RELATIONSHIP BETWEEN POSTPARTUM DEPRESSION AND INFANT FEEDING PRACTICE IN KILTE AWLAELO HEALTH AND DEMOGRAPHIC SURVEILLANCE SITE, EASTERN ZONE OF TIGRAY, ETHIOPIA, 2018/19

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As thesis research advisor, I hereby certify that I have read and evaluate this thesis prepared under my guidance by Angesom Weldu entitled ‘‘the relationship between postpartum depression and infant feeding practice in kilte Awlaelo health and demographic surveillance site, eastern zone of Tigray, Ethiopia” is recommended to be submitted as fulfilling the thesis requirement and regulations of the University and meets the accepted standards with respect to originality and quality.

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ACRONYM

AAU : Addis Ababa University

ANC : Antenatal Care

AOR : Adjusted Odds Ratio

CI : Confidence Interval

DSM-V **:** Diagnostic and Statistical Manual of Mental Disorders 5th edition

EDHS : Ethiopian Demographic and Health Survey

ETB : Ethiopian Birr

EBF : Exclusive Breast Feeding

HIV **:** Human Immunodeficiency Virus

IYCF : Infant and Young Child Feeding

KA-HDSS **:** Kilite Awlaelo Health and Demographic Surveillance Site

COR : Crude Odds Ratio

ORS : Oral Rehydration Salt

PPD : Postpartum Depression

PNC : Postnatal Care

PR : Prevalence Ratio

SPH : School of Public Health

SPSS **:** Statistical Package for Social Science

SRQ-20 :Self-Reporting questionnaire-20

USAID **:** United States Agency for International Development

US$: United State dollar

WHO : World Health Organization

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Abstract

Background: Optimal infant and young child feeding practices is a cornerstone of care for childhood physical and mental development and the most effective intervention to reduce infant morbidity and mortality. Infant feeding practice can be compromised by postpartum maternal mental health condition. Postpartum depression is a non-psychotic maternal mental disorder that occurs within one year of child birth. The aim of this study is to assess whether there is any difference in infant feeding practice among postpartum depressed and non-depressed mothers, the finding of which may help to design appropriate evidence based public health intervention.

Objectives: To assess the association between postpartum depression and infant feeding practice in eastern zone of Tigray, Ethiopia, 2018/19.

Methods: comparative cross-sectional study was conducted to examine the influence of postpartum depression on infant feeding practices among randomly selected 525 postpartum women and infants who resides in Kilite Awlaelo Health and Demographic Surveillance Site, northeast Tigray. Postpartum depression was assessed using self-reporting questionnaire-20 which was developed by World Health Organization and infant feeding practices was measured using modified questionnaire from United State Agency for International Development toolkit for monitoring and evaluation of breastfeeding practice based on 24hr recall and recall since birth method. A binary logistic regression analysis was carried out to determine the associations between postpartum depression and infant feeding practice by controlling potential confounders. Finally, variables with p-value ≤ 0.25 at bivariate analysis were included in the final model of multivariable logistic regression analysis.

Results: Complete data from a total of 513 mothers was retrieved giving a response rate of 97.7%. The overall exclusive breast feeding rate was 160/293 54.6% (95% CI; 48.9%–60.3%).The overall of prevalence of appropriate complementary feeding practices was 14.1% (9.4%-18.6%).The overall odd of appropriate infant feeding was 1.7 times higher among mothers without postpartum depression (AOR= 1.71; 95% CI: 1.08-2.69). The odds of appropriate infant feeding among infants with birth order above three was 48% (AOR= 0.52; 95% CI: 0.28-0.97) less than those infants with birth order of three and below.

Conclusion: low appropriate infant feeding practice was observed. Postpartum depression is an important contributor to appropriate infant feeding practice. Households with high monthly incomes and birth order above three were significantly associated with appropriate infant feeding practice.

Recommendation: Based on the results of this study, routine screening of postnatal mothers and formulation of policies for integrating of postpartum depression into maternal and child health could mitigate the consequences of child undernutrition that could results from poor maternal mental health conditions.

Key words: Infant feeding practices, postpartum depression, Kilite Awlaelo HDSS

1. Introduction

1.2 Background

Appropriate infants and young child feeding is central to early child health, growth, and development. According to World Health Organization recommendation all infants should be exclusively breastfed for the first six months of life and they should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond to achieve optimal growth, development (1).

Proper breastfeeding practice would annually save about 820,000 children under 5 years of age among them 87% are infants less than 6 months of age. Reduce infection related mortality of under three month infant by 88% and the estimated economic loss due to inappropriate infant breast feeding practice in low and middle income countries is US$70.9 billion in 2012**.**(2)

Around 32% of children less than 5 years of age in developing countries are stunted and 10% are wasted. It is estimated that sub-optimal breastfeeding, especially non-exclusive breastfeeding in the first 6 months of life, results in 1.4 million deaths and 10% of the disease burden in children under five.(3)

According to Diagnostic and Statistical Manual of Mental Disorders 5th edition the diagnosis of postpartum depression has replaced the specifier "with postpartum onset" which is defined as the most recent episode occurring during pregnancy as well as in the four weeks following delivery. DSM-V mood disorders workgroup did extending Postpartum depression in clinical practice and research, regardless of the DSM criteria, women with a depressive disorder onset within 12 months of birth are often classified as having "Major Depressive Disorder, with postpartum onset.(4)

Postpartum depression is a non-psychotic maternal mental disorder that occurs within one year of child birth. Postpartum depression is the most common postpartum affective disorders that are typically divided into three categories: postpartum blues, nonpsychotic postpartum depression and postpartum psychosis.

1.2 Statement of the problem

Inappropriate infant feeding practice carries many risks, which contributes to persistent child malnutrition, mortality and morbidity in developing countries. Poor nutrition results not only from lack of food but also from inappropriate infant feeding practices where the timing, quality and quantity of foods given to infants and young children are often inadequate and unsafe.(5)

Globally, inappropriate infant feeding practices attribute to over two-thirds of these 10.9 million deaths. sub optimal Infant and young child feeding practice is attributed to 45% of all child deaths in which two thirds of those deaths occurred in the first year of life and optimal breast-feeding could prevent 13% of deaths of children aged less than 5 years, whereas appropriate Complementary feeding practices might result in an additional 6% reduction in under-five mortality .(6,7)

Some studies suggest maternal psychosocial factors have a potential influence on exclusive Breastfeeding duration than the known less modifiable socio-demographic factors. This is because the practice of breastfeeding was uniquely predicted by faith in breast milk, planned breastfeeding duration and breastfeeding self-efficacy, could be a possible reason why depressed mothers are unable to perform feeding practice appropriately.(8,9)

Although evidence of the life-saving benefits of exclusive breast-feeding up to 6 months of age is compelling, only 58% of 0-5 month infants are exclusively breastfed in Ethiopia and 11% of infants begin complementary foods before 6 months of age , which is Contrary to the WHO recommendation.(10)

There are scarce of studies which examine the association between PPD and infant feeding practice in the area despite high prevalence of postpartum depression and malnutrition which is mainly determined by infant feeding practice in eastern zone of Tigray.(11,12) this study compare infant feeding practices among postpartum depressed and non-depressed mothers. The aim of this study is to fill the knowledge gap of the association of Postpartum Depression and infant feeding practice.

1.3 Significance of the study

A mother is experiencing emotional changes in addition to physiological changes in the first year after child delivery, which is a critical period for child mental and physical growth. Depression represents the most frequent form of maternal mental changes in the postnatal period. The potential adverse effect of postpartum depression upon the mother and child care reinforces the need for early detection and effective treatment at primary health care. Despite the knowledge of infant feeding practice requires good maternal health, the attention given to maternal mental health in postnatal period is still neglected in our country. Maternal postpartum depression is not easy to be recognized by health care providers at primary health care so the effect usually remains unknown so far in this country. Early screening and identification of postpartum depression will improve the ability to recognize maternal mental disorders. Hence, improves maternal and child care that ensures appropriate clinical outcomes for both mothers and children. This study will contribute to the body of knowledge on association between postpartum depression and infant feeding practice and it is expected to draw the attention of health policy makers on integration of maternal mental health especially postpartum depression screening to maternal and child health service.

2. Literature review

2.1 magnitude of infant feeding practice

A study conducted in Southwest Ethiopia shows only 24.6% of mothers breastfed their infants optimally and thirty-seven percent of mothers initiated breastfeeding later than one hour after delivery, which was significantly associated with not attending formal education (AOR = 1.05;95% CI: 1.03- 1.94) and painful breastfeeding experiences (AOR = 5.02 ; 95%CI: 1.01- .0.08).(13)

A meta-analysis of 32 studies in Ethiopia shows that the pooled prevalence of Exclusive breast feeding was 59.3% (95% CI; 53.8- 64.8) and mothers who deliver at health institution and who had attended antenatal care were two times more likely to practice exclusive breast feeding.(14)

A study conducted in Enderta shows that 70.2% of mothers were practiced exclusive breastfeeding and age of the mother (AOR 0.12; 95% CI: 0.02- 0.97), age of the child (AOR 0.52 95% CI: 0.27-0.99) and postnatal care utilization (AOR; 2.68; 95% CI:1.44-4.98) were found statistically significant with exclusive breastfeeding.(15)

A study conducted in Hawassa shows that exclusive breastfeeding prevalence was 60.9% (95% CI: 56.6-65.1). Mothers who had a vaginal birth were more likely to practice exclusive breast feeding than mothers who gave birth via Cesarean section (AOR= 2.8; 95% CI 1.7- 4.6) and mothers who gave birth at a healthcare facility were more likely to practice exclusive breast feeding than mothers who gave birth at home (AOR= 8.8; 95% CI 5.04, 15.4).(16)

A study conducted in Zambia shows that only one hundred forty five 30.1% of mothers were practiced exclusive breastfeeding up to six months and 8.9% of the mothers giving Prelacteal feeding. Only 37% of the youngest children aged six-twenty three months were fed in accordance to infant and young child feeding practice minimum standard.(17)

A study conducted in northern Ghana shows that appropriate complementary feeding was 14.3% and 57.3 % met the minimum meal frequency, 35.3 % received minimum dietary diversity (≥4 food groups) and 25.2 % had received minimum acceptable diet.(18)

A study conducted in northern Ethiopia shows the Level of appropriate complementary feeding practice was 15% (95% CI; 12.2- 18.0). Literate mothers (AOR= 3.1, 95% CI ;1.8-5.3), low income (AOR=3.3, 95% CI ;1.54-7.16) and Mother's age<20 (AOR=2.1, 95% CI ;1.64- 6.21) were independently associated with appropriate complementary feeding practice.(19)

A study conducted in southern Ethiopia shows that the level of appropriate complementary feeding practice was 11.4% (95% CI; 8.8-14.3). Antenatal care follow-up (AOR = 3.2, 95% CI: 1.1-9.5) and birth order (AOR = 2.4, 95% CI: (1.1-5.1) were found to have a significant association with appropriate complementary feeding practice.(20)

A study conducted in Abiyi Adi, Tigray shows that appropriate complementary feeding among 6-11 months were 5.4%.In this study only 10.75% (95% CI = 8.07-13.95) children aged 6-23 months received appropriate complementary feeding. Child's age (AOR=4.21), education level of mother (AOR=3.84), and postnatal care follow up (AOR=2.80) were found to be independent predictor of timely initiation of complementary feeding (21)

.

2.2 Postpartum depression and infant feeding practice

A qualitative systematic review conducted in developed countries shows that Women's with early postpartum depression had negative influence on infant feeding outcomes, including decreased breastfeeding duration 4 weeks postpartum, they are more likely to perceive breastfeeding to be progressing not well at 4 and 8 weeks of postpartum period and may be less likely to initiate breastfeeding early and do so exclusively.(22)

A case-control study conducted among 150 Iranian mothers to compare the prevalence of postpartum depression symptoms among breast feeding mothers and non-breastfeeding mothers revealed that there was a significant difference in prevalence of postpartum depression symptoms between breast feeding (2.5%) and non- breast feeding mothers (19.4%) (p=0.004).(23)

2.2.1 Postpartum depression and exclusive breastfeeding

A study conducted in Canadian women revealed that Postpartum depression at 3 months was associated with an 11% reduction in the odds of exclusive breastfeeding at 6 months (AOR = 0.89; 95% CI, 0.80-0.99).(24)

A prospective cohort study conducted in Brazil shows mothers with postpartum depressive symptoms were at higher risk of early interruption of exclusive breastfeeding in the first and second months of follow-up (RR = 1.46; 95%CI: 0.98-2.17) and (RR = 1.21; 95%CI: 1.02-1.45, respectively).(25)

A study conducted in Nigeria shows women with postpartum depression were significantly more likely to practice non-exclusive breastfeeding than women without postpartum depression (AOR 6.99, 95% CI 2.88–16.96; P < 0.001).(26)

2.2.2 Postpartum depression and breastfeeding intensity and duration

A study conducted in United states shows that mothers with postpartum depression were 1.57 times (95% CI:1.16- 2.13) more likely to breastfeed at low intensity compared to non-postpartum depressed mothers and 1.77 times (95% CI:1.16- 2.68) more likely to add cereal to infant formula than were those without postpartum depressed .(27)

A study conducted to examine breastfeeding duration and reasons for cessation of breastfeeding shows large proportion of mothers with postpartum depressed stopped breastfeeding before 6 months (68.7% vs. 57.2%, P < .001).the primary reason for breastfeeding cessation among women who stopped breastfeeding before 6 months. Women with Postpartum Depressive Symptoms had, on average, 2.4 weeks shorter breastfeeding duration than women without Postpartum Depression Symptoms (P = .025).(28)

A study conducted in low and middle income country shows that depressive symptoms have been associated with short duration of breastfeeding and mothers with depressive symptoms in the first 4–6 weeks postpartum were more likely to stop breastfeeding earlier than non-depressed mothers.(29)

A systematic review of 48 studies shown that postpartum depression is associated with Early exclusive and non-exclusive breastfeeding cessation and a shorter breast- feeding duration.(30)

2.2.3 Postpartum depression and complementary feeding

A community based study conducted in northern Ghana shows that there is no significant association between maternal depression and complementary feeding indicators of MDD (p=0.245), MMF (p=0.442), and MAD (p=0.885) or children's risk of stunting (p=0.872).(31)

Even though inappropriate complementary feeding practice increased the risk of stunting in 12-24 months old children by 8.26 times, there is still nearly a half of mothers practicing inappropriate complementary feeding practice in Amhara region, considering timely introduction of foods, minimum dietary diversity, and feeding frequency for age.(32,33)

2.4 Maternal and child characteristics with infant feeding practice

Many studies in Ethiopia suggests that maternal characteristics including mothers who attend formal education, delivered at health facility, maternal age, ANC follow up 4 and more ,attending PNC, birth order and child age were significantly associated with appropriate infant feeding practices.(13,15,16,19,20)

Theoretical framework

Social cognitive theory

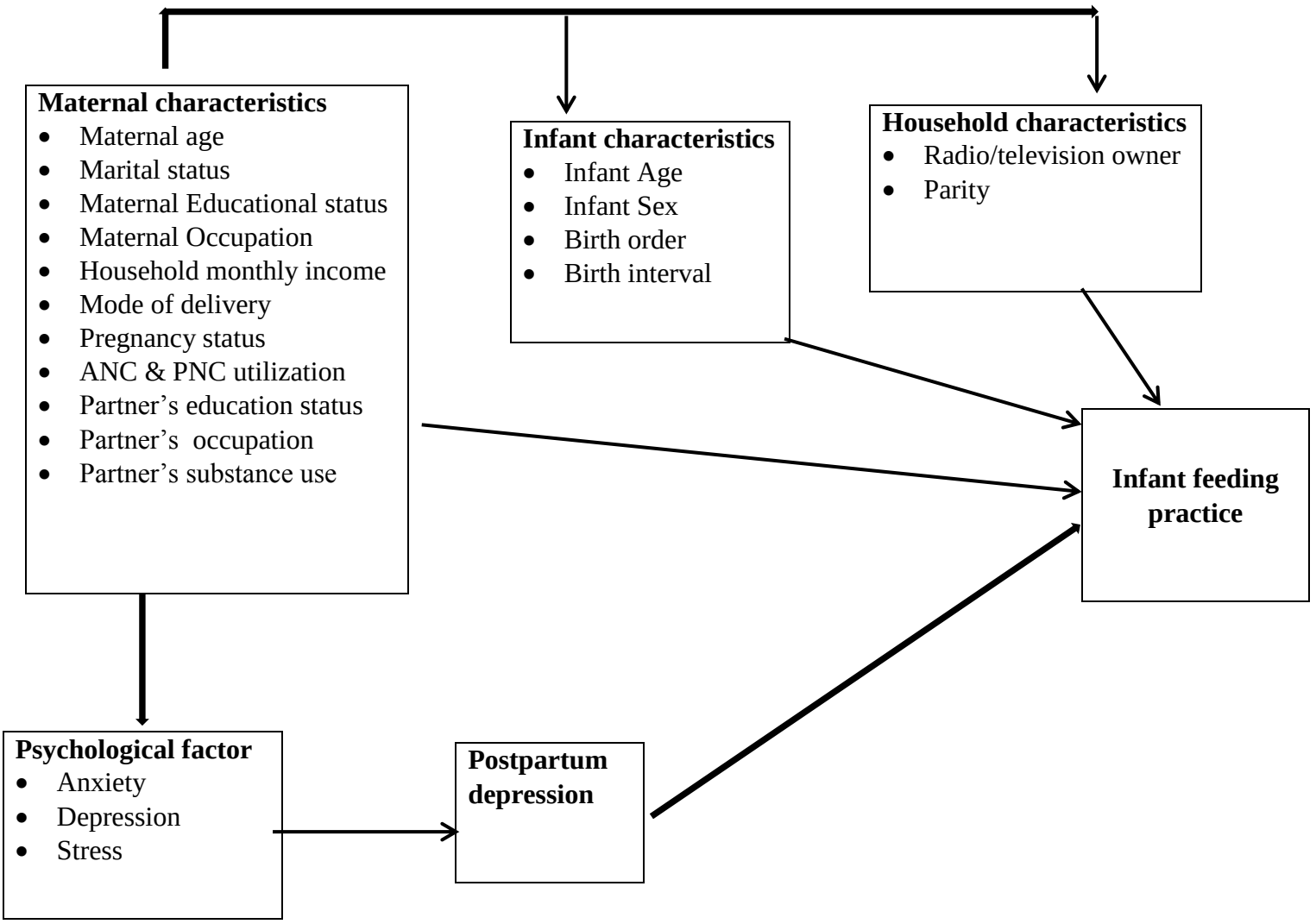
The theoretical frame work is based on Social cognitive theory, developed by Albert Bandura in 1986 which refers much of human behavior is self-regulated. The basic assumption underlying the theory is that individuals regulate their behavior based on their self-efficacy beliefs. Humans avoid situations that they believe they are unable to cope with successfully and they sought situations that they believe they can successfully overcome.

Perceived Self efficacy

Perceived self-efficacy is concerned with people's belief in their capabilities to perform in way that gave them some control over. Self-Efficacy belief forms the foundation of human agency. Unless people believe that they can produce desired results by their actions, they have little incentive to act or to persevere in the face of difficulties. Perceived self-efficacy stems from numerous sources are performance accomplishments, vicarious experiences, verbal persuasion, and affective or physiologic states.

Feeding self-efficacy refers to a mother's perceived ability or confidence to feed her newborn and influences her decisions regarding feeding practice such as whether to breastfeed or not, how much effort she will place on breastfeeding and how she will respond to any challenges that she confronts during the experience.(34)

Conceptual framework



Source: modified Bandura's social cognitive theory 1986

Figure 1.Conceptual framework

3. Objective

3.1 General objective

- To assess the association between postpartum depression and infant feeding practice in eastern zone of Tigray, Ethiopia in 2018/19.

3.2 Specific objectives

- To assess the magnitude of infant feeding practice among randomly selected women who live in KA-DHSS.
- To compare the magnitude of infant feeding practice among mothers without postpartum depression and with postpartum depression.
- To identify factors affecting infant feeding practices among participants who live in KA-DHSS.

4. Methodology

4.1 study design

Community based comparative cross-sectional study was conducted among mothers in Kilite Awlaelo health and demographic surveillance site in Eastern zone of Tigray, Ethiopia.

4.2 study area and period

Kilite Awlaelo Health and Demographic Surveillance Site was established in 2009 under supervision of Mekelle University with an aim to provide important demographic and health related indicators that have international, national and local policy importance. Kilite Awlaelo-DHSS comprises 9 rural and 3 urban administrative kebeles selected from eastern zone of Tigray which is characterized by agro-climatic condition and predominantly rural inhabitants. Kilite Awlaelo-DHSS is located about 802 km North of Addis Ababa, the capital city of Ethiopia. The total population and household in Kilite Awlaelo-HDSS are 104,464 and 21,485 respectively. Under-five children accounted for 8492 and 2247 accounted for infants. There are five health centers, ten health posts and one hospital which provide health service. This study was conducted from December 2018 to May 2019.

4.3 Source and study population

4.3.1 Source population

The source populations were all mothers and infant living in Kilite-Awlaelo DHSS.

4.3.2 Study population

The study population was randomly selected mothers with postpartum depression and mothers without postpartum depression who fulfill inclusion criteria.

4.3.3 Inclusion and exclusion criteria

4.3.3.1Inclusion criteria

- All mothers with their respective infant who resides in the study area for more than six months.

4.3.3.2 Exclusion criteria

- Mothers with infants under two weeks of age
- Mothers who are previously diagnosed as mentally ill or on psychotropic medication.
- Known HIV positive mothers whose infant was sick at the time of data collection.
- Mothers below age of 18 years
- Mothers with currently experiencing stressful life conditions

4.4 Sample size determination

The sample size was estimated considering the objectives of the study using Epi info version 7.

For the 1st Objective

To estimate the magnitude of infant feeding practice a single population proportion formula was used with the assumptions of the prevalence of optimal breast feeding of 24.6%.(13), 95% confidence interval, Margin of error (d) 5%, Design effect 1.5 and 5% non-response rate ,to obtain a total sample size of 448 participants.

$$n = \frac{(Z_{\alpha/2})^2 \times p\,(1-p)}{d^2}$$

For the 2nd Objective

The sample size was estimated with the following assumptions: the proportion of unsuccessful breast feeding among non-postpartum depressed mother(unexposed) of 49.8%.(35) The sample size required for detecting odds ratio of 2, at 95% confidence interval; power of the study 80% and unexposed to exposed ratio of 2:1; design effect of 1.5 and 5% non-response rate additions. Accordingly the minimum sample size is 525(175 mothers with PPD and 350 without PPD)

For the 3rd Objective

The sample size was estimated by taking ANC follow up assuming as significantly associated factor to infant feeding practice. The following assumptions were considered: the proportion of inappropriate complementary feeding among mothers with no ANC follow-up(unexposed) was 93.85% and the proportion of inappropriate complementary feeding among mothers with four or more ANC follow-up(exposed) of 81.89%.(20) The sample size required for detecting odds ratio of 2, 95% confidence interval, power of the study 80% and unexposed to exposed ratio 2:1. Accordingly the minimum sample size is 315 and design effect of 1.5 and 5% non-response rate addition, a total sample size of 496(165 exposed and 331 unexposed)mothers will be required..

For objectives 2 and 3 double proportion formula was used

$$n_1 = \frac{[Z\alpha/2\sqrt{(1+1/r)p(1-p)} + Z1-\beta\sqrt{p1(1-p1)+p2(1-p2)/r}]^2}{(P1-p2)^2}$$

- P1- 81.89%
- P2- 93.85%
- P- Pooled proportion (p1+rp2)/1+r
- α - 0.05 probability of committing type 1 error (1.96)
- β - 20% probability of rejecting a true difference
- r- the ratio of unexposed to exposed :2

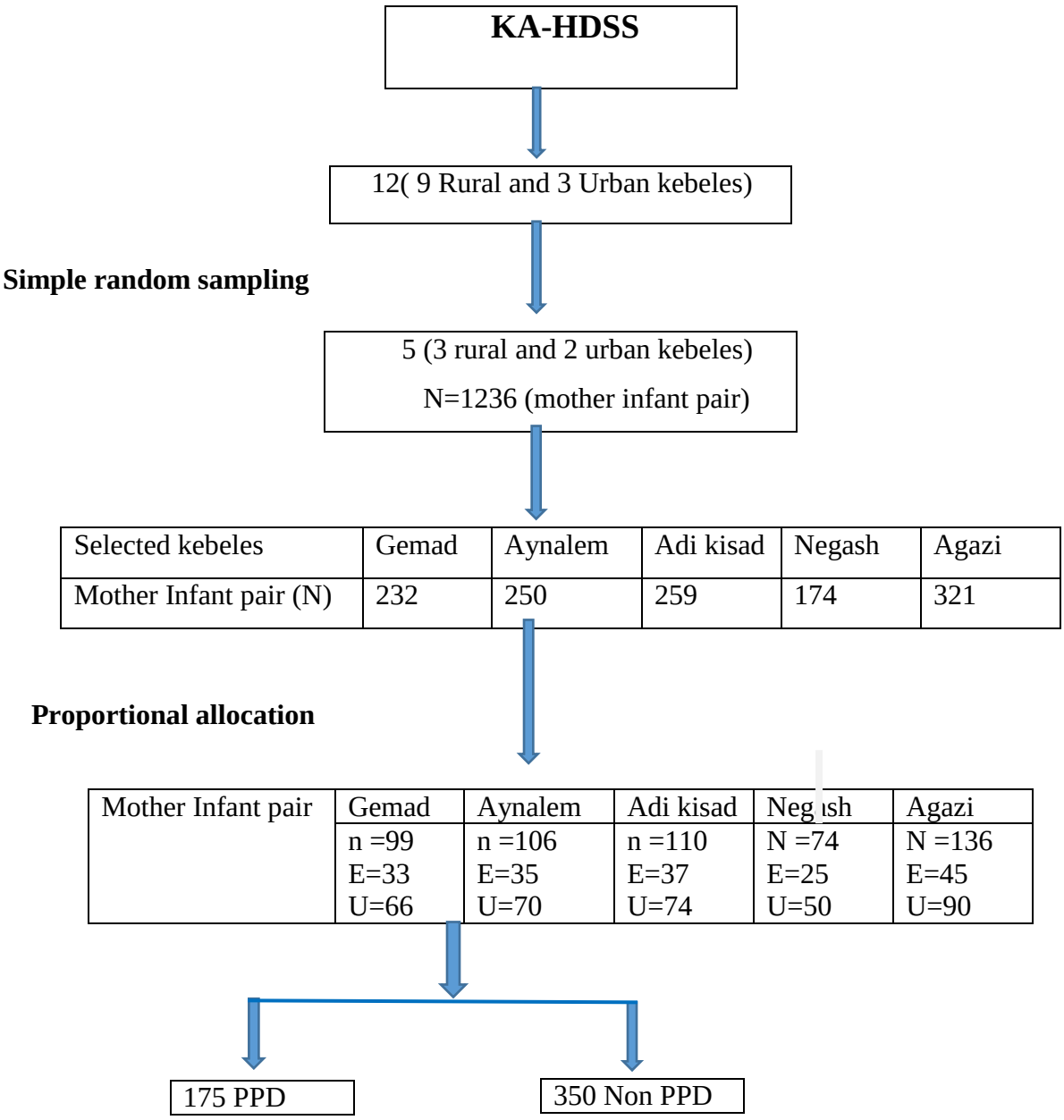
$n_2 = 2 \times n_1$

Accordingly, the sample size calculated for the second objective using double population proportion formula yielded the largest sample size which is 525. So that it was used as the final sample size to increase the power of this study.

4.5 Sampling methods and procedure

A multistage simple random sampling was used to recruit study participants. KA-HDSS has 12 kebeles from these five kebeles was randomly selected by using lottery method, which are 3 rural and 2 urban kebeles, with the help of health extension workers we track down the households with an eligible mothers and their respective infant of the five randomly selected kebeles. Then we employed coding to track each households of eligible mother. Using coding system as sampling frame a total 1236 mothers with respective infants were eligible in those five randomly selected kebeles. Then we conduct a census prior to the main study to identify mothers with postpartum depression using SRQ-20 questions, subsequently we select mothers without postpartum depression through face to face interview of SRQ-20 from the same kebeles after adequate sample size of mothers with postpartum depression found.

The total size of study participants was proportionally allocated to the total infant size in each selected kebeles in KA-HDSS to ensure we select representative sample size from each kebeles. For each infant of depressed mother 2 counterpart infants of non-depressed mother was selected from the same kebeles with maximum infant age difference of 30 days. For those mothers having more than one infant at study time the last born infant was selected.



E=Exposed, mothers with postpartum depression

U=Unexposed, mothers without postpartum depression

Figure 2 Schematic presentation of sampling procedure

4.6 Data collection method

Postpartum depression was assessed using SRQ -20 which was developed by WHO to screen for psychiatric disturbances in developing countries. The instrument contains 20 items that ask about depressive, anxiety and somatic symptoms present in the preceding 4 weeks. SRQ-20 has been validated in community setting among postnatal women in Ethiopia in 2008.

SRQ-20 score was calculated after summing the numbers of **yes** of each respondent. The possible response are 0 for '**NO'** and 1 for '**YES'** with a minimum and maximum score of 0 and 20 respectively. The category of 'high' symptoms was chosen to correspond to the cut-off for caseness of postpartum depression. Those women who have SRQ-20 score of six and above were identified as having postpartum depression. A cut-off score of ≥ 6 yes to SRQ-20 questions were taken as it has been evidenced to have high convergent validity and excellent Internal consistency measured by Cronbach's alpha which is 0.84 and a balance between sensitivity and specificity was achieved at the higher cutoff score of 6/7 with specificity and sensitivity of 82.9% and 68.5% respectively and the receiver operator characteristic (ROC) curve analysis for the total sample revealed an area under the curve (AUC) statistic of 0.87.(36,37)

Infant feeding practice was assessed using a questionnaire developed from Indicators for assessing IYCF Practice and USAID toolkit for monitoring and evaluation of breastfeeding practice. Recall since birth method was used to assess exclusive breast feeding which reflects the feeding practices of infant since birth. Complementary feeding practice was assessed using 24hr recall method.

Appropriate infant feeding practice was calculated separately for less than six month and greater than six month. For infants less than six month, only exclusive breast feeding was taken as appropriate so those infants who exclusively breast fed was coded as **1** and those infants that receive Prelacteal foods ,liquids and solid other than vitamins and medicine was considered as inappropriate exclusive breast feeding which was coded as **0**.

For infants 6-11 months of age, each complementary feeding indicator was coded as dummy variable with 0 and 1, for instance if an infant fulfill minimum dietary diversity, minimum meal frequency for his age, timely complementary start at six month and minimum acceptable diet was coded as 1 and those infants who did not fulfill the four complementary feeding indicators was coded as 0.A composite variable of complementary feeding indicators was four. So only those infants who had a total score of four were considered as appropriately consume complementary food.

A composite variable was created for appropriate infant feeding practice for infants 0-5 months of age only exclusive breast feeding practice considered as appropriate which is coded as 1 and inappropriate as 0. For infants 6-11 those infants who fulfill the four criteria of complementary feeding was considered appropriate which coded as 1 and inappropriate those who miss at least one criteria was considered as inappropriate with 0 code.so the infant feeding practice has two responses 0 for inappropriate and 1 for appropriate infant feeding practice.

A structured interviewer administered questionnaire was prepared to assess household variables (residence and monthly income), maternal health related characteristics (mode of delivery, place of delivery, ANC and PNC) and child characteristics (infant age, sex and birth order). The questionnaires of exposed mothers were coded as E1E2E3…E175 and the questionnaire of unexposed mothers U1U2U3…….U350.

4.7 Data collection procedure

Data collectors with previous experience of data collection in the surveillance site and able to fluently speak the local languages (Tigrigna) were recruited and trained by principal investigator for 3 days on the objective of the study, how to collect data, how to treat the study participants during interview and what steps to be followed on. Then the questionnaire was pre-tested in 5% of the population from the study area and those participants were not involved in the main study. During the pre-test, the questionnaire was assessed for its understandability, reliability, time needed to complete the interview and for cultural acceptability in the area. The questionnaire was translated from English to Tigrigna (local language) and translated back to check its consistency.

Informed verbal consent was taken from all mothers who meet the criteria for selection and agreed with information provided by the supervisor. Face-to-face interview was employed to gather relevant information on socio demographic variables, postpartum depression and infant feeding practice.

4.8 study variables

4.8.1 Dependent/outcome variable

- Infant feeding practice

4.8.2 Independent variable

- Postpartum depression (primary)
- Maternal characteristics(maternal age, marital status, maternal occupation, maternal education status)
- Maternal Health care related variables(mode of delivery, ANC and PNC utilization, type of delivery and parity)
- Infant characteristics(infant age, sex, birth order and birth interval),)
- Household factor(monthly income, residence)

4.9 Operational Definitions

Appropriate infant feeding practice: defined as exclusive breast feeding for infant less than 6 months and for infant's age of 6-11 months, timely introduction of complementary feeding, minimum meal frequency, minimum dietary diversity and minimum acceptable diet.

Postpartum depression: is defined as postpartum women with SRQ-20 score of six and above.

Exclusive breastfeeding: infants who have received breast-milk only and no other liquids or solid foods with the exception of vitamins or medicines in the first six months.

Prelacteal feeding: Giving infants any drinks and foods except medication or immunization before the initiation of breast milk.

Minimum dietary diversity: the proportion of children 6–11 months of age who receive foods from 4 or more food groups for breastfed infant and 5 or more for non-breastfed infant during the last days.

Minimum meal frequency: Breastfed infants receive solid, semi-solid, or soft foods at least twice a day for 6-8 months and at least three times a day for children age 9-11 months. Non-breastfed infants 6-11 months are considered to be fed with a minimum meal frequency if they receive solid, semi-solid, or soft foods at least four times a day.

Minimum acceptable diet: the proportion of breastfed infants 6–11 months of age who had at least the minimum dietary diversity and minimum meal frequency during the previous day.

Appropriate complementary feeding: defined as infants 6-11 month receive timely introduction of complementary feeding, minimum meal frequency, minimum dietary diversity and minimum acceptable diet.

4.10 Data quality management

Data quality was ensured through training of both data collectors and supervisors. All filled questionnaires were reviewed at the end of the day by the supervisor. Questionnaires were randomly checked by principal investigator for their omissions and incompleteness then Responses carefully coded; with verification and checked for consistency.

4.11 Data processing and analysis

The data was entered to Epi- info version 7 for data management and transferred to SPSS version 23 for statistical analysis and data cleaning. In descriptive analysis, categorical variables was presented using frequency table, percentage and continuous variables was described by mean (SD) and median (IQR). In Bivariate analysis, crude odds ratio with 95% confidence interval was calculated to see association between postpartum depression and infant feeding practice indicators. In multivariable analysis, Binary logistic regression was run to see the association between postpartum depression and infant feeding practice by controlling potential confounding variables. Variables with p-value ≤0.25 in bivariate analysis were included in the final model of multivariable logistic regression analysis. Collinearity was checked for the independent variables and all variables that are included in the model had VIF (variance inflation factor) of less than 1.8 and tolerance greater than 0.52. Hosmer and Lemeshow model fit was insignificant at p-value 0.05.

4.12 Ethical considerations

Ethical clearance was obtained from research ethics committee, School of Public health, Addis Ababa University to conduct the research then letter of approval to conduct the research was obtained from Addis Ababa University, school of public health. This letter was submitted to KA-HDSS coordinator office found Mekelle university compound. Confidentiality was assured by informing participants that their name will not be mentioned on the questionnaire and informing them to entertain their full right not to participate or withdraw from the study at any time. Finally, informed verbal consent was taken from each participant by reading all necessary information prior to interview to ensure that their participation is fully voluntary.

4.13 Dissemination of results

Results of these study findings will be presented to Addis Ababa University, College of Health Sciences, School of Public Health .The research findings will also be reviewed by peer review journals for publication in reputable journals.

5. Results

5.1 Socioeconomic-demographic characteristics

Complete data from a total of 513 mothers were retrieved giving a response rate of 97.7%. The overall mean (SD) age of mothers was 31.1(4.8) years. Majority (76.6%) of mothers with postpartum depression and 69% of mothers without postpartum depression were in the age group of 25–35 years. One hundred forty-six (84.7%) of mothers with postpartum depression and 283(82.7%) of mothers without postpartum depression were orthodox Christian.

Almost comparable proportion of 76(43.8%) of exposed mothers and 144(42.7%) of unexposed mothers had at least primary level education. Regarding to husband educational status105 (61.4%) of mothers with postpartum depression and almost half of mothers without postpartum depression had attended at least primary level education. Only 27(5.2%) of the respondents had attended college and above. Majority (52.6%) of mothers with postpartum depression and (59.6%) of mothers without postpartum depression were housewives. One hundred forty-five (84.8%) of mothers with PPD and 294 (85.9%) of mothers without PPD were married at the time of the survey. The overall median (IQR) monthly income was 1800(1833) Ethiopian birr. Seventy-six (44.4%) of households with postpartum depression and 47.4% households without postpartum depression earned below the median level of income. More than 70% of the respondents owned functional radio. Two hundred ninety eight (58.1%) of respondents resides in rural area and 215(49.1%) resides in urban kebeles.

Of 513 children enrolled in the study 265 (51.7%) were males and 248 (48.3%) were females. The overall infant age mean (SD) was 171 (97.1) days. Ninety-three (54.4%) of infants with postpartum depressed mother was less than six months and 78 (45.6%) were 6-11 months. The mean (SD) age of immediate older child was 19.1(14.5) months and 22.7(18) months of an exposed and unexposed mothers respectively. The birth order of infants at fourth place and above is 12.7%.

Table 1.Socioeconomic-demographic characteristic of the participants, in KA-DHSS, Ethiopia, 2019

Characteristics	PPD n (%)	Non PPD n (%)	Total n (%)
Maternal age			
<=24	13(7.6%)	32(9.4%)	45(8.8%)
25-29	53(31.0%)	87(25.4%)	140(27.3%)
30-35	78(45.6%)	149(43.6%)	227(44.2%)
>35	27(15.8%)	74(21.6%)	101(19.7%)
Religion			
Orthodox	145(84.7%)	283(82.7%)	428(83.4%)
Muslim	20(11.7%)	48(14%)	68(13.2%)
Others	6(3.5%)	11(3.3%)	17(3.3%)
Marital status			
Married	145(84.8%)	294(86.0%)	439(85.6%)
Single	6(3.5%)	15(4.4%)	21(4.1%)
Divorced	9(5.3%)	15(4.4%)	24(4.7%)
Widowed	5(2.9%)	7(2.0%)	12(2.3%)
Separated	6(3.5%)	11(3.2%)	17(3.3%)
Maternal educational status			
No formal education	49 (28.6%)	108(31.6%)	157(30.6%)
Read and write only	17 (9.9%)	50(14.6%)	67(13.1%)
Primary school	59(34.5%)	84(24.6%)	143(27.9%)
Secondary school	40(23.4%)	79(23.1%)	119(23.2%)
College and above	6(3.5%)	21(6.1%)	27(5.2%)

Husband education			
No formal education	45(26.5%)	82(24.0%)	127(24.8%)
Read and write only	9(5.3%)	59(17.2%)	68(13.2%)
Primary school	58(33.9%)	69(20.2%)	127(24.8%)
Secondary school	43(25.1%)	103(30.2%)	146(28.5%)
College and above	16(9.4%)	29(8.4%)	45(8.7%)
Maternal Occupation			
Housewife	90(52.6%)	204(59.6%)	294(57.3%)
Farmer	37(21.6%)	52(15.3%)	89(17.4%)
Merchant	19(11.1%)	39(11.4%)	58(11.3%)
Gov't employee	15(8.8%)	24(7.0%)	39(7.6%)
Others	10(5.9%)	23(6.7%)	33(6.4%)
Residence			
Urban	79 (46.2%)	136 (39.8%)	215 (41.9%)
Rural	92 (53.8%)	206 (60.2%)	298 (58.1%)
Monthly income			
< =999 ETB	41(24.0%)	80(23.4%)	121(23.6%)
1000–1999 ETB	71(42.1%)	133(38.9%)	205(40.0%)
2000–2999 ETB	22(12.9%)	41(12.0%)	63(12.3%)
3000–3999 ETB	18(10.5%)	27(7.9%)	45(8.8%)
> =4000 ETB	18(10.5%)	61(17.8%)	79(15.3%)
Paternal substance use			
YES	13 (7.6%)	22 (6.4%)	35 (6.8%)
NO	158 (92.4%)	320 (93.6%)	478(93.2%)
Maternal age(yr.)			
Mean (SD)	30.9(4.9)	31.1(4.8)	31.1(4.8)
Infant sex			
Male	82 (48%)	183(53.5%)	265 (51.6%)
Female	89 (52%)	159(46.5%)	248(48.4%)

Infant age			
0-5 month	93(54.4%)	200(58.5%)	293(57.1%)
6-11 month	78(45.6%)	142(41.5%)	220(42.9%)
Infant age(day)			
Mean(SD)	181.7 (91.9)	165.6 (99.2)	171 (97.1)
Birth interval (month)			
Mean (SD)	19.1(14.5)	22.7(18.0)	21.5(17.0)
Birth order			
1st	57(33.3%)	119(34.8%)	176(34.3%)
2nd	58(38.9%)	101(29.5%)	159(31.0%)
3rd	34(19.9%)	79(23.1)%	113(22.0%)
>=4th	22(12.3%)	43(12.6%)	65(12.7 %)

5.2 Maternal health care related variables

Almost all, 160 (93.6%) of mothers with PPD and 322 (94.2%) of mothers without PPD attended antenatal care follow up at least once during their last pregnancy. More than half (61.4%) of mothers with PPD and 60.2% mothers without PPD were multipara (2–4births), About 146 (85.4%) of depressed mothers and 295 (86.3%) of non-depressed mother delivered their last child at health facility. Seventy three (42.7%) of mothers with PPD and 213 (62.3%) of mothers without PPD had postnatal care service after their last child delivery. Almost all mothers had their last born baby through spontaneous vaginal delivery. More than 95% of the respondents answered their current pregnancy status was planned.

Table 2.maternal health care related variables among the study participants, KA-DHSS, Ethiopia, 2019

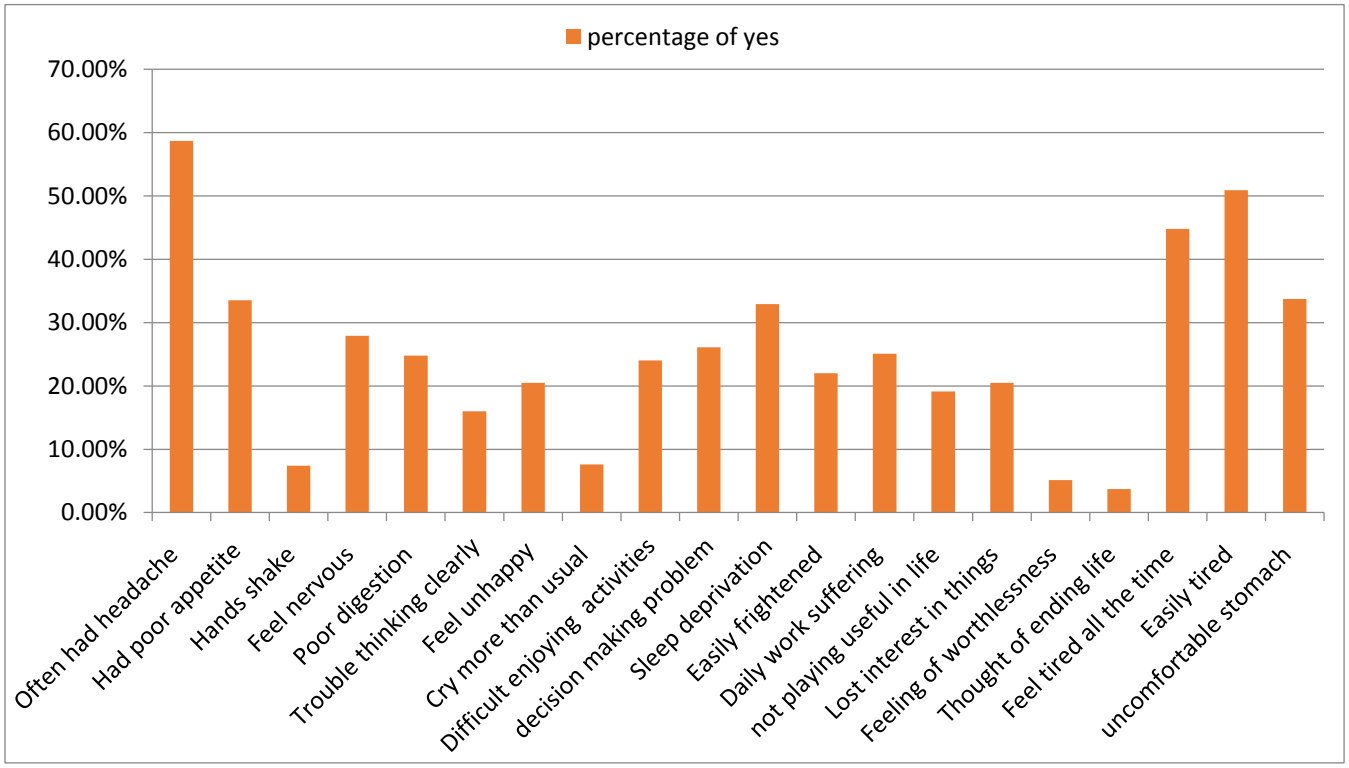
Characteristics	PPD N (%)	Non PPD N (%)	Total N (%)
Place of delivery			
Home	25(14.6%)	47(13.7%)	72(14.0%)
Health facility	146(85.4%)	295(86.3%)	441(86.0)
ANC utilization			
YES	160 (93.6%)	322(94.2%)	482(93.4%)
NO	11 (6.4%)	20(5.8%)	31(6.6%)
PNC utilization			
YES	73 (42.7%)	213(62.3%)	286(55.7%)
NO	98 (57.3%)	129(37.7%)	227(44.3%)
Prelacteal feeding			
YES	30(17.5%)	69(20.2)	99(19.3%)
NO	141(82.5%)	273(79.8%)	414(80.7%)
Pregnancy status			
Planned	155(90.6%)	336(98.2%)	491(95.7%)
unplanned	16(9.4%)	6(1.8%)	22(4.3%)
Parity			
Primipara	69(39.7%)	105(60.3%)	174(34%)
multipara	118(37.9%)	193(62.1%)	311(60.2%)
Grand multipara	6(21.4%)	22(78.6%)	28(5.8%)

5.3 Postpartum Depression among study participants

The overall mean (SD) score value (the number of yeses to the SRQ-20 questions) was 4.8(3.4) ranging between 0 and 17. The internal consistency of the SRQ-20 in this study was Cronbach's alpha of 0.703. The chi square shows no significant difference in basic socio-demographic including maternal education, maternal occupation and husband's education among mothers with PPD and mothers without PPD.

Postpartum depression symptoms: The most commonly reported symptoms of postpartum depressed mothers were: **"headache"** (58.7%), followed by **"easily tired"** (50.9%) and "**feel tired all the time"** (44. 8%).Overall 3.7% of them had suicidal ideation within the last 30 days prior to the survey..

Figure 3. Proportion of mothers who said yes to SRQ 20 questions, KA-DHSS, Ethiopia, 2019



5.4 Magnitude of Infant feeding practice

Breast feeding practice

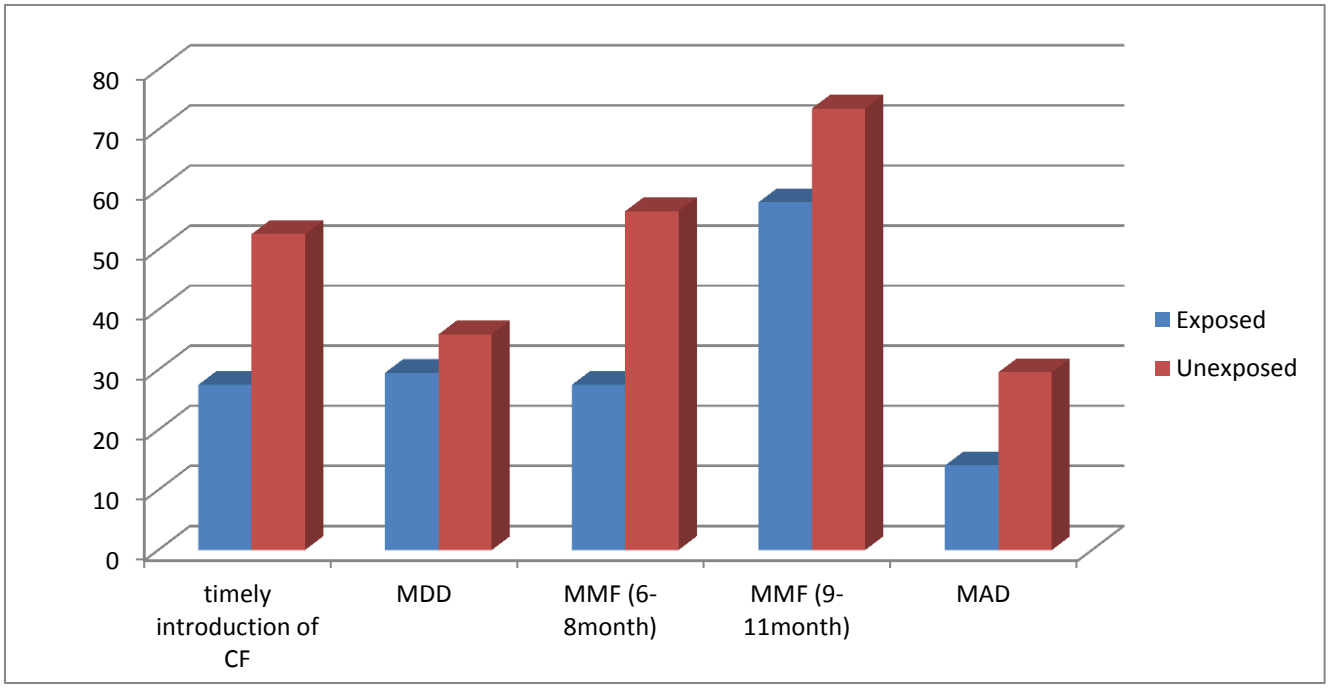
Almost all infants were breastfed at some point in time within one year before survey. Four hundred sixty two (90.1%) infants were breastfed within 1 hour of birth and 99 (19.3%) of infants received prelacteal feeding before the start of breast milk. According to recall since birth method, the overall exclusive breast feeding up to six month was 160/293 54.6% (95% CI; 48.9%–60.3%).

Four hundred ninety nine out of 513 (97.3%) infants consume breast milk one day prior to interview. Ninety nine (56.1%) of infants of depressed mother and 155 (45.3%) of infants from non-depressed mother consume Plain water one day prior to the interview. Four hundred forty one (85%) of infants receive breast milk eight and more times in the last 24 hour.

Complementary feeding

The overall prevalence of appropriate complementary feeding practices was 31/220 14.1% (9.4%-18.6%). The initiation of solid and semisolid foods at the age of six month was 52/118 44.1% (35.2%-53%), Minimum acceptable diet was 24.1% (18.5%-29.7%); minimum dietary diversity was 74/220 33.6% (27.4%-39.8%) while the minimum meal frequency among 6-8 months was 46.6% (37.6%-55.6%) and 67.6% (58.5%-76.7%) among 9-11 months, indicating that as age increases the meal frequency also increases.

Figure 4. The proportion of complementary feeding indicators among exposed and unexposed mothers, KA-HDSS, Ethiopia, 2019



5.5 Association between postpartum depression and appropriate infant feeding practice

In the bivariate analysis, postpartum depression was significantly associated with appropriate complementary feeding, exclusive breast feeding and appropriate infant feeding practice. The odds of appropriate infant feeding were 1.96 times higher among mothers without postpartum depression (COR=1.96; 95% CI: 1.32- 2.93).

Moreover, the likelihood of appropriate complementary feeding among mothers without postpartum depression was 2.43 times higher than their counterpart (COR= 2.43; 95%CI: 1.38-4.28). The odds of exclusive breast feeding were 1.6 times higher among mothers without postpartum depression (COR= 1.66; 95%CI: 1.11-2.47).

Variables such as postnatal care utilization and antenatal care visit were significant in bivariate analysis and lost their significance when adjust for potential confounder.

In multivariable analysis, the overall odd of appropriate infant feeding was 1.7 times higher among mothers without postpartum depression (AOR= 1.71; 95% CI: 1.08-2.69). Other variables which were significantly associated with overall appropriate infant feeding included: monthly income and birth order.

With regard to monthly income, mothers from households which earn 1000–1999 ETB (AOR= 2.26; 95% CI: 1.02-5.01) and 3000–3999 ETB (AOR= 5.31; 95% CI: 1.97-13.4) had higher odds of appropriate infant feeding.

The odds of appropriate infant feeding among infants with birth order above three was 48% (AOR= 0.52; 95% CI: 0.28-0.97) less than those infants with birth order of three and below.

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Table 3.Association of postpartum depression and Indicators of infant feeding practice among participants, KA-DHSS, Ethiopia, 2019

Exposure status	Exclusive breast feeding		COR(95% CI)
Postpartum depression	Appropriate N (%)	Inappropriate N (%)	
Exposed	43(46.2%)	50(43.8%)	1.00
unexposed	118(59.0%)	82(41.0%)	1.66(1.11-2.47)*
Postpartum depression	Appropriate Complementary Feeding		
	Appropriate N (%)	Inappropriate N (%)	
Exposed	6(6.5%)	2(93.5%)	1.00
unexposed	26 (18.3%)	116(81.7%)	2.73 (1.03-7.25)*
Postpartum depression	Appropriate Infant Feeding practice		
	Appropriate N (%)	Inappropriate N (%)	
Exposed	47 (27.5%)	114(72.5%)	1.00
unexposed	146 (42.7%)	196(57.3%)	1.96(1.32-2.93)*

* Significant at p-value <0.05

Table 4.independent variables associated with infant feeding practice, KA-DHSS, Ethiopia, 2019

Characteristics	Appropriate infant feeding practice		COR (95 % CI)	AOR (95 % CI)
	Appropriate N (%)	Inappropriate N (%)		
Exposure status(PPD)				
Exposed	47(27.5)	124(72.5)	1.00	1.00
Unexposed	146(42.7)	196(57.3)	1.96(1.32-2.93)	1.71 (1.08-2.69)*
Marital status				
Married	171 (39)	268 (61)	1.00	1.00
Divorced/separat	14 (34.1)	27(65.9)	0.81(0.41-1.59)	1.78(0.62-5.16)
ed	8 (24.2)	25 (75.8)	0.50 (0.22-1.14)	2.17(0.93-5.08)
Others				
Maternal occupation				
House wife	144(38.8)	180 (61.2)	1.00	1.00
Farmer	24(29.3)	58 (70.7)	0.65(0.38-1.11)	0.74(0.42-1.29)
Merchant	27 (46.6)	31 (53.4)	1.38(0.78-2.42)	1.37(0.76-2.48)
Gov't employee	11 (29.7)	26 (70.3)	0.67(0.32-1.40)	0.77(0.35-1.68)
others	17 (40.5)	25(59.5)	1.07 (0.56-2.08)	1.24(0.62-2.47)
Monthly income				
< =999 ETB	41(24.0)	80(23.4)	1.00	1.00
1000–1999 ETB	71(42.1)	133(38.9)	2.12(0.97-4.64)	2.26(1.01-5.01)*
2000–2999 ETB	22(12.9)	41(12.0)	1.90(0.81-4.48)	1.96(0.81-4.73)
3000–3999 ETB	18(10.5)	27(7.9)	4.57(1.79-	5.13(1.97-13.4)*
> =4000 ETB	18(10.5)	61(17.8)	11.6)*	2.22(0.93-5.33)
			2.21(0.94-5.22)	
ANC utilization				
No	14(43.8)	18(56.3)	1.00	1.00
Yes	179(37.2)	302(62.8)	0.94(0.49-1.80)	0.68(0.34-1.38)

Birth order				
<=3	177(39.5)	271 (60.5)	1.00	1.00
>3	16 (24.6)	49 (75.4)	0.50 (0.28-0.91)	0.52(0.28-0.97)*
Parity				
Primipara	69(39.7)	105(60.3)	1.00	1.00
multipara	118(37.9)	193(62.1)	0.93(0.64-1.36)	1.05(0.70-1.60)
Grand multipara	6(21.4)	22(78.6)	0.42(0.16-1.08)	0.73 (0.20-2.63)
Postnatal care				
No	73(32.2)	154(67.8)	1.00	1.00
Yes	120(42)	166(58)	1.52(1.06-2.20)*	1.02(0.57-1.76)
ANC visit				
<4times	84(31.2)	185(68.8)	1.00	1.00
>=4times	109(44.7)	135(55.3)	1.78 (1.24-2.55)*	0.83(0.44-1.57)

COR Crude odds ratio, AOR Adjusted odds ratio, CI Confidence interval

*P < 0.05

6. Discussion

This study was conducted to assess the difference of postpartum depression on infant feeding practice in Kilite Awlaelo health and demographic surveillance site in eastern zone of Tigray. Postpartum depression was significantly associated with infant feeding practice and the other socio demographic variable which is significantly associated is monthly income and birth order. Postnatal care and ANC visit were significantly associated but lost its significance after controlling for potential confounder.

Earlier studies in Ethiopia assessed the magnitude of postpartum depression among postpartum mothers and maternal common mental disorders on infant under nutrition(38). However, none of them tried to assess the association between postpartum depression and infant feeding practice so this study bridged this gap by exploring the association between postpartum depression and infant feeding practice.

This study showed that he prevalence of exclusive breast feeding up to six month in this study is 54.6% (95% CI; 48.9–60.3) which is comparable with the result from previous study in Gurage zone in which the prevalence was 50.2%, (95% CI: 45.4, 55.1). (39) But this is lower than the national prevalence of exclusive breast feeding which was 58% (10) and a meta-analysis done on exclusive breastfeeding which was 59.3% (14) the possible explanation for the variation might be due to different method of assessing exclusive breast feeding. This study used recall since birth to assess exclusive breast feeding whereas the above three studies used 24 hr. recall method which overestimates the exclusive breastfeeding rate.

In the present study, mothers who gave prelacteal feeding before the start of breast milk was 19.3% which was comparable with finding from a previous study in southern Ethiopia in which pre-lacteal feeding practice was 16.5%(40).this finding is lower the pooled prevalence of prelacteal feeding among Ethiopian children was 26.95% (41) and much lower than a study conducted in Afar region in which the prevalence of prelacteal feeding was 42.9%(42).This discrepancy could be due sociocultural and educational status difference among the study participants. However, this study was higher than a previous study finding in Bahir Dar which was 15% (43) this variation could be due to many mothers deliver their last born baby at home

which might increase traditional activities like prelacteal and the difference on awareness of prelacteal feeding.

In the current study, Four hundred sixty two (90.1%) of infants were breastfed within 1 hour of birth. This was similar with a study conducted in Gondar town in which early initiation of breast feeding was 93.1%.(44) But this was higher than a national estimate of early breast feeding initiation which was 73% (10) this discrepancy can be explained by the time difference in which the implementation of National Nutrition Programme II (NNP II) and other governmental and non-governmental institutions play a great role in promoting optimal breast feeding practice.

In this study, the overall of prevalence of appropriate complementary feeding practices was 14.1% .This was higher than a study conducted in southern Ethiopia in which appropriate complementary feeding was 11.4%(20).this might be due to socioeconomic and cultural difference between the study subjects. This study includes urban areas unlike the above study that may increase the accessibility to different food groups. In addition the majority of women participated in this study were housewives and get much of their time at home that may increases child care practice including proper feeding. But this was much lower than the study conducted in lasta district which was 56.5%(33).this discrepancy could be due to difference in assessment tool of complementary feeding in which the study uses three indicators unlike the current study which uses four indicators of complementary feeding.

The current study showed the prevalence of minimum acceptable diet is 24.1%. This is almost similar with the findings of Ghana (45). but higher to the national EDHS 2016 report of (7%) (10), Abiyi Adi (11.9%) (21).this could possibly be due to time difference in which medias and health extension workers highly devoted to promote optimal complementary feeding practices and A relatively higher findings observed in our study may be due to educational differences compared to Abiyi Adi.

However, the current study prevalence is lower than the study conducted in northern Ghana (44%) (31). this variation could be due to cultural and socio economic difference among study participants.

The current study shows the prevalence of minimum dietary diversity is 33.6%.this finding is relatively consistent with a finding from northern Ghana 35.3% (31) but higher than a study conducted in southern Ethiopia 18.8% (46) ,Bahir Dar 7% (43) This might be due to the fact that there are educational, socioeconomic differences and difference in study settings as those studies was conducted in slum areas and rural areas hence the participants were poor and low educational status.

This study shows significant association between postpartum depression and appropriate infant feeding practice. Similarly a qualitative systematic review conducted in developed countries shows that Women's with early postpartum depression had negative influence on infant feeding outcomes (22) and a study conducted in low and middle income country shows that depressive symptoms have been associated with short duration of breastfeeding and mothers with depressive symptoms in the first 4–6 weeks postpartum were likely to stop breastfeeding earlier than non-depressed mothers (29) A study conducted in Canada revealed that Postpartum depression at 3 months was associated with 11% reduction in the odds of exclusive breastfeeding at 6 months and a study done in Brazil shows mothers with postpartum depressive symptoms were at higher risk of early interruption of exclusive breastfeeding and a study in Nigeria shows women with postpartum depression were more likely to practice non-exclusive breastfeeding.(24,25,26)

However , a community based study conducted in northern Ghana shows that there is no significant association between maternal depression and complementary feeding indicators (31) this might be due to using of locally invalidated tool for assessing maternal postpartum depression and small sample size used which reduce the power of the studies makes difficult to really find the association between postpartum depression and feeding practice in the study.

The current study determined that monthly income and birth order are significantly associated with infant feeding practice. Similar with this study, A study conducted in northern Ethiopia shows monthly income level and birth order were independently associated with appropriate feeding practice.(46,47)

Limitation of the study

It has a limitation to formulate temporal relationship, as to how and when the associations of postpartum depression and infant feeding practice are established, since the study design is a cross sectional which is carried out at short period of time. In addition to this, as the study considered 24-h recall method to assess complementary feeding practice which might not reflect the accurate infant's habitual dietary intake.

7. Conclusion and Recommendation

Conclusion:

This study found the prevalence of exclusive breast feeding, complementary feeding and appropriate infant feeding practice is low which have an impact on the health of infants. Hence, this indicates the importance of immediate action to promote appropriate infant feeding practices.

In addition this finding reveals that there is association between postpartum depression and infant feeding practices. Inappropriate infant feeding practice associated to postpartum depression should be mitigated through early screening and treatment of postpartum depression so this result point out the importance of a giving special attention towards maternal mental health in the postpartum period.

In order to achieve Soqota declaration of ending undernutrition by 2030 we should give emphasis to all possible factors that have negative impact on child nutrition including postpartum paternal mental health conditions.

This study has an important implication for the identification of women who are at risk for developing postpartum depression and the implementation of primary intervention strategies to screen postpartum depression. The findings of the study gave insight higher level of household monthly income and birth order of infant less than three were factors that increase appropriate infant feeding practice.

Recommendation:

For health policy makers

Health policy makers should integrating screening and early identification of postpartum depression into maternal and child health services at postpartum period hence, this could mitigate the child nutrition consequences that could results from poor maternal mental health conditions. The government should train health professional on screening of postpartum depression skills. The government should also scale up the behavioral change communication through promoting of appropriate infant feeding practices at community and financial empowerment of women by giving incentives for those mothers who appropriately fed their infants.

For health extension workers and health professional

Health extension workers should focus on advising appropriate infant feeding practice and health professionals should focus on counseling of mothers at risk of developing postpartum depression and give appropriate individual or group therapy for those who already develop postpartum depression.

For further research

Researchers had better to use prospective cohort study design to see temporal association between postpartum depression and infant feeding practice.

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ANNEXES

Annex I. information sheet

Dear respondent my name is_____ and I am working as data collector conducted in KA-HDSS by Mr. Angesom Weldu who is studying for his master's degree under school of public health, Addis Ababa University.

Research topic: the relationship between postpartum depression and infant feeding practice among postpartum mothers in KA-HDSS in Eastern zone of Tigray, Ethiopia 2018/19.

Aim of the study: To assess the association between postpartum depression and infant feeding practice among randomly selected postpartum mothers who live in KA-HDSS, Eastern zone of Tigray, Ethiopia 2018/19.

Procedure and duration: First of all I selected you to take part in this study randomly. There are different questions to answer. A face to face interview will be used that might take 30 to 35 minutes.

Risks: the risk of taking part of this study are negligible, only takes of a very few minutes and no short term and long term harm/disadvantage.

Expected benefits: The study has no immediate benefits to the respondents, but will have benefits later in improving the GAP in addressing postpartum depression by health workers and policy makers so as mothers could have physically and mentally healthy baby.

Confidentiality: All the information obtained from participants will remain confidential and your privacy will be upheld. Identification will be by number only; no names will be used in this study or in its future publications.

Rights: Participation in this study is voluntary and you may withdraw from the study at any time if you feel discomfort and your non participation will never involve penalty of benefits to which you are entitled at this community and health service. **Contact Address**: In case you need more information or have any doubt about the survey, you may contact the principal investigator Angesom Weldu at +251-926-705-494 or E-mail address angesomweldu2016@yahoo.com.

Annex II. Informed consent

Good morning/afternoon

The purpose of this study is to assess the relationship of postpartum depression and infant feeding practice in Kilite Awlaelo Health and Demographic Surveillance Site in Eastern zone of Tigray, Ethiopia 2018/19. From eligible mothers with infant less than 12 months of age, you are selected randomly to participate in this study. This study will be conducted through face to face interviews.

The interview involves different questions on socioeconomic status, maternal mental health status and feeding practice of your infant. We are asking you for a little of your time, about thirty to thirty-five minutes, to help in this study. We would like to assure you that confidentiality will be strictly secured throughout the study. All your information will be numbered and your name will not be used. Your answers to any of the questions will not be given to anyone else and no reports of the study will ever identify you. If a report of results is published, only information about the total group will appear.

The interview is totally based on voluntariness. Your participation/ non-participation, or refusal to answer questions will have no effect now or in the future on services that you or any member of your family may receive from health service providers or the community as a whole. If I come to any question you don't want to answer, just let me know and I will go on to the next question; or you can stop the interview at any time. However, your honest answers to these questions will help us in better understanding of the factors related to inappropriate infant feeding practice including postpartum depression in this area and will eventually help to design appropriate intervention on maternal and child health.

I have heard, understand and comprehend all the information stated above.

Are you willing to participate in this study?

1- No (say thank you and goodbye)

2- Yes (continue interviewing)

Annex III. Questionnaire (English version)

Date of interview: _____/_____/_____ Kebeles: _____
Code Number: _____

Annex VI. Socio-demographic characteristics

S.no	Questions	Coding category/Responses	Skip to
101	Maternal age(in completed years)	_____ years	
102	What is your Marital status?	Unmarried----------1 Married----------2 Divorced----------3 Separated----------4 Widowed----------5 Other (specify)----------6	
103	What is your educational status?	Illiterate----------1 Only read and write------2 Grade (completed)____3 College or university graduate----------4 Other(specify)_____5	
104	What is your occupation? (More than one answer is possible).	Student ----------1 Employed----------2 Farmer----------3 Unemployed ----------4 Only housewife----------5 Other (specify)_____6	

105	What is your monthly family income? (In ETB)	_____	
106	Where is your Residence?	Urban …….1 Rural……2	
107	Parity	_____	
108	Religion	Protestant ……1 Orthodox……..2 Muslim…….3 Catholic ……..4 Other (specify)…….5	
109	Where did you give birth [Name]?	Home……...1 Health facility…….....2	
110	Mode of delivery	Normal delivery……...1 Ceaserian section…...2	
111	Infant age (in completed months)	_____ months	
112	Infant sex	Boy ……1 Girl……...2	
112	Birth interval	_____years	
113	Birth order of the child	_____	
114	When you got pregnant with [Name], did you want to get pregnant at that time?	YES……....1 NO…….....2	
115	Did you see any one for antenatal care for this pregnancy?	YES……....1 NO…….....2→	If '**NO** 'Skip Q 116

116	How many times did you receive ANC for this pregnancy?	Once……...1 Twice…….2 Three times……....3 Four times……..4	
117	Did you receive any care after you deliver with [Name]?	YES……....1 NO…….....2	
118	Did you have functional radio/television or both?	YES……....1 NO…….....2	

Annex V: Self-reporting Questionnaire (SRQ-20)

Study number _____ Date of completion _____

As you have recently had a baby, we would like to know how you are feeling. The following questions are related to certain somatic and emotional symptoms that might bother you in the last 30 days. If you think the questions applies to you Say YES and say **NO** if it doesn't apply to you.

S.no	SRQ-20 Questions	YES=1	NO=0
201	Do you often have headaches?		
202	Is your appetite poor?		
203	Do you sleep badly?		
204	Are you easily frightened?		
205	Do your hands shake?		
206	Do you feel nervous, tense or worried?		
207	Is your digestion poor?		
208	Do you have trouble thinking clearly?		
209	Do you feel unhappy?		
210	Do you cry more than usual?		
211	Do you find it difficult to enjoy your daily activities?		
212	Do you find it difficult to make decisions?		
213	Is your daily work suffering?		
214	Are you unable to play a useful part in life?		
215	Have you lost interest in things?		
216	Do you feel that you are a worthless person?		
217	Has the thought of ending your life been on your mind?		
218	Do you feel tired all the time?		
219	Are you easily tired?		
220	Do you have uncomfortable feelings in your stomach?		
	SRQ-20 Total Score		

Annex VI: Infant feeding practice assessment tool

S.no	Questions	Coding category/Responses	Skip to
300	Date of interview	_____/_____/_____dd/mm/yy)	
301	Child's date of birth	_____/_____/_____dd/mm/yy)	
302	Have you ever breastfed [Name]?	YES……....1 NO…….....2 →	If 'NO' go to Q304
303	Since this time yesterday, have you breastfed [Name]?	YES……....1 NO…….....2	
304	Do you ever give your child anything to drink in a baby bottle?	YES……....1 NO…….....2	
305	How long after birth did you first put (NAME) to the breast for the first time? If less than 1 hour, record '00' hours; if less than 24 hrs, record hrs; otherwise, record days?	Immediately_____ Hours _____ Days_____	
306	How many times did you breastfeed [NAME] last night between sunset and sunrise?	Times _____	
307	How many times did you breastfeed [NAME] yesterday during the daylight hours?	Times _____	

308	Since this time yesterday, has [NAME] received any of the following?		
	A) Vitamins, mineral supplements, medicine	YES……....1 NO…….....2	
	B)Plain water	YES……....1 NO…….....2	
	C)Sweetened or flavored water	YES……....1 NO…….....2	
	D)Fruit juice	YES……....1 NO…….....2	
	E)Tea or infusions	YES……....1 NO…….....2	
	F)Infant formula	YES……....1 NO…….....2	
	G)Tinned, powdered or fresh milk	YES……....1 NO…….....2	
	H)Other liquids (Includes broths and clear soups)	YES……....1 NO…….....2	
	I)Mushy or solid foods (Includes cereal, porridge, thick soups, or stews)	YES……....1 NO…….....2	
	J)Oral Rehydration Salts (ORS) solution	YES……....1 NO…….....2	

Questions for infants' Complementary feeding (6-11months)

309	Did [Name] ever start eating any solid, semi-solid, or soft foods? Yesterday during the day or at night?	YES……....1 NO…….....2 →	End of interview
310	When did you start giving any solid, semi-solid, or soft foods [Name]?	Less than 6 months……..1 At 6 months ……2 Greater than 6 months……..3	
311	If Q309 is yes, What kind of solid, semi-solid, or soft foods did **(NAME)** eat? Please describe everything that **(NAME)** ate yesterday during the day or night, whether at home or outside the home?		
	A. Porridge, bread, rice, noodles, or other foods made from grains	YES……....1 NO…….....2	
	B. Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside	YES……....1 NO…….....2	
	C. white potatoes, white yams, manioc, cassava, or any other foods made from roots	YES……....1 NO…….....2	
	D. any dark green leafy vegetables	YES……....1 NO…….....2	
	E. any other fruits or vegetables	YES……....1 NO…….....2	
	F. liver, kidney, heart, or other organ meats	YES……....1 NO…….....2	
	G. any meat, such as beef, pork, lamb, goat, chicken, or duck	YES……....1 NO…….....2	

	H. any meat, such as beef, pork, lamb, goat, chicken, or duck	YES……....1 NO…….....2	
	I. fresh or dried fish, shellfish, or seafood	YES……....1 NO…….....2	
	J. any foods made from beans, peas, lentils, nuts, or seeds	YES……....1 NO…….....2	
	K. cheese, yogurt, or other milk products	YES……....1 NO…….....2	
	L. any oil, fats, or butter, or foods made with any of these	YES……....1 NO…….....2	
	M. any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits	YES……....1 NO…….....2	
	N. condiments for flavor, such as chilies, spices, herbs	YES……....1 NO…….....2	
	O. ripe mangoes, ripe papayas, or	YES……....1 NO…….....2	
312	How many times [Name] eat any of the food groups provided below in the last night?		
	1.grains, roots and tubers	0. Never 1.1-3 days 2. ≥4	
	2.legumes and nuts	0. Never 1.1-3 days 2. ≥4	
	3.dairy products (milk and yoghurt)	0. Never 1.1-3 days 2. ≥4	
	4.flesh foods (meat, fish, poultry and meats)	0. Never 1.1-3 days 2. ≥4	
	5.eggs	0. Never 1.1-3 days 2. ≥4	
	6.vitamin A-rich fruits and vegetables	0. Never 1.1-3 days 2. ≥4	
	7.other fruits and vegetables	0. Never 1.1-3 days 2. ≥4	

Annex. Questionnaire (Tigrigna version)

Annex I ናይ ሓበሬታ ወረቀት

ዝተከበርኩምተሳተፍቲ

ስመይ_____እንትበሃል ከምሓበሬታ ሰብሳቢ ኮይነ ከዓ ይሰርሕ። ቀንዲ ጽንዓት ኣካያዲ ኣይተ ኣንጎሶ ምወልዱ እንትበሃሉ ኣብ ክልተ ኣወላዕሎን ከባቢኣን ጽንዓት ንምክያድ ካብ ኣዲስ ኣበባ ዩኒቨርሲቲ ናይ ካልኣይ ዓመት ማስተርስ ዲግሪ ተመራቂ እዮም።

ርእሲ እዚ ጽንዓት ፡ ናይ ድሕሪ ወሊድ ጫፋቀት ኣብ ናይ ትሕቲ ሓደ ዓመት ህጻናት ዘምጽኡ ናይ ኣመጋግባ ጉድለት ኣብ መንጎ ድሕሪ ወሊድ ዝርከባ ኣዴታት ነበርቲ ኪልተ ኣወላዕሎን ከባቢኣን, ምብራቃዊ ዞባ ትግራይ, ኢትዮጵያ 2018/19

ዓላማ እዚ ጽንዓት ፡ ናይ ድሕሪ ወሊድ ጫፋቀት ኣብ ናይ ትሕቲ ሓደ ዓመት ህጻናት ዘምጽኡ ናይ ኣመጋግባ ጉድለት ንምፍታሽ።

ኣከያይዳን ግዜ እዚ ጽንዓት ፡ ብመጀመርታ ተሳታፊት እዚ ጽንዓት ንምሕጋን ብዕጻ እንትከወን። ዝተፈላለዩ ሕቶታት ዝሓዘ መሕተት መልሲ ክትህብሉ ይጽበ። ገጽ ንገጽ ቃለመሕተት እንትንጥቀምብምጥቐላይ ካብ 30 ክሳብ 35 ደቂቃኣዩ ዝወስድ።

ጥቅምታት ፡ ተሳተፍቲ ብምሕጋክን ጥራይ ምንም ዓይነት ሓደጋ ከምዘየስዕብ ክንገልጽ ንፎቱ ንተሳተፍቲ ዝህቦ ዝተፈለየ ጥቅሚየለን እንተኾን ግን ኣብ መጻኢ ኣወሃህባ ግልጋሎት ኣዴታት ምስ ንይኣእምሮ ጫፋቀት ዝተተሓዘ ዘሎሃገራዊ ክፍተት ንምሙላእን ንምምህያሽ ዓቢይ ግደ ኣለዎ።

ምስጢራውነት ፡ ዝኾነ ይኹን ሓበሬታ ዝትኣከበ ምስጢሩ ዝትሓለወ እዩ። ኣብቲ መሕተት ካብ ቁጽሪ ወጻኢ ምንምዓይነት ስም ከምዘይጽሓፍ ክንሕብረለን እፎትው፡ ፡

መስላት ፡ መጠየቅና ብፍቃደኛ ዝተመስረተ እንትኾነ አብዚ ጽንዓት ምስታፍ ኮነ ዘይምስታፍ፣ ዘይደለይኦ መልሲ ዘይምምላስ፣ ከምልስኦ ዘይደሊያ ሕቶ እንተሃሊዩ ወን ንኽንሰግሮ ይሓበራና ብምኽንያት እዚ ድማ አብ ቀጻሊ ክረኽቡኦ ዝግብእን ናይ ጥዕና ይኹን ሜሕበረሰባዊ ግልጋሎት ከምዘይኣተዓናቅፍ ክንሕብረለን እፎትው፡ ፡

ኣድራሻ ፡ ንዝበለጸ ሓበሬታ በዚ ስልኪ ቁጽሪ ኣድራሻ ክትረኽቡኒ ትኽእሉ +251-926-705-494 ወይከዓ ኢ-መይል ኣድራሻ angesomweldu2016@yahoo.com.

Annex II. መግለፂ ስምምዕነት

ጥዕና ይሃበለይ ከሞይ ትሓድሩ/ትወፅሉ

ዓላማእዚ ጽንዓት ናይ ድሕሪ ወሊድ ጫፃቀት ኣብ ናይ ትሕቲ ሓደ ዓመት ህጻናት ዘምጽኡ ናይ ኣመጋግባ ጉድለት ኣብ ክልተ ኣወላዕሎን ከባቢኡን ዘሎ ንምፍታሽ። ካብተን ብዕጻ ዝተመረጻ ኣዴታት ሓንቲ እንትኾነ ፣ ተሳትፎኺ ኣብ ድሌት ዝተመዝረተ እዩ። እዚ ቃለ መሕተት ገጽን ገጽ ዝግበር እዩ።

እዚ ቃለ መሕተት ዝተፈላለዩ ሕቶታት ዝሓዘ እንትኸውን ንሳቶም ከዓ ብዛዕባ ሜሕበራውን ቁጠባውን ኩነታት ዝድህስስ፣ ናይ ኣዶ ኣእምራዊ ጥዕና ከምኡ ድማ ኣብ ትሕቲ ሓደ ዓመት ህጻናት ዘሎ ኣመጋግባ ስርዓት ዘተኮረ እዩ፡ ፡ ዝህባና ዝኾነ ይኹን ሓበሬታ ብሚስጢር ከምንሕዞ ክነረጋግፀለን ንፈቱ፡ ፡ ንፅንዓት ካብ ንደልዮ ወፃኢ ንዐአን ወይ ንወላደን ንምፍልላይ ንጥቀሞሉ ምንምነገር ኣይህሉን፡ ፡ ኣብዚ ፅንዓት ዝሳተፉ ብናይ ባዕለን ሰናይ ፈቓድ ስለዝኾነ ከምልስኡ ዘይደልያ ሕቶ እንተሃልዩ ናይ ዘይምምላስ መብለን ሕልውእዩ ፡ ፡ ከምኡውን ኣብ ዝኾነ ሰዓት ነቲ ቃለ መሕተት መሉእ ብመሉእ ናይ ምቁራፅ መብል ዝተሓለወእዩ፡ ፡

ኣብዚ ጽንዓት ምስታፍ ኮነ ዘይምስታፍ፣ ዘይደለይኡ መልሲ ዘይምምላስ ኣብቀጻሊ ክረኽቡኡ ዝኽላ ናይ ጥዕና ኾነ ሜሕበረሰባዊ ግልጋሎት ከምዘይኣተዓናቅፍ ክንሕበረለን እፎትው፡ ፡ ከምልስኡ ዘይደሊያ ሕቶ እንተሃሊዩ ንኽንሰግሮ ሓበራና፣ ይኹን ደኣምበር ትኽክለኛ መልሲ ክህባና ንምሕጸን ምኽንያቱ ንቀጻሊ ኣብ ዝህልው፡ ፡ ሐዚ ስለ እቲ ቓለ መሕተት ዓላማን ትሕዝቶን ዝሓታኒ ሕቶ እንተሃልዩ እቲ ዕድል ንዐአን ክህበን፡ ፡

ስለዚ ኣብዚ ጽንዓት ንምስታፍ ፍቓደኛ ድየን ?

1- ኣይተሰማማንን ናይቲ ቃለ መሕተት መወዳእታ (ኣማኺንካ ተፋነወ)

2- ተሰማሚዐን (ቓለ መሕተት ቀጽል)

Annexes. ቃለ-መሕተት

ቃለ-መሕትት ዝተገብረሉ ዕለት ፡ _____/ሬ_____/ሬሬሬሬሬሬሬ ቀበሌ: ሬሬሬሬሬሬሬሬኮድ ቁጽሪ: ሬሬሬሬሬሬ

ሞቃቃስቦ ህ.ሜሕበራዊ ኩነታት ዝምልከት

ተ.ቁ	ሕቶ	መልሲ/መሚጽታት	ዝለልል
101	ዕድመአዶ (በዓመት)	_____ ዓመት	
102	ናይ ሓዳር ኩነታት ከመይ እዩ ?	አይተመርዓኩን .....1 ተመርዕየ እየ ዘለኩ .....2 ተፋቲሐ .....3 ተፈላሊና .....4 ካለእ በዓል ቤት አእትየ .....5 ከይተመርዓውሓቢሮምዝነ ብሩ.....6 ካለእ (ግለጽ) _____.....7	
103	ትምህርቲ ደረጀኣ ከንደይ እዩ ?	ዘይተምሃረት.....1 ምጽሓፍን ምማሃብን ጥራይ .....2 ከፍሊ(ዝወድእት)_____.....3 ኮሌጅ ወይ ዩኒቨርሲቲ ተመራቂ.....4 ካለእ (ግለጽ) _____.....5	
104	እንታይ ትሰርሒ ? (ካብ ሓደ ብላዕሊ መልሲ ይከአል).	ተማሃሪት.....1 መንግስቲ ሰራሕተኛ.....2 ናይ ግሊ ስራሕ.....3 ሞኑዕ መንልቲ ሰራሕተኛ.....4 ነጋዳይ .....5 ሓረስታይ .....6 ስራሕየ ብለይ.....7	

		ናይ ገዛ ስራሕ.....8 ካለእ (ግለጽ) _____.....9	
105	ወርሓዊ ናይ ቤተ ሰብ እቶት ክንደይ እዩ?(ብብር)	_____	
106	ትነ ብርሉ ካባቢ	ከተማ.....1 ገጠር.....2	
107	በዝሒበተሰብ ?	_____	
108	ትክተልዮ ሃይማኖት ?	ጴንጤ.....1 ኦርቶዶክስ.....2 እስልምና.....3 ካቶሊክ.....4 ካለእ (ግለጽ) _____.....5	
109	ህጻን ዝወለድኪሉ ቦታ አበይ እዩ ?	ኣብ ገዛ .....1 ኣብ ጥዕና ተቋም.....2	
110	እዚ ህጻን ዝወለድኪሉ ብምን ታይ እዩ ?	ብማህጸን .....1 ብከብደይ (ኣፕሬሽን) 2	
111	ናይ ህጻን ዕድመ? (ብመሉእ ኣዋርሕ)	_____ ኣዋርሕ	
112	ኣብ ናይ መጀመሪያ ቆልዓን ቀጺሉ ዘሎ ቆልዓን ዘሎዕድመኣፈላላይ ?	_____ኣዋርሕ	
113	እዚ ቆልዓ ማህል ክንደየ ናይ እዩ ?	_____	
114	እቲ ሕርሲ ብድሌት ናይ ክልቴኩምድዩ ነይሩ ?	እወ.....1 ኣይፋሉን.....2	

115	ኣብ እዋን ሕርሲ እዚ ቆልዓ እንዳሃለወኪ ቅድሚ ወሊድ ክትትል ጌርኪ ነይርኪ ዶ?	እወ.....1 ኣይፋሉን .....2 →	ናብ ተ. ቁ 117 ይሕለፉ
116	ንክንደይ ጊዜ ዝከወን ክትትል ጌርኪ ነይርኪ?	ሓደጊዜ.....1 ክልተጊዜ.....2 ሰለስተ ጊዜ.....3 ኣርባዕተ ጊዜ.....4	
117	ድሕሪ ወሊድ ክትትል ጌርኪ ነይርኪ ዶ?	እወ.....1 ኣይፋሉን 2	
118	በዓል ቤትኪ ነቲ ቆልዓ ከተጥቡቢዮ የበረታትዐኪ፣ ሕማቕ ስሚት ክስምዐኪ ከሎ ኣብ ጎንኺኮይኑ ይሕግዘኪ ዶ?	እወ.....1 ኣይፋሉን 2	

Annex II: Self-reporting Questionnaire (SRQ-20)

ተሳታፊ ቁጽሪ_____ ዝተወድአሉ ዕለት_____

ድሕሪ እዚ/እታ ቆልዓ ምክ ወለድኪ ዘሎ ስምዒት ንምፍላጥ። እዞም ዝስዕቡ ሕቶታት ምክ አእምሮኣዊ ስምዒታት ዝተትሓዙ እንትኮኑ ኣብዝሓልፉ 30 መዓልትታት ዘጨበቑኺሉውን ዘተሓሳስቡኺሕቶታት ዝሓቆፈ እዩ። እንድሕር እቲ ሕቶ ዝወክለኪ እንተኮይኑ **እወ** ብምባል ዘይወክለኪ እንተኮይኑ ድማ**ኣይፋሉን** ብምባል ይመልሱ። .

ተ.ቁ	SRQ-20 ሕቶታት	1=ኣይፋሉን	2=እወ
201	መበዛ ሕቲኡ ጊዜ ድኻም ይስማዓኪ ዶ?		
202	ካብ ዝሓለፈ ወርሒጀሜኡ ናይ ምግቢ ድሌትኪ ቀኒሱ ዶ?		
203	ድቃስ ቡዙሕ ጊዜ ይኣብየ ኪዶ?		
204	ብቀሊሉ ፍርሕ ፍርሕ ትብሊ ዶ ?		
205	ኣእዳወኪ ይንቅጥቀጥ ዶ?		
206	ወጥረት ፣ ጫዓቀት ይስመዓኪ ዶ?		
207	ምግቢ ቶሎምሕቅቅ ይኣብየ ኪ ዶ?		
208	ብግልጺ ናይ ምሕሳብ ችግር የጋጥመኪ ዶ?		
209	ካብ ዝሓለፈ ወርሒጀሜኡ ሕጉስቲ ዘይመዓን ስሚት ይስማዓኪ ዶ?		
210	ብዙሕ ጊዜ ካብ ዓቀን ንላዕሊ ትነ ብዒ ዶ?		
211	ኣብ መዓልታዊ ትሰርሕዮ ስራሕ ብቀሊሉ ዘይምሕጓስ ስሚት ይስማዓኪ ዶ		
212	ካብ ዝሓለፈ ወርሒጀሜኡ ወሳኔ ኣብ ምመሰን ትጽገ ሚ ዶ?		
213	ሞዓልታዊ ስራሕ ንምክራሕ ትጽገ ሚ ዶ?		
214	ኣብ እዋን ፉሉይ ሓጎስ ዘይምሕጓስ ?		
215	ካብ ዝሓለፈ ወርሒጀሜኡ ኣብ ነገራት ድሌት ዘይም		
216	ዋጋ የ ብለይን （አይረብሕን） እየ ኣልኪ ትሓስቢ ዶ?		
217	ዓርሰ ቅትለት ንምፍጻም ሃሲብኪ ትፈልጢ ዶ?		
218	ኩሉ ጊዜ ድኻም ይስማዓኪ ዶ?		
219	ብቀሊሉ ትደኽሚ ዶ?		
220	ኣብ ጨቢራኺ ቃንዛ ይስማዓኪ ዶ?		
	SRQ-20 ወጽኢት ድምር		

Annex III: ናይ ትሕቲ ሓደ ዓመት ኣመጋግባ ስርዓት መለክዒ

ተ.ቁ	ሕቶ	መልሲ	ዝለልል
300	ቃለ-መሕትት ዝተገ ብረሉ ዕለት	_____/_____/_____መ/ወ/ዓ	
301	ህጻኑ ዝተወለደሉ ዕለት	_____/_____/_____መ/ወ/ዓ	
302	ነዚ ቆልዓ እስካብ ህዚ ኣጥቢብኪዮ ትፈልጢዶ ?	እወ.....1 ኣይፋሉን 2	
303	ነዚ ህጻን ካብ ጸባ ኣዶ ወጻኢ ብጠሮ ሂብኪዮ ትፈልጢዶ ?	እወ.....1 ኣይፋሉን 2	
304	እዚ ህጻን ምኽ ወለድኪ ድሕሪ ክንደይ ጡብ ምጥቢብ ጀሚርኪዮ ? ቅድሚ ሓደ ሰዓት እንተ ኾይኑ 00 ሰዓት ትሕቲ 24 ሰዓት እንተኾይኑ ብ ሰዓታት እንተዘይ ኮይኑ ድማ ብመዓልትታት ኣቀምጥ	_____ ወድያ ወኑ _____ሰዓታት _____ መዓልትታት	
305	ካብ ጸሓይ ዓራርቦ ክሳብ ወጋሕታ ዘሎ ንክንደይ ሰዓት ኣጥቢብኪዮ/ያ ?	_____ ጊዜ	
306	ኣብ እዋን ቀትሪ ንክንደይ ሰዓት ኣጥቢብኪዮ/ያ ?	_____ ጊዜ	
307	ካብ ትሚኪ ክሳብ ሐዚ ካብዞ ም ዝተዘርዘሩ ወሲዱ/ዳ ነይሩ/ራ ዶ?		
	ሀ) ቫይታሚን ፣ ሚ ራል ወይ ከዓ መድሓኒ ት	እወ.....1 ኣይፋሉን 2	
	ለ) ናይ ቡንቧ ሚይ	እወ.....1 ኣይፋሉን 2	
	ሐ)ሽኮራዊ መኻተ	እወ.....1	

		ኣይፋሉን 2	
	መጻጽቻ ናይ ፍረምረ	እወ.....1 ኣይፋሉን 2	
	ረ) ሻሂ	እወ.....1 ኣይፋሉን 2	
	ሰ) ፎርመላ ጸባ	እወ.....1 ኣይፋሉን 2	
	ሸ) ዕሹግ ጸባ	እወ.....1 ኣይፋሉን 2	
	ቀ) ካልኦት ፈሰስቲ ከምበዓል	እወ.....1 ኣይፋሉን 2	
	በ) ዝተጥሓነ ድንሽ፣ ገዓት፣ ሓፊስ ጸብሒ	እወ.....1 ኣይፋሉን 2	
	ተ) ጨውኢንግሊዝ(ORS)	እወ.....1 ኣይፋሉን 2	
308	እንድሕር ካብቶም ዝተዘርዘሩ እወ ኮይኑ መልሲ ንመጀመሪያ ጊዜ ዝሃብሉ ወርሒመንስ እዩ ነይሩ ?	ሀ___ ለ___. ሐ___መ)___. ረ)___ሰ)___. ሸ)___ቀ)___. በ) ___ተ)___.	

	ተወሳኪ ምግቢ ዝምልከቱ ሕቶታት(6-11 ወርሒ)		
309	ተወሳኺምግቢ(ካብ ጸባ ወጻ)ኢ ጀሚርከሉ ዶ?	እወ.....1 ኣይፋሉን .....2 →	ናብ 401 ስገር
310	መዓዝ እዩ ን[ስም]ተወሳኺምግቢ ዝጀመርከሉ?	ቅድሚሽድሽተ ወርሒ.....1 ኣብ ሽድሽተ ወርሒ.....2 ድሕሪ ሽድሽተ ወርሒ.....3	
311	ኣብ ዝሓለፈ መዓልቲ [ስም] ካብዞም ዝተዘርዘሩ ምግብታት ወሲዱ/ዳ ነ ይሩ/ራ ዶ?		
	ሀ)ገዓት፣ ባኒ፣ ሩዝ ወይከዓ ካልኦት ምግብታት ካብ ኣዝርእቲ ዝተዳለዉ	እወ.....1 ኣይፋሉን 2	
	ሀ)ካሮት፣ ሽኮር ድንሽ፣ ዳብ፣ ፓስታ	እወ.....1 ኣይፋሉን 2	
	ለ)ድንሽ ወይ ከዓ ካብ ሱሮም ዝበላዕ ምግብታት ዝተዳለወ	እወ.....1 ኣይፋሉን 2	
	ሐ)ቆጽለ መጽሊ ዝበልዑ ምግብታት ከም በዓል ቆስጣ፣ ሰላጣ ወይ ከዓ ሓምሊ	እወ.....1 ኣይፋሉን 2	
	መ)ፍረ ምረ ታት	እወ.....1 ኣይፋሉን 2	
	ረ)ጸላም ከብዲ፣ ልቢ፣ ኩላሊት ናይ እንስሳ	እወ.....1 ኣይፋሉን 2	
	ሰ)ናይ ብዕራይ ስጋ፣ ጠሊ ስጋ፣ በጊዕ ስጋ ፣ ዓሳ ስጋ ወይ	እወ.....1	

	ድማናይ ደርሆስጋ	ኣይፋሉን 2	
	ሸ)ካብ ጥራምረ ዝዳለዉ ምግብታት ከም ዓተር ፣ ዓይኒ ዓተር ፣ ፉል ወይ ድማቢልደንጻ	እወ.....1 ኣይፋሉን 2	
	ቀ)ኣጅቦ፣ ርግኡ፣ ጠስሚ ፈሜን ወጽኢት ጸባ	እወ.....1 ኣይፋሉን 2	
	በ)ሽኮር ዘለዎም ምግብታት ከም ቸኮላታ፣ ካሪሚላ፣ ፓስቲ፣ ኬክ ወይ ድማብሽኩቲ	እወ.....1 ኣይፋሉን 2	
	ተ)ተወሰኽቲ መሞቅርቲ ምግብታት ከ ቃሪያ፣ ቅመማቅመም	እወ.....1 ኣይፋሉን 2	
	ተ)ከም ማኒጎ፣ ፓፓዮ ኣራንሺ ብ ቫይታሚን A ዝበልጸጉ ፍረምረታት	እወ.....1 ኣይፋሉን 2	
312	ኣብ ዝሓለፈ ሸውዓተ መዓልቲ ወሽጢንከንደይ ጊዜ ዝኣከል ካብዞምዝተዘርዘሩ ጉጅለ ምግብታት ወሲዱ?		
	ሀ)ኣዝርቲ ፣ ሱሮምዝብላዕ	_____ጊዜ	
	ለ)ጥረምረ	_____ጊዜ	
	ሐ)ጸባን ወጽኢት ጸባን(ጸባ፣ ርግኡን ኣጅቦ)	_____ጊዜ	
	መ)ስጋ ናይ(ዓሳ፣ ከፍሊ ኣካላት እንስሳ ከም በዓል ጸላም ከብዲንኩላሊት)	_____ጊዜ	
	ረ)እንቋቁሓታት	_____ጊዜ	
	ሰ)ብ ቫይታሚን A ዝበልጸጉ ፍረምረታትን ኣቁጽልትን	_____ጊዜ	
	ሸ)ካልኦት ፍረምረታትን ኣቁጽልትን	_____ጊዜ	