Effect of antenatal depression on the initiation of breastfeeding in South Gondar zone, Northwest Ethiopia: A population-based prospective cohort study

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ABSTRACT

Background: Delayed initiation of breastfeeding has been found to increase early neonatal morbidity, mortality, and impaired mother-infant bonding. However, there is no study that revealed the effect of antenatal depression on breastfeeding initiation in Ethiopia. This study aimed to see the effect of antenatal depression on the practice of initiation of breastfeeding among women in urban Ethiopia.

Methods: The Edinburgh Postnatal Depression Scale (EPDS) was administered to 970 women in the second and third trimesters of pregnancy to screen for antenatal depression. Information was collected on initiation of breastfeeding of newborns and mother's socio-demographic, obstetric, clinical, psychosocial, and behavioral factors. A logistic regression model was used to adjust for the confounders and determine association between antenatal depression and initiation of breastfeeding.

Results: The cumulative incidence of late initiation of breastfeeding (LIBF) was found to be 166 (18.34%). The cumulative incidence of LIBF in those born from depressed pregnant women was 37% as compared to 8.4% in nondepressed. Antenatal depression at the second and third trimester of pregnancy remained a potential predictor of late initiation of breastfeeding after adjusting for potential confounders (AOR = 6.42: (95% CI 3.72, 11.05)). A significant association was also seen between infants who were born by cesarean section, a complication of current pregnancy, inadequate ANC follow-up, lack of advice about the importance of early initiation of breastfeeding (EIBF), home delivery, and low quartile of wealth index and late initiation of breastfeeding.

Conclusions: These findings suggest that screening for antenatal depression can help to identify women at risk for late initiation of breastfeeding. Health care providers shall have to give emphasis on the treatment of antenatal depression to benefit both the mother and the physical health, growth, and development of the fetus.

1. Introduction

World Health Organization (WHO) defines early initiation of breastfeeding (EIBF), is the initiation of breast milk feeding within 1 h of birth [1]. Globally there were 140 million live births in 2015; only less than half of all newborns started breastfeeding within an hour of birth [2].

Despite the WHO’s recommendation that every newborn should feed breast milk within 1 h of birth, the rate of early initiation of breastfeeding improvement has been slow over the past 15 years, with global rates increasing only by 14 percent [2]. The trend is similar in Ethiopia; a recent Demographic Health Survey (DHS) report shows that only 52% in 2011 and 74.3% in 2016 of newborn infants were breastfed within the first hour of birth [3, 4]. Despite the existence of slow improvements in the prevalence of EIBF from 52% in 2011 to 74.3% in 2016, still, the percentage of EIBF is below the target (90%) set by the Ethiopian Health Sector Transformation Plan (HSTP) [5].

Early initiation of breastfeeding practices has short and long-term benefits for both children and mothers. For children, it increases the ability to defend against infections, increases child survival, reduces the risk of diarrhea, pneumonia, and other childhood illnesses [6, 7], and in the long run, it reduces the incidence of overweight, obesity, and diabetes later in life [8]. Maternal health benefits have also received considerable attention, including lower risk of developing breast and ovarian cancers, reduces postpartum hemorrhage, lowers the risk of...
obesity, delay ovulation; as a result, helping women to improve birth spacing [8, 9, 10, 11]. In spite of the benefits, initiation of breastfeeding within the first hour is often delayed by feeding newborns anything other than breast milk [12]. Research in Ethiopia has indicated that 27% of infants are given prelacteal feeds prior to breastfeeding [4, 13, 14]. One study in Ethiopia revealed that mothers who give birth at home were more likely to give prelacteal feeding as compared to mothers who deliver in health institutions [15]. Delayed initiation of breastfeeding has been associated with increased early neonatal mortality [16, 17], diarrhoeal episodes [18], and impaired mother-infant bonding [19].

Evidence indicates that globally, approximately three million neonates die every year in their first month of life [16]. The risk of dying for neonates who didn’t feed breast milk within the first hour is increased threefold when compared to neonates who feed breast milk within 1 h after birth [20, 21].

In Ethiopia, neonatal morbidity and mortality is a public health problem [22], specifically true in the Amhara region ranging from 18.6 to 48.3 per 1000 live births in Gojam and Gondar, respectively [23, 24]. Different studies indicated that up to 22%-33% of neonatal morbidity and mortality could be prevented by promoting the early initiation of breastfeeding [12, 20, 21].

To realize the benefit of EIBF, Ethiopia implemented different breastfeeding programs in addition to the Primary Health Care program, such as the Baby-friendly Hospital Initiative (BFHI) and community integrated management of childhood illnesses (IMCI) program [28, 29]. Despite these activities, EIBF is still below the target (92%) set by the Ethiopian Ministry of Health Sector Development Program Four HSDP-IV [30]. This indicates the presence of new barriers that require further investigation. Common mental disorders during pregnancy (depression, anxiety, and somatic symptom disorders) appeared to be possible significant contributors to delayed initiation of breastfeeding [31]. Additionally, antenatal depression affects not only breastfeeding practice but also it makes the women experience social dysfunction, more emotionally withdrawn [32], develop diabetes [33], preeclampsia [34], prolonged pregnancy [35] as well as it affects infant’s birth weight [36, 37] and development [38].

The relationship between antenatal depression and early cessation of breastfeeding has been explored [39, 40]. However, we are unaware of published studies addressing the association between antenatal depression and late initiation of breastfeeding. The study aimed to assess the effect of antenatal depression on the initiation of breastfeeding.

2. Methods

2.1. Study design and settings

A community-based prospective cohort study was conducted at Debre Tabor and Woreta towns, which are situated in the South Gondar zone from June 2019 to March 2020 in the Northwest, Ethiopia.

According to the South Gondar zonal catchment profile, the total population of Debre Tabor town has an estimated population of 84,382, of which 40753 are females. About 2844 and 1404 women were estimated to be pregnant per year at Debre Tabor and Woreta towns, respectively [41]. In these towns, there were one government-operated referral hospital, five health centers, and ten private health institutions providing health services during the data collection period. Health extension workers (HEWs) are responsible for performing prevention and promotion activities, identifying pregnant mothers, and updating maternal records in each Kebele. The magnitude of antenatal care services at Debre Tabor and Woreta towns was estimated to be 75% and 64%, respectively [41].

2.2. Sample size

The sample size was estimated using the double population formula, with the exposed and non-exposed ratio of 1:2 (exposed are those who are depressed and non-exposed are those who are not depressed). A 95% level of confidence, 80% power and 10% non-response rate were considered.

2.3. Cohort recruitment and eligibility

This is the part of the previously published a community-based prospective cohort study [42]. We recruited all pregnant women who consented and who were living in Debre Tabor and Woreta towns at least for the preceding six months, who were in their second and third trimesters of pregnancy, and who were without any cognitive or hearing impairment during the study period into the cohort. Health Extension Workers (HEWs) identify all pregnant women in their respective kebeles and register them based on the criteria mentioned above.

The data collectors (HEWs) conducted an interview through the home-to-home visits to identify pregnant women who were willing to participate in this study and declared untraceable after three recruiting visits had been unsuccessful.

All pregnant women who were aware of their pregnancy and fulfilled the criteria from June 2019 to October 2019 were included in the study. A total of 970 eligible women were identified and prospectively followed up until March 2020. Potentially newborn is eligible if they were breastfed (Figure 1).

970 women eligible to the study (recruited and assessed for depressive symptoms at their second and third trimesters of pregnancy).

2.4. Data quality management

Twenty experienced data collectors and two supervisors participated in the data collection process after two days of training. All the data collectors were recruited from each Kebele. The data collectors were nurses some with diploma and others with a bachelor degree. The supervisors had MSc educational level. The training was aimed to help trainees understand the contents of the questionnaire, objectives, and ethical issues relevant to the study. The ongoing quality of the data was closely monitored by supervisors and first authors of the study through weekly meetings and regular telephone calls.

2.5. Measurement

2.5.1. Primary exposure

Antenatal depression was the main exposure for the present study, which was assessed using the Edinburgh Postnatal Depression Scale (EPDS). The EPDS is a 10-item scale with scores ranging from 0 to 30, with higher scores indicating greater depression severity. The scale has demonstrated good validity and reliability in non-Western populations [43].

A flow chart of recruited pregnant women and outcome of initiation of breastfeeding.

Figure 1. Flow chart of recruited pregnant women and outcome of initiation of breastfeeding.
(EPDS), which was validated in Ethiopia among postnatal women and had 78.9% sensitivity and 75.3% specificity [43]. The EPDS includes ten items with a Likert scale of responses scored from 0-3 to a maximum score of 30, which was then coded as Yes [1] if there is depression (score ≥12) and No (0) if otherwise (<12 scores) to indicate scores that are likely to suggest depressive disorder.

The EPDS is a preferable scale to other depression scales to screen depression during pregnancy because it removes the physical symptoms of depression associated with pregnancy [44]. In these kebelema, women who reported suicidal ideation were referred to the psychiatric clinics for formal assessment of depression and appropriate management.

2.5.2. Outcome variables

The primary outcome variable was the late initiation of breastfeeding. Initiation of breastfeeding was categorized as a binary variable, as early initiation of breastfeeding if a woman breastfed her newborn within 1 h of birth and late initiation of breastfeeding if a woman breastfed her newborn after 1 h of birth. Health extension workers (HEWs) working in each kebele asked the participants about whether they breastfed their baby or not and if yes, when they initiated.

2.5.3. Potential confounding variables

Most common maternal and child variables were used in the analyses to control for potential confounding effects. These variables are chronic medical condition, complications of current pregnancy, threatening life events, social support, intimate partner violence, alcohol use, Gender of the infants, term of the infant, being twins, parity, gravidity, mid upper arm circumference (MUAC), socio-demographic and economic variables were assessed.

The history of physician-diagnosed chronic medical conditions, such as cardiac disease, diabetes, etc., was taken for each woman and recorded as (“yes/no”). Preterm was defined as a baby born alive before 37 weeks of pregnancy (yes/no). History of current pregnancy complications: anemia, hypertension, and APH were counted for each woman and recorded as “yes/no”.

The Oslo Social Support Scale (OSSS-3) was used to measure maternal social support during pregnancy. The level of social support is classified as “poor support” 3–8, “moderate support” 9–11, and “strong support,” 12–14 scores. The OSSS-3 has good convergent and predictive validity [45].

Experiences of stressful life events during the six months before assessment were assessed using the List of Threatening Experiences (LTE). The scale contains twelve items and includes questions of death, illness, conflicts, and loss of property. The presence of one or more stressful life events in the last six months was considered [46]. Both the Oslo Social Support Scale (OSSS-3) and the list of threatening experiences (LTE-12) have been used in a population-level study in Ethiopia [47]. The presence of intimate Partner Violence (IPV) during pregnancy was assessed by using three questions on emotional IPV, physical IPV, and sexual IPV. The presence of IPV was ascertained by the presence of at least one type of IPV [48].

The Fast Alcohol Screening Test (FAST) was used to assess alcohol use. The score ranges from 0 to 16, the presence of hazardous or harmful drinking was indicated by a score of three or more.

The potential biases in this study were the previous history of depression and current depression status, which were measured using EPDS and semi-structured questionnaire based on self-report, which may lead to a recall and/or measurement bias that may underestimate or overestimate the association between antenatal depressive symptoms and late initiation of breastfeeding, but this was minimized by telling the participants to provide truthful responses, and the information would be kept confidential and used for the study purpose alone and by preparing a case vignette.

2.6. Data analysis

We used Stata software (version 14) for data analysis. We calculated descriptive statistics and correlation of all the quantitative study variables. Percentage values, with their corresponding 95% confidence intervals (CIs), were used to summarize categorical variables. The odds ratio was used to measure the effect of antenatal depression on birth weight. Univariate logistic regression analyses were carried out for each risk factor to identify possible predictors associated with LBW (<2500 g). Variables significant at p < 0.2 in the bivariate analysis were included in multiple logistic models for controlling the simultaneous confounding effects of possible predictors. The significance of a variable was declared at a P-value of <0.05. The total number of loss to follow up was 32 (3.2%). Thus, complete case analysis was used as it was suggested that less than 5% lost to follow up was with little concern [49, 50].

3. Results

A total of 970 pregnant women were enrolled in the study. Thirty-two (3.3%) women were excluded from the study because they refused to participate (n = 22) and moving away from the area (n = 10). Another 33 women were excluded from the analysis because they were not breastfeeding (n = 28) and had stillbirth (n = 5). Finally, 905 participants were included in the analysis, with a response rate of 93.3%.

3.1. Socio-demographic characteristics of the study participants

The majority of the women 390 (43.1%) were 25–29 years of age, 284 (31.4%) had completed diploma and above, 466 (51.5%) more than half of the participants were housewives, 831 (91.8%) were married, and 814 (89.9%) reported having enough money for food (Table 1).

3.2. Clinical and obstetric variables of the study participants

With regard to clinical and obstetric factors, 104 (12.5%) of women reported a history of current pregnancy complications. More than three-fourth of the participants had two or more ANC follow up. One-fourth of women reported a history of depressive symptoms prior to pregnancy. Of the participants, only 710 (78.5%) received advice on the early initiation of breastfeeding by skilled health professionals (Table 2). A Hosmer-Lemeshow test indicated that the model fit the data well (P = 0.90).

3.3. Psychosocial and behavioral characteristics of the study participants

Of the 905 included in this analysis, almost half 470 (51.9%) of the women reported intimate-partner violence and 555 (61.3%) not experienced life treating events (Table 3).

3.4. The magnitude of late initiation of breastfeeding

Of the 905 mother-infant pairs, 166 (18.3%) did not initiate breastfeeding within 1 h of delivery, with the mean initiation of breastfeeding (55.7 ± 59 SD minutes). The women who were excluded did not differ significantly from participating women in terms of age, level of education, and economic status. The overall timely initiation of breastfeeding was 739 (81.7%) within 1 h of birth, followed by after one to 4 h 148 (16.3%), and after 4 h was 18 (2.00%) (Figure 2).

3.5. Risk factors for late initiation of breastfeeding within 1 h

Before adjusting for confounders, regression analysis showed a significant positive association between late initiation of breastfeeding and antenatal depressive symptoms. Wealth index, unplanned pregnancy, a complication of current pregnancy, inadequate ANC follow up, life-threatening events, social support, intimate partner violence, preterm, lack of advice about the importance of EIBF, mode of delivery, and place of delivery were also significantly associated with late initiation of breastfeeding (Table 4).

During bivariate analysis, mothers who had antenatal depression were 6.34 (COR = 6.34 (95 CI: 4.38, 9.17)) times more likely to have late
initiation of breastfeeding as compared to those who had no antenatal depression. Also, after adjusting for confounders, the results of multivariable logistic regression showed that experiencing antenatal depression was significantly associated with late initiation of breastfeeding (OR = 6.42; 95% CI 3.67, 11.25). Pregnant women in low quartile of wealth index (OR = 2.14; 95% CI 1.25, 3.66), Complication of current pregnancy (OR = 2.15; 95% CI 1.12, 4.10), inadequate ANC follow up (OR = 1.67; 95% CI 1.04, 2.70), lack of advice about importance of early initiation of breastfeeding (EIBF) (OR = 3.50; 95% CI 2.19, 5.59), home delivery (OR = 3.00; 95% CI 1.49, 5.99), and infants who were born by caesarean section (OR = 6.42; 95% CI 3.72, 11.05) were more likely to have late initiation of breastfeeding within 1 h delivery (Table 4).

4. Discussion

Trends in early initiation of breastfeeding in Ethiopia increased from 52% in 2011 to 75% in 2016. This study revealed that timely initiation of
anténatal depression on the late initiation of breastfeeding among women in the urban area of Ethiopia.

Mothers who had anténatal depression were 6.34 (COR = 6.34 (95% CI: 4.38, 9.17)) times more likely to have late initiation of breastfeeding in bivariate analysis. Anténatal depression (AOR = 6.42; (95% CI 3.72, 11.05)) remains significantly associated with late initiation of breastfeeding after adjusted for complication of current pregnancy, mode of delivery, place of delivery, unplanned pregnancy, inadequate ANC follow up, life-threatening events, social support, intimate partner violence, preterm, lack of advice about time initiation of early breastfeeding, and wealth index.

Our finding of an independent and prospective association between anténatal depression and late initiation of breastfeeding is consistent with findings from another study in Ethiopia among pregnant women with common mental disorders [31]. However it is in contrast to research findings in Chicago [39, 54]. The main reasons for the delay in breastfeeding were lack of early skin to skin contact between baby and mother [55]. This is more pronounced in women with anténatal depressive symptoms (such as loss of interest and fatigue) that disturb normal mother-infant bonding [56, 57], which in turn leads to delayedinitiation of breastfeeding. Besides this, women who are affected by anténatal depression might lack the resources to initiate breastfeeding. The reason for inconsistency might be study settings (rural and facility based), socioeconomic difference, health literacy and access to information. Although the WHO recommended for cesarean section rate not to exceed 15%, the cesarean section rate in Ethiopia has reach up to 21.4% [58]. Scientific evidence reported that Caesarean delivery was an important determinant of delayed initiation of breastfeeding. In this study, women delivered by Caesarean were more than six times more likely to have delayed initiation of breastfeeding as compared to women delivered spontaneously. This association is consistent with a recent systematic review [59] as well as other studies [60, 61, 62]. The delay could be attributed to the very nature of cesarean delivery (pain and discomfort); postoperative care given to women interrupt the contact between the mother and her newborn in the postpartum period [63, 64, 65]. There is a rapid rise in the rate of cesarean sections in Ethiopia, the most effective strategy to reduce delayed initiation of breastfeeding would be to avoid unnecessary caesarean sections.

Complication during pregnancy potentially affects breastfeeding practices of the women. In our study, complications during pregnancy were significantly associated with delayed initiation of breastfeeding. This result accords with the finding of the WHO Global Survey [66]. Current pregnancy complications may cause maternal morbidities during delivery and the early postpartum period that need urgent interventions for mothers or neonates, which interrupt mother-baby interaction.

Different research findings revealed that delivering at home was associated with delayed initiating breastfeeding. The number of home deliveries in our study was low; however, delayed initiation of breastfeeding was more likely to occur in women who delivered at home. Mothers who delivered at home were more likely to delay initiating

| Characteristics | Frequency (n = 905) | (%) |
|-----------------|---------------------|-----|
| Life treating events |                     |     |
| Yes             | 350                 | 38.7|
| No              | 555                 | 61.3|
| Social support  |                     |     |
| Poor            | 401                 | 44.3|
| Moderate        | 309                 | 34.1|
| Strong          | 195                 | 21.6|
| Intimate partner violence (IPV) |     |     |
| Yes             | 470                 | 51.9|
| No              | 435                 | 48.1|
| Alcohol use     |                     |     |
| Yes             | 198                 | 21.9|
| No              | 707                 | 78.1|

The result of our study indicates that women reporting anténatal depressive symptoms were more likely to have delayed initiation of breastfeeding as compared to those without anténatal depressive symptoms. This is the first study that specifically addressed the effect of breastfeeding on the late initiation of breastfeeding among women in the urban area of Ethiopia.
Table 4. Bivariate and multivariable analysis for factors associated with late initiation of breastfeeding among babies born alive at Debre Tabor and Woreta towns, Northwest Ethiopia, 2020.

| Characteristics                         | Late initiation of breastfeeding | COR at 95%CI | AOR at 95% CI |
|-----------------------------------------|---------------------------------|-------------|---------------|
|                                        | Late initiation of breastfeeding |             |               |
| Depression                              | Yes                             | 116         | 198           | 6.34 [4.38, 9.17] ** 6.42 [3.67, 11.25] ** |
|                                        | No                              | 50          | 541           | 1              |
| Occupation                              | Housewife                       | 92          | 374           | 1              |
|                                        | Employee                        | 45          | 187           | 0.98 [0.66, 1.45] | 1.12 [0.67, 1.87] |
|                                        | Merchant                         | 16          | 124           | 0.52 [0.29, 0.92] * 0.70 [0.35, 1.40] |
|                                        | Student                          | 5           | 16            | 1.27 [0.45, 3.55] | 1.55 [0.44, 5.42] |
|                                        | Daily laborer                    | 8           | 38            | 0.86 [0.38, 1.89] | 1.33 [0.56, 3.48] |
| Wealh index                             | Low                              | 69          | 233           | 1.72 [1.13, 2.61] * 2.14 [1.25, 3.66] * |
|                                        | Middle                           | 53          | 250           | 1.23 [0.79, 1.90] | 1.51 [0.87, 2.63] |
|                                        | High                             | 44          | 256           | 1              |
| Unplanned pregnancy                     | Yes                             | 77          | 264           | 1.56 [1.10, 2.18] * 1.52 [0.97, 2.36] |
|                                        | No                              | 89          | 475           | 1              |
| A complication of current pregnancy     | Yes                             | 32          | 72            | 2.21 [1.40, 3.49] * 2.15 [1.12, 4.10] * |
|                                        | No                              | 134         | 667           | 1              |
| Inadequate ANC follow up                | Yes                             | 108         | 383           | 1.97 [1.34, 2.90] * 1.67 [1.04, 2.70] * |
|                                        | No                              | 42          | 294           | 1              |
| Life-threatening events                 | Yes                             | 94          | 256           | 2.46 [1.74, 3.46] ** 0.92 [0.52, 1.60] |
|                                        | No                              | 72          | 483           | 1              |
| Social support                          | Poor                            | 90          | 311           | 1.88 [1.17, 3.02] * 0.82 [0.42, 1.58] |
|                                        | Moderate                        | 50          | 259           | 1.25 [0.75, 2.09] | 1.42 [0.73, 2.74] |
|                                        | Strong                           | 26          | 169           | 1              |
| Intimate partner violence (IPV)         | Yes                             | 62          | 373           | 1.71 [1.21, 2.41] * 0.85 [0.52, 1.40] |
|                                        | No                              | 104         | 366           | 1              |
| Preterm                                 | Yes                             | 29          | 60            | 2.40 [1.48, 3.87] ** 1.18 [0.58, 2.38] |
|                                        | No                              | 137         | 679           | 1              |
| Lack of EIBF advice                     | Yes                             | 78          | 117           | 4.71 [3.27, 6.77] ** 3.50 [2.19, 5.59] ** |
|                                        | No                              | 88          | 622           | 1              |
| Mode of delivery                        | Vaginal                         | 109         | 682           | 1              |
|                                        | Caesarean                       | 57          | 57            | 6.26 [4.11, 9.51] ** 6.42 [3.72, 11.05] ** |
| Place of delivery                       | Institutional                   | 136         | 701           | 1              |
|                                        | Home                            | 30          | 38            | 4.07 [2.44, 6.79] ** 3.00 [1.49, 5.99] * |

NB: CI = Confidence Interval; OR = Odds Ratio; COR = Crude Odds Ratio; AOR = Adjusted Odds Ratio; ** (P < 0.001); * (P < 0.005); Hosmer-Lemeshow: (p = 0.90).

breastfeeding compared to mothers who delivered at health facilities. The result is similar to those reported by [67, 68, 69]. The likely reasons for the delay in initiation of breastfeeding could be that many of the home deliveries were assisted by traditional birth attendants and family members who have inadequate knowledge about the correct time of initiation of breastfeeding [70, 71].

Besides this, women who gave birth at home have negative cultural beliefs about the colostrum, that the initial milk is dirty and hence harmful to the neonate, so they were had to wait for the milk to clear before they initiate breastfeeding and hence the delayed initiation of breastfeeding [72, 73].

Health services utilization by pregnant women has a great role in the improvement of optimal breastfeeding practices. This study suggests that women who had less than four ANC follow up were almost two times more likely to have delayed initiation of breastfeeding. This is similar to the finding in Bangladesh [74]. In addition to inadequate ANC follow up, women who lack advice about early initiation of breastfeeding at ANC follow up was almost two times more likely to have delayed initiation of breastfeeding as compared to women who received advice about early initiation of breastfeeding. This finding is similar to the finding of a systematic review [59] and a study done in Congo [75]. This reemphasizes that women who were had inadequate ANC follow up and who did not receive advice about early initiation of breastfeeding may lack counseling and support given by health professionals on the correct time and importance of early initiation of breastfeeding.

We also observed a positive association between household wealth index and late initiation of breastfeeding. In this study, women from the poorest households had significantly higher odds of late initiation of breastfeeding compared to mothers from wealthier households. This finding is similar to finding from Bangladesh [74], Nigeria [9], and another study in Ethiopia [53]. This is possible as a result of the positive effect of wealthier household index on mothers’ health care utilization, which in turn leads to receiving counseling about the early initiation of breastfeeding and women were from the lowest wealth quintile may not have access to mass media, which promotes the importance of early initiation of breastfeeding. However, our finding contradicts a study done in Nepal, which indicates that the household wealth index was not associated with the initiation of breastfeeding [68]. The possible explanation might be less access and availability of health resources.

4.1. Limitation

It is important to interpret the result of this study in the presence of some limitations. This study did not address the effects of antenatal depression on women's breastfeeding behaviors. Further research is needed to determine if depressive symptoms during pregnancy might affect women's breastfeeding decisions and late initiation of breastfeeding more in depth beyond 1 h after birth. In addition, we didn't address the reason why women did not breastfeed the newborn, such as physical breastfeeding challenges and infant health status, which may underestimate or overestimate the association between antenatal depressive symptoms and late initiation of breastfeeding. Despite these limitations, the study has strengths, including the selection of women was from a population-based sample with minimal loss-to follow-up, large sample size, therefore, likely to be representative of the odds ratio and factors that predict late initiation of breastfeeding within the region. Besides these, we use EPDS to screen pregnant women for depression. This study may have implications for policymakers, health administrators, and health care professionals. This study confirmed that antenatal depression has an adverse effect on the initiation of breastfeeding among urban areas of Ethiopia. Efforts to reduce the effect of antenatal depression such as routine screening of all pregnant women for depressive symptoms and to treat them at the primary health care level by integrating the service is crucial, since screening is an effective approach for reducing morbidity in depressed people [76], and prevent the adverse effects of depression on the initiation of breastfeeding. The association between antenatal depression and late initiation of breastfeeding could help to promote women's mental health in the health care services.

5. Conclusion

This population-based follow-up study found an independent association between antenatal depression in the second and third trimester of pregnancy and late initiation of breastfeeding in a sample of Ethiopian
urban settings. Therefore antenatal depression has serious breastfeeding consequences, early identification of depressive symptoms using the EPDS, and treatment of antenatal depression could benefit not only maternal mental health but also the physical health, growth, and development of the fetus. The effect of antenatal depression on late initiation of breastfeeding should be discussed during ANC counseling in pregnant women.

6. Ethics approval and consent to participate

This study was approved by the University of Gondar Ethical Review Board and the Regional research of board and the Regional research of.

7. Consent for publication

Not applicable.

Declarations

Author contribution statement

Getnet Mihretie Beyene, Telake Azale, Kassahun Alemu Gelaye and Tadesse Awoke Ayele: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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