi city, Vietnam among 166 women for EPDS ≥ 12, the prevalence of PPD was 27.6% among new mothers during the first year after delivery. Level of education, diseases during pregnancy, being the first-time mothers, dissatisfaction about family, and limited communication and interaction with others were significant predictors of PPD [6].

Study was done on 123 postnatal women attending a rural maternity hospital in Karnataka, South India, of whom 74 women were interviewed within one week of childbirth, and 49 women at 6-8 weeks post-delivery. About 45.5% of the women screened positive for postnatal depression (44.6% of all subjects within one week of delivery and 46.9% at 6-8 weeks after delivery). Postnatal depression was significantly associated with mood swings during antenatal period, staying with the family of birth during pregnancy and away from their husbands, and was significantly higher among women who perceived their life as stressful and having a low self-esteem. [5]

Similar study done in a rural tertiary care hospital of Mandya District, Karnataka state, India. PND prevalence based estimated sample of 102 women who came for postnatal follow up from 4th to 10th week of lactation. EPDS Cut-off score of ≥13 was used as high risk of PND. The percentage of women at risk of PND was estimated Prevalence of PND was 31.4% (95% CI 22.7–41.4%). PND showed significant ($P<0.05$) association with joint family, working women, non-farmer husbands, poverty, female baby and pregnancy complications or known medical illness. In binomial logistic regression poverty (AOR: 11.95, 95% CI:1.36–105), birth of female baby (AOR: 3.6, 95% CI:1.26–10.23) and pregnancy complications or known medical illness (AOR: 17.4, 95% CI:2.5–121.2) remained as independent predictors of PND. [4]

A study done among 122 postnatal women who are attending at Hiwot Fana Specialized University Hospital, Eastern Ethiopia. The prevalence of PPD one week after delivery at HFSUH was 13.11%. Premature baby 5.74%, poor satisfactions with medical care 22.13%, family history of mental illness 3.28% were strongly associated with PPD. The other factors such as neonate illness, residence, desired new born sex, hypertension, and hyper emesis had also their own significant association. Educational status, number of birth, age, place of delivery and sex of new born had no significant association with PPD. [3]

Similar study done in three hospitals of Southwest Ethiopia reported that, prevalence of postpartum depression among 422 mothers who gave birth within the last 12 months was 33.82%. Unplanned pregnancy adjusted odds ratio (AOR)=4.49, 95% CI (2.31, 8.71), age from 15 to 24 years AOR=0.420, 95% CI (0.18, 0.98), having a chronic physical illness AOR=7.71, 95% CI (2.34, 25.44), experiencing death of infant AOR=4.12, (1.78, 9.51) and unstable marital condition AOR=6.02, (2.79, 12.99) were significantly associated with postpartum depression. [2]

A community based cross- sectional study done among 460 mothers of Mizan-Aman town, southern Ethiopia magnitude of postpartum depression among the study population was 22.4%. Postpartum depression is relatively higher in the first 6 weeks after birth. Postpartum depression is higher among mothers with age range between 18 and 23 years (AOR 3.89 95%CI: 1.53–9.90), unplanned pregnancy (AOR 3.35 95% CI: 1.701–6.58), child having sleeping problems (AOR 3.72 95%CI: 1.79–7.72), domestic violence (AOR 2.86 95%CI 1.72–8.79), unsatisfied marital relation (AOR 2.72 95% CI 1.32–5.62), poor social support (AOR 4.30 95% CI 1.79–10.30), history of previous depression (AOR 7.38 95% CI 3.12–17.35) and substance use [1]

Among 137 women in rural South India, 26.3% were diagnosed to have post-partum depression. Age less than 20 or over 30 years, schooling less than five years, thoughts of aborting current pregnancy, unhappy marriage, physical abuse during current pregnancy and after childbirth, husband's use of alcohol, girl child delivered in the absence of living boys and a preference for a boy, low birth weight, and a family history of depression were associated with post-partum depression. Post-partum depression was also associated with an increased number of causal models of illness, a number of non-medical models, treatment models and non-medical treatment models [48].

Study done among 353 Jordanian women with the age range of 18 and 45 years, reported that antenatal postnatal depression 19% and 22% respectively. antenatal depression, unplanned pregnancy, difficult relationship with mother-in-law, dissatisfaction with overall care, stress, lack of social support, giving birth to a female baby, feeling pressured to birth the baby quickly, and perceived low parenting knowledge were associated with postnatal depression [49].

A cross-sectional study showed that the prevalence of paternal postnatal depression was 12% using the Edinburgh Postnatal Depression Scale cut off score of 12 or above, when the cut off score was reduced to 9 or above the prevalence was 28%. The factors found to increase the risk of paternal postnatal depression included having an infant with sleep problems, a previous history of depression, a lack of social support, poor economic circumstances, not having paternity leave and not being married [50]. Also study finding from Russia indicated that postpartum depression (PPD) affects 10% to 15% of all women after childbirth and the symptoms usually occur after discharge from the hospital [51].

Validation studies of the Edinburgh Postnatal Depression Scale and Kessler Scales were conducted for detecting postnatal common mental disorders in Addis Ababa, Ethiopia. The optimal cut-offs for the EPDS, K6 and K10 were 7/8, 5/ 6 and 7/8 respectively against criterion of DSM-IV major or minor depressive disorder. At these cut-off points all the three instruments had high sensitivities(84.6%)and moderate specificities(75.9% to 80.5%).Positive predictive value for the EPDS, K6 and K10 were 35.5%, 39.3% and 34.4% respectively. Negative predictive value for the EPDS, K6 and K10 were 97.1% 97.2% 97.1% respectively. Misclassification rate for the EPDS, K6 and K10 were 22.0%, 19.0% and 23.0% respectively. AUROC for the EPDS, K6 and K10 were 0.86 (0.78–0.94) , 0.91(0.84–0.98),0.91 (0.84–0.98) respectively(43).

2.2: Conceptual frame work

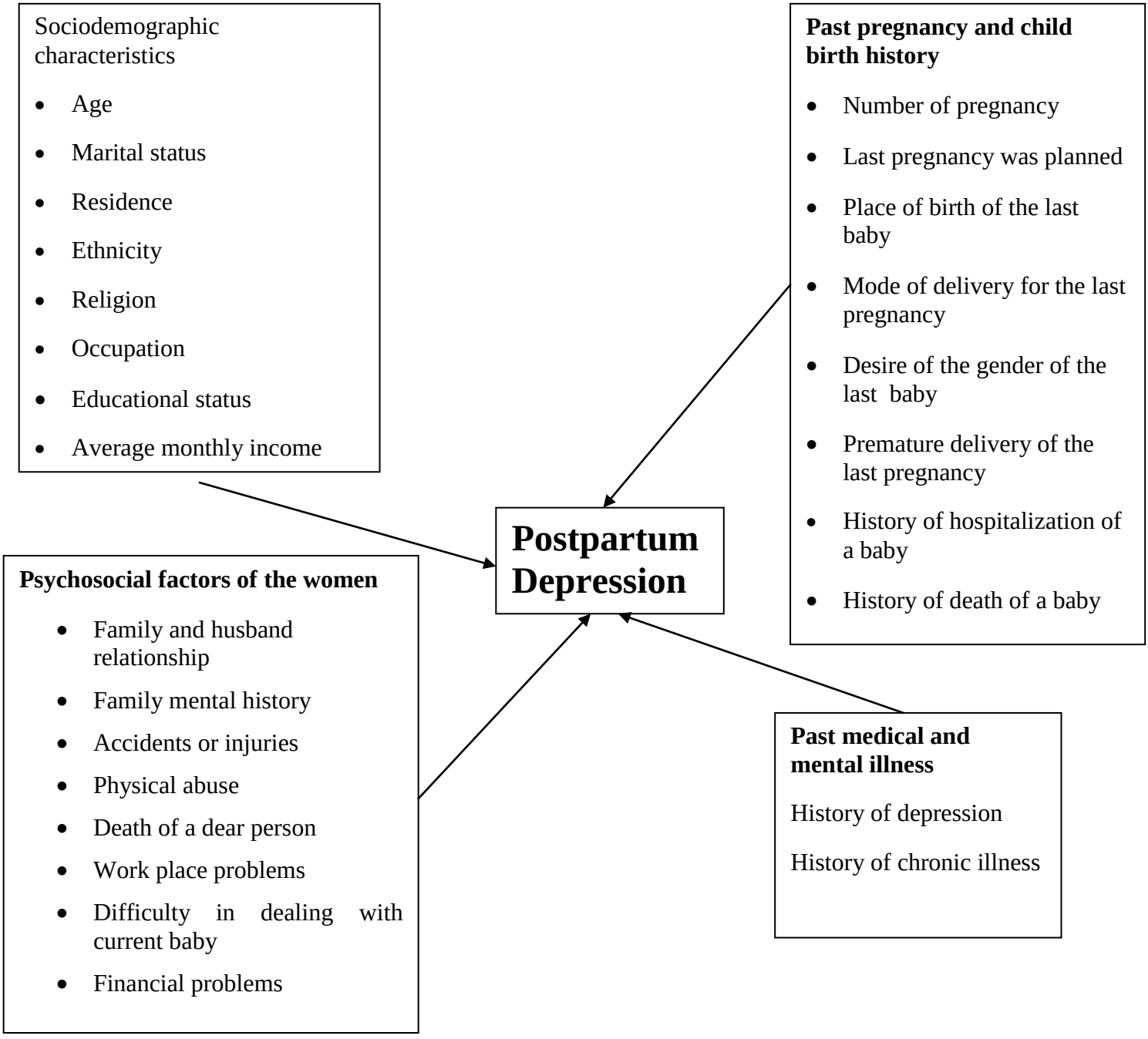

Figure 1: Conceptual frame work which shows the predictors of postpartum depression among postpartum women attending child immunization clinic of Jimma University medical center, and developed after reviewing different literatures**.**

2.3. Significance of the Study

In Ethiopia there are few published researches on PPD and its associated factors and none in JUMC, so this study plays an important role to determine and solve the problem by disseminating the result to concerned bodies. This study provides an evidence base from which further studies can be done and compared at different hospital in Ethiopia. It serves as initial to do further research and a pioneering study for our junior students and other investigators toward future studies among related subjects. It also expands our knowledge about the various aspects of PPD among Jimma town women in order to focus on coming researches. This study draw the attention of health care practitioners to many ignored aspects of PPD and its associated factors, in order to give them more focus towards the integration of PPD screening during the care of pregnant and postpartum women.

The study is will be expected to urge health care decision makers to consider PPD in the planning and delivering of health care services.

CHAPTER THREE: OBJECTIVES

3.1.General objective

- To assess the magnitude and associated factors of postpartum Depression among postpartum women attending child immunization clinic of Jimma University medical center, Jimma, southwest Ethiopia in2019.

3.2.Specific Objectives

- To determine the magnitude of postpartum depression among postnatal women attending child immunization clinic of Jimma University medical center, Jimma, southwest Ethiopia in 2019.
- To identify the associated factors of postpartum Depression among postnatal women attending child immunization clinic of Jimma University medical center, Jimma, southwest Ethiopia in 2019.

CHAPTER FOUR: METHODS AND MATERIALS

4.1 Study Area and period

The study was conducted at child immunization clinic of Jimma university medical center, Jimma Zone from February 18/2019 to march 18/2019. Jimma zone comprises Jimma town and its nearby woredas. It is located in South West of Ethiopia, Oromia regional state, with estimated population of 2,486,155. The town is located 350 Kilometers from the capital, Addis Ababa.

JUMC is one of teaching hospitals in the country. Jimma University runs both undergraduate and postgraduate programme in several disciplines. The hospital gives health service at inpatient and outpatient level as a referral Hospital for 15 million populations in the South West of the country. It has one child immunization clinic which gives routine vaccination service every day. The mothers are caregivers for their children attending this immunization clinic. Thus, those mothers who were attending the immunization clinic were selected to assess the magnitude and predictors of PPD from February 18-March 18, 2019

4.2 Study design

Institutional based cross sectional study design

4.3.Population

4.3.1 Source population

All postnatal (as the first 12 months after birth)mothers who were attending child immunization clinic at JimmaUniversity medical center

4.3.2 Study population

Sampled postnatal mother who were attending at child immunization clinic of Jimma University medical center during the data collection period and from whom data was collected

4.4 Sample size and Sampling technique

4.4.1 Sample size

The formula that we used to calculate sample size in the study was

$no = Z^2 p(1-p)/d^2$

Where d = margin of error (5%)

Z= standard normal variable at 95% confidence level (1.96)

P = 22.4% (in Mizan Aman town, Bench Maji zone, Southwest Ethiopia 2017)

No =sample size

no= $(1.96)^2$ $0.224(1-0.224)/(0.05)^2$

no = 267

We add Non respondent rate =10%, from this no=294

Because our total population was less than 10,000, we used a reduction formula.

n=no/1+no/N=294/1+294/293=146.75; nf=**147**

4.4.2 Sampling technique

Data was taken from clients who were present at a time of data collection, because of this; Consecutive sampling technique was used.

4.5. Inclusion and Exclusion criteria

Each client coming to the clinic during study period was evaluated for eligibility to be included in the study. Those who fulfilled the criteria and give informed consent to participate in the study wasenrolled.

Inclusion criteria:

- Post natal women who were attending at child immunization clinic of JUMC and who gave birth within the past12months
- Ability and acceptance to consent to participate in the study.

Exclusion criteria:

- Patients,who couldn’t communicate.
- Patients who were not-volunteer to participate in the study.
- Known psychiatric client

4.6 Variables

4.6.1 Dependent variable

Postpartum depression

4.6.2 Independent variable

Socio demographic factors:

a. Age
b. Occupation
c. Residence
d. Income
e. Marital status
f. Educational status
g. Ethnicity
h. Religion

Pregnancy and birth related factors:

a. number of pregnancy
b. any experience death of a baby
c. any of baby hospitalized
d. whether planned pregnancy
e. whether desired gender of baby
f. whether the new born is delivered before 9-month
g. mode of delivery
h. place of delivery
i. history of depression
j. chronic medical illness

Relationship with her husband and her family members:

a. Relationship with husband
b. Help and support provided by husband
c. Relationship with own family
d. Relationship with mother in-law

e. Relationship with husband's family in general

Psychosocial and psychological factor:

a. Personal mental Hx

b. Family mental Hx

c. death of a dear person

d. recurrent verbal abuse

e. accidents or injuries

f. physical abuse

g. abandon a dear person

h. work place problems

i. separation or divorce

j. severe illness of you or dear person

k. difficulty in dealing with your children

l. financial problems

m. housing problems

4.7.Data collection procedure

A structured interviewer-administered questionnaire wasdeveloped from previously published literatures [33-39]. The questionnaire was designed in English and translated into the local language by data collector during data collection process but EPDS questionnaire has its own Afaanoromoo and Ahmaric version. A total of three health professional two nurse, who were working in JUMC, was involved in the data collection using a data collection instruments after training was given. The principal investigator was leading the overall activities during the data collection period. Every data collector interviewed the participants to involve voluntarily after informed consent was obtained by convincing the patient, as their information was confidential.

Data collection instrument: The structured and standard questionnaire which contains the following:

a. Socio-demographic history

b. Pregnancy and birth related factors

c. Maternal and family related factors

d. Psychosocial and psychological factors

e. Edinburg post natal depression scale

All the above tools were used to determine the prevalence and associated risk factors of postpartum depression among post natal women attending at JUMC

4.8 Data quality control

The quality of data was kept by preparing each and every question related to our specific objectives and weused EPDS that is translated into Afaan Oromo and Ahmaric. We also tried to improve our quality of data by sharing information from advisor and using standard data collection tools. Clear discussion was done among our group members about the purpose and procedures of the study. The group members decided to peruse non respondents by explaining the objective of study clearly.

The collected data was checked out for the completeness, accuracy and clarity by principal investigator daily after data collection and corrective measure was taken before the next data collection.

4.9 Data processing and analysis

The Edinburgh Postnatal Depression Scale (EPDS) was used to screen for depressive symptoms (cut off point ≥8). Logistic regression analysis was used to calculate the association. Data was be edited, entered into, cleaned and analyzed using Epi-data and SPSS for windows version 16 of the computer software and presented by using table, figure, frequency, percentages, and cross tabulation. A P value of less than 0.05 was considered statistically significant. Independent variable was assessed for association with postnatal depression and associated factors using bivariate and multiple logistic regressions analyses to generate odds ratio. Associated factors of PPD was identified by Adjusted Odd Ratios (AOR) with 95% CI were. P value less than 0.05 was considered statically significant. Finally, appropriate recommendations was given based on findings and results of study will be communicated through publications and conferences.

4.10. Operational definitions

Postpartum depression (**PPD**), also called postnatal depression, is a type of mood disorder associated with childbirth, which can affect both sexes. Symptoms may include extreme sadness, low energy, anxiety, crying episodes, irritability, and changes in sleeping or eating

patterns. Onset is typically between one week and one month following childbirth. But it can be up to 12 months before a woman starts having symptoms.

The Edinburgh Postnatal Depression Scale (EPDS) is a 10 item self-report questionnaire designed specifically for the detection of depression in the postpartum period. It has been validated , computerized, and translated into more than 12 languages. Responses are scored 0, 1, 2, or 3, with a maximum score of 30; scores ≥10 identify most women with postpartum depression. But validation studies of EPDS were conducted for detecting postnatal common mental disorders in Addis Ababa, Ethiopia showed the optimal cut-offs for the EPDS, K6 and K10 were 7/8, 5/ 6 and 7/8 respectively against criterion of DSM-IV major or minor depressive disorder. At these cut-off points all the three instruments had high sensitivities and moderate specificities(43).

Postpartum Period Consistent with many reviews and studies, we define the postpartum period as the first 12 months after birth [44,45]. However, there is no established consensus as to what time frame constitutes the postpartum period [46,47].

4.11. Ethical Consideration

The study was conducted after ethical clearance was given from Jimma University College of Health and Medical Science. Ethical clearance letter was submitted to JimmaUniversity medical center and management body to conduct research. The objectives of study were clarified to Jimma University medical center and informed consent was agreed as well as notified to patients and their information was not observed by other body. A patientswascounseled verbally regarding whether or not they want to participate in the study and the fact that they were not be enforced if they choosed not to participate. Mother who warrants psychiatric medical help was connected to psychiatry clinic.

4.12.Dissemination plan

The study result will be given to JimmaUniversity, CBE office, School of Post graduate, School of obstetrics and gynecology. Finally the manuscript will be submitted to scientific journals for possible publication.

CHAPTER FIVE: RESULT

5.1. Sociodemographic Characteristics of the mother

Complete data was collected from all respondents (147) with 100% response rate. Among the respondents, 71 (48.3%) were found in the age group of 24-29 with minimum age of 18 and maximum of 38 years old. Majority of them are married and urban dwellers which were 134(91.2%) and 113(76.9%) respectively.

Regarding the religious and ethnic background of the respondents, most of them were Muslims, 80 (54.4%), and Oromo by ethnicity 120(81.6%).

Respondent's educational and occupational background reveals that, elementary school and college graduates were 36(24.5%) and 58(39.4%) respectively. Also most study subjects were house wife and government workers accounted 76(51.7%) and 34(23.1%) respectively. According to the study subjects report, 51(34.7%) of them average monthly income of their family were ≤2500 Birr and the same number of subjects earn monthly income of 2500-4500 birr. The minimum and maximum monthly income was 400 and 13,000birr respectively.

Table 1: Sociodemographic characteristics of postnatal women who attended child immunization clinic of JUMC, Jimma Town, South-west Ethiopia from February 18/2019-march 18/ 2019. (n=147)

Variables	No (%)	Postpartum depression		P value
		No PPD	PPD	
Age in years				
18-23	39(26.5%)	20(13.6%)	19(12.9%)	
24-29	71(48.3%)	49(33.3%)	22(15.0%)	0.00
30-38	37(25.2%)	13(8.8%)	24(16.3%)	
Marital status				
Married	134(91.2%)	76(51.7%)	58(39.5%)	0.46
Unmarried	13(8.8%)	6(4.1%)	(4.8%)	
Residence				
Urban	113(76.9%)	63(42.9%)	50(34.0%)	0.90
Rural	34(23.1%)	19(12.9%)	15(10.2%)	

Ethnicity				
Oromo	120(81.7%)	68(46.3%)	52(35.4%)	
Amhara	18(12.2%)	9(6.1%)	9(6.1%)	0.86
Others: Dawuro and Gurage	9(6.1%)	5(3.4%)	4(2.7%)	
Religion				
Muslim	80(54.4%)	44(29.9%)	36(24.5%)	
Orthodox	34(23.1%)	21(14.3%)	13(8.8%)	0.68
Protestant	33(22.5%)	17(11.6%)	16(10.9%)	
Educational status				
Unable to read and write	13(8.8%)	4(2.7%)	9(6.1%)	
Only able to reading & writing	19(12.9%)	9(6.1%)	10(6.8%)	0.18
Elementary school	36(24.5%)	19(12.9%)	17(11.6%)	
High school and preparatory	21(14.3%)	12(8.2%)	9(6.1%)	
College graduate	58(39.5%)	38(25.9%)	20(13.6%)	
Occupation				
Housewife	76(51.7%)	35(23.8%)	41(27.9%)	
Private office worker	23(15.6%)	13(8.8%)	10(6.8%)	0.01
Government worker	34(23.2%)	27(18.4%)	7(4.8%)	
Merchant	14(9.6%)	7(4.8%)	7(4.8%)	
Average monthly income of the family (in Eth.birr)				
<=2500	51(34.7%)	26(17.7%)	25(17.0%)	0.69
2501-4500	51(34.7%)	30(20.4%)	21(14.3%)	
>4500 (400-13,000birr)	45(30.6%)	26(17.7%)	19(12.9%)	

5.2. Past pregnancy and child birth history of postnatal mother

Concerning the last pregnancy and child birth, 62(42.2%) and 47(32.0%) of them reported that their last pregnancy were for the 1st and 2nd time respectively. Also, 120(81.6%) of the last pregnancy were planned. Among the total women, 95(64.6%) of them delivered their last baby vaginally and of the total mothers, 142(96.6%) delivered their last baby in health institution. Also, 48(32.7%) of them reported that the gender of the last pregnancy were desired and

50(34.0%) of them said the gender of the last baby was undesired. Premature delivery of the last pregnancy was reported by 11(7.5%). Among the total, 33(22.4%) and 26(17.7%) reported hospitalization and death of their baby respectively. In addition, three (2.0%) and 18(12.2%) of them reported previous chronic illness and depression respectively. (Table 2)

Table 2: Past pregnancy and child birth history of postnatal women who attended child immunization clinic of JUMC, Jimma Town, South-west Ethiopia from February 18 /2019-march 18/ 2019. (n=147)

Variables	No (%)	Postpartum Depression		P value
		No PPD	PPD	
Number of pregnancy				
1	62(42.2%)	37(25.2%)	25(17.0%)	
2	47(32.0%)	29(19.7%)	18(12.2%)	
3	21(14.3%)	10(6.8%)	11(7.5%)	
>=4	17(11.6%)	6(4.1%)	11(7.5%)	0.21
Last pregnancy was planned				
Yes	120(81.7%)	68(46.3%)	52(35.4%)	
No	27(18.3%)	14(9.5%)	13(8.8%)	0.64
Place of birth of the last baby				
Home	5(3.4%)	3(2.0%)	2(1.4%)	0.84
Health Institution	142(96.6%)	79(53.7%)	63(42.9%)	
Mode of delivery for the last pregnancy				
Vaginal	95(64.6%)	55(37.4%)	40(27.2%)	
Cesarean Section	52(35.4%)	27(18.4%)	25(17.0%)	0.48
Desire of the gender of the last baby				
Desired	48(32.7%)	31(21.1%)	17(11.6%)	
Undesired	50(34.0%)	27(18.4%)	23(15.6%)	0.29

I don't mind	49(33.3%)	24(16.3%)	25(17.0%)	
Premature delivery of the last pregnancy				0.93
Yes	11(7.5%)	6(4.1%)	5(3.4%)	
No	136(92.5%)	76(51.7%)	60(40.8%)	
History of hospitalization of a baby				
Yes	33(22.4%)	18(12.2%)	15(10.2%)	
No	114(77.6%)	64(43.5%)	50(34.0%)	0.87
History of death of a baby				
Yes	26(17.6%)	13(8.8%)	13(8.8%)	0.51
No	121(82.3%)	69(46.9%)	52(35.4%)	
History of depression				
Yes	18(12.2%)	5(3.4%)	13(8.8%)	0.01
No	129(87.8%)	77(52.4%)	52(35.4%)	
History of chronic illness				
Yes	3(2.0%)	1(0.7%)	2(1.3%)	
No	144(98.0%)	81(55.1%)	63(42.9%)	0.42

5.3. Marital and family relationship characteristics of the mother

Concerning relationship with husbands, 61(44.9%) and 64(47.1%) of them rated good and very good relationship respectively. Also 81(55.1%) and 83(61.0%) of them reported good relationship with own and husband's family respectively. In addition, 57(41.9%) and 56(41.2%) of them had good and very good help and support from their husbands respectively.(Table 3)

Table 3: Marital and family relationship characteristics of the mother who attended child immunization clinic of JUMC, Jimma Town, South-west Ethiopia from February 18 /2019-march 18/2019. (n=147)

Variables	No (%)	Postpartum depression		P value
		No PPD	PPD	
Relationship with husband (n=136)				
Poor	3(2.2%)	1(0.7%)	1(0.7%)	0.03
Satisfactory	8(5.9%)	2(1.4%)	6(4.4%)	
Good	61(44.9%)	30(22.1%)	32(23.5%)	
Very good	64(47.1%)	44(32.4%)	20(14.7%)	
Help and support from husband (n=136)				
Low	6(4.4%)	1(0.7%)	1(0.7%)	
Satisfactory	17(12.5%)	3(2.2%)	15(11.0%)	0.00
Good	57(41.9%)	33(24.3%)	26(19.1%)	
Very good	56(41.2%)	40(29.4%)	17(12.5%)	
Relationship with own family				
Poor	5(3.4%)	0(0.0%)	5(3.4%)	
Satisfactory	38(25.9%)	19(12.9%)	19(12.9%)	.03
Good	81(55.1%)	47(32.0%)	34(23.1%)	
Very Good	23(15.6%)	16(10.9%)	7(4.8%)	
Relationship with husband's family (n=136)				
Very Poor	2(1.4%)	1(0.7%)	1(0.7%)	0.37
Poor	8(5.9%)	3(2.2%)	5(3.7%)	
Satisfactory	26(19.1%)	12(8.8%)	14(10.3%)	
Good	85(61.5%)	50(36.8%)	35(25.7%)	
Very Good	15(11.0%)	11(8.1%)	4(2.9%)	

5.4. Psychosocial factors of the women

Thirty five (23.8%) of the respondants has family history of mental illness. Six (4.1%) and 16(10.9%) of them reported accidents/injuries, and physical abuse respectively over the last one year. Death and severe illness of dear person reported by 34(23.1%) and 20(13.6%) respectively over the last one year. Also, difficulty in dealing with current baby was mentioned by 19 (13.0%) of the postpartum women.

Table 4: Psychosocial factors of the women who attended child immunization clinic of JUMC, Jimma Town, South-west Ethiopia from February 18 /2019- march 18/2019. (n=147)

Variables	No (%)	Postpartum depression		P value
		No PPD	PPD	
Family history of mental illness				
Yes	35(23.8%)	17(11.6%)	18(12.2%)	0.32
No	112(76.2%)	65(44.2%)	47(32.0%)	
Accidents or injuries				
Yes	6(4.1%)	4(2.7%)	2(1.4%)	0.58
No	141(95.9%)	78(53.1%)	63(42.9%)	
Physical abuse				
Yes	16(10.9%)	12(8.2%)	4(2.7%)	0.10
No	131(89.1%)	70(47.6%)	61(41.5%)	
Death of a dear person				
Yes	34(23.1%)	16(10.9%)	18(12.2%)	0.24
No	113(76.9%)	66(44.9%)	47(32.0%)	
Severe illness of dear person				
Yes	20(13.6%)	10(6.8%)	10(6.8%)	0.57
No	127(86.4%)	72(49.0%)	55(37.4%)	
Work place problems				
Yes	12(8.2%)	6(4.1%)	6(4.1%)	0.67
No	135(91.8%)	76(51.7%)	59(40.1%)	

Difficulty in dealing with current baby Yes No	19 (13.0%) 128 (87.0%)	5(3.4%) 77(52.4%)	14(9.5%) 51(34.7%)	0.00
Financial problems Yes No	30(20.4%) 117(79.6%)	13(8.8%) 69(46.9%)	17(11.6%) 48(32.7%)	0.12
Housing problems Yes No	29(19.7%) 118(80.3%)	13(8.8%) 69(46.9%)	16(10.9%) 49(33.3%)	0.18

5.5. Magnitude of Postpartum Depression among Women

Magnitude of PPD was determined by using Edinburg Postpartum Depression Scale (EPDS). Those women who scored ≥8 was considered as having PPD and <8 considered as no PPD. Thus, in current study the magnitude of PPD among Women who attended child immunization clinic of JUMC was 44.2 %. (Figure:2)

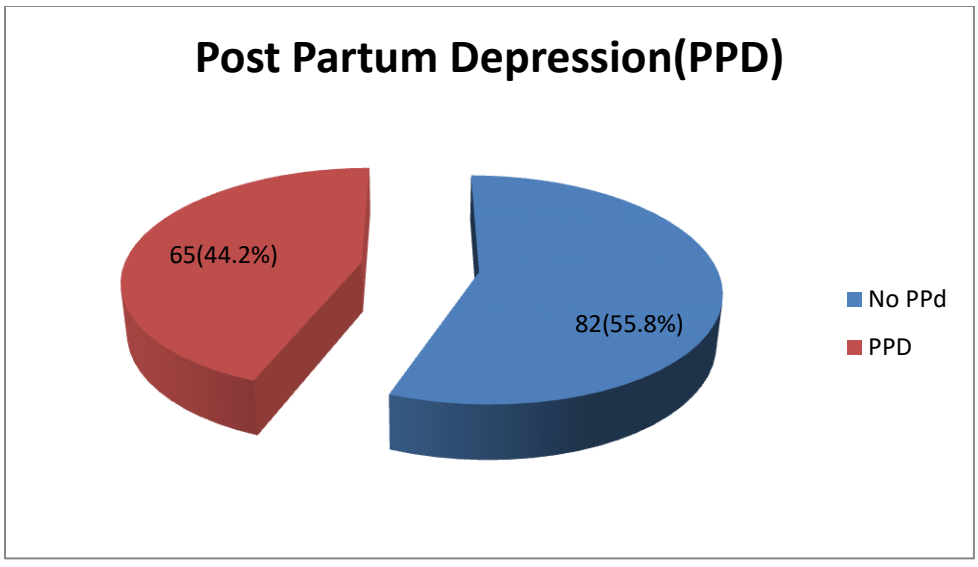

Figure 2: Magnitude of Postpartum Depression among Women who attended child immunization clinic of JUMC, Jimma Town, South-west Ethiopia from February 18 /2019- march 18/ 2019. (n=147)

5.6. **Factors associated with postpartum depression**

Primarily Chi square and bivariate binary logistic regression were done to determine the potential predictor of postpartum depression, and then those potential predictor variables with p value < 0.25 were entered into multivariate binary logistic regression analysis to control effect of confounding variables. The potential variables includes age, educational status, number of pregnancy, history of depression, relationship with husband, help and support from husband, relationship with own family, physical abuse, death of dear person, difficulty of dealing child, financial problems and housing problems. Finally three independent predictor variables of postpartum depression were identified in the multivariable binary logistic regression model. This were, Age of the mother 24-29 year less than age of mother 30-38 (AOR: 0.31, 95%CI: 0.10-0.92); having history of previous depression (AOR: 5.83, 95%CI: 1.38-24.64) and satisfactory help and support from husband were more likely to develop PPD than those who have said very good(AOR: 10.71, 95%CI: 2.35-48.68).

Table 5: Factors associated with Post partum depression (PPD) among women attending Child Immunization clinic of JUMC, Jimma town, southern Ethiopia from February 18 /2019- march 18/ 2019. (n=147)

Variable	No PPD	PPD	COR(95%CI)	AOR(95%CI)
Age in years				
18-23	20(13.6%)	19(12.9%)	0.51(0.20-1.29)	0.73(0.22-2.35)
24-29	49(33.3%)	22(15.0%)	0.24(0.10-0.56)*	0.31(0.10-0.92)*
30-38	13(8.8%)	24(16.3%)	1	1
Occupation				
Housewife	35(23.8%)	41(27.9%)	1.171(0.37-3.66)	1.39(0.182-10.55
Private office worker	13(8.8%)	10(6.8%)	0.76(0.20-2.92)	0.46(0.051-4.14
Government worker	27(18.4%)	7(4.8%)	0.26(0.07-0.99)*	0.28(0.032-2.38
Merchant	7(4.8%)	7(4.8%)	1	1
History of depression				
Yes	7(4.7%)	11(7.5%)	3.85(1.29-11.44)*	5.83(1.38-24.64)*
No	103(70.1%)	26(17.7%)	1	1

Help and support from husband (n=136)				
Low	2(1.5%)	4(2.9%)	2.35(0.13-39.84)	4.95(0.24-100.06)
Satisfactory	9(6.6%)	8(5.9%)	11.76(3.01-45.98)*	10.71(2.35-48.68)*
Good	46(33.8%)	11(8.1%)	1.85(0.86-3.98)	2.06(0.80-5.28)
Very good	47(34.6%)	9(6.6%)	1	1
Difficulty in dealing with current baby				
Yes	7(4.8%)	12(8.2%)	4.22(1.43-12.45)*	2.78(0.78-10.02)
No	103(70.0%)	25(17.0%)	1	1

* P value <0.05, COR= Crudes Odds Ratio, AOR=Adjusted Odds Ratio

CHAPTER SIX: DISCUSSION

This study aimed to determine level of postnatal depression and its associated factors among post natal women (who give birth within the past 12months) and attending at child immunization clinic of JUMC February 18/2019 to march 18/2019.

According to current study, the magnitude of postnatal depression was 44.2 %. The current finding was higher than most similar study findings done in different part of the world (1-4,6,7). In addition to methodological and Sociodemographic difference the current study used lower cutoff point of EDPS ≥8. But most of the former studies used EDPS≥10 (1-3), ≥12 (7) and ≥13(3,4).

Study done in Mizan-Aman town of southern Ethiopia [1], Three Hospitals of Southern Ethiopia [2] and HiwotFana university Hospital of eastern Ethiopia [3]reported postpartum depression was 22.4%, 33.82%and 13.11% respectively. This discrepancy might be the former was community based study [1], Sociodemographic characteristics such as age and educational status of the respondents [2] and the second was hospital based study which involved only those mothers one week after delivery[3].

Two studies done among rural women of south India showed that PPD was 26.3% and 31.4% [4, 48] which was lower than the current finding. This difference may occur since the previous study was done among mothers of a rural community with four to ten weeks after delivery (4).

The current finding was also higher than similar study findings from three Asian countries (Jordan, Nepal and Vietnam) which was 22% [49], 27.6% [6] and 30% [7] respectively. The discrepancy might be related to the previous study was community based among mothers who visited the child immunization clinic at a period of six to ten weeks after delivery [7] and the other study used mothers with six to eight weeks after delivery [49].

Study findings from Ireland and Russia were also lower than the current finding which was 12% [50], and 10-15% [51] respectively. This discrepancy showed that the magnitude of postpartum depression is higher among mothers from less developed countries like Ethiopia than their counterparts.

The current study was only comparable with a study result from rural hospital of south India which revealed that about 45.5% of the women screened positive for postnatal depression [5].

But the former study includes mothers who delivered within one week and at 6-8 weeks after delivery.

Postpartum depression was 69% less likely among mothers with the age of 24-29 years than 30-38 years. Similarly, two studies from southern Ethiopia were reveled reciprocal reports on the association of age of the mother and post natal depression. The first mentioned postpartum depression was higher amongmothers with age range between 18 and 23 years [1] and the other study indicated that PPD was less likely among mothers with the age of 15 to 24 years [2]

Also study report from India indicated that PPD was higher among mothers with age less than 20 or over 30 years [48]. Also study finding from Nepal indicated that mothers aged 20 to 29 yearswere less likely to have depressive symptoms compared to oldermothers [7]. Other similar studies were also indicated age of the mother as associated factor of post natal depression [8-9]

In the current study, postpartum depression was nearly 6 times more likely among mothers with history of previous depression with their counter parts. This finding is in line with a study finding reported from Mizan-Aman town of Ethiopia [1] and Ireland [50]. Also some scientific report indicated that risk of getting postpartum depression increases among women with history of depression prior to becoming pregnant, or during pregnancy [8,9].

Among mothers who reported ‘satisfactory help and support from husband’were nearly 11 times more likely to develop PPD than those who have said ‘very good support’. Similarly, different findings revealed postpartum depression was more likely because of living away from husband [5], limited social support [1, 3, 8,9, 47, 49], living alone [8], marital conflict or dissatisfaction [1, 2,8,47] and poverty [4, 49].

Beyond the current research findings, recent studies also indicated some other determinants of PPD. These were history of pregnancy-induced health problem or diseases [3, 4, 6, 7, 47]; Level of education [6,47]; family history of mental illness [3, 9, 47]; Unplanned pregnancy [1,2, 8, 47, 48]; having a chronic physical illness [2, 3], domestic violence [1, 47]; gender preference[47, 48], Pregnancy and birth complications[9]

CHAPTER SEVEN: CONCLUSION AND RECOMMENDATION

7.1 Conclusion

The current study finding revealed postpartum depression was 44.2% which was found toobe high. Age of the mother, help and support from husbandandprevious history of depression were independent predictors of postpartum depression among mothers who give birth within the past 12months.

7.2 Recommendation

- More focus on postnatal depression screening and early management
- The screening of postpartum depression should be included in routine maternity care services in the maternity, child immunization clinic and post natal room. It should be performed by health workers supported and monitored by policy makers
- PPD can be prevented by close support by her husband.
- Mothers with previous depressive symptom should have close follow up during the first year after delivery to detect the recurrence of depression during the postnatal period.
- Researchers should do cohort to determine the incidence of PPD

Limitation

- Non probability technique (Consecutive sampling) was used
- PPD is more detected on early weeks after delivery
- Recall bias
- The cross-sectional nature of the study limits the capacity to draw any causal implications.
- The other limitation of this study might be the use of EPDS tool use only for screening of depressive symptoms without a clinical diagnosis
- Data was notcollected regarding different substance abuse, recent history of antidepressants use.

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Appendix

Questionnaire

Jimma University

Institute of Health

College of Public Health and Medical Sciences

1. Information Sheet and informed consent form for hospital manager

My name is TayeAbdeta (OBGYN R4), I am studying at Jimma University, Institute of Health Sciences. I kindly request you to give me a permission to conduct the study in this hospital on Prevalence of postnatal depression and associated factors among postpartum women in Jimma University medical center,2019

Purpose of the study

The purpose of this study is to write a thesis as a partial requirement for the fulfillment of a specialty certificate in obstetrics and gynecology for the principal investigator.

This study will provides an evidence base from which further studies can be done and compared, not just at this hospital only, but from other hospitals in Ethiopia. It serves as initial to do further research and a pioneering study for our junior students and other investigators toward future studies among related subjects. It also expands our knowledge about the various aspects of PPD amongJimma women in order to focus on coming researches. This study is will be expected to unveil and draw the attention of health care practitioners to many ignored aspects of PPD and its associated factors, in order to give them more focus towards the integration of PPD screening during the care of pregnant and postpartum women.

Procedure and duration

Post partum mothers will be interviewed using a structured questionnaire.

The EdinburghPostnatal Depression Scale (EPDS) will be used to screen for depressive symptoms and data collector fill a questionnaire within 15minute

Benefits and risk

The findings from this research may reveal important information for hospital managers.There is no risk at all from this study.

Confidentialityand Rights

The information postpartum mother will provide us will be confidential. There will be no information thatwill identify mother in particular. Participation for this study is fully voluntary. Mother have the right to declare to participate ornot in this study.

Declaration of informed voluntary consent

I have read the participant information sheet. I have clearly understood the purpose of theresearch, the procedures, the risks and benefits, issues of confidentiality, the rights ofparticipating and the contact address for any questions .I have been given the opportunity to askquestions for things that may have been unclear. I was informed that I have the right to stop thisstudy from being conducted in this hospital at any time. Therefore, I declare my voluntaryconsent for the student to conduct the study in this hospital with my initials (signature) as indicated below.

Signature of participant ---------- Signature of data collector----------

Date ___/___/___.

Section one: socio-demographic information:

Table 1: Socio-demographic characteristics of the study populationin jimma town JimmaUniversity medical center Hospital from February 18-march 18, 2019

Variables	**Response**
1.Age (yrs)	
2.Ethnicity	1. Oromo 2. Amhara 3. Dawuro 4. Gurage 5. others
3.Marital Status	1. Single 2. Married 3. Divorced 4. Widowed
4. Residence	1. urban 2. rural
5. Educational Status	1. unable to read and write 2. only reading and writing 3. Elementary school 4. High school and preparatory 5. College graduate
6. Family Monthly Income	----------ETB/month

7. occupation	1. housewife 2. Farmer 3. Private office worker 4. student 5. Government worker 6.merchant/trading
8. Religion	1. Orthodox 2 .Protestant 3 .Muslim 4. Others

Section two: Pregnancy and Birth related factors

Table 2: Pregnancy and Birth related factors of the study population in jimma town Jimma University medical center HospitalFebruary 18-march 18, 2019

Variable	**Response**
1.Number of pregnancy	1.1 2.2 3.3 4≥4
2. Any experience death of a baby	1. yes 2. no
3.Any of baby hospitalized	1. yes 2. no
4.Planned pregnancy	1. yes 2. no
5. Desired gender of the last baby	1. Desired 2. undesired 3. I don't mind
6.premature delivery	1. yes

	2 .no
7.Mode of delivery last baby	1. Vaginal 2. Cesarean section 3. Instrumental delivery
8.Place of birth of last baby	1. home 2. health institution 3.others
9. History of depression	1.yes 2.no
10.Medical care during labor and delivery	1. Poor 2. Satisfactory 3. Good 4. very good
11.chronic medical illness	1.Yes 2.No

Table 3: marital and Family relationship satisfactions of the participants in Jimma town, Jimma University medical center Hospital from February 18 to march 18, 2019

Variable	**Categories**
1.Relationship with husband	1. Very Poor 2. Poor 3. Satisfactory 4. Good 5. Very good
2.Help and support provided by husband	1. Very Poor

	2. Poor 3. Satisfactory 4. Good 5. Very good
3.Relationship with own family	1. Very Poor 2. Poor 3. Satisfactory 4. Good 5. Very good
4.Relationship with mother in-law	1. Very Poor 2. Poor 3. Satisfactory 4. Good 5. Very good
5.Relationship with husband's family in general	1. Very Poor 2. Poor 3. Satisfactory 4. Good 5. Very good

Section three: psychosocial and psychological factor

Table 4:Psychosocial and psychological characteristics of the participants in Jimma town, Jimma University medical center Hospital February 18 to March 18, 2019

Variable	**Response**
1.Personal mental Hx	1. yes 2. no
2.Family mental Hx	1. yes 2. no
3.death of a dear person	1. yes 2. no
4.recurrent verbal abuse	1. yes 2. no
5.accidents or injuries	1. yes 2. no
6.physical abuse	1. yes 2. no
7.abandon a dear person	1. yes 2. no
8.work place problems	1. yes 2. no
9.separation or divorce	1. yes 2. no
10.severe illness of you or dear person	1. yes 2. no
11.difficulty in dealing with your children	1. yes 2. no
12.financial problems	1. yes 2. no
13.housing problems	1. yes 2. no

Table 5. EPDS (Edinburgh postnatal depression scale) responses among postpartum women's in Jimma Town, Jimma University medical center Hospital from February 18 to march 18, 2019

The Edinburgh Postnatal Depression Scale:

1. The mother is asked to check the response that comes closest to how she has been feeling in the previous 7 days.
2. All the items must be completed.
3. Care should be taken to avoid the possibility of the mother discussing her answers withothers. (Answers come from the mother or pregnant woman.)
4. The mother should complete the scale herself,

Symptoms	Response
1. I have been able to laugh and see the funny side of things	1. As much as I always could 2. Not quite so much now 3. Definitely not so much now. 4. Not at all.
2.I have looked forward with enjoyment to things	1. As much as I ever did. 2. Rather less than I used to 3. Definitely less than I used to 4. Hardly at all.
3.I have blamed myself unnecessarily when things went wrong.	1. Yes, most of the time 2. Yes, some of the time. 3. Not very often. 4. No, never
4.I have been anxious or worried for no good reason	1. No not at all. 2. Hardly ever.

	3. Yes, sometimes. 4. Yes, very often.
5. I have felt scared or panicky for no very good reason.	1. Yes, quite a lot. 2. Yes, sometimes. 3. No, Not much. 4. No, not at all.
6. Things have been getting on top of me.	1. Yes, most of the time I haven't been able to cope at all 2. Yes, sometimes I haven't been coping as well as usual. 3. No, most of the time I have coped quite well 4. No, I have been coping as well as ever
7. I have been so unhappy that I have had difficulty sleeping.	1. Yes, most of the time 2. Yes, sometimes 3. Not very often. 4. No, not at all.
8. I have felt sad or miserable	1. Yes, most of the time 2. Yes, quite often 3. Not very often 4. No, not at all.
9. I have been so unhappy that I have been crying	1. Yes, most of the time 2. Yes, quite often 3. Only occasionally 4. No, never

10. The thought of harming myself has occurred to me	1. Yes, quite often 2. Sometimes. 3. Hardly ever 4. Never

Thank You, For Your Cooperation!

Assurance of Principal Investigator

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the Health Science Institute in effect at the time of grant is forwarded as the result of this application.

Name of the resident:_____

Date:-_____

Signature:_____

Approval of Advisors

Name of the first advisor:_____

Date:_____

Signature _____

Name of the second advisor: _____

Date _____ Signature_____