MEKELLE UNIVERSITY,

COLLEGE OF HEALTH SCIENCES,

SCHOOL OF MEDICINE

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

PREVALENCE AND DETERMINANT FACTORS OF POSTPARTUM DEPRESSION AMONG MOTHERS VISITING POSTNATAL AND IMMUNIZATION CLINICS IN SELECTED PUBLIC HEALTH INSTITUTIONS MEKELLE, TIGRAY; HOSPITAL BASED CROSS-SECTIONAL STUDY

BY: BERIHU KAHSAY MD, YEAR 4 OBGYN RESIDENT

A THESIS PAPER TO BE SUBMITTED TO MEKELLE UNIVERSITY COLLEGE OF HEALTH SCIENCES, DEPARTMENT OF OBSETRICS AND GYNECOLOGY, IN PARTIAL FULFILLMENT FOR THE REQUIREMENT FOR CERTIFICATE OF SPECIALIY DEGREE IN OBSTETRICS AND GYNECOLOGY

ADVISOR: Dr. AKEBOM KIDANEMARIAM MD, ASSISTANT PROFESSOR IN OBSTETRICS AND GYNECOLOGEY

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Name of investigator	Berihu Kahsay, MD, 4th year OBGYN resident
Name of Advisor	Dr.Akebom Kidanemariam ,MD ,Assistant professor in OBGYN
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Address of investigator	Tel/cell phone No: 0980473999 E-mail: Hadikah12@gmail.com

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List of Abbreviations and Acronyms

Abbreviations	Extended form
ACSH	Ayder comprehensive Specialized Hospital
MGH	Mekelle General Hospital
CD	Cesarean Delivery
OVD	Operative vaginal delivery
ETB	Ethiopian Birr
SPSS	Statistical Package for Social Science
WHO	World Health Organization
OBGYN	Obstetrics and gynecology
EPI	Expanded Program on Immunization
OPD	Outpatient department

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Abstract

Background

Postpartum Depression (PPD) involves various groups of depressive symptoms and syndromes that take place during the first year following birth. It is recognized as risk period for severe mood disorder that comprises provisional blue, major depression and debilitating psychotic depression. Most of the studies indicate that the magnitude and impact of PPD is higher in developing nations. Worldwide the prevalence ranges 0.5- 60.8 and up-to 3.8% to 69.9% in Africa. Recent institution-based study Addis Ababa, Ethiopia showed prevalence of 25.95%.

Despite the high prevalence of PPD in developing countries, there is a paucity of research on postpartum depressive disorders and their predictors particularly in Ethiopia and the Tigray region. This lack of research hinders the development of effective e interventions and policies to address PPD in these regions. Therefore, it is important to study on it, so that we can develop effective interventions and policies to tackle it.

Objective

To assess the magnitude and associated factors of postpartum Depression among postpartum mothers in selected governmental Hospitals in Mekelle, Tigray

Methodology

Hospital based cross- sectional study on 326 post-natal mothers who visit Mekelle Public Hospitals was undertaken. Data was collected using pretested prepared questionnaire with structured questions (modified Edinburgh Postnatal Depression Scale) from December 1, 2024 to January 30, 2025 G.C. It was coded on pre- arranged coding sheet and entered into the Epi info version 7.2.6 statistical package then, after checking for completeness and cleaning, analyzed using SPSS version 27.

Results

The complete response rate was 100%. The magnitude of postpartum depression found to be 26.997%. Living away from husband (AOR 2.975(95%CI :1.16-7.613), working during the postpartum period(AOR 0.221(95%CI :0.07-0.699)), monthly income(AOR,4.045(95%CI: 1.793-9.127)), status of the baby (alive or dead) (AOR,55.852(95%CI :1.937-1610.387)) and whether the mother had negative social life event (AOR 6.031(95%CI :1.009-36.064)) are the factors which has statistically significant association with PPD in this study.

Conclusion

Postpartum depression is a common mental health problem at the postpartum period. This study also revealed that different factors contributing to the occurrence of postpartum depression, such as living away from husband, working during the postpartum period, monthly income, status of the baby and whether the mother had negative social life event.

Key words

Post-partum depression, Edinburgh Postnatal Depression Scale, post-partum period

Background

Postpartum Depression (PPD) involves various groups of depressive symptoms and syndromes that take place during the first year following birth. It is recognized as risk period for severe mood disorder that comprises provisional blue, major depression and debilitating psychotic depression. 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(1).

It is a common and serious mental health problem that is associated with maternal suffering and numerous negative consequences for the offspring. Worldwide its prevalence varies from 0.5% to 60.8% in the first 12 months postpartum using self-reported questionnaire(2). An updated systematic review which was conducted on burden of postpartum depression in sub-Saharan Africa the prevalence of postpartum depressive symptoms ranged from 3.8% to 69.9%(3) and recent institution based study Addis Ababa, Ethiopia shewed prevalence of 25.95%(4).

Major risk factors include past depression, stressful life events, poor marital relationship, and social support. (5).

Other literature also showed; psychological factors such as a previous history of depression and anxiety, economic and social factors, obstetrical history, and biological factors, lifestyle and history of mental illness (6).

Statement of the problem

Postpartum depression (PPD) is a significant mental health disorder that affects approximately 10-15% of mothers worldwide(7). It is the most common psychological condition following childbirth, and may have a detrimental effect on the social and cognitive health of spouses, infants, and children(8).

PPD has a significant impact on the mother and long-term consequences on the cognitive and emotional development of most children whose mothers are affected. It is generally also agreed that while this illness can progress into major depression and carries a great risk of illness and death, it is an underdiagnosed and underrated illness in many countries. In addition, it has been reported that the prevalence of PPD is three times higher in developing countries compared to developed countries, with various risk factors accounting for the high burden of the illness(7).

Despite the high prevalence of PPD in developing countries, there is a paucity of research on postpartum depressive disorders and their predictors in women in developing countries, particularly in Ethiopia and the Tigray region. This lack of research hinders the development of effective interventions and policies to address PPD in these regions. Furthermore, the cultural and socio-economic differences between developed and developing countries may contribute to the unique predictors and manifestations of PPD in developing countries. Therefore, there is a critical need for research to understand the predictors and prevalence PPD in Ethiopia and the Tigray region to develop culturally and contextually appropriate interventions and policies.

Significance of the study

The significance of the study lies in its focus on understanding the predictors and prevalence of PPD in Tigray region, where there is a paucity of research on this topic.

This study will contribute to filling the research gap and provide evidence-based recommendations for addressing PPD in our hospital, regional level and nationwide. This information is crucial for developing effective interventions and policies to address PPD. By understanding the predictors of PPD in Ethiopia and the Tigray region, the study will contribute in improving the mental health and well-being of mothers, infants, and children in the region. The study will be expected to urge health care decision makers to consider PPD in the planning and delivering of health care services.

Magnitude of postpartum depression

The literature review on the magnitude of PPD in the world highlights the significant impact of PPD as a major maternal health challenge globally(2).The prevalence of PPD is reported to be higher in developing countries compared to developed countries, with rates around 20-40% in developing countries according to the World Health Organization(9). The prevalence PPD worldwide varies from 0.5% to 60.8% in the first 12 months postpartum using self-reported questionnaire(10).Fewer cases of postpartum depression have been documented in certain nations, such as Singapore, Malta, Malaysia, Austria, and Denmark, while more cases have been reported in other nations, such as Brazil, Guyana, Costa Rica, Italy, Chile, South Africa, Taiwan, and Korea(10).

The estimated prevalence of PPD in Africa is 18.4%. However, various countries have reported higher rates such as Uganda (43.0%) and Cameroun (23.4%) as compared to Ethiopia (13.1%), Ghana (3.8%) and Morocco (11.6%) (7).

An updated systematic review which was conducted on burden of postpartum depression in sub-Saharan Africa the prevalence of postpartum depressive symptoms ranged from 3.8% to 69.9%, with a pooled estimate of 22.1% (CI 18.5-26.2; I2 = 98.2; Tau = 0.848; p<0.001) South Africa (30.6%; CI 23.6-38.7) and Zimbabwe (29.3%; CI 22.2-37.5) reported the highest prevalence rates, while Tanzania (13.5%; CI 10.1-17.9) reported the lowest prevalence estimates. Upper-middle SSA countries presented the highest prevalence rates (30.6%; CI 23.6-38.7) (3).

In A descriptive cross-sectional study which was conducted among 250 mothers in EtiOsa Local Area of Lagos State, Nigeria, the prevalence of postpartum depression was 35.6% (7).

In a health facility based survey which was conducted on prevalence and associated factors of postpartum depression among postpartum mothers in central region, Eritrea PPD was found to be 7.4%(9).

A community based cross- sectional study design was conducted in Mizan Aman town, Bench Maji zone, Southwest Ethiopia ,the magnitude of postpartum depression among the study population was 22.4%, (95% CI: 19.84–24.96) (11).

Health institution-based cross-sectional study was conducted among 461 postnatal mothers attending public health institutions in Addis Ababa from 15 May 2021 to 15 July 2021 and 19.7% of them had postpartum depression (12).

In a community-based study on Magnitude and associated factors of postpartum depression among women in Nekemte town, East Wollega zone, west Ethiopia, 2019 shows 20.9% had developed postnatal depression (13).

Recently institution-based cross-sectional study on Magnitude and associated factors of postpartum depression among mothers visiting Mahatma Gandi memorial hospital in Addis Ababa showed 25.97% had PPD (4).

Other health institution based cross-sectional study on Magnitude and associated factors of PPD among mothers visiting in Jimma university medical center found that 44.2 % them had PPD (14).

Postpartum depression is a debilitating mental disorder with a high prevalence. The literature review on associated factors of PPD highlights various risk factors that contribute to the development of this mental health condition.

Factors associated with PPD include psychological factors such as a previous history of depression and anxiety, economic and social factors, obstetrical history, and biological factors, lifestyle and history of mental illness (6).

In a Tertiary Care Hospital which was conducted on prevalence and Determinants of Postpartum Depression in Pakistan, multivariable analysis adjusted for age and gestational age showed no family support OR 2.01 (95% CI: 1.07-3.75), primiparity OR 2.28 (95%CI: 1.28-4.07), uneducated women OR 1.78 (95% CI: 1.04-3.05), women experience complications at time of delivery OR 7.55 (95% CI: 2.98-19.12), unintended pregnancy OR 2.82 (95% CI: 1.59-5.02), obesity OR 3.84 (95%CI: 2.3-6.43) and financial issues OR (95% CI: 1.78-11.01) were independent determinants of postpartum depression (15).

In a Longitudinal Study on Prevalence and Incidence of Postpartum Depression among Chinese Women The prevalence of possible and high-level depression at 1 month were 37.7% and 15.2%, respectively; at 6 months were 32.6% and 13.1%, respectively. Both prevalence rates of possible and high depression were higher at 1 month than that at 6 months after delivery. The incidence rates of possible and high-level depression at 6 months were 11.8% and 7.2%, respectively. Of those with possible symptoms at 1month, 20.8% continued to have symptoms at 6 months. Higher EPDS scores at 1 month, employment during pregnancy and multiparas were risk factors for elevated EPDS scores at 6 months($P<0.05$) (16).

Furthermore, another study which is conducted on determinant Factors of Postpartum Depression Among Mothers Attending Their Postnatal and Vaccination Services at Public Health Institutions of Addis Ababa, Ethiopia; shows marital status, income management, sex of the baby, history of child death, unplanned pregnancy, negative life events, substance use during pregnancy, history of depression, and marital satisfaction were main determinant factors. These factors play a significant role in the development of postpartum depression and highlight the importance of addressing various aspects of a mother's life to prevent and manage PPD effectively (12).

A cross-sectional study which is conducted on magnitude and risk factors of postpartum depression among women attending primary healthcare centers in northern of West Bank/ Palestine in 2022 shows that the predictors of postpartum depression were stressful life events during pregnancy (p-value 0.003, OR: 2.1, 95% CI [1.27-3.4]), vacuum use during delivery p-values 0.002, OR: 4, 95% CI: [1.64-9.91]), low social support (p-value less than 0.001, OR: 2.5, 95%CI: [1.7-4.2]) and husband's low level of education (p-value less than 0.001, OR: 5.2, 95%CI: [2.7-10]) (17).

From a case control study conducted in populations of Rhode Island and selected counties in Massachusetts, Georgia, Texas, and Utah, current depression was more likely in women with stillbirth (14.8%) vs. healthy live birth (8.3%, COR 1.90 [95% CI 1.20, 3.02]). However, after control for history of depression and factors associated with both depression and stillbirth, the stillbirth association was no longer significant (AOR 1.35 [95% CI 0.79, 2.30]). Conversely, for

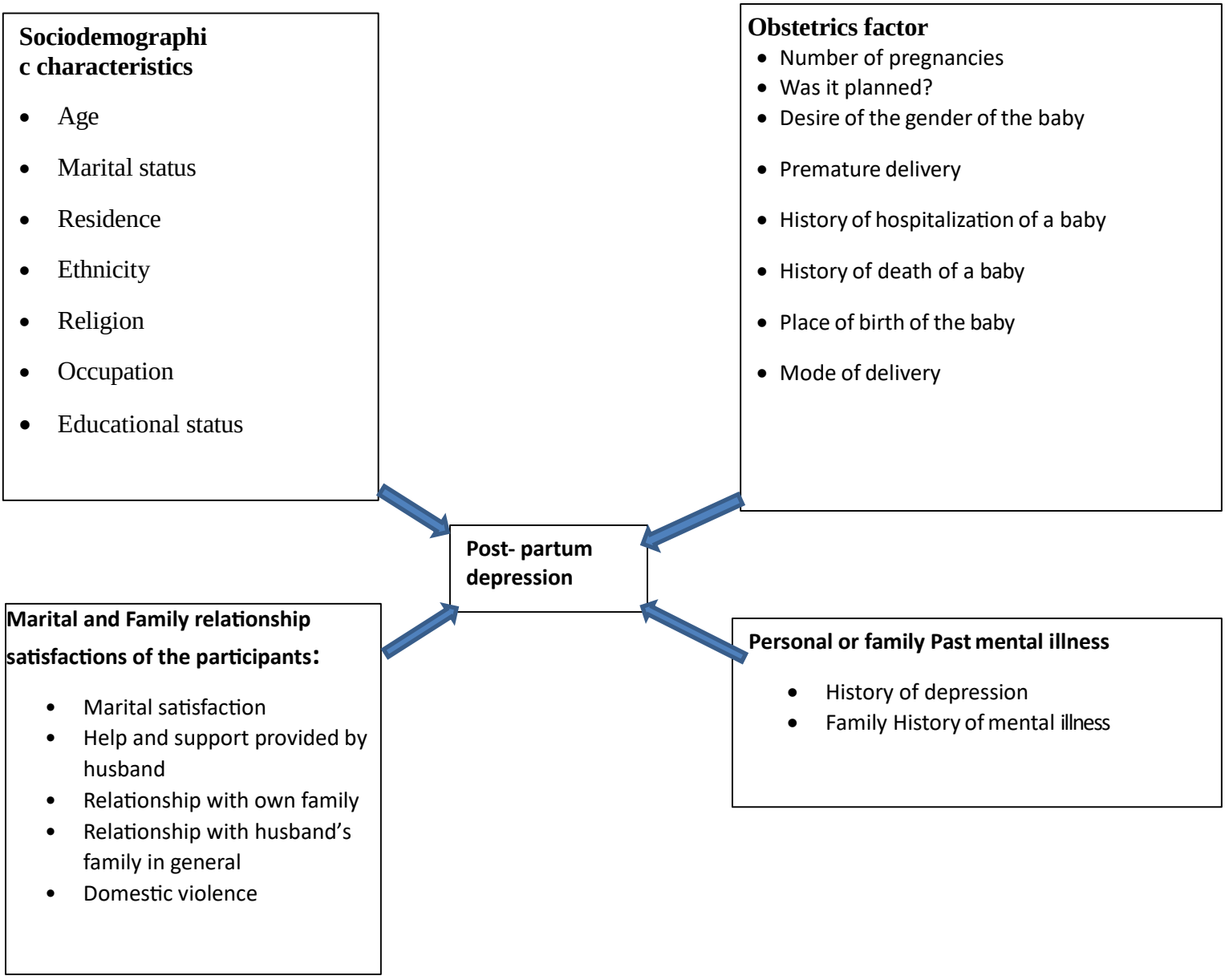
the 76% of women with no history of depression a significant association remained after adjustment for confounders (AOR 1.98 [95% CI 1.02, 3.82]) (18).

In a research which was conducted in Eritrea shows : Mothers who are housewives were less likely to develop PPD (AOR = 0.24, 95% CI: 0.06–0.97; p = 0.046), whereas, mothers with perceived low economic status (AOR = 13.33, 95% CI: 2.66–66.78; p = 0.002), lack of partner support (AOR = 5.8, 95% CI: 1.33–25.29; p = 0.019), unplanned pregnancy (AOR = 3.39, 95% CI: 1.24–9.28; p = 0.017), maternal illness after delivery (AOR = 7.42, 95% CI: 1.44–34.2; p = 0.016), and reside in Southwest-Asmara (AOR = 6.35, 95% CI: 1.73–23.23; p = 0.05) had statistically significant higher odds of postpartum depression (9).

In a community-based study which was conducted on magnitude and associated factors of postpartum depression among women in Nekemte town, East Wollega zone, west Ethiopia, 2019 shows :Unplanned pregnancy (AOR = 7.84, 95% CI: 3.19, 19.26), Being first time mother (AOR = 4.99, 95% CI: 1.54, 16.09), History of previous depression (AOR = 3.06, 95% CI: 1.06, 8.82), Domestic violence (AOR = 5.92, 95% CI: 2.44, 14.40), History of substance use (AOR = 3.95, 95% CI: 1.52, 10.30) and poor social support (AOR = 6.59, 95% CI: 2.25, 19.29) were significantly associated with postnatal depression (13).

In hospital-based study magnitude and associated factors of postpartum depression in Addis Ababa showed that difficulty with income [AOR = 2.0 (95% C.I: 1.0-3.8)], hospitalized children [AOR = 2.6 (95% C.I: 1.2-6.0)], and unplanned pregnancy [AOR = 2.0 (C.I: 1.0-4.1)] were associated with postpartum depression. Those who had unsatisfied marital relations [AOR = 3.6 (95% C.I: 1.7-7.6)] had higher odds of postpartum depression compared to their counterparts, and relative mental illness [AOR = 11.9 (95% C.I: 2.5-57.3)] were more likely to be depressed (4).

Conceptual framework



Objectives of the study

General Objective

- To assess the magnitude and associated factors of postpartum Depression among postpartum mothers in selected governmental Hospitals in Mekelle, Tigray.

Specific Objectives

- To determine the magnitude of postpartum depression among postpartum mother in selected governmental Hospitals in Mekelle, Tigray
- To identify the associated factors of postpartum Depression among postpartum mother in selected governmental Hospitals in Mekelle, Tigray

Method and Materials

Study Area

Ayder comprehensive Specialized Hospital is one of the largest public hospitals in Ethiopia. It started as a referral and specialized medical center in 2008 G.C. It serves for its catchment areas of Tigray, Northern Afar, and North-eastern part of Amhara regional states. The hospital also served as teaching hospital and research center for the College of Health Sciences, Mekelle University. In this hospital about 300-400 deliveries are being served and average of about 200 mothers monthly are coming for postnatal follow up and EPI service.

Mekelle general hospital is one of the oldest regional hospitals that gives service currently mainly for residents of the city and neighboring districts. The hospital gives delivery services to 400 mothers per month on average. This hospital is serving about 400 postpartum mothers monthly in the EPI OPD.

Study Period

Data collection for this study undertaken in December 1 2024 -January 30, 2025G.C

Study Design

Hospital based cross- sectional study

Source Population

All postnatal mothers visiting postnatal and EPI OPD in ACSH and Mekelle General Hospital within 6 weeks of delivery.

Study Population

Sampled postnatal mothers visiting postnatal and EPI OPD in ACSH and Mekelle General Hospital fulfilling the inclusion criteria during the data collection period and within 6 weeks of delivery

Eligibility Criteria

Inclusion criteria

- Post-natal women who were attending at postnatal and child immunization (EPI) OPD of ACSH and Mekelle General Hospital and who gave birth within the last 6 weeks.
- 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.

Study Variables

Independent Variables

Socio demographic factors:

- Age
- Occupation
- Residence
- Marital status
- Educational status
- Ethnicity
- Religion

Obstetrics factors:

- Parity
- Any experience death of a baby
- Any of baby hospitalized
- Whether planned pregnancy
- Whether desired gender of baby
- Whether the new born is delivered before 9-month
- Mode of delivery
- Place of delivery

Marital and Family relationship satisfactions of the participants:

- Marital satisfaction
- Help and support provided by husband
- Relationship with own family
- Relationship with husband's family in general
- Domestic violence

Personal and family history of depression among postpartum women:

- Personal mental illness history
- Family mental illness history

Dependent Variables

- Postpartum depression

Sample size Determination

The sample size was calculated using the formula

$$N = z2 * p(1 - p)/d2$$

Where

d = margin of error (5%)

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

P = 25.97% (Magnitude and associated factors of postpartum depression among mothers visiting Mahatma Gandi Hospital in Addis Abeba, Ethiopia, 2024: institution -based study)

N =sample size

N= (1.96)2 0.2597(1-0.209)/ (0.05)2

N = 296

We add Non respondent rate =10% and the final sample size=326

Sampling procedure

Ayder Comprehensive Specialized Hospital, and Mekelle General Hospital was selected because we thought we can have enough study population from both hospitals and conduct our study with better supervision and feasible budget.

The sample size was allocated proportionally to each institution depending on the number of postnatal mothers who visited each hospital for the previous Two months.

Systematic random sampling method was used and since the expected visiting postnatal mothers were total of 1200(average of 200 /month and 400/month for ACSH and Mekelle general hospital respectively) in 2 months, the K Value found to be 4. And the 1st was selected by lottery method.

Data collection Methods

Data retrieved using pre-designed structured questionnaires prepared and adapted from previous research and litterateurs. It was used to collect information regarding socio-demographic characteristics, obstetric factors, substance use status, and social support characteristics of postnatal mothers. In addition to this, the 10 items questionnaire of the Edinburgh Postnatal Depression Scale (EPDS) of ≥13 threshold was used as screening method for PPD. This tool is validated to assess postnatal depressive symptoms in Ethiopia among postnatal mothers. These questionnaires are designed in the English language, translated into Tigrigna, and back to the English language for consistency of collected data.

Data quality assurance

Data was collected by midwives after giving short training and supervision by principal investigator to assure the quality of data. The following measures were also undertaken,

- Prepared questionnaire with structured questions was used
- On daily bases the collected data were reviewed and checked for completeness, accuracy and clarity by the principal investigator.

Data Processing and Analysis

Finally, the collected data cleaned, coded, and entered into Epi-data version 3.1 and exported to the statistical package for social science (SPSS) version 27 for analysis. Descriptive statistics like frequency and percentage were used to summarize the data. Bivariable and multivariable binary logistic regression analyses was used to identify the determinant factors of PPD and P-values <0.2 and 0.05 were considered statistically significant for bivariable and multivariable binary logistic regression, respectively. The overall results are presented in texts, tables, and figures.

Operational Definition

- **Postpartum depression** is a psychiatric disorder that occurs in the women following delivery up to six weeks if ≥13 according to (EPDS). (2,4).
- **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 ≥13 identify most women with postpartum depression (4).
- **Domestic violence**: Any behaviour within an intimate relationship that causes physical, psychological, or sexual harm, and is reported by mothers with yes or no items (4).

Ethical Consideration

Ethical clearance was obtained from Institutional Review Board of Mekelle University, College of Health Science, Department of Obstetrics and Gynecology at ACSH and Mekelle general hospital. Names and other identifiers were not used in collecting the data, and confidentiality maintained throughout the study period.

Plan for Dissemination of Results

The result of this study will be presented and submitted to Mekelle University, Department of Obstetrics and Gynecology and it will be presented to University Community as part of research thesis defense.

Results

Socio-demographic characteristics

Complete data was collected from all respondents (326) with 100% response rate. Among the respondents, 71 (67.2%) were found in the age group of 25-34 with minimum age of 18 and maximum of 40 years old. Majority of them are married and urban dwellers which were 309(94.8%) and 308(94.5%) respectively. And 284(87.1%) of the participants were living with their husband during the study period.

Regarding the religious most of them were orthodox ,269(82.5.4%) and most of them,320 (98.2%) attended formal education.

Out of the respondents, 254(77.9%) were working during their postpartum period (6 months).

Table 1Socio-demographic characteristics of postnatal mothers visiting ASCH and MGH(N=326)

Characteristics		Frequency	Percentage
Residence	Urban	308	94.5
	Rural	18	5.5
Age range	18-24	19	20.9
	25-34	219	67.2
	35>=	39	12
Religion	Orthodox	269	82.5
	Catholic	2	o.6
	Protestant	1	o.3
	Muslim	53	16.3
	Other	1	0.3
Marital status	Single	2	.6
	Married	309	94.8
	Divorced	11	3.4
	Widowed	4	1.2
Attend regular school	Yes	320	98.2
	No	6	1.8
Level of education	Primary school	40	12.3
	Secondary school	127	39.0
	Technical/vocational	11	3.4
	Diploma	59	18.1
	Degree and above	83	25.5
Job	Housewife	132	40.5
	Farmer	5	1.5
	Private office worker	35	10.7
	Student	13	4.0
	Governmental employee	88	27.0

	Merchant	44	13.5
	Other	9	2.8
Living with husband	Yes	284	87.1
	No	42	12.9
Husband's occupation	Farmer	14	4.3
	Private office worker	48	14.7
	Student	2	.6
	Governmental employee	132	40.5
	Merchant	88	27.0
	Other	42	12.9

Past pregnancy and child birth history of postnatal mother

Concerning the last pregnancy and child, 131(42.2%) and 96(32.0%) of them reported that their last pregnancy was for the para 1 and para 2 respectively.303(92.6%) of the last pregnancy were planned. Among the participant mothers, 191(58.6%) of them delivered via SVD and 134(41.1%) via cesarean delivery. Based on place of delivery, most them (98.5%) delivered in health care institutions.

Most of the participants' 232(71.2%) labor starts spontaneously and 321(98.5%) of deliveries resulted in alive babies. Also, most of deliveries happened at term (85%).

Table 2 Past pregnancy and child birth history of postnata mothers visiting ACSH and MGH(N=326)

Characteristics		Frequency	Percentage
Parity	1	131	40.2
	2	96	29.4
	3	58	17.8
	≥4	41	12.6
Abortion	Yes	68	20.9
	No	258	79.1
Onset of the abortion	Induced	5	7.5
	Spontaneous	62	92.5
GA of the abortion	≤13w6d	56	17.2
	14-27w6d	11	3.4
Hx of stillbirth or neonatal death	Yes	20	6.1
	No	306	93.9
Hospitalized baby	Yes	33	10.1
	No	293	89.9
Planned pregnancy	Yes	303	92.9
	No	23	7.1
Obstetric complications	Yes	24	7.4
	No	302	92.6

ANC contacts	<4	13	4.0
	≥ 4	312	95.7
Place of delivery	Home	3	.9
	Health care institution	321	98.5
	Other	2	.6
Mode of delivery	SVD	191	58.6
	CD	134	41.1
	OVD	1	.3
Status of the baby	Alive	321	98.5
	Died	5	1.5
GA at delivery	≤36w6d	24	7.4
	37- 41w6d	277	85.0
	≥42wk	25	7.7
Birth weight	<2500 g	32	9.8
	2500-3900 g	248	76.1
	≥4000 g	46	14.1
Onset of labor	Spontaneous	232	71.2
	Induced	64	19.6
	Elective CD	30	9.2
Sex of baby	Female	201	61.7
	Male	125	38.3
Expected or desired baby's sex	Desired	80	24.5
	Undesired	92	28.2
	I don't mind	154	47.2

Psychiatric and socioeconomic factors

Most of the respondents' monthly income is above 5000 ETB (62%) and 44(13.5%) of them earns less than 1500 ETB monthly. 313(96%) of the participants had no negative social life event or experience during the pregnancy and delivery time. Out of the total participants 1.8% and 1.2% had history of psychiatric illness and family history psychiatric illness respectively.

Among the participant mothers ,9(2.8%) of the had experienced domestic violence and about 91.7 % are satisfied with their marriage. Moreover 92.6 % of them gets enough support from their partners and 96.3 % of them were accompanied by their relatives during childbirth time.

Additionally, almost half of them (54 %) had very good relationship with their own family and majority (68.8 %) had good relationship with their husband's family.

Table 3 Psychiatric and socio-economic factors of postnatal mothers visiting ACSHand MGH(N=326)

Characteristics		Frequency	Percentage
Working during the postpartum period	Yes	72	22.1
	No	254	77.9
Monthly income	< 1500	44	13.5
	1501 – 3000	17	5.2
	3001 – 5000	63	19.3
	≥ 5000	202	62.0
Negative life event during pregnancy and delivery	Yes	13	4
	No	313	96
Substance misuse during pregnancy	Yes	0	0
	No	326	100
Hx of psychiatric illness	Yes	6	1.8
	No	320	98.2
Hx of psychiatric illness in family	Yes	4	1.2
	No	322	98.8
Domestic violence	Yes	9	2.8
	No	317	97.2
Satisfied with your marriage	Yes	299	91.7
	No	27	8.3
Support from your husband	Yes	302	92.6
	No	24	7.4
Accompanied by your relatives during childbirth	Yes	314	96.3
	No	12	3.7
Relationship with your own family	Satisfactory	74	22.7
	Good	74	22.7
	very good	178	54.6
Relationship with your husband's family	Poor	17	5.2
	Satisfactory	32	9.8
	Good	223	68.4
	very good	54	16.6

Magnitude of post-partum depression

Using The Edinburgh Postnatal Depression Scale (EPDS**)** of ≥ 13, the magnitude of PPD found to be 88(26.99%) of the respondent mothers who visited EPI and postnatal clinic in ASCH and postnatal clinic in Mekelle general hospital.

Determinant factors of post-partum depression

Binary Logistic regression was performed to assess the association between each independent variable and dependent variable (PPD) and 8 variables with found to be significant (p-value < 0.2). These variables are; living with husband, working during the postpartum period, monthly income, alive or dead baby, onset of labor, whether the mother had negative social life event, satisfaction with her marriage and whether she gets enough support from her husband.

Then these variables added to multivariable binary logistic regression and analyzed and five of them found to be significant (p-value < 0.05) which includes; living with husband, working during the postpartum period, monthly income, status of the baby (alive or dead) and whether the mother had negative social life event.

Table 4 Logistic regression analysis results

Independent Variables	Category	PPD		P value	COR 95% CI	P value	AOR 95% CI
		No	Yes				
Living with husband currently	Yes	221	63		1		1
	No	17	25	<0.001	5.159(2,622-10-15)	0.023	2.975(1.16-7.613)
Working during the post- partum period	Yes	63	9	0.003	0.316(0.15-0.668)	0.010	0.221(0.07-0.699)
	No	175	79		1		1
Monthly income	≥ 5001	156	46	<0.001	1	0.006	1
	< 1500	18	26	<0.001	4.899(2.469-9.718)	0.001	4.045(1.793-9.127)
	1501 – 3000	16	1	0.137	0.212(0.027-1.641)	0.540	.497(0.53-4.632)
	3001 – 5000	48	15	0.864	1.060(0.544-2.064)	0.321	1.510(0.669-3.410)
Baby status	Alive	237	84		1		1
	Dead	1	4	0.031	11.286(1.244-102.405)	0.019	55.852(1.937-1610.387)

Onset of labor	Spontaneous	182	50	0.003	1	0.151	1
	Induced	39	25	0.005	2.333(1.291-4.216)	0.743	1.133(0.536-2.395)
	Elective	17	13	0.011	2.784(1.267-6.115)	0.052	2.699(0.991-7.348)
Negative life event during pregnancy and delivery	Yes	6	7	0.035	3.342(1.091-10.235)	0.049	6.031(1.009-36.064)
	No	232	81		1		1
Satisfied with your marriage	Yes	224	75		1		1
	No	14	13	0.012	2.773(1.247-6.165)	0.925	0.889(0.077-10.279)
Husband's support	Yes	227	75		1		1
	No	11	13	0.003	3.577(1.538-8.321)	0.209	4.844(0.414-56.715)

Discussion

The findings of this study indicate the prevalence and associated factors of postpartum depression among 326 of post-natal women who were attending at postnatal and child immunization (EPI) OPD of ACSH and Mekelle General Hospital and who gave birth within the last 6 months.

The prevalence of postpartum depression in this study found to be 26.99 %. This result is within the range of 0.5-60.8% globally and even the higher finding in the developing nations ranging 20-40%. It also goes with results from the updated systematic review which was conducted on burden of postpartum depression in sub-Saharan Africa which ranged 3.8% to 69.9%(3,9,10). In addition to these a recent institution-based cross-sectional study in Mahatma Gandi memorial hospital in Addis Ababa had similar result (25.97%)(4).

But it higher than the findings in Cameroun (23.4%), Ethiopia (13.1%), Ghana (3.8%) and Morocco (11.6%) as nation. It is also higher than the result found in a facility-based survey in Eritrea (7.4%)(7,9).

The prevalence of PPD in this study also is higher than the previous studies in deferent parts of Ethiopia like in Nekemt town,2019 (20.9%) which was community-based study and Addis Abeba public health institutions from 15 May 2021 to 15 July 2021(19.7%) (12,13). These differences might be related to methodological differences such as sample size, sampling procedure, the timing of the postpartum period, assessment tool rating scale difference. For example, the study conducted in Eritrea used DSM fifth edition for diagnosis of postpartum depression which is more specific tool. The other important factor is the fact that Tigray is in post devastating civil war which resulted in multiple socioeconomic and psychological crisis which might increase the prevalence PPD compared to the other parts of Ethiopia during the study time.

However, the prevalence PPD in this study is lower than that reported in studies conducted in South Africa (30.6%; CI 23.6-38.7), Zimbabwe (29.3%; CI 22.2-37.5) and Upper-middle Sub-Saharan Africa countries (30.6%; CI 23.6-38.7). It's also lower than a descriptive cross-sectional study which was conducted among 250 mothers in EtiOsa Local Area of Lagos State, Nigeria (35.6%). A health institution based cross-sectional study on Magnitude and associated factors of PPD among mothers visiting in Jimma university medical center found that 44.2 % them had PPD which high compared to this result(7,14).

This variation might be associated with socio-cultural differences, assessment tools, the difference in the cut of point of EPDS, the difference in the sampling procedure, whether it is community or health institution-based study and included study participants. The study conducted in Jimma university used a lower cut of point of EPDS (eight) while in this study it was 13 and this could explain the discrepancy.

This study found that: living with husband, working during the 6-month postpartum period, monthly income, alive or dead baby and whether the mother had negative social life event has significant association with PPD.

Mothers not living with their husband have almost three times more likely to develop PPD than their counterparts (AOR 2.975(95%CI :1.16-7.613). This is consistent with the report from study done in Jimma(14). The possible explanation for this is that mothers who are living away of their husbands have less support, which make more prone to depression.

Another significant association found in this study was negative life event during the last pregnancy and it increases the probability PPD by 6 times (AOR 6.031(95%CI :1.009-36.064)), And this goes along the report from health institution-based study done in Addis Abeba(12). Negative life events like loss loved ones, may result in a stress and depression on the mother.

Working during the postpartum period is found to be protective by about 80 %, (AOR 0.221(95%CI :0.07-0.699)) than those who don't. this is in line with report of the study conducted in Addis Abeba but opposite to study done in Eritrea(9,12). This could be related to the lack of adequate income among unemployed postnatal mothers which could be the driving cause for the onset of a different psychosocial stressor and postpartum depression.

Additional significant factors in study are status of baby (alive or dead) and monthly income. Mothers who earn 1500 ETB or less monthly, has four times higher risk of being depressed than those who earn 5000 ETB or above (AOR,4.045(95%CI: 1.793-9.127)). This is in line with study results in Pakistan and Addis Abeba(4,15). And this can be explained by, low -income results in economic crisis which in turn affects mental health of the mother.

Mothers who had dead baby in the index pregnancy are also more likely (AOR,55.852(95%CI :1.937-1610.387)) to be depressed than their counterparts. This is consistent with population-based case-control study that enrolled women in-hospital immediately after delivery, included populations of Rhode Island and selected counties in Massachusetts, Georgia, Texas, and Utah (18).

Conclusion

Postpartum depression is a common mental health problem at the postpartum period. This study found that 26.997% of respondents had postpartum depression, which is a significantly high value. This study also revealed that different factors contributing to the occurrence of postpartum depression, such as living away from husband, working during the postpartum period, monthly income, status of the baby (alive or dead) and whether the mother had negative social life event.

Limitations

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 only for screening of depressive symptoms without a clinical diagnosis.

The health institutions in this study were not selected randomly

Recommendations

Policymakers and health planners should strengthen the integration of mental health services with existing maternal healthcare and inter-sector collaboration between women's affairs and health institutions to decrease Postpartum depression among postpartum women.

The Ministry of Health should prepare policies for integrating mental health services with prenatal care, especially postpartum care.

The government should have policies to help women to be self-sufficient economically.

Accredited training providers should provide continuous training for all healthcare providers, especially nurses, midwives, and health officers, to modify client care by including psychological support with PNC.

Healthcare providers should pay attention to and perform regular preventive screening during antenatal and postnatal follow-ups for women with low income, living away of their partners, stillbirth or neonatal death and negative social life events during pregnancy.

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Annex

Information Sheet and informed consent form for hospital manager

My name is Dr Berihu Kahsay (OBGYN R4), I am studying at Mekelle University, Institute of Health Sciences. I kindly request you to give me a permission to conduct the study in this hospital on Prevalence of postpartum depression and associated factors among postpartum women in Ayder specialized comprehensive hospital and Mekelle General Hospital.

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 provide 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 among Tigray 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 Edinburgh Postnatal 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.

Confidentiality and Rights

The information postpartum mother will provide us will be confidential. There will be no information that will identify mother in particular. Participation for this study is fully voluntary. Mother have the right to declare to participate or not in this study.

Declaration of informed voluntary consent

I have read the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any questions. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to stop this study from being conducted in this hospital at any time. Therefore, I declare my voluntary consent 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 __/_____/_____.

Questionnaire

✓ English version

Section one: Socio-demographic information:

S.no	Characteristics	Response
1.1	Residence	1. Urban 2. Rural
1.2	Age in years	
1.3	Religion	1. Orthodox 2. Catholic 3. Protestant 4. Muslim 5. Others
1.4	Marital Status	1. Single 2. Married 3. Divorced/Separated 4. Widowed
1.5	Have you ever attended school?	1. Yes 2. No
1.5.1	If the answer to question no 1.5 is yes, What is the Highest level of school you attended?	1. Elementary school 2. High school and preparatory 3. Technical/vocational 4. Diploma 5. Degree and above
1.6	Occupation status	1. Housewife 2. Farmer 3. Private office worker 4. Student 5. Governmental employee 6. Merchant 7. Others

1.6.1	If the answer to question number 1.6 is “others “please specify	
1.7	Are you currently with your husband?	1. Yes 2. NO
1.8	What is your Husband’s occupational status?	1. Farmer 2. Private office worker 3. Student 4. Governmental employee 5. Merchant 6. Others
1.8.1	If the answer to question number1.8 is “others “please specify	
1.9	Do you work during the postpartum period?	1. Yes 2. No
1.10	What is your monthly average income in ETB?	1. < 1500 2. 1501 - 3000 3. 3001 - 5000 4. ≥ 5001

Section two: Obstetrics factors

S.no	**Characteristics**	**Response**
2.1	What is your Parity?	1. 1 2. 2 3. 3 4. ≥ 4
2.2	Have you ever had an abortion?	1. Yes 2. No
2.2.1	If answer to question number 2.2 is” yes “please specify the type	1. Induced 2. Spontaneous
2.2.2	If answer to question number 2.2 is” yes “please specify the GA	1. ≤ 13 wk + 6 days 2. 14wk - 27 wk + 6 days 3. Unknown
2.3	Have you experienced a death of a baby?	1. Yes 2. No
2.4	Has Any of your babies hospitalized?	1. Yes

		2. No
2.5	Was your last pregnancy Planned?	1. Yes 2. No
2.6	Have you ever experienced Illness/complication during last pregnancy?	1. Yes 2. No
2.7	How many ANC visit does she had?	1. None 2. < 4 3. ≥ 4
2.8	Where was your Place of birth?	1. Home 2. Health institution 3. Others
2.9	What was your Mode of delivery?	1. Vaginal 2. Cesarean section 3. Instrumental delivery
2.10	What was the Status of the last infant at birth?	1. Alive 2. Died
2.11	What was the Gestational age of last pregnancy	1. ≤ 36 week + 6 days 2. 37 weeks- 41weeks + 6 days 3. ≥ 42 weeks
2.12	What was the weight of the last infant/s?	1. < 2500 grams 2. 2500 - 3900 grams 3. ≥ 4000 grams
2.13	What was the onset of labor for the last infant?	1. Spontaneous 2. Induced 3. Elective CD
2.14	What was the Sex of your last baby?	1. Female 2. Male
2.15	Was the sex of the baby desired?	1. Desired 2. Undesired 3. I don't mind
2.16	Was there a negative life event during pregnancy?	1. Yes 2. No
2.16.1	If the answer to question number 2.16 is" yes "please specify	
2.17	Was there any substance misuse during pregnancy?	1. Yes 2. No
2.17.1	If the answer to question number 2.17 is" yes "please specify	
2.18	Have you ever had any psychiatric disorders before the last pregnancy?	1. Yes 2. No
2.19	Is there any Mental/Psychiatric illness in your family?	1. Yes 2. No

Section three

S.no	Characteristics	Response
3.1	Have you ever experienced abuse at home?	1. Yes 2. No
3.2	Are you satisfied with your marriage?	1. Yes 2. No
3.3	Do you have Support from the father of the child?	1. Yes 2. No
3.4	Was any of your Relatives present in the birth place of the last baby?	1. Yes 2. No
3.5	How is your relationship with your own family?	1. Poor 2. Satisfactory 3. Good 4. Very good
3.6	How is your Relationship with your husband's family?	1. Poor 2. Satisfactory 3. Good 4. Very good

✓ Tigrigna version

ክፋል ሓደ

ሰደቓ 1 ፡ □□□□□ ማሕበራውን ኩነታት ተሳታፊት ዝምልከት

ተ.ቁ	መሕትት	መልሲ
1.1	እተትቅመጥሉ/እትነብርሉ ቦታ	1. ከተማ 2. ገጠር
1.2	ዕድመ	
1.3	ሃይማኖት	1. ኦርቶዶክስ 2. ካቶሊክ 3. ፕሮቴስታንት 4. ሙስሊም 5. ካልእ
1.4	ናይ ሓዳር ኩነታት	1. ዘይተመርዐወት/ብሕቲ 2. ዝተመርዐወት 3. ዝተፋተሐት 4. ሰብኣያ ዝሞታ
1.5	ትምህርቲ ተማሂርኪ ዶ?	1. እወ 2. ኣይፋል
1.5.1	ናይ ሕቶ ቁፅሪ 1.5 መልሲ እወ እንተኮይኑ : ክሳብ ክንደይ ክፍሊ ተማሂርኪ?	1. ቀዳማይ ብርኪ 2. ካልኣይ ብርኪ 3. ቴክኒክን ሞያን 4. ዲፕሎማ 5. ዲግርን ልዕሊኡን
1.6	ናይ ስራሕ ኩነታት	1. ስራሕ ዘይብላ 2. ሓረስታይ 3. ናይ ግሊ ቢሮ ሰራሕተኛ 4. ተምሃሪት 5. ናይ መንግስቲ ሰራሕተኛ 6. ነጋዴ 7. ካልእ
1.6.1	ናይ ሕቶ ቁፅሪ 1.6 መለሲ ካልእ እንተኾይኑ ዓይነት ይገለፅ	

ሰደቓ 2

1.7	ሕዚ ምስ በዓል ገዛኺ ዲኺ ትነብሪ?	1. እወ 2. ኣይፋል
1.8	ናይ ባዓል ገዛኺ ናይ ስራሕ ኩነታት	1. ሓረስታይ 2. ናይ ግሊ ቢሮ ሰራሕተኛ 3. ተምሃራይ 4. ናይ መንግስቲ ሰራሕተኛ 5. ነጋዴ 6. ካልእ
1.8.1	ናይ ሕቶ ቁፅሪ 1.8 መለሲ ካልእ እንተኾይኑ ዓይነት ይገለፅ	
1.9	ወርሓዊ መሃያኺ ክንደይ ይበፅሕ / ክንደይ እዩ?	1. 1500 ቅርሽን ትሕቲኡን 2. ካብ 1501 ክሳብ 3000 3. ካብ 3001 ክሳብ 5000 4. 5001 ቅርሽን ልዕሊኡን
1.10	ኣታዊኺ ኣብ ምቁፅፃር ትቸገሪ ‘ዶ?	1. እወ 2. አይፋል

ተቁ	ኩነታት	መልሲ
2.1	ክንደይ ቆልዑ ወሊድኪ?	1.1 2.2 3.3 4.≥4
2.2	ፀንሲ ከይድኪ ይፈልጥ ዶ?	1. እወ 2 □□□□
2.2.1	ን ቁፅሪ 2.2 መልሲ እወ እንተኮይኑ	1. ብመድሃኒት 2. በዓሉ
2.2.2	ን ቁፅሪ 2.2 መልሲ እወ እንተኮይኑ ናይ ክንደይ ወረሒ ነይሩ	1.≤13 ሰሙንን 6 መዓልትን 2. 14 -27 ሰሙንን 6 መዓልትን 3 ኣይፍለጥን
2.3	ኣብ ከብድኪ ወይ ምስተወለደ ቆልዓ ሞይትኪ የፈልጥ ድዩ?	1. እወ 2.ኣይፋል

2.4	ካብዞም ደቂኪ ደቂሱ ዝተሓከመ ኣሎ?	1. እወ 2. ኣይፋል
2.5	ናይ መጨረሻ ጥንስኪ ብዕቅድ ድዩ ነይሩ?	1. እወ 2. ኣይፋል
2.6	ኣብ ናይ መጨረሻ ጥንሲኪ □□□□ ወይ ምስ ጥንሲ ዝተተሓሐዘ ፀገም ኣጋጢሚኪ ነይሩ ድዩ?	1. እወ 2. ኣይፋል
2.7	ክንደይ ግዜ ክትትል ጥንሲ ነይርኪ	1. <4 2. ≥4 3. ኣይነበረንን
2.8	ኣበይ ወልድኪዮ	1. ገዛ 2. ሆስፒታል 3. ካሊእ
2.9	ብከመይ ወሊድኪዮ	1. ብንቡር 2. ብመጥባሕቲ 3. ብርእሱ ሲሒቦሞ/ ብሓገዝ መሳርሒ
2.10	እቲ ናይ መጨረሻ ቆልዓ ክውለድ ከሎ ኩነታቱ ከመይ ነይሩ	1. ብሂወት 2. ሞቱ/ ተጎዲኡ
2.11	እቲ ናይ መጨረሻ ቆልዓ ክውለድ ከሎ ኣብ ክንደይ ወርሑ ነይሩ	1.≤36 ሰሙንን 6 መዓልትን 2. 37 -41 □□□□ 6 መዓልትን 3. ⩾42 ሰሙን
2.12	ክብደቱ ክንደይ ነይሩ	1. <2500 □ 2. 2500-3900 ግ 3. ⩾4000 ግ
2.13	ሕርሲ ከመይ ጀሚሪኪ	1 □□□ 2.ብሓገዝ ሕርሲ
2.14	ፅትኡ እንታይ ነይሩ	1. ተባዕታይ

		2. ኣንሰታይ
2.15	ፆትኡ ከምቲ ዝተፀበኪዮ ድዩ ነይሩ	1. □□ 2.ኣይፋል 3. ዝኮነ ይኩን
2.16	ኣብ ጥንሲ ግዜኪ ሕማቅ ነገር ኣጋጢሚኪ ነይሩ ድዩ	1. እወ 2. ኣይፋል
2.16.1	ንተ.ቁ 2.16 መልሲ እወ እንተኮይኑ እንታይ ነይሩ	
2.17	ኣብ ግዜ ጥንስኪ ዘይልሙድ ነገር/ መዐወኒ ሓሸሽ ትጥቀሚ ነይርኪ ድኪ	1. እወ 2. ኣይፋል
2.17.1	ንተ.ቁ 2.17 □□□□ እወ ኣንተኮይኑ እንታይ ነይሩ	
2.18	ቅድሚ ምጥናስኪ ናይ ስነ ኣእምሮ ፀገም ነይሩኪ ድዩ?	1. እወ 2. ኣይፋል
2.19		

ሰደቓ 3: □□□□ ሓዳር ርክብ ምስ ቤተሰብን ማሕበራዊ ድጋፍን

ተቁ.	መሕትት	መልሲ
3.1	ኣብ ገዛ ጥቕዓት በፂሑኪ ይፈልጥ ድዩ?	1. እወ 2. 2 ኣይፋል
3.2	ብሓዳርኪ ዕግብቲ ድኺ?	1. እወ 2. ኣይፋል
3.3	ካብ ኣቦ ውላደኪ ደገፍ ኣለኪ ዶ?	1. እወ 2. ኣይፋል
3.4	ክትወልዲ ከለኺ ካብ ኣዝማድኪ ምሳኺ ነይሮም ዶ?	1. እወ 2. ኣይፋል

3.5	ምስ ቤተሰብኪ ዘለኪ ርክብ ታይ ይመስል?	1. ድኹም 2. ኣዕጋቢ 3. ፅቡቕ 4. ብጣዕሚ ፅቡቕ
3.6	ምስ ዓዲ ኣሕማኺ ዘለኪ ርክብ ታይ ይመስል/	1. ድኹም 2. ኣዕጋቢ 3. ፅቡቕ 4. ብጣዕሚ ፅቡቕ

The Edinburgh Postnatal Depression Scale

Code:
As you have recently had a baby, we would like to know how you are feeling. Please mark the answer which comes closest to how you have felt in the past 7 days, not just today.

S.no	**In the past seven days:**	Response
1.	I have been able to laugh and see the funny side of things	0. As much as I always could 1. Not quite so much now 2. Definitely not so much now. 3. Not at all.
2.	I have looked forward with enjoyment to things	0. As much as I ever did. 1. Rather less than I used to 2. Definitely less than I used to 3. Hardly at all.
3	I have blamed myself unnecessarily when things went wrong.	3. Yes, most of the time 2. Yes, some of the time. 1. Not very often 0. No, never
4	I have been anxious or worried for no good reason	0. No not at all. 1. Hardly ever 2. Yes, sometimes 3. Yes, very often
5.	I have felt scared or panicky for no very good reason.	3.Yes, quite a lot. 2.Yes, sometimes. 1. No, not much 0. No, not at all.
6.	Things have been getting on top of me	3.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. 1. No, most of the time I have coped quite well 0. No, I have been coping as well as ever
7.	I have been so unhappy that I have had difficulty sleeping.	3. Yes, most of the time 2. Yes, sometimes 1. Not very often 0. No, not at all.
8.	I have felt sad or miserable	3. Yes, most of the time 2. Yes, quite often 1. Not very often 0. No, not at all.
9.	I have been so unhappy that I have been crying	3.Yes, most of the time 2.Yes, quite often 1. Only occasionally 0. No, never
10.	The thought of harming myself has occurred to me	3, Yes, quite often 2.Sometimes. 1. Hardly ever 0. Never

Total score: ----------

መመርመሪ ድብርቲ ድሕረ ወሊድ ኢድንብሮ

ሰደቓ ቁፅሪ 4

ተቐ	ኣብዝሓለፉ 7 መዓልትታት	መልሲ
1	አብ ዝሓለፈ ሰሙን ዘስሕቕ ነገር ተረኺበ ይስሕቕ ነይረ	0, ብደንቢ እስካብ ዝኸኣልክዎ 1, ሓለሓሊፉ 2, ኣዝዩ ስሕት ስሕት ኢለ 3, ጠቕሊለ ኣይስሕቕን ኔረ
2	መፃእየ ብተስፋ ብ ሓጎስ ይርኢ ኔረ	0, እስካብ ዝኸኣልክዎ ብዙሕ ግዜ 1, ካብ ካሊእ ግዜ ብዝነኣሰ 2, , ካብ ካሊእ ግዜ ኣዝዩ ብዝነኣሰ 3, ጠቕሊለ ኣይርእን ኔረ
3	ዝሓሰብክዎ ከይተሳኸዐ ክቐሪ ከሎ ወይከዓ ፀገም ከጋጥመኒ ከሎ ዓርሰይ ኣመና ይወቕስ እየ	3, እወ ብዙሕ ግዜ 2, እወ ሓለሓሊፉ 1, ኣዝዩ ስሕት ስሕት ኢለ 0, ጠቕላላ ወቒሰ ኣይፈልጥን
4	ምንም ምኽንያት ዘይብለይ ኣብዚሐ ይጭነቕ እየ	0, ኣይፋል ጠቕላላ ኣይጭነቕን 1, መብዛሕትኡ ግዜ ኣይጭነቕን 2, እወ ሓለሓሊፉ 3, እወ ብዙሕ ግዜ ይጭነቕ እየ
5	ምንም ምኽንያት ዘይብለይ ስቕ ኢለ ይፈርሕን ይድንግፀን እየ	3, እወ ብዙሕ ግዜ 2, እወ ሓለሓሊፉ 1, ኣይፋል ብዙሕ ግዜ ኣይኮን

		0, ኣይፋል ጠቕላላ ከምዚ የብለይን
6	ነገራት ከቢዶምኒ ኔሮም	3, እወ ብዙሕ ግዜ ክቆፃፀሮም ኣይከኣልኩን 2, እወ ሓለሓሊፉ ምቁፅፃር ይኣብዩኒ ኔሮም 1, ኣይፋል መብዛሕትኡ ግዜ ይቆፃፀሮም ኔረ እየ 0, ኣይፋል ኩሉ ግዜ ይቆፃፀሮም ኔረ እየ
7	ምድቃስ ስለዘኣብየኒ ሕጉስቲ ኣይነበርኩን	3, እወ መብዛሕትኡ ግዜ 2, እወ ሓለሓሊፉ 1, ኣይፋል ብዙሕ ግዜ ኣይኮነን 0, ኣይፋል ጠቕሊሉ ኣይኮነን
8	ሱቕ ኢለ ይሓዝን ኔረ	3, እወ መብዛሕትኡ ግዜ 2, □□ ሓለሓሊፉ 1, □□□□ ብዙሕ ግዜ ኣይኮነን 0, ኣይፋል ጠቕሊሉ የብለይን
9	ሕጉስቲ ስለዘይኮንኩ ይበኪ ኔረ	3, እወ መብዛሕትኡ ግዜ 2, □□ ሓለሓሊፉ 1, □□□ ስሕት ስሕት ኢሉ 0, ኣይፋል ፈፂሙ የብለይን
10	ንዓርሰይ ንኽጎድእ ሓሳብ መፂኡለይ ኔሩ	3, እወ መብዛሕትኡ ግዜ 2, □□ ሓለሓሊፉ 1, □□□ ስሕት ስሕት ኢሉ 0, □□□ ሓሲበ ኣይፈልጥን

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_____