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Evaluating the Relationship Between Maternal Postpartum Depression, Infant Feeding Practices, and Infant Nutritional Status at a Maternity Hospital in Uasin Gishu County, Kenya

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ABSTRACT

Postpartum depression is a major maternal mental problem that has been shown to contribute to malnutrition in infants. This cross-sectional study explores the association between maternal postpartum depression (PPD) and infant feeding practices as well as infant nutritional status among infants aged 6-14 weeks at Eldoret West Maternity Hospital (EWMH) in Uasin Gishu County, Kenya.

The study involved 257 women of reproductive age with infants aged 6-14 weeks postpartum attending postnatal and maternal and child health clinics at EWMH. Data was collected using a modified Edinburgh Postnatal Depression Scale (EPDS) to screen for PPD and other questionnaires to gather sociodemographic information, feeding practices, and infant nutritional status. Multivariate logistic regression analyses were conducted to assess associations between maternal PPD, infant feeding practices, and nutritional status.

The prevalence of maternal PPD was 17.5%, with 1 in 6 mothers affected. Exclusive breastfeeding was practiced by 94.6% of mothers, exceeding the national level of 60%. Mothers with PPD were more likely to practice non-exclusive breastfeeding and were 1.4, 1.8 and 1.6 times more likely to have stunted, wasted and underweight infants respectively than mothers without PPD though the association was not statistically significant after adjusting for confounders.

Maternal PPD is prevalent among mothers at EWMH and is more likely to influence infant feeding practices particularly non-exclusive breastfeeding and nutritional status. Stunting, wasting and underweight were prevalent in infants of mothers with PPD.

These findings underscore the importance of integrating mental health and nutritional support services for mothers and infants in maternal healthcare settings. Early identification and intervention for maternal PPD can help improve infant feeding practices and nutritional outcomes, promoting the well-being of both mothers and their infants.

Keywords: maternal, postpartum depression, infants, malnutrition

INTRODUCTION

The postpartum period is a pivotal phase in a woman's life, often marked by the profound physiological, psychological, and social changes that accompany childbirth. During this period, maternal mental health is of utmost significance since it impacts both the mother's wellbeing and the health and development of the infant. Maternal postpartum depression (PPD) is a mental disease that manifests as: apathy, lack of attention, disturbed sleep patterns, and poor temperament (Agarwala et al., 2019). Such manifestations interfere with the mother's ability to perform her roles particularly in caring for her infant (Shewangzaw et al., 2018). The health burden maternal PPD has not gone unnoticed as it affects 17.7% mothers globally (Hahn-Holbrook et al., 2018) and 18.6% in the developing countries including Sub-Saharan countries (Woldeyohannes et al., 2021). Though being a serious mental challenge to women, often it remains undiagnosed and untreated yet it plays a significant contributory role in developing infant malnutrition.

Malnutrition, particularly undernutrition is a condition that results from inadequate or excess nutrient intake for healthy tissues and organs (World Health Organization [WHO], 2013). It is a condition that manifests itself in form of undernutrition as either; wasting, stunting and underweight as well as in form of overnutrition as overweight and obesity **(**WHO & UNICEF, 2009**).** Globally, undernutrition levels are persistently alarming in that approximately 1 in every 3 children in the first 1000 days of their life and beyond are not growing well (WHO, 2020).

In under-five year children in particular, malnutrition is a serious risk factor for their mortality accounting for approximately 45% of infant deaths globally (UNICEF, 2019). In Africa, 40% of all under-five year children are stunted (2 in every 5) while 27% are wasted (>1/4 of all under-five year children) (UNICEF, 2020). In Kenya, the levels of stunting are at 18%, wasting at 5% and underweight at 10% among under-five year old children- a factor that contributes to the high children mortality being reported annually (KDHS, 2022). Stunting in Uasin Gishu among under-five is at 16.9%, wasting at 4.9% and underweight is 7.4% (KDHS, 2022).

The major maternal mental problem that has been shown to contribute to undernutrition in infants is postpartum depression (Haithar et al., 2018). Evidently PPD has been associated with negative consequences on both infants and mothers (Agarwala et al., 2019). Untreated maternal PPD affects the infants' nutritional status since a mother with PPD is unable to: be responsive, sensitive and cannot fully concentrate on the nutritional needs of her infant (Madeghe et al., 2016). Recent studies have proposed that poor maternal mental health play an important contributory role in infant undernutrition since a mother who is mentally unstable may be unable to properly feed and care for her child, increasing the child's risk of being malnourished (Haithar et al., 2018; Shewangzaw et al., 2018).

Malnutrition due to PPD at infancy has permanent lifetime damages. It results in poor nutritional status of the infant which in turn compromises their immunity resulting in high morbidity, stunted growth and impaired cognitive development (KDHS, 2014). Moreover, due to cognitive impairment, these children are further less likely to perform well in school because of poor attention, perception, learning and memory consequently resulting in them being individuals who get trapped in the poverty and malnutrition cycle (KDHS, 2014).

The effects of PPD on the infants feeding practices and nutritional status make it an important condition to diagnose, treat and prevent (Madeghe et al., (2016). Early diagnosis and treatment help promote proper infant feeding at its early days which involves exclusive breastfeeding in the first six months and subsequently proper complementary feeding upto two years of life (Shewangzaw et al., 2018). It is for this reason that attention is now being turned towards addressing PPD to reduce its prevalence and consequently improve child survival chances (Mukuku et al., 2019; Hajeebhoy et al., 2013). In Kenya, studies have been done in the urban settings of Nairobi such as those done by Madeghe et al. (2016) and Ongeri et al. (2018) but there is a dearth of published studies done in Uasin Gishu County that explore association of PPD on infant feeding practices and nutritional status. Given this paucity, this study sought therefore to assess the association between maternal PPD an infant feeding practices and nutritional status at Eldoret West Maternity hospital in Uasin Gishu County, Kenya.

METHODOLOGY

Study Design and Setting

The study adopted a descriptive cross-sectional study design. This design was deemed appropriate because it describes the prevalence of the disease and/or exposure at one time and provides a "snapshot" of the proportion of individuals in the population who are diseased and non-diseased at one point in time (Alexander et al., 2015).

The study was carried out at Eldoret West Maternity Hospital's postnatal and maternal and child health clinics, a facility that is located in Uasin Gishu County headquarter's- Eldoret, Kenya next to 64 Stadium along Muyodi Road. It is a 70-bed capacity facility that provides services such as; maternity, postnatal clinic, maternal and child welfare clinic, family planning, HIV testing as well as outpatient medical services to both rural and urban mothers with approximately 500 mother-infant pairs attending maternal and child health and postnatal clinics monthly. This facility was chosen since it has both maternal and child health and postnatal clinics thus making it possible to find the target population for the study.

Study Population

The target population was women of reproductive age with infants aged 6-14 weeks postpartum. The accessible population was mothers aged 18-49 years and their infant at 6-14 weeks after delivery attending postnatal and maternal and child health clinics at Eldoret West Maternity Hospital. The approximate total number of mothers aged 18-49 years 6-14weeks postpartum attending the maternal and child and postnatal clinic in two months at Eldoret West Maternity Hospital is 1000. In order to meet the interests of the study, all mothers aged 18-49 years and their infants aged 6 to 14 weeks attending postnatal and maternal and child health clinic at Eldoret West Maternity Hospital were included. Mothers with severe PPD and with infants having congenital problems and infants brought by caregivers other than theirs mothers were excluded.

Sample Size Determination and Sampling Technique

The study sample size of 257 subjects was determined using Fischer's formula (Daniel & Cross, 2013) at a 95% confidence interval, 0.05 sampling error and a prevalence rate of 18.7%; since it is the estimated prevalence of PPD in Kenya (Ongeri et al., 2018). Purposive sampling method was used to select the study area while mother-infant pairs to participate in the study were selected through simple random sampling method. Random numbers from a random number table were assigned to the names of the mothers who were present each day of data collection. The numbers were randomly picked and whichever name it was assigned, after consenting and meeting inclusion criteria, was selected to participate in the study until the required sample size was attained.

Data Collection Procedures

Data was collected using a questionnaire with four sections that include; a modified version of the validated Edinburgh Postnatal Depression Scale (EPDS) for screening postpartum depression that was developed by Cox et al. (1987) and translated to Swahili by Kumar et al. (2015); sociodemographic information; a modified 24-hr recall tool from the KDHS (2022) for assessing the infant feeding practices and a section on anthropometric assessment. Pretesting of the questionnaire was done using 10% of the sample size at Uasin Gishu District Hospital's maternal and child health clinic. Afterwards, data collected during pretesting was analyzed using the Coefficient Alpha and Successor procedure for determining the level of random error done; of which it was less than 0.7 (Cronbach, 2014). Before actual data collection, two research assistants (1 nurse and 1 nutritionist- both with a diploma qualification) were trained for two days by explaining and also demonstrating what the study entailed, the research methodology used, the different terminologies used and on how to fill the questionnaires and to perform anthropometric assessment in a standard and a uniform way. The research assistants were single blinded so as not to know the research objectives to avoid biasness. On every clinic day during the study period, the research team recruited participants who meet the inclusion criteria of

being a mother aged between 18-49 years with infants aged 6-14weeks. COVID-19 guidelines on disease prevention protocols were observed through wearing of face masks by the lead researcher, research assistants and the mothers; ensuring social distance by maintaining at least 1-meter distance between the researchers and the respondents and among the respondents; ensuring minimal handling of research tools by the respondents and sanitization of shared research tools after every use.

The mother-infant pairs 6 to 14 weeks after delivery attending postnatal and maternal and child health clinics in Eldoret West Maternity Hospital meeting the inclusion criteria and whose names were picked using numbers from the prepared random number table were recruited each day of the clinic after giving them an explanation of the study and requested to fill a written informed consent form until the desired number of 257 was attained. The data collection was done within a period of two months (July and August 2022).

Data Management and Analysis

After every data collection, the questionnaires were checked for completeness and any entries missing were corrected and the questionnaires kept safely in a lockable cabinet. Collected Data was cleaned, coded and then entered into the Statistical Package for Social Sciences (SPSS) version 20 which was used to analyze the data. Descriptive statistics [*means, frequencies and percentages*] was used to analyze data on the prevalence of maternal PPD and sociodemographic characteristics, and feeding practices and nutritional status of infants aged 6-14 weeks. Multivariate logistic regression was carried to determine association between maternal postpartum depression and infant feeding and nutritional status while controlling for confounders.

On prevalence of maternal postpartum depression, the EPDS scale item responses were scored and interpreted as either having PPD symptoms or not having PPD symptoms. All the responses to the 10 item scale of EPDS were scored where each item is scored from 0-3 points with 3 representing most severe option leading to a maximum of 30 points. Items 1, 2 and 4 are scored 0, 1, 2, and 3 while items 3, 6, 5, 7, 8, 9 and 10 are reversely scored (3-0) because they evaluate negative aspects about the mothers' depressive state. The study used a cut off of ≥ 10 points to indicate maternal postpartum depression while 0-9 points to mean less likely to have postpartum depression as stipulated by Cox et al. (1987).

Ethical Considerations

Approval to proceed for data collection and Ethical clearance was obtained from the Kabarak University Institute of Postgraduate Studies and the Kabarak University Ethical Review committee (*KABU01/KUREC/001/03/03/2022)* respectively. Research Permit (*NACOST/P/22/16790*) was obtained from the Kenya National Commission for Science, Technology and Innovation (NACOSTI) after which an approval for data collection was also obtained from the Uasin Gishu County Government Ethical Committee of Eldoret (*UGC/ADM.1/31/GEN/2022/VOL.1*).

Written informed consent was obtained from the study participants and an explanation was made to them that the study was voluntary and the information collected will solely be used for the purpose of the study and no incentives shall be given in that the study will be conducted during the normal clinic visits. Mothers with severe levels of PPD were excluded from further assessment and referred for further diagnosis and treatment in a mental health facility

Confidentiality, privacy and anonymity was ensured and maintained on information obtained from the study participants and no names were used on the questionnaires; only unique codes were allocated to the participants to ensure privacy and for ease of analysis of data. To ensure data privacy, the questionnaires were kept in a lockable cabinet and were only accessed by the lead researcher and the research assistants.

IV. RESULTS

Prevalence of Maternal PPD

Of the 257 participants, 45 (17.5%) of them had postpartum depression as measured by EPDS scale (≥10scores) and indicated in Table 1 below.

Table 1:
Prevalence of postpartum depression at Eldoret West Maternity Hospital

Prevalence of Postpartum depression	N=257	
Variables	**n**	**%**
Mothers without postpartum depression (<10 scores)	212	82.5
Mothers with postpartum depression (≥10 scores)	45	17.5

Infant Feeding Practices

This study established that 243(94.6%) of the mothers practiced exclusive breastfeeding a level that is higher than the national level of 60% (KDHS, 2022) while 14(5.4%) of the mothers (see Table 2) had complemented their infants feed.

Table 2:
Infant feeding practices at 6-14 weeks postpartum at Eldoret West Maternity Hospital

How infants were fed in the last 24 hours	N=257	
	N	%
Exclusive breastfeeding	243	94.6
Not exclusive breastfeeding	14	5.4

Table 3 shows that mothers that had complemented their infants feed mainly with cow's milk (35.7%), plain water (35.7%), infant formula (14.3%) and porridge (14.3%); citing the reason for mixed feeding as having inadequate breast milk, sore nipples, lack of knowledge on breastfeeding, and being busy at work.

Table 3:
Types of complementary feeds given to infants

What infants not exclusively breastfed were fed in 24hrs	N=14	
Variables	**n**	**%**
Cow's milk	5	35.7
Infant formula	2	14.3
Plain water	5	35.7
Porridge	2	14.3

Infant Nutritional Status

The study established using weigh for length (WFL) z-score that 80.8% of infants 6-14 weeks' old were normal, 1.5% severely malnourished (SAM), 2.3% moderately malnourished (MAM), (acute malnutrition= 3.8%), 3.5% at risk while 11.9% were overweight as depicted in Table 4

Table 4:
Nutritional status of the infants 6-14 weeks old using WFL Z-scores

WFL Z-Scores	N=260	
	n	%
SAM (<-3)	4	1.5
MAM (-3 to -2)	6	2.3
at risk (-2 to -1)	9	3.5
normal (=1 to +1)	210	80.8
overweight (>+1)	31	11.9

**Total number of infants was 260 since there were 3 multiple births.*

Besides, the study found out the nutritional status assessed using weight for age (WFA) Z-scores that 78.8% of all the infants were normal, 2.7% were severely underweight; 4.2% were moderately underweight (total underweight=6.9%) and 13.5% were at risk of being underweight (see Table 5).

Table 5:
Nutritional status of infants aged 6-14 weeks using WFA Z-Sores

WFA Z-Scores	N=260	
	n	%
Severely underweight (<-3)	7	2.7
Moderately underweight (-3 to -2)	11	4.2
At risk of underweight (-2 to -1)	35	13.5
Normal weight (-1 to + 1)	205	78.8
Overweight (>+1)	2	0.8

**Total number of infants was 260 since there were 3 multiple births.*

Additionally, the study found out the nutritional status assessed using length for age (LFA) Z-scores, that of all the infants 72.7% were normal while 27.3% were stunted (see Table 6).

Table 6:
Nutritional status of infants aged 6-14weeks using LFA Z-Sores

LFA Z-Scores	N=260	
	n	%
stunted (<-2)	71	27.3
Normal (>-2)	189	72.7

The prevalence of malnutrition reported in the study for; stunting (27.3%) is higher than the national (18%) and the Uasin Gishu prevalence of stunting (16.9%); wasting (3.8%) is lower than both the Uasin Gishu county (4.9%) and the national prevalence level (5%) and underweight (6.9%) which is also lower than the national (10%) and Uasin Gishu county prevalence (7.4%) (KDHS, 2022).

Association between Maternal Postpartum Depression and Infant Feeding Practices

This study established that mothers with postpartum depression were more likely to practice non-exclusive breastfeeding compared to mothers without PPD (AOR=0.485, 95% CI= 0.142-1.662; p-value>0.05) after adjusting for confounders (Table 7). This indicates that maternal postpartum depression affects infant feeding practices though the association was not found to be statistically significant.

Table 7:

Effects of postpartum depression on feeding of 6-14weeks old infants

Variables		Mothers without PPD(%) n= 212	Mothers with PPD (%) n=45	UOR	AOR	P-value <0.05
Infant feeding	Exclusive breastfeeding	202(95.3%)	41 (91.1%)	1.971 (0.57-6.590)	0.485 (0.142-1.662)	0.850
	No exclusive breastfeeding	10(4.7%)	4 (8.9%)			

**AOR after adjusting for confounders such as education level, occupation, income and parity.*

Association between Maternal Postpartum Depression and Infant Nutritional Status

This study established that PPD affected infant feeding practices which consequently affected the infant nutritional status as indicated in Table 7. The study found out the prevalence of stunting among infant 6-14 weeks old of mothers with PPD to be 30.4% after adjusting for confounders (birth weight), which meant that mothers with PPD had 1.4 times higher odds (AOR=1.436, 95% CI= 0.706-2.920; p-value>0.05) of having infants who are stunted compared to mothers without PPD.

Similarly, the study established the prevalence of wasting (acute malnutrition) among infants 6-14weeks old of mothers with PPD to be 6.5% after adjusting for confounders (birth weight) which meant that mothers with PPD had 1.7 times higher odds (AOR=1.738, 95% CI= 0.442-6.833; p-value>0.05) of having infants who are wasted than mothers without PPD. Moreover, mothers with PPD had more infants who were underweight (9.5%) [AOR=1.636, 95% CI= 0.496-5.396; p-value>0.05] than mothers without PPD after adjusting for confounders (birth weight). The findings indicated that postpartum depression affects infant nutritional staus though the association is not statistically significant (Table 8)

Table 8:

Effects of postpartum depression on nutritional status of 6-14weeks old infants

Variables		N=257(mothers) N=260* infants				
		Mothers without PPD(%) n= 212	Mothers with PPD (%) n=45	UOR	AOR	P-value <0.05
LFA Z-score	Stunted	52(24.3%)	14(30.4%)	1.363(0.676-2.749)	1.436(0.706-2.920)	0.318
	Normal	162(75.7%)	32(69.6%)			
WFL Z-score	Acute mal-nutrition	8(3.7%)	3(6.5%)	1.797(0.468-7.049)	1.738(0.442-6.833)	0.429
	Normal	206 (96.3%)	43(93.5%)			
WFA Z-score	Under-weight	13 (6.1%)	4(9.5%)	1.473(0.458-4.739)	1.636(0.496-5.396)	0.419
	Normal	201(93.9%)	42(90.5%)			

**AOR after adjusting for confounders such low birth weight.*

DISCUSSION

Maternal postpartum depression (PPD) is a significant global mental health concern that affects a considerable portion of women. Research has revealed that the period spanning from 6 to 14 weeks postpartum represents a heightened risk for the onset of PPD. This vulnerability is attributed to the abrupt and profound changes in a woman's roles and responsibilities that accompany the birth of an infant, as highlighted by Slomian et al. (2019). The findings of our study indicate an estimated prevalence of 17.5% within this critical timeframe, signifying that approximately 1 in every 6 mothers in the 6-14 weeks' postpartum stage experienced PPD. This prevalence aligns closely with the global estimate of 17.7% reported by Hahn-Holbrook et al. (2018). Furthermore, our prevalence figures are in harmony with estimates for Sub-Saharan African countries, particularly East Africa, where Woldeyohannes et al. (2021) established a prevalence rate of 18.6% based on their systematic review and meta-analysis of 26 studies involving 30,021 mothers in Sub-Saharan Africa countries. Similarly, Ongeri et al. (2018) reported an estimated PPD prevalence of 18.7% in Kenya. This striking similarity in prevalence rates is likely attributed to the consistent focus on the 6-14 weeks' postpartum window, the shared sociodemographic characteristics of the study populations, and the prevalent use of similar assessment tools, particularly the EPDS scale with a cutoff score of ≥10, for screening maternal PPD across these studies. Nonetheless, the findings of our study reveal a higher prevalence of PPD compared to the results reported by Madeghe et al. (2016) in their study conducted in Nairobi, Kenya, which involved 200 mothers at the 6-14 weeks' postpartum stage. Their study identified a PPD prevalence of 13.0%, which diverges from our findings, likely due to the variance in the employed EPDS scale with a higher cutoff score of ≥13.

This study has revealed that the vast majority of the mothers (94.6%) in the study population adhered to exclusive breastfeeding, a rate significantly surpassing the national average of 60% as reported in the Kenya Demographic and Health Survey (KDHS, 2022). In contrast, 5.4% of the mothers had introduced complementary feeds to their infants, primarily utilizing cow's milk (35.7%), plain water (35.7%), infant formula (14.3%), and porridge (14.3%) as supplementary foods. The rationale for introducing complementary feeds was cited as inadequate breast milk production, sore nipples, limited breastfeeding knowledge, and busy life due to maternal employment. It is worth noting that introducing alternative foods to infants instead of exclusive breastfeeding exposes them to health risks, including diarrhea, which can have adverse implications for their nutritional status. These findings align with the results of other studies, such as Shewangzaw et al. (2018), who reported a prevalence of 95.9% for exclusive breastfeeding among postpartum mothers in Ethiopia, due to the similarities in sociodemographic characteristics shared by mothers in both East African countries. These findings are also quite similar to those of Amipara et al. (2020) in Gujarat, India, where 100% of postpartum mothers self-reported exclusive breastfeeding for their infants at 4-8 weeks. The high prevalence of exclusive breastfeeding observed at Eldoret West Maternity Hospital can be attributed to the enhanced maternal knowledge resulting from continuous health education initiatives within the facility.

The study also ascertained that a majority of the infants in this age group, specifically 80.8%, exhibited normal growth as indicated by the WFL z-score. Additionally, the research revealed that 11.9% of all the infants were overweight, 3.5% were at risk of wasting, 1.5% were severely malnourished (SAM), and 2.3% were moderately malnourished (MAM), resulting in an overall acute malnutrition prevalence of 3.8%. These figures were lower than both the Uasin Gishu County (4.9%) and national prevalence levels (5%). Furthermore, the study disclosed that among all the infants assessed using the WFA measure, 78.8% fell within the normal range, while 13.5% were at risk of being underweight, 2.7% were severely underweight, and 4.2% were moderately underweight, resulting in an overall underweight prevalence of 6.9%. Again, these figures were notably lower than the national (10%) and Uasin Gishu county prevalence rates (7.4%). Additionally, the study highlighted using length for age that 72.7% of the infants examined were normal while 27.3% of them were stunted, a prevalence rate surpassing both the Uasin Gishu prevalence of 16.9% and the national prevalence of 18% as reported in KDHS (2022). This situation may be attributed to intrauterine growth retardation stemming from inadequate maternal nutrition as well as inadequate infant feeding pratcices. The findings on stunting contrasted with the findings of Wemakor & Mensah (2016) in their study on postpartum mothers-infant pairs

at 0-59 months attending child welfare clinic in Norther Ghana who reported a prevalence a lower prevalence of stunting (16%) due to their differences in the age of the infants under study but lower than findings of Saeed et al. (2017) in their Pakistan study on socially disadvantaged women with infants less than 2 years in which the prevalence of stunting and underweight in children under two years was found to be 36.6% and 35.4%, respectively with the contrast thought to be due to due to the social disadvantage of the mothers as compared to the socioeconomic level of the women in Eldoret West Maternity Hospital.

The study established that PPD was more likely to affect infant feeding practices though the association was not statistically significant. Notably, a large number of mothers with PPD practiced non-exclusive breastfeeding (AOR=0.485, 95% CI= 0.142-1.662; p-value>0.05) as compared to mothers without PPD after adjusting for confounders. This is because when mothers are depressed, they fail to interpret and respond appropriately to the signals of infant hunger so as to feed them. The depressed mothers also have more negative emotions that interfere with the feeding of their infants since they cannot fully concentrate to nurture and feed them resulting in early introduction of other feeds and early cessation of breastfeeding which should be done exclusively at this age of 6-14weeks consequently leading to malnutrition in the infants. These findings compare well with outcomes of other studies that found an association between PPD and poor infant feeding practices such as cessation of breastfeeding and early introduction of complementary feeding. In Kenya, Madeghe et al. (2016) showed that women with PPD were more likely to introduce complementary foods early than women without. In Maryland, USA Hurley et al. (2015) demonstrated that mothers with mental health symptoms were more likely to have poorer infant feeding practices and higher infant dietary intake during the first six months as compared with those without. In contrast, Amipara et al. (2020) in India reported that there was no association between PPD and exclusive breastfeeding since 100% of mothers with PPD reported to exclusively breastfeed.

Through its influence on infant feeding practices, PPD was also likely to affect infant nutritional status though also not statistically significant. It was found that the prevalence of stunting among infant 6-14 weeks of mothers with PPD to be 30.4%. Evidently, this was almost double the Uasin Gishu county prevalence of 16.9% and the national prevalence of 18% (KDHS, 2022). Moreover, it meant mothers with PPD had 1.4 times higher odds (AOR=1.436, 95% CI= 0.706-2.920; p-value >0.05) of having infants who are stunted compared to mothers without PPD after adjusting for confounders (birth weight). These findings were in concurrence with the findings Holm-Larsen et al. (2019) in their study in Tanzania, who stated that infants whose mothers had PPD were stunted as compared to infants whose mothers had no PPD and with a study carried out in Ghana by Wemakor & Mensah (2016) who reported prevalence of stunting in infants of mothers with PPD compared to those whose mothers had no PPD.. Similarly, the study findings agrees with the findings for a study in three countries namely; Bangladesh, Vietnam and Ethiopia, Nguyen et al. (2014), established that PPD was associated with stunting in infants born to mothers who were depressed

Similarly, mothers with PPD had 1.7 times higher odds of having infants who were acutely malnourished (wasted) (AOR=1.738, 95% CI= 0.442-6.833; p-value>0.05) compared to mothers without PPD after adjusting for confounding factors (birth weight) though the association between PPD and acute malnutrition was not statistically significant. The findings of this study agrees with those of a study done in Brazil by Hassan et al. (2016) that reported that infants whose mothers had PPD were wasted than of mothers without PPD. Further the study found no statistical significant association between PPD and underweight though mothers with PPD had 1.6 times (AOR=1.636, 95% CI= 0.496-5.396; p-value>0.05) higher odds of having infants who were underweight compared to mothers without PPD after adjusting for confounding factors (birth weight). These findings agree with the findings of other studies such as Saeed et al. (2017) PPD in mothers was associated with very high levels of underweight in their infants as compared with infants of those mothers without PPD though it disagrees with the findings of a Tanzanian study by Holm-Larsen et al. (2019) who stated that PPD had no effect on the nutritional status particularly underweight in infants. This higher prevalence of malnutrition in infants aged 6-14weeks at Eldoret West maternity Hospital is attributed to the likely effects of PPD on infant feeding which results in early introduction of complementary feeds which may lead to infants developing childhood illnesses such as diarrhea and infants receiving inadequate nutrients consequently compromising their nutritional status.

CONCLUSION

In conclusion, this study found:

- The prevalence of maternal PPD at Eldoret West Maternity Hospital to be 17.5% which is equivalent with the global levels.
- Majority of the mothers practiced exclusive breastfeeding.
- Mothers who were not exclusively breastfeeding cited the reasons for mixed feeding as; having inadequate breast milk, sore nipples, lack of knowledge on breastfeeding, and being busy as a working mother.
- High levels of stunting among infants 6-14 weeks at Eldoret West maternity Hospital.
- PPD was likely to affect infant feeding practices since 8.9% mothers with PPD practiced non-exclusive breastfeeding compared to 4.7% mothers without PPD though the association was not statistically significant (AOR=0.485, 95% CI= 0.142-1.662; p-value>0.05) after adjusting for confounding factors.
- PPD was likely to affect infant feeding practices which consequently likely to affect the infant nutritional status.
- The prevalence of stunting among infant 6-14 weeks of mothers with PPD to be too high (30.4%) compared to those without PPD.
- Moreover, the prevalence of wasting (6.5%) and underweight (9.5%) among infants of mothers with PPD was higher compared to the infants of mothers without PPD after adjusting for confounders.

RECOMMENDATIONS

Based on the conclusions, this study recommends:

- Integrated Mental Health and Nutrition Support Services: Implement integrated healthcare services that combine mental health support and nutritional guidance for mothers and infants in maternal healthcare settings, such as Eldoret West Maternity Hospital. This would involve training healthcare professionals to identify and address maternal postpartum depression (PPD) and its impact on infant feeding practices and nutrition. Offering counseling, education, and practical assistance to mothers experiencing PPD can help improve both maternal mental health and infant nutritional outcomes.
- Breastfeeding Education and Support Programs: Develop and implement targeted breastfeeding education and support programs aimed at addressing the challenges cited by mothers who are not exclusively breastfeeding. These programs should focus on providing information and resources to address issues related to inadequate breast milk, defective breasts, lack of breastfeeding knowledge, and the challenges faced by working mothers. By addressing these barriers, healthcare facilities can promote exclusive breastfeeding, which has been shown to have numerous benefits for infant health and nutrition.
- Early Screening and Intervention for PPD: Introduce routine screening for maternal PPD during prenatal and postnatal visits at maternity hospitals. Early identification of PPD allows for timely intervention and support. Healthcare providers should offer evidence-based treatments and interventions, including counseling and therapy, for mothers experiencing PPD. Reducing the prevalence of PPD can have a positive ripple effect on infant feeding practices and nutritional status, as indicated by the study's findings.

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