

ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCE  
SCHOOL OF PUBLIC HEALTH  
DEPARTMENT OF REPRODUCTIVE AND HEALTH SERVICE MANAGEMENT



ASSESSING THE ASSOCIATION BETWEEN INFANT FORMULA PROMOTION AND  
EXCLUSIVE BREAST FEEDING PRACTICE AMONG MOTHERS OF INFANTS AGED 0-5  
MONTHS, JIGJIGA TOWN, ETHIOPIA

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## LIST OF ABBREVIATION AND ACRONYMS.

ANC	Antenatal Care.
AOR	Adjusted Odds Ratio
BF	Breast Feeding.
BFP	Breast Feeding Practice.
BMS	Breast Milk Substitute.
CSA	Central Statistical Agency of Ethiopia
CPF	Complementary Feeding
EBF	Exclusive Breast Feeding Practice.
EBFP	Exclusive Breast Feeding Practice.
EDHS	Ethiopian Demographic Health Survey.
IF	Infant Formula.
IYCF	Infant and young child feeding
HEW	Health extension workers.
NGO	Non-Governmental Organization
PNC	Postnatal Care.
PAS	Proportional allocation to size
SD	Standard Deviation.
UNICEF	United Nations Children's Fund.
WHO	World Health Organization.
US	United states

## ABSTRACT

**Introduction:** Despite the well-known benefits of breast milk, the exclusive breastfeeding practice for the first six months of life is lower than the international recommendation of exclusive breast feeding practice in the world, in Africa and Ethiopia (3, 4 and 18) and this suboptimal breast feeding has different determinant and infant formula promotions is amongst, as different studies indicated (8, 11 and 13).

**Objectives:** the objective of this study was to assess the association between infant formula promotions and exclusive breast feeding practice among mothers of infant aged 0-5 months, Jijjiga town, Eastern harrage, Ethiopia.

**Methods and materials:** A facility based cross sectional study design was conducted in Jijjiga town of Somali regional state of Ethiopia. Sample size was calculated by using single proportional formula and the total sample size was 585. List of facilities offering child immunization service was obtained from Somali regional health bureau then Stratification was carried out to classify facilities into health centers, hospitals and private facilities then simple random sample will was used to select facilities in which the study was conducted and systematic sampling was used to select the study subject. Data was entered and cleaned by using Epi data version 3.1 and analyzed by STATA Software version 14 software. Both bivariate and multi variate logistic Regression analyses were used to analyze the data. Odds ratio along with 95% CI was estimated to identify factors associated with exclusive breastfeeding. Level of statistical significance was declared at  $p$  value  $< 0.05$ .

**Result:** Prevalence of exclusive breastfeeding was 54.91 % (95% CI; 50.79-58.90). Infant formula promotion prevalence was 41.19% (95% CI; 39.13-47.27) of which the highest source of information was TV 59(24.8%). Exclusive breastfeeding were more likely practiced by mothers who had infants age 0-1 [AOR= 7.29 (1.05,50.24)], mothers who visited facilities for ANC 4 times and above [AOR=10.29 (1.41 75.12)], mothers who received PNC [AOR=4.14(1.34, 14.48)], mothers who didn't fed their current infant from bottles on the proceeding day [AOR=10.65 (1.92 59.1)] and Mothers who didn't fed infant formula to their previous infants [AOR=4.16 (1.17, 14.80)].

**Conclusions and recommendations:** The magnitude of Exclusive breastfeeding in the study area was low. The Infant formula promotions in study area was high. age of the infants, number

of ANC, postnatal care, bottle feeding practice to the infant on the preceding day, mothers experience of infant formula feeding to their previous infant were found to be significantly associated with exclusive breastfeeding but no association was found the main objective of this study which was infant formula promotions and the exclusive breast feeding. To increase breast feeding practice, ANC and postnatal care should be promoted and strengths, health care professions should discourage mothers factors that undermines breast feeding like bottle feeding and infant formula feeding during ANC visits and PNC. Health professionals should educate the Community about breast feeding and provide right information regarding to infant formula.

# 1 INTRODUCTION.

## 1.1 BACKGROUND.

Exclusive breastfeeding refers to feeding an infant with breast milk from his or her mother or a Wet nurse, or expressed breast milk without any additional solid or liquid foods, except for oral Rehydration salt, syrups of vitamins, minerals and medicines. WHO and UNICEF recommend that all mothers should breastfeed their children exclusively for the first 6 months and should continue with complementary food after 6 months of age. Exclusive breastfeeding (EBF) has many functions on the optimal health and development as well as prevent infection disease including otitis media, RTI and non-infectious disease like child obesity (1, 2).

Despite the well-known benefits of EBF, globally only 35% of children less than 6 months of age are exclusively breastfeed (3). In developing world only 39% of infants under six months are exclusively breast feed (18) while in Ethiopia are 52% (4).

Infant formula defined as a breast-milk substitute formulated industrially in accordance with applicable Codex Alimentarius standards for infants up to between four and six months of age. Promotion refers to any advertising material, use of printed materials, distribution of any material containing the name of a manufacturer or the distributor in nominal cost or for free or Exhibition of products or other method to encourage material to use and In recognition of the role of the BMS that leads to a decline in breastfeeding, the WHO developed International Code of Marketing of BMS in 1981 which aims was to protect, promote and support the EBF (6, 7).

Although this code was adopted but there were more violation of the code of which study In America indicated that hospital distribution sample of infant formula as a promotion where 66.8 %. And in Philippine, 75.1% of mothers were seen an advertisement of infant formula of which 68.4% from TV and 16.5% from Radio (8, 9).

Infant formula observation by the mothers in different area were 86.1%, 27.5%, 41% and 10.5% in compodia, Nepal, Senegal and Tanzania respectively (34). 21.2% of mothers in Senegal were recommended by doctors to use all category of BMS, while promotions outside health facilities were 16.7% of which the highest source was TV 38.9% (39). This maternal exposure of commercially promotions and messaging of infant formula were influenced negatively on Exclusive breast feeding practices (8). But little is known about IF promotion and how it associate with the EBFP in Ethiopia.

## 1.2 Statement of the problem.

In the world, suboptimal feeding of infant and infectious diseases contributes a 60% of total children death, of which two-third resulted from suboptimal breast feeding and developing world suboptimal breastfeeding contributes for 45% of neonatal infectious deaths, 30% of diarrheal deaths and 18% of acute respiratory deaths among under five children (15, 28).

In Ethiopia an estimated 70,000 infant deaths per year which is 24% of the total infant death annually are due to suboptimal breastfeeding practices, in which can be prevented by exclusive breastfeeding And Ethiopia has history of suboptimal breast practice of which only 52 % of children under six months age are exclusively breastfeed ( 10,4).

Suboptimal breast feeding practices have different determinants and Infant formula promotions is amongst them. One study reported that the Promotion of in-hospital formula supplementation was associated with nearly 2-fold greater risk of not fully breastfeeding days 30– 60 and nearly 3-fold risk of breastfeeding cessation by day 60 (11). Other study found Children were more likely to be given formula if their mother recalled advertising messages, or a doctor, or mother or relative recommended it and those using formula were 6.4 times more likely to stop breastfeeding (8). Similarly other study reported Mothers who received formula milk sample had lower breast feeding rate (13).

So promotions of infant formula in the studies areas were high and its effects on the exclusive breast feeding were negative. Suboptimal breast feeding practice in the world and in country are exist, but To improve exclusive breastfeeding, factors influencing its practice have to be assessed and identified although some factors has been identified in the world and in the country, infant formula promotions and how it associate with the exclusive breast feeding practice were not studied totally in the country and in the region (Somali) and This shows clear research gap in the study area.

Therefore my study will fill this gaps and will generate evidence based information regarding to infant formula promotions and how it associate with exclusive breast feeding practice in jijjig town, Ethiopia.

### 1.3 Significance of the study.

This study will provide important baseline information on the infant formula promotions and how it associated with the exclusive breast feeding practices, in jigjig a town. The finding of this study will also provide the city health office, regional health bureau, policy makers and Non-governmental organizations (NGOs) with relevant information for future planning and interventions of appropriate strategies to promote and maintain exclusive breastfeeding practices for the first six months of infant's life.

## 2. LITERATURE REVIEW.

### 2.1. Exclusive breastfeeding.

WHO and UNICEF recommend that all mothers should breastfeed their children exclusively for the first 6 months and should continue with additional of appropriate and sufficient weaning food after 6 months of age (2). Despite the recommendation from WHO and UNICEF, Worldwide the exclusively breast feeding of children under 6 months are 35% (3). Only 39% of infants in developing world and 35% of infants in Africa are exclusively breast feed. (5).

The initiation of the breast feeding with in the first hour is always higher and decrements after while is common, In USA the Breast feeding initiation was 71% but lower exclusive breast feeding reported after 3 months of birth 38% (16). In Nova Scotia study found, mothers who initiated breast feeding within one hour were 64.1%, but only 10.4% mothers remained to breastfeed exclusively their infant for first 6 months of age (37).

Similarly, evidence from studies of Mauritius, Vietnam and Iran indicated that the prevalence of mothers who initiated breast feeding earlier were above fourth percent while those stick to remain the exclusive breast feeding were less than eighteen percent (38, 40 and 41).

According to Study in Singapore done on Singaporean Chinese, Malay and Indian mothers, showed similar finding with the above studies of which the exclusive breast feeding decrease as infants age grew older and mother who started breast feeding were more than ninthy percent while those remained to exclusive breast fed up to six months were twenty percent (17). In Pakistan, A 65% of mothers exclusively breastfed their children under-6 months of age, of which the prevalence of EBF were 67%, 59% in rural and urban respectively (35).

The reports of Global trends in exclusive breastfeeding from 1995 to 2010 were showed increments of exclusive breast feeding in almost all regions in the developing world, with the biggest improvement were seen in West and Central Africa, of which the Prevalence doubled from 12% in 1995 to 28% in 2010, whereas Eastern and Southern Africa increased from 35% in 1995 to 47% in 2010 (18).

In Africa the exclusive breast feeding were low , The average exclusive breast feeding rate among infants younger than 6 months of age were 16.4% and 35.5%,in Nigeria and Cameroon respectively(5,19). Similarly lower exclusive breast feeding practice were reported from Chad, Niger and Burkina Faso of which the exclusive breast feeding practice were 2% ,4% and 7% respectively (20).other study done on factors affecting actualization of the WHO breastfeeding recommendations reported only third of children were exclusively breastfed for the first 6 months in Kenya (21).

According to the 2011 Ethiopian Central Statistical Agency report, nationally 52 % of children under 6 months are exclusive breast feed, among sub-groups, infant's age of 0-1 month, 2-3 months and 4-5 months, the exclusive breast feeding were 70%, 55% and 32% respectively (4). According to survey from different regions of Ethiopia, Indicated that mothers who remain to breast fed their infants exclusively for the first six months of life were fifty percent and lower (3, 23, 26 and 42).

In contrary to above finding, two survey from Debre Berhan District and Enderta district revealed mothers who remain to fed breast milk to their infants exclusively were almost 70% and above (24,25).

## 2.2 Factors associated with the practice of exclusive breastfeeding.

### 2.2.1 Infant formula promotions.

Infant formula promotions as a definition is if any mother exposed to advertisement material including media, printing material which indicates infant formula is good for infant or if sample is given to mother or other activities to encourage mothers to use the formula once in a life time. because of fear of this promotions the WHO developed International Code of Marketing of BMS in 1981 which aims was to protect, promote and support the EBF(6).

Although the code of marketing was developed by the WHO but there was advertisement and promotions of infant formula as different studies indicated, results from systematic study design found that infant formula promotion affects optimal breast feeding through provision of infant formula information to the mothers and those mothers who received formula company-produced infant feeding materials at their first prenatal visit were more likely to stop breastfeeding before 2 weeks postpartum and over all duration of exclusive breast feeding were lower than those who received noncommercial materials (16).

In hospital uses of infant formula has many reasons to use and its effects on the future continuation of exclusive breast feeding were found to be negative consequence, result of one study reported Mothers used infant formula in hospital through many reason, including mother's belief of insufficient milk supply, mother's inadequate intake, poor infant breast feeding and in-hospital formula supplementation were associated with nearly 2-fold greater risk of not fully breastfed in between the first 2 months and nearly 3-fold risk of breastfeeding cessation at two months of age (11).

Infant formula promotions in the health care facilities were prohibited by regulation of code of the BMS to protect breast feeding but evidence from studies revealed that mothers were received advertisement information and sample of infant formula in the health care facilities, among those received infant formula freely in the facilities, those exposed the promotions from health care providers and media were less likely to practice breast feeding exclusively (13, 14).

Similar findings were reported from one qualitative focus group discussion in Malaysia, which revealed 46% of mothers in the Study were given infant formula milk samples after discharge, for those who received infant formula sample, the exclusive breast feeding of the first 4 months were zero, mixed feeding practiced and total formula feeding were 16%, 84% respectively and 32% reported that their choice of feeding were influenced by Doctor's advice (27).

Other study showed mothers who received a commercial hospital discharge packs were more likely to exclusively breastfed for shorter durations than women who didn't received a commercial hospital discharge packs (9). Formula milk sample provision to mothers increased probability of introducing breast milk substitute but no effects were seen on the initiation of breast feeding (43).

In Contrary to all above studies, different findings were reported from an experimental study design which was done in the maternity wards of three public hospitals which concluded that there was no differences between those who received samples of infant formula and those who didn't received the sample in the initiation or maintenance of breast feeding but variation of the two group depend on money to buy infant milk, or health of the mothers, or mothers plan to be away from the baby for one or more feeding periods (12).

Other study In Philippine reported The highest infant formula promotions were from TV and radio and the least were reported from health institutions and shops and those mothers who were exposed advertisement message particularly from television, from their mothers, relatives or from their doctors were more likely to provide infant formula to their infant and Those using formula were 6.4 times more likely to stop breastfeeding earlier than Non-users (8).

### 2.2.2. Maternal and family related factors.

#### **Maternal age.**

Age of the mothers affects exclusive breast feeding, of which different studies reported that mothers with age older than 30 years were exclusively breastfed their infants compared younger age mothers (44, 29, and 30)

In contrary to above studies, other evidence indicated that younger mothers whose age less than 30 years were breast fed exclusively their infants (25).

Other studies reported that mothers whose ages between 25-35 were more likely to practice breast feeding exclusively (24 52).

#### **Educational status of mothers.**

The effects of maternal education level on the exclusive breast feeding were assessed and identified. Study in Germany and Malaysia reported mothers with higher education status were more likely to breast fed their infant exclusively than mothers with lower educational status (44, 36).

Similar finding were reported study in Cameroon which revealed mothers whose educational level were higher had breast fed their infants more likely than their counterparts (19).

In contrary to above, other evidence reported those mothers with higher educational status were influenced breast feeding negatively (30)

#### **Maternal economic status.**

Maternal economical status was recognized as one determinant factors for exclusive breast feeding practice, results from Vietnam and Malaysia studies reported poor mothers had higher odds of being exclusively breastfed their infants for the first 6 months of age compared wealth mothers (44,41).

In contrary to above finding, other evidence from Nigeria study clarified wealth mothers had higher chance to breast fed their infants exclusively than poor mothers (5).

Similarly, reports from other studies showed that those mothers whose economic status was high had higher chance to breast fed their infants exclusively (3, 26).

### **Employment status of mothers.**

Employment status affect EBF, In Malaysia Unemployed or non-working mother had higher chance to breast fed exclusively in the first six months compared to working mothers ( 17 44).

Similarly in Debre Markos results revealed that unemployed mothers had 2 times more likely to exclusively Breastfed than employed mothers (28).

Similar finding were reported from Timor leste study and Debre Berhan district Ethiopia, mothers who works outside as employments were less likely to offer breast feeding exclusively (24 ,30).

### **Maternal marital status.**

The Maternal marital status and religion affects the exclusive breast feeding as following studies indicated, one Study revealed that unmarried women were 2.2 times more likely to practiced breast feeding exclusively than married women (3).

Contrary, study from southern Ethiopia reported currently unmarried women had 4 times chance of less breast fed to their infants exclusively than married women (42).

### **Residence of the mothers.**

Places that mothers resides had potential effects on the exclusive breast feeding practice, reports from Timor leste study revealed those mothers who resides in the rural had breast fed their infant exclusively compared to urban resident mothers (30).

Similar finding was obtained from studies done in mecha district, North West of Ethiopia and Debre Berhan district of central Ethiopia, showed that rural resident mothers had higher chance of breast feeding practice compared to urban residents (23, 24).

### **Maternal Knowledge and Exposure to information.**

Knowledge of the mothers and Exposure to information about breastfeeding were identified as determinant factor of BF. Sudan study reported those mothers who had knowledge on breast feeding were more likely to breast fed their infants exclusively (33).

Similar findings were reported from Mecha district, North West Ethiopia, mothers with more knowledge about BF were breast fed their infants more likely than their counterpart (23).

Similar to above studies, Debre Markos district study found that mothers who had adequate knowledge on breast feeding were 2.57 times more likely to breast feed their infants than their counterpart (28).

### **Number of children.**

Number of Children that mothers had were associated with the exclusive breast feeding, study in Timor Leste reported mothers with more than 4 children were less likely to offered breastfeeding exclusively than mothers with less infants (30).

Contrary to above study, Vietnam study reported mothers with more than three children were practiced lower breast feeding compared to mothers with less infants (41).

### **2.2.3. Obstetric and health facility related factors.**

#### **Antenatal care.**

Obstetric and health facilities related factors were showed to be determinants factors of exclusive breast feeding, results from Nigeria revealed those Mothers who had four or more antenatal visits were 2.70 times more likely to exclusively breast fed (5).

Similar findings were obtained from Mecha district, North west Ethiopia and Debre Markos o north west Ethiopia , summarized that mothers who had more ANC visit during pregnancy had higher chance to breast fed exclusively their infants than who had less or no ANC follow up (23,28,).

Contrary to above studies, study in countrywide of Ethiopia reported ANC were not associated with exclusive breast feeding (3).

#### **Postnatal care.**

Postnatal care provision to mothers had great effects on continuation of breast feeding exclusively , mothers who received postnatal care about breast feeding were more likely to fed breast milk exclusively compared to those mothers who didn't received any PNC (28,23,24,25,26).

Similarly to above studies, study in Ethiopia revealed those mothers who had no postnatal care after delivery were 1.9 times more likely to practice none exclusive breast feeding practice compared to than those who had postnatal care( 42).

**Place of delivery.**

Where mothers give birth their infants become predictor for breast feeding continuation, results from Germany study revealed mothers who delivered home were less likely to had breast fed exclusively than those delivered health institutions (36).study from Cameroon reported similar finding ,mothers who delivered at home had lower breast feeding than mothers who delivered health care institution (19).

Similar to above studies, mothers who delivery home were less likely to breast fed than those delivered health care institution, means health care set up delivery were positively associated exclusive breast feeding practice (24,26).

Other study in Timor leste found, mothers who delivered private institutions were showed to had breast feeding exclusively than who delivered public institutions as well as home delivered (30).

**Mode of delivery.**

Mode of delivery affects the way mothers breast feed their infants as a lot of evidence was revealed from different studies, In Germany study showed mothers who delivered by Caesarean section in the health facilities were practiced lower breast feeding than mothers who delivered vaginally (36).

Similarly, other finding reported that those mothers who delivered by caesarian section were less likely to start breast feeding earlier with in the first one hour and continued the exclusive breast feeding compared to mothers who delivered vaginally (41).

#### 2.2.4. Infant related factors.

##### **Infant age.**

Infant age as one determinant factor for the EBF was identified in different studies, result from Singapore study showed decrement of exclusive breast feeding practice as infant age get older (17)

Similar to above studies, Cameroon study reported that the EBF was decreased and partial breastfeeding practice were increased as the infant grew older, of which older infants had lower EBF than younger infants (19).

Studies done different parts of Ethiopia revealed similar reports with the above studies, younger age infants had breast fed exclusively than older infants (3, 25, and 42).

In contrary to above finding ,study from dolo ado woreda of Somali regional were reported that age of infants were not associated with exclusive breast feeding practice (26).

##### **Sex of the infants.**

Results of some studies reported that the sex of infants were associated with EBF .In Denmark study revealed that male infants were 1.7 times more likely to breast fed exclusively than female infants (31)

Similar finding were observed from Cameron study which said that male infants had breast fed exclusively more likely than female infants (19). Contrary different finding was revealed from others study which was female infants had breast fed exclusively compared to male infants (30).

##### **Birth weight of the infants.**

Birth weights of infants had effects on breast feeding of which results of some studies revealed, In Germany study reported term birth infants had breast fed higher than pre-term birth infants (36).

Similarly to above study other study finding reported infants whose mothers gave birth at Gestational age between 24 – 27 were 2.9 times more likely to failure to breast fed exclusively compared to term infants (31).

**Time of breast feeding initiation to the infant.**

Infants who breast fed earlier with in the first one hour of birth had positive effects on the exclusive breast feeding practice. Studies in Denmark and Indonesia reported similar finding which was infants who breast fed earlier with in the first one hour of delivery had breast fed exclusive than those didn't fed earlier (31,44).

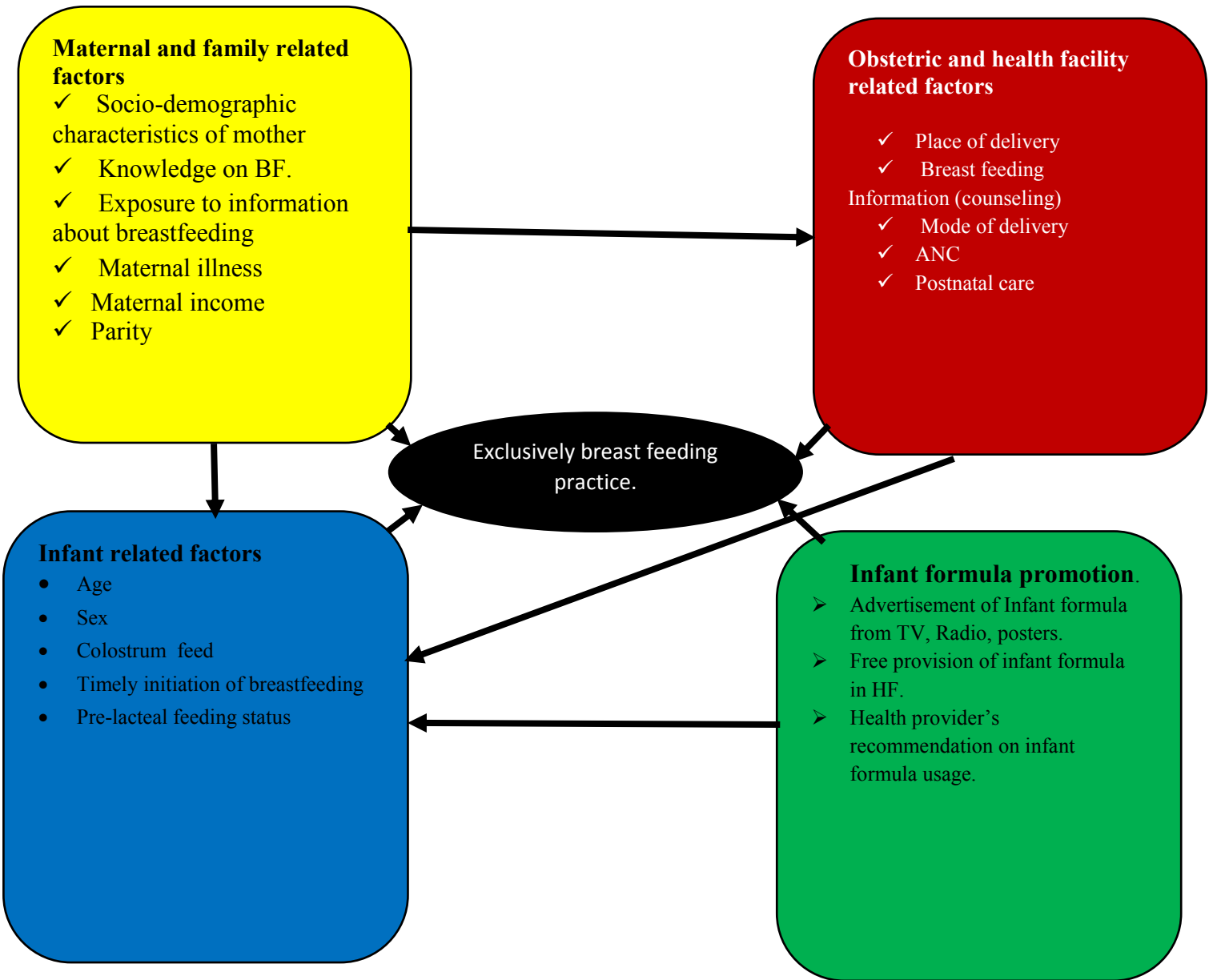
Similar to above studies, Other studies revealed that infants who had initiated breast feeding more than one hour of delivery had higher odds of early discontinuation of exclusive breastfeeding compared to those who initiated breastfeeding within one hour after delivery (23,42,).

**Infants' prelacteal feeding.**

Prelacteal feeding were showed to be one of predictors for continuation of EBF as following finding indicated, in Mauritius study revealed that infants who exposed early introduction of water were showed early cessation of breast feeding (40).

Similarly, infant who didn't fed prelacteal feeding had 3.44 times more likely to breast fed exclusively compared to those fed prelacteal feeding (28).similarly,

### 2.3 Conceptual framework.



**Fig1: conceptual framework.**

Adopted and modified from Tawabe. T (2015).

### 3 OBJECTIVES.

#### 3.1 General objective.

To assess the association between infant formula promotions and exclusive breast feeding practice among mothers of infant aged 0-5 months, jigjiga town, Ethiopia.

#### 3.2 Specific objective.

- To measure the prevalence of mothers of Infants aged 0-5 months who were exposed for a promotion in jigjiga town.
- To assess the association between infants' formula promotion and exclusive breast feeding practice among mothers of Infants aged 0-5 months in jigjig a town.

## **4 METHODS.**

### **4.1 Study area.**

The study was conducted in Ethiopian Somali Regional State specifically in the Jigjiga town. Jigjiga is located south eastern of Ethiopia. It is situated at a distance of 621 km away from Addis Ababa. It lies latitude of 110 North latitude and 400 and 480 East longitude; the altitude of this district ranges from 200 to 1000 meters above sea level. The total population of the city is 967652 out of this 526397 are male and 441254 are female where 96.86% are Muslim. The city has 3 health centers, one regional hospital, and 12 private clinic of which 6 of them working maternal and child care.

### **4.2 Study period.**

The study was conducted from February to April, 2017.

### **4.3 Study design.**

An institution based cross sectional study design was used.

### **4.4 Populations.**

#### **4.4.1 Source population**

All mothers of infants aged under six months residing Jigjiga town.

#### **4.4.2 Study population**

All randomly selected mothers of infants aged under six months who visited the selected facilities.

### **4.5 Eligibility criteria.**

#### **4.5.1 Inclusion criteria.**

All mothers who was visited health facilities with infants aged under six months and resides in Jigjiga town was included in the study.

Only those mothers who brought their children to health facilities was included the study.

#### **4.5.2 Exclusion criteria.**

Care giver beside mothers who brings children to facilities were excluded from the sample.

Mothers who came from outside Jigjiga town were excluded from the study.

Mothers who had severe ill infants.

#### 4.6 Sample size determination.

##### **For the first objective: The prevalence of infant formula promotion.**

The sample size required for the study was calculated using the formula to Estimate a single population proportions. The sample size will be determined based on Senegal (Dakar) prevalence of mothers who were observed promotions of breast milk substitutes which was 41%( 34) and level of precision at 95% level of confidence will be used .then 5% for non-response will be taken . The final sample will be

$$n = [(Z_{\alpha/2})^2 p (1-p)]/d^2$$

$$n = [(1.96)^2(0.41)*(1-.41)]/ (0.05)^2$$

$$n = 0.929283/0.0025 = 371$$

$$n = 371 + 19(5\%) = 390$$

##### **For the 2<sup>nd</sup> objective: Association between infant formula promotion and EBF.**

The sample size required for the study will be calculated using the formula to Estimate a double population proportion. The sample size will be determined based on the following assumptions and formula.

##### **Assumptions**

n1= sample size of mothers who exposed infant promotion and practiced EBF

n2 = sample size of mothers who are not exposed infant formula and practiced EBF.

$$n_1 = \frac{\left[ Z_{\frac{\alpha}{2}} \sqrt{\left(1 - \frac{1}{r}\right) P(1 - P)} - Z_{\beta} \sqrt{P_1(1 - P_1) - \frac{P_2(1 - P_2)}{r}} \right]^2}{(P_1 - P_2)^2}$$

r = n1/n2 = 1 that is taking one to one ratio.

Z $\alpha$ /2=1.96 for the standard scale of 95% level of confidence, Z $\beta$ =0.84 considering 80% of Power to detect a difference of (P1-P2) 31.9%

p1= proportion of mothers exposed infant promotion and practiced EBF 37.3 % (16)

p2 =proportion of mothers who were not exposed and EBF, 68.2 % (16)

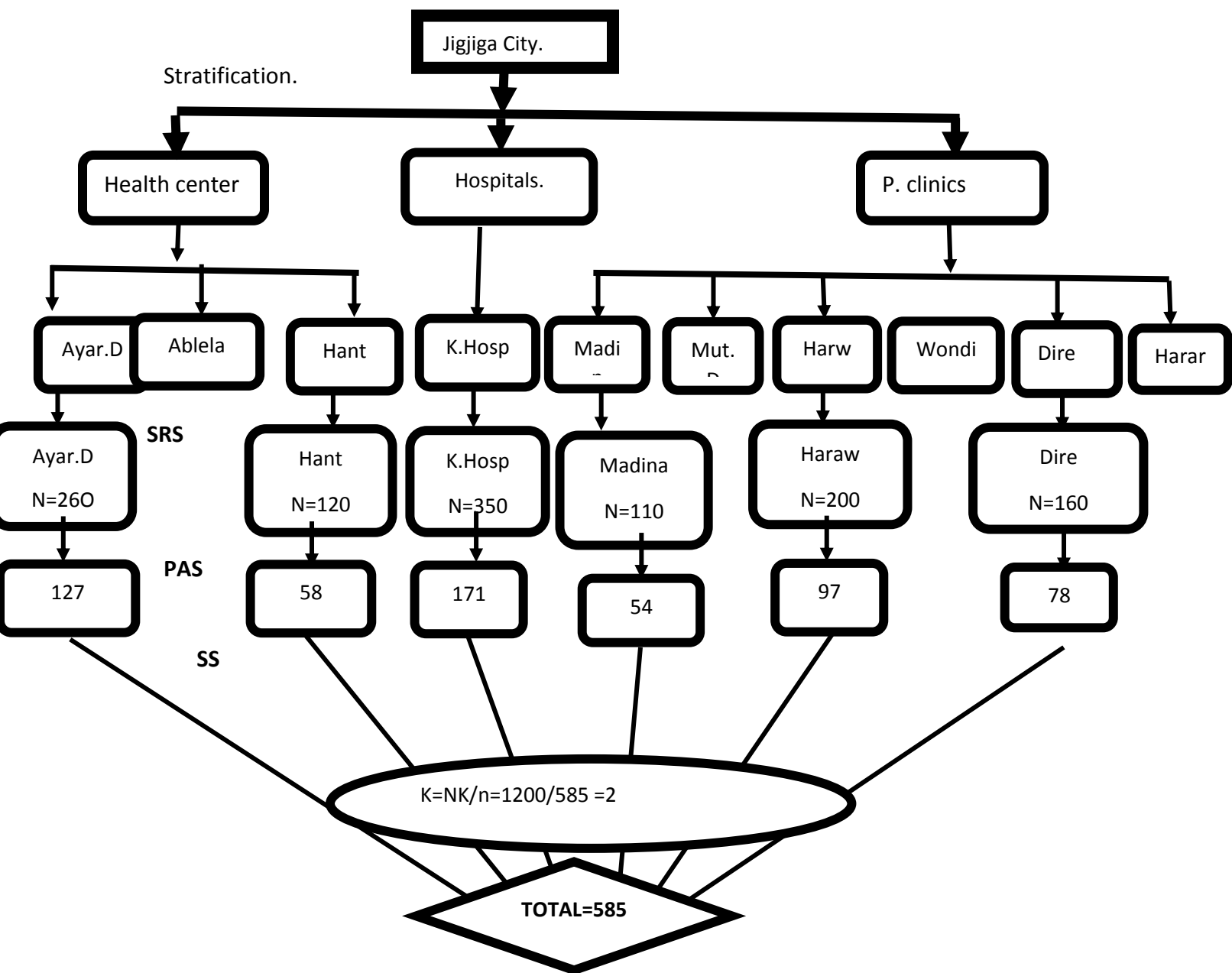
P (pooled population proportion) = P1+rp2/1+r = .05275

The sample size was n1=n2=58 giving a total of 116.Taking 5% for non-Response it yields a total sample size of 122

By comparing the two sample sizes the largest sample size was 390 and was multiplied 1.5 because of stratification and the total sample was **585**.

#### 4.7 Sampling procedure.

First jigjiga city was selected purposively then Lists of all health facilities offering immunization like PCG, OPV, PCV and PENTA and those offering in patients and out patients services to the children was obtained from Somali regional health bureau to capture mothers with infants aged 0-5 months and the facilities was government owned and non-governmental or faith based organizations. The types of health facilities that remained in the sampling frame was regional hospital, health centers and private clinics. Since there was heterogeneity between hospitals, health centers and private owned facilities, the facilities classified strata of hospitals, health centers and private facilities. Facilities who offering immunizations and other services was 10 facilities ( karamar hospital, ayar daga health center, ablela health center, hanati shab, madina clinic, dire clinic, harar clinic, harawa clinic, wondimu clinic, mutazin clinic ). then simple randomly method was used to select facilities in which the study was conducted. Available flow statics in each facility was obtained from each facility to get average monthly facilities visited numbers of mothers with infants aged under 6 months and average monthly facilities visited numbers served as each facility's population size then facilities was sampled by using proportional allocation to size (PAS). And systematic random sample was used to select study subject during data collection by divided the total average monthly facilities visit numbers to total sample size to get K number which was  $1200/585=2$  then every 3<sup>rd</sup> mother who visited health facilities was selected and interviewed until estimated sample size was achieved from each facilities.



**SRS**=Simple random sample

**PAS**: propotopnal allocation to size

**SS**=systematic sampling.

**NK**= total average monthly facilities visit numbers of mothers of infant aged under 6 months.

**n**= total sample size

Fig 2: Schematic presentation of sampling procedure.

#### 4.8 Study variables.

##### 4.8.1 Dependent variables.

- ✓ **Exclusive Breast feeding practice.**

##### 4.8.2 Independent variables.

- ✓ **Infant formula promotion.**
- ✓ **Maternal related factors:** factors including Age of the mother, marital status, Education of the mother, Occupation of the mother, income of the mothers, Religion, maternal parity, Father's attitude toward BF, grandmother's attitude towards exclusive breast feeding, Mothers Knowledge on breastfeeding, mothers Exposure to information about breastfeeding and maternal illness.
- ✓ **Obstetrics and facility related factors :**Including place of delivery, Breast feeding formation (counseling), Mode of delivery, Parity ,ANC ,Postnatal care,
- ✓ **Infant related factors:** including infant Age, Sex, Timely initiation of breastfeeding, Pre-lacteal feeding status and Infant health.

#### 4.9 Operational definition.

**Exclusive breastfeeding**-If infant fed only breast milk (with the exception ordered medicines and vitamins by health professionals) one day (24hrs) before the survey was conducted.

**Breast milk substitutes (BMS)** – any industrially formulated milk which is prepared for children less than six months up to one year and older which includes infant formula, follow-up formula and growing-up.

**Infant formula**-defined as a breast-milk substitute formulated industrially, prepared only for infants aged under six month.

**Infant formula promotions** \_ defined if a mother exposed to advertisement material including media, printing material which indicates material is good for infant or if sample is given to mother or other activities to encourage mothers to use the formula once in a life time.

**Professional promotion.** Defined as if mothers receive recommendations/advice from a health professional, to use infant formula for their infants once in a life Time of the mother.

**Lay man promotion**\_ defined as if mothers receive recommendations/advice from a family or other individuals to use infant formula for their infants once in a life Time.

**Literate:** those attended formal school

**Illiterate:** those never attended school.

#### **4.10 Data collection procedures.**

The study was conducted over a period of 2 month and was collected from participants by using a structured interview administered questionnaire.

Three BSC data collectors and one BSC supervisor with previous experience of data collection was recruited to participate in data collection and was selected from those residing in the study area and fluently Somali and Amharic language since there is Amharic speakers at study area. Data collectors was responsible to interview the mothers, record the result in a consistent manner and finally data was submitted to supervisors as scheduled. And the study participant was interviewed after they leave from OPDs at temporary built tent for interview.

#### **4.11 Data quality control.**

First English version of the questionnaire was prepared, then it was translated to Somali version (local language) and back to English by someone else who could speak both languages fluently.

The questionnaire was pre-tested before it was used in actual data collection, then revision and modification was made.

In order to assess appropriateness of questions wording, language, content of the questions, clarity of the questions and respondent reaction to the questions and interviewer 21 individual of (5% of the total sample) from the study area was interviewed and was not included in the sample. The data collectors were exposed to a practical experience in conducting interviews during the pre-testing of the questionnaires.

The data collectors were trained on the way of asking questions and recording responses. All the questionnaires was checked daily to ensure that whether they were appropriately filled. Any missing data was confirmed before the start of the next day's interviews. In addition quality of data collection was assured through close supervision of the data collection team daily by the principal investigator and supervisors.

#### **4.12 Data Processing and analysis.**

The data was entered and cleaned using Epi data version 3.1 and analyzed by STATA statistical software version 14. Descriptive summary statistics such as frequencies, percentages, means, standard deviation and median was used to summarize different characteristics' of the study participants. Bivariate analysis was performed on the predictor variables, and the simple binary logistic regression was employed to calculate crude odds ratio to identify variables associated with exclusive breastfeeding practice and to select variables for the multivariable logistic

regression analysis. Multivariate logistic regression was used to control for confounding variables. Adjusted odds ratio (AOR) with 95% confidence interval was estimated to investigate the association between the dependent and independent variable. Variables with p-value  $\leq 0.2$  in the bivariate analysis were taken to the multivariable analysis, with the exception of infant formula promotion which was promoted to the final model regardless of their cut-off values. In the multivariate regression model p-value of  $< 0.05$  was used as a measure of statistical significance. Those variables with p-value of  $< 0.05$  were confirmed to be the independent predictors of exclusive breastfeeding.

#### **4.13 Ethical Considerations.**

Approval letter was obtained from Addis Ababa University, School of Public Health Research Ethical Review Committee (REC) and an official letter was written from Department of Public Health to Somali regional health bureau. Permission to collect data was obtained from the regional health bureau. Data collectors explained to the respondents the target of the study and risk of the study was minimum, except few minutes of interview. And the right of Participation for this study was fully voluntary and participant had the right to declare to participate or no and to withdraw from the study at any time and they explained to the participants the benefits of study which had not any direct payment for the participating of the study of which the findings of the study are expected to use for planning intervention programs. The information was kept confidential and assured through research purposes only. Oral consents were obtained from the respondents who participated in the study.

#### **4.14 Data dissemination.**

Data will be disseminated to all stakeholders including Addis Ababa University College of Health Science, Somali regional health bureau and Jijjig town administration health bureau. To use the findings as planning and intervention programs.

## 5 RESULT.

### 5.1 Study participants' profile.

A total of 570 respondent were enrolled in the study yielding the response rate of 97.43%,

### 5.2 Socio demographic/economic characteristics.

Almost half of mothers age 289(51.05%) were between 20-30years, with a mean age of 25(5.49± SD) years. about 499(87.54%) of the respondents were Somali Ethnicity. Out of 570 ,A 526(92.28 %) of the mothers were Muslims. Majority 511 (89.65%) of them were married. while most of them 458(80.35%) were house wives. With regard to educational status, A 349 (61.23%) mothers were illiterate. While half 260(50.88%) of husbands education were literate (Table 1).

**Table 1:** Socio demographic/economic characteristics of mothers with their infants aged 0-5 Months, jiggiga town, Ethiopian Somali Regional State, Easter harrage, Ethiopia, June, 2017.

<b>characteristic</b>	<b>Frequency</b>	<b>%</b>
<b>Age of mother</b>		
15-24	289	51.05
25-34	243	42.63
35-44	38	6.31
<b>Ethnicity of the mothers</b>		
Somali	499	87.54
Amhara	27	4.73
Oromo	21	3.68
Gurage	14	2.46
Tigre	7	1.23
Others	2	0.35
<b>Religion of the mothers</b>		
Muslim	526	92.28
Orthodox	28	4.91
Protestants	10	1.75
others	6	1.05
<b>Level of education (among attended)</b>		
Illiterate	349	61.23
Literate	221	39.77
<b>Marital status</b>		
Single	5	0.88
married	511	89.65
divorced	34	5.96
widowed	20	3.51
<b>Occupation of the mother</b>		
House wife	458	80.35
Daily laborer	35	6.14

Governmental organization employee	35	6.14
merchant	18	3.16
Private organization employee	14	2.47
Student	10	1.75
<b>Wealth index</b>		
poorest	114	20
poor	113	19.82
medium	117	20.53
Wealth	113	19.82
wealthiest	113	19.82
<b>Husband occupation</b>		
Daily laborer	209	40.90
Governmental organization employee	110	21.53
merchant	73	14.28
Private organization employee	39	7.63
farmer	35	6.85
Student	14	2.74
No job	31	6.06
<b>Husband education</b>		
Illiterate	<u>251</u>	<u>49.12</u>
Literate	<u>260</u>	<u>50.88</u>

### 5.3 Maternal health service utilization.

About 289 (38.14%) of mothers had 3-4 children, with mean number of infants that mothers had were 3.7(2.32± SD). Mothers who received ANC service during her pregnancy were 366(64.21%). mothers who received ANC from governmental hospitals were 143(39.07%), followed by health centers 111(30.33%). The highest number of ANC visits that mothers visited the health facilities were four times and above 149 (40.71%). Most of the mothers give birth at health facilities which accounts 507(88.94%), among them 194(34.04%) of the mothers give birth at governmental hospitals followed by health center 161(28.21%) and private clinics 140 (24.56%), while home delivered was 163(11.05%). almost all 516(93.53%) of the mothers get delivered by Normal/vaginal. Female infants were 302(52.98%) while male's infants were 268(47.02%) yielding female to male sex ratio of 1.12:1. After their delivery only 202(35.44) of them were received PNC, among these only 163 (80.69%) received counseling about breast feeding and complementary feeding. (Table 2).

**Table 2.** Maternal health service utilization and infant related factors in jigjiga town, Ethiopian Somali regional state, Eastern harrage, Ethiopia, June 20017.

<b>Characteristic</b>	<b>Frequency</b>	<b>%</b>
Number of children mothers had		
≤2 children	189	33.16
3-4 children	219	38.14
≥5 children	162	28.42
<b>ANC services</b>		
Yes	366	64.21
No	204	35.79
<b>Place of ANC received.</b>		
Governmental hospital	143	39.07
Health centers	111	30.33
Private clinics	101	27.60
Health post	11	3.01
<b>Number of ANC</b>		
Once	46	12.56
Two times	86	23.50
Three times	85	23.22
Four times and above	149	40.71
<b>Breast feeding counselling during ANC service.</b>		
Yes	233	63.66
No	133	36.33
<b>Place of delivery</b>		
Governmental hospital	194	34.04
Health centers	161	28.25
Private clinics	140	24.56
Health post	12	2.1
Home	63	11.05
<b>Mode of delivery</b>		
Normal/vaginal	516	90.53
C/S	54	9.47
<b>Sex of the infant</b>		
female	302	52.98
male	268	47.02
<b>Postnatal care service</b>		
Yes	202	35.44

No	368	64.56
<b>Place of postnatal care received.</b>		
Governmental hospital	98	48.51
Health centers	53	26.24
Private clinics	46	22.77
Health post	5	2.48
<b>Counselling regarding BF and CPF during PNC</b>		
Yes	163	80.69
No	40	19.31

#### 5.4 Breast feeding practice.

Mothers who ever breast fed their infant was 556 (97.54%),but only 313 (54.91%) were remained to breast fed their infants exclusively on the preceding days as measured by 24 hour recall, which makes The overall prevalence of exclusive breastfeeding 54.91 %( 95% CI; 50.79-58.90),while non-exclusive breast feeding were 45.09%.

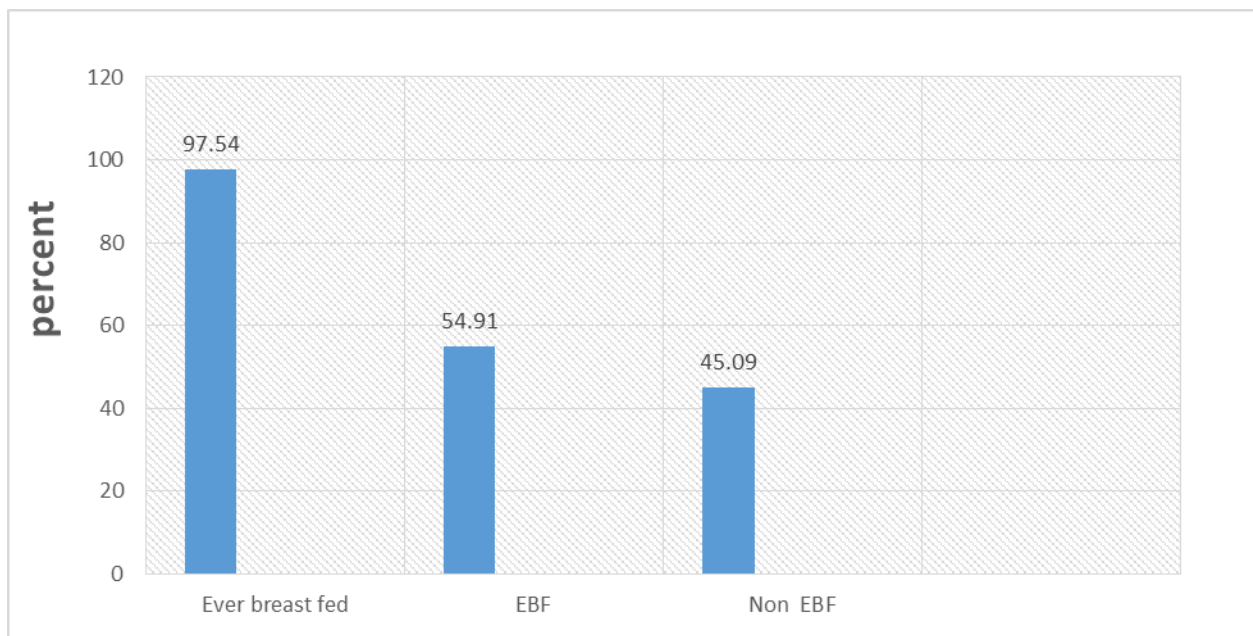


Figure 3. Prevalence of infants who ever breast fed and those infants who breast feed exclusively in the first 6 months of life, jigjiga town, Ethiopian Somali region state, Easter harrage, Ethiopia, June 2017.

#### 5.5 Breastfeeding related practice.

The mean age of infants was 3 3.63(SD±1.42) months and 265 (46.49%) of infants were between 4-5 months. Among those didn't fed breast milk in the preceding day based on 24 hr recall, the highest feeding was infant formula 127(49.42%). Most of the Mothers claimed that reason

behind not to breast feed their infants in the preceding day was decreased breast milk 155 (60.55%). While those mothers who put their infants at breast immediately with in the 1<sup>st</sup> hr of delivery were 384(67.37%). about 401 (70.35%) of them fed first milk/colostrum to their infants. (Table 4).

**Table 3:** breast feeding related practice among mothers of infant aged 0-5 months, jigjig town, Ethiopian Somali regional state, Eastern barrage, Ethiopia, June 2017.

<b>Age of infant</b>		
0-1	83	14.56
2-3	222	38.95
4-5	265	46.49
<b>Number of breast feeding</b>		
≤5 times	54	9.47
6-10 times	113	19.83
>10	403	70.7
<b>Those didn't fed breast milk in the last 24 hr, they fed these food/liquid.</b>		
Infant formula	127	49.42
Animal milk	81	31.52
Powdered milk other than IF	20	7.78
soup	11	4.28
tea	8	3.11
Plan water	4	1.56
juice	6	2.33
<b>Reason that infant not to breast fed</b>		
Decreased breast milk	155	60.55
Maternal illness	31	12.11
Infant illness	21	8.20
Mothers had no time to fed	18	7.03
b/c infant was feeding IF	14	5.47
Going back to work	12	4.69
others	6	1.95
<b>Time of the ignition of the breast feeding</b>		
Immediately with in the 1 <sup>st</sup> hr of delivery	384	67.37
1hr up to 1 day	137	21.04
1 day up to 3 days	38	6.67
After 3 days	11	1.93
<b>colostrum feeding</b>		
Yes	401	70.35
No	169	29.65

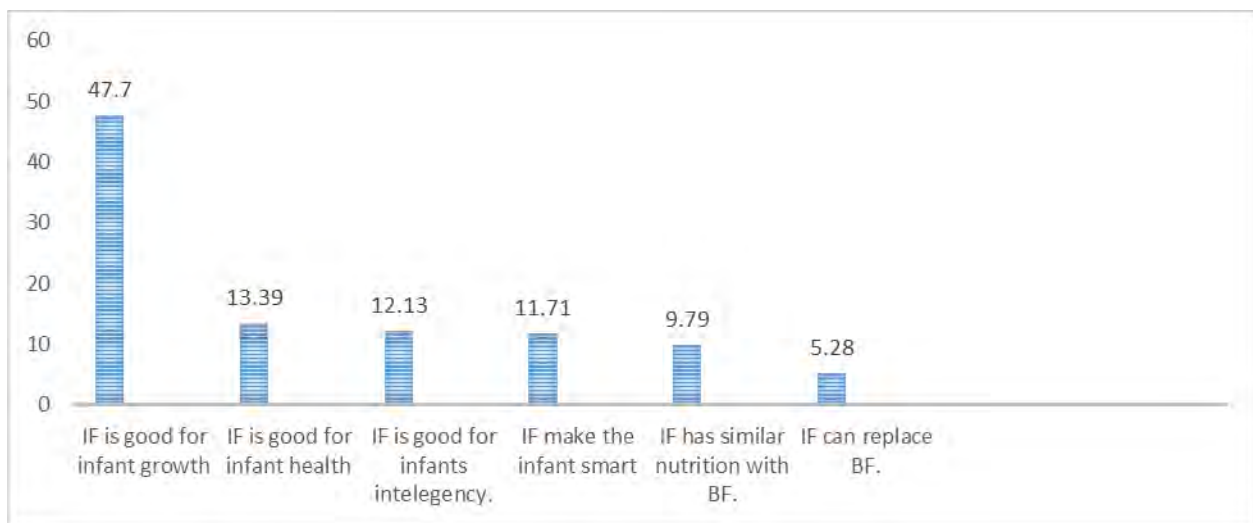
## 5.6 Infant formula promotions.

Among 570 of the mothers, A 239 (41.19%) of them were exposed information talking about infant formula once in their time, the mean number of times that mothers exposed the information was 3.95(SD±3.05) times. The highest information which mothers received was infant formula is good for infant growth 114(47.70%) .most frequented source that mothers received the advertisement was TV 59(24.69%) followed by their relatives particularly their mothers 40 (16.76%).among place of delivery, mothers who delivered private clinics was the highest among facility who exposed the advertisement 84(35.56%).mothers who transferred infant formula information to the other person was 116 (20.35%), Among those transferred information, about 58(50%) of them was transferred infant formula promotions to their frineds. mothers who ever fed infant formula in their current infant was 166(29.12%),but those fed infant formula in the proceeding day was 127 (22.28%). The reason behind infant formula feeding on the preceding which mothers claimed was decreased breast milk 85(62.0%).Mothers who exposed (heard/seen) about bottle feeding information was 298(52.28%), among these only 133(44.63%) were bottle fed to their infant in the proceeding day.(Table 5, Figure 4 and figure5).

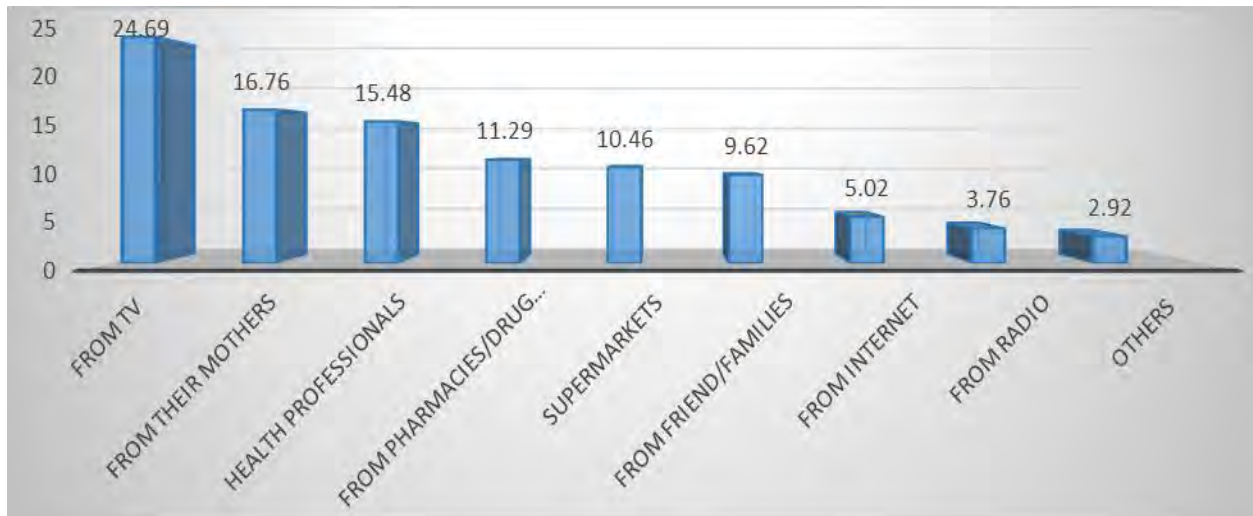
**Table 4:** infant formula promotions and its related factors among mothers with infant aged 0-5 months in jigjiga town, Ethiopian Somali regional state, Easter harrage, Ethiopia, June 2017 .

characteristic	frequency	%
<b>Mothers who exposed information talking about infant formula.</b>		
Yes	239	41.19
No	331	58.07
<b>Among those exposed (place of delivery).</b>		
Governmental hospital	72	30.12
Health centers	61	25.52
Health posts	3	1.25
Private clinics	84	35.15
Home	19	7.95
<b>Mothers who ever fed infant formula to their infant.</b>		
Yes	166	29.12
No	404	70.88
<b>Mothers who fed infant formula to their infant in the preceding day.</b>		
Yes	127	22.28
No	443	77.72

<b>Mothers experience of infant formula feeding to their previous infants.</b>		
Yes	215	37.72
No	355	62.28
<b>Exposed Information talking about bottle feeding</b>		
Yes	298	52.28
No	272	47.72
<b>Bottle feeding to the infant in the preceding day (among those exposed bottle feeding information).</b>		
Yes	133	44.63
No	165	55.37
<b>Mothers who transferred infant formula information they exposed to other individuals.</b>		
Yes	116	20.35
No	454	79.65
<b>Among those transferred infant formula information, to whom they transfer to.</b>		
To my friends	58	50
To my family	44	37.93
To my neighbors	14	12.07



**Figure 4:** Infant formula information which mothers of infant aged 0-5 months exposed, jigjiga town, Ethiopian Somali regional state, Easter harrage, Ethiopia, June 2017.



**Figure 5:** source of infant formula promotions, among mothers of infant aged 0-5 months, jigjiga town, Ethiopian Somali regional state, Easter harrage, Ethiopia, June 2017.

### 5.7 Result of bivariate analysis.

To identify factors associated with exclusive breastfeeding practice, each variable were assessed independently whether they were predictor of EBF practice or not. First variables bivariate analysis was done to test for significant associations between independent variables and exclusive breastfeeding as determined by 24 hours recall method. Variables which were associated in the bivariate logistic regression analysis ( $P \leq 0.2$ ) were : age of the mothers, wealth index of the house hold, ANC service , number of ANC, facilities which mothers received ANC, mode of delivery ,age of infant , sex of the infants, PNC services , counseling about breast feeding and complementary feeding during PNC postnatal care , mode of delivery, place of delivery, time of initiation of the breast feeding, first milk/colostrum feeding, infant formula promotion exposure, exposure of bottle feeding information to the mothers , infant feeding from bottles on the preceding day, mothers experience of infant formula feeding to their previous infants.

Variables which were associated in the bivariate analysis were tested in the final multivariate analysis to see their significant association with exclusive breastfeeding practice. After adjusting for potential confounders in multivariate logistic regression analysis; only age of the infant , number of ANC visits, PNC , Infant feeding from bottles on the preceding day, mothers experience of infant formula feeding to their previous infants were significant associated with breast feeding based on  $p \leq 0.05$ . (Table 5).

**Table 5:** Results of bivariate and multivariate analyses among selected factors associated with EBF practice of Mothers with the infants' aged 0-5 months, jigjiga town, Ethiopian Somali regional state, Eastern harrage, Ethiopia, June 2017.

characteristic	EBF measured by 24hr recall.		COR(95%CI)	AOR(95%CI)
	Yes	No		
<b>Mothers age</b>				
15-24 years	137(43.77)	158(61.48)	1	1
25-34 years	148(47.28)	95(35.80)	1.88(1.33 , 2.68)*	3.35(0.99 ,11.28)
35-49 years	28(8.95)	4(1.56)	7.76(2.65, 22.7)*	13.35(0.84 211)
<b>Wealth index.</b>				
Poorest	36 (11.50)	78 (30.35)	1	1
Poor	61 (19.49)	52(20.23)	2.56 (1.48 ,4.42)*	0.61(0.07 5.20)
Median	78(24.92)	39(15.18)	4.52 (2.57,7.94)*	7.14(0.74 69.05)
Wealth	69(22.04)	44(17.12)	3.46( 1.98 6.02)*	4.07(0.49 33.70)
wealthiest	69(22.04 )	44(17.12)	3.27( 1.89 ,5.66)*	1.01(0.155 6.62)
<b>ANC follow up.</b>				
No	69(22.04)	135(52.53)	1	1
Yes	244(77.96)	122(47.47)	3.93 (2.72 ,5.68)*	--
<b>Place of ANC follow up.</b>				
Private clinics	42(17.21)	59(46.36)	1	1
Governmental hospital	113(46.31)	30(24.59)	5.58(3.12 9.96)*	3.30(0.31 35.25)
Health centers	79(32.38)	32(26.23)	3.4(1.90 6.05)*	1.15(0.08 15.91)
Health post	10(4.10)	1(0.82)	13.33(1.64,108.25 *	0.45(.005 45.43)
<b>Number of ANC follow up.</b>				
Once	24 (9.84)	23 (18.86)	1	1`
2times	34 (13.93)	52 (42.62)	0.66(0.31 ,1.39)*	9.09(1.03 79.79)
3 times	65 (26.64 )	21 (17.21 )	2.95(1.36 ,6.41)*	2.64(0.39 17.62)
4times and above	121(49.59)	26(21.31)	4.89(2.33 ,10.26)*	<b>10.29(1.41 75.12)**</b>
<b>Place of delivery</b>				
Home delivery	36 (11.50 )	27(10.51 )	1	1
Governmental hospital	137(43.77)	57 (22.18)	2.05(1.13 3.70)*	2.080(0.21 19.9)

Health centers	93(29.71)	68 (26.46)	1.16(0.63 2.12)*	3.09(0.20 47.41)
Health posts	7 (2.24)	5 (1.94 )	3.29(0.64 ,16.78)*	--
Private clinics	40 (12.78)	100(38.91)	0.42(0.23 ,0.78)*	---
<b>Mode of delivery</b>				
c/s	18 (5.75)	36(14.01)	1	1
Normal/vaginal	295(94.25)	221(85.99)	2.57(1.41 ,4.70)*	1.87(0.30 11.59)
<b>Age of the infant</b>				
0-1 months	57 (18.21)	26(10.12)	3.18(1.85,5.44)*	<b>7.29(1.05 50.24)**</b>
2-3 months	147(46.96)	75 (29.18)	2.69(1.85 ,3.92)*	2.22(0.61 8.11)
4-5 months	109(34.82)	156(60.70)	1	1
<b>Sex of the infant</b>				
female	128(40.89)	174(67.70)	1	1
male	185(59.11)	83 (32.30)	3 ( 2.11, 4.20*	0.53(0.17 1.68)
<b>PNC service</b>				
No	150(47.92)	218(84.82)	1	
Yes	163(52.08)	39( 15.18)	5.86(3.89 ,8.84)*	<b>4.14(1.34 14.48)**</b>
<b>Bf and CPF counseling during PNC</b>				
No	26(15.95)	13(33.33)	1	1
Yes	137(84.05)	26(66.67)	2.74(1.24 ,6.04))*	0.63(0.21 18.59)
<b>Time of BF initiation.</b>				
immediately with in the 1 <sup>st</sup> hr	256(81.79)	128(49.81)	1..06(2.01 ,8.22)*	2.24(0.31 15.80)
1hr up - 1sday	38 (12.14 )	99 (38.52 )	0.27 (0.072,1.0)*	0.23(0.21 1.94)
After 1 <sup>st</sup> days -3 days	13(4.15 )	25(9.73)	0.34(0.082,1.45)*	0.44(0.63 3.13)
After 3 days	6 (1.92)	5(1.95 )	1	1
<b>Colostrum/first milk fed.</b>				
No	40(12.78)	129(49.81)	1	1
Yes	273(87.22)	128(50.19)	6.76(4.46,10.26)*	8 (3.17 111.70)
<b>Exposure of infant formula promotion to the mothers.</b>				
Yes	105(33.55)	134(52.14)	1	1
No	208(66.45)	123(47.86)	2.44(1.72 , 3.43)*	0.22(0.04 1.09)

<b>Exposure of Bottle feeding information to the mothers.</b>				
Yes	139(44.41)	159(61.87)	1	1
No	174(55.59)	98(38.13)	2.05(1.46 ,2.89)*	1.07(0.56 2.03)
<b>Bottle fed to the currant infant on the preceding day (among those exposed information).</b>				
Yes	34 (24.46)	99 (62.26)	1	1
No	105(75.54)	60(37.74)	5.09 (3.06, 8.46)*	<b>10.65(1.92, 59.01)**</b>
<b>Mothers who fed infant formula to their previous infants.</b>				
Yes	70 (22.36)	145(55.56)	1	1
No	243(77.64)	112(43.58)	4.34 (3.07, 6.26)*	<b>4.16(1.17 14.80)**</b>

1=reference    \*= Significant at p-value of  $\leq 0.2$  & \*\* Significant at p-value of  $\leq 0.05$

## 6 DISCUSSION.

This study was intended to see the association between infant formula promotions and the exclusive breast feeding among mothers of infant aged 0-5 months in jigjiga town. As a preliminary the result revealed no association between exposure to infant formula promotion and breast feeding but other factors showed a significant association with the breast feeding.

The rate of exclusive breast feeding in this study area was 54.91 % (95% CI; 50.79-58.90). This result is comparable to the 2011 Ethiopian DHS report 52%(4) .this finding is higher than study in done in different regions of the Ethiopia (3,23,26 and 43) and far higher than studies in Nigeria and Cameroon (5,19) . But lower than studies in Pakistan (35), Debre Berhan district (24) and Enderta woreda of southern region (25).

These differences of magnitudes among studies can be explained by due to methodological variations between studies, since most of these studies were community based while mine was institutional based and that's might be the reason. Other possible reason might be dissimilarities in infant related factors like age of infant and health service utilization factors like ANC and PNC between respondents of the referenced areas and the study place.

The proportion Mothers who exposed information talking about infant formula was 41.19% (95% CI; 39.13, 47.27). of which the highest source of advertisement was TV which was 24.69% .this result is comparable to study done in Philippine (8), compodia (39) and Senegal (34).This can be explained by which media did the study subjects received the infant formula information, in the case of this study as already mentioned the highest source of information were TV. Since almost 70% of the study subject had TV which can reaches audiences locally, regionally or nationally depending on the type of programming, this might predispose more mothers to receive information while they are in their homes.

In this study one of the factors that has been identified to be main predictor for the continuation of the breast feeding exclusively was age of the infants, infants whose age between 0-1 were 7.29 times more likely to breast fed compared to older infant. This finding was in agreement with the study in Singapore (17), study in Cameroon (19) and studies done in different regions of Ethiopia (3, 25, and 42) .This could be due that mothers assuming breast milk alone would not be sufficient for infants once they are get older. In the case of this study, around 61 % of those

mothers who didn't feed breast milk in the preceding day, the reason behind not to breast feed was decreased breast milk.

ANC follow-up were positively associated with EBF practice. Mothers who had four and more ANC visit had higher chance of tenfold to practice EBF than those had less ANC visits. This is consistent with other study findings from Nigeria (5), Mecha district of Ethiopia (23). The possible reason might be mothers who visited health facilities get counseled about breast feeding and those visited more get adequate knowledge about breast feeding which in turn led mothers to breast feed their infant exclusively. The other possible explanation could be the availability of breastfeeding guidelines and training for health facilities staff on infant feeding which contributed to have better knowledge and skills of counselling on EBF among health workers.

Significant association was observed between PNC and breast feeding, mothers who received PNC had higher chance 4.14 times of exclusive breast feeding practice compared to those mothers who didn't receive PNC, this is in line to these studies (28, 23, 24, 25, and 26). This could be that breast feeding counselling provided during postnatal period could positively influence mothers EBF practice, since it is the most appropriate time for delivering key infant and young child feeding messages which enable to take immediate action.

Bottle feeding to the infant on the preceding day revealed significant association with the breast feeding, mothers who didn't bottle fed their infant on the preceding day were 10.65 times more likely to breast feed their infant comparing to those mothers who bottle fed their infant. This study shared similar finding with the study done in china (49) and Nigeria (50). This might be infants who feed from bottle adapts the bottle feeding and decrease desire of breast feeding. Other possible reason could be those mothers who bottle feed to their infant in this study might be those working outside and don't have time to breast feed their infant.

Mothers who had experience infant formula feeding to their previous infants were significant associated with the breast feeding. Mothers who didn't fed infant formula to their previous infants were 4.16 times higher chance to breast feed exclusively to their current infant compared to those mothers who fed infant formula to their previous. The possible explanation might be those mothers who had experienced infant formula feeding to their previous infants continue to

provide the infant formula to their current infant and cease breast feeding , since they already fed the formula to their previous infant, they might had full knowledge and positive attitude towards infant formula feeding .

## 7 STRENGTH AND LIMITATION.

### 7.1 Strength of the study.

- The use of pre tested questionnaires and standard questionnaires from EDHS to assure quality of data was strengths of this study.
- Since the Principal investigator and supervisors were supervising the daily data collection activity to assure the quality of data were other strengths of this study.

### 7.2 Limitation of the study.

- Since study was facility based we can't generalize the result to the whole community
- It may overestimate the prevalence of EBF since the prevalence was determined using one day infant diet recall method.
- Recall bias may occurred during interviewing questions regarding to infant formula promotions.
- Due to nature of the study it's impossible to classify which precedes the others (breast feeding or other predictor variables).

## 8 Conclusions and recommendations

### 8.1 Conclusions

The magnitude of Exclusive breastfeeding in the study area was low. Infant formula promotions in the study area was high. Youngest infant age , having 4 and more antenatal visit during pregnancy by mothers , mothers who received postnatal care, mothers who didn't fed infant formula to their previous infants and those mothers who didn't fed their infant from bottles on the preceding day were found to breast feed exclusively. But no association was found the main objective of this study which was infant formula promotions and the exclusive breast feeding practice.

### 8.2 Recommendations.

#### **To Regional health bureau and Jigjiga town health office**

- Regional health bureau should work on promoting behavior change communication on exclusive breastfeeding practice to increase the exclusive breast feeding practice.

#### **To health care professionals**

- Health care professionals should upgrade and strength the postnatal care service provision to the mothers after delivery.
- Health care professions should discourage mothers' factors that undermines breast feeding like bottle feeding and infant formula feeding during ANC visits and PNC service provision.
- Should educate the community about of breast feeding and give right information of infant formula to the mothers in order to tackle infant formula promotions which mothers receiving from different media.

#### **To researchers.**

- Further longitudinal studies are recommended to determine the exact level of exclusive breastfeeding.

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## ANNEXESES.

### I. Participant information sheet and informed consent form.

My name is \_\_\_\_\_. Currently I am a master degree graduate candidate student at Addis Ababa University, College of Health Sciences, School of public health, Department of nutrition. This time I'm doing my thesis on the association between Infant formula promotion and exclusive breast feeding practice in jigjga town, Ethiopia.

#### **The study title:**

To assess the association between infant formula promotions and exclusive breast feeding practice among mothers of infant aged under 6 months in jigjiga town, Ethiopia.

#### **Purpose of the study**

The findings of this study is to identify association between Infant formula promotion and exclusive breast feeding practice in jigjga town. Knowing this factors have paramount importance for the city health office, regional health bureau to plan intervention programs so as to reduce infant morbidity and mortality that are associated with non-exclusive and sub optimal breastfeeding practices which result from infant formula promotions.

#### **Procedure and duration:**

I will be interviewing you using a questionnaire to provide me with pertinent data that is helpful For the study. There are questions to answer where I will fill the questionnaire by interviewing You, the interview will take few minutes, so I kindly request you to give me a time for the interview.

#### **Risks and benefits:**

The risk of being participating in this study is very minimal, except few minutes of interview. There will not be any direct payment for participating in this study; the findings obtain from the study is useful for planning intervention programs.

#### **Confidentiality:**

The information you will provide us will be confidential. There will be no information that will Identify you in particular. The findings of the study will be general for the study community and

Will not reflect anything particular of individual persons or housing or facilities. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could Link participants to the research.

**Rights:**

Participation for this study is fully voluntary. You have the right to declare to participate or not In this study. If you decide to participate, you have the right to withdraw from the study at any Time and this will not label you for any loss of benefits which you otherwise are entitled. You do Not have to answer any question that you do not want to answer.

**Contact address:**

If there are any questions or enquires any time about the study or the procedures, please contact In this address. Principal investigator: muse obsiye, email museibnuobsiye22@gmail.com or Mob: 0915003357.

**Declaration of informed voluntary consent:**

I have read/ was read to me the participant information sheet. I have clearly understood the Purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any question. I have been given the opportunity to ask Questions for things that may have been unclear. I was informed that I have the right to withdraw

From the study at any time or not to answer any question that I do not want. Therefore, I declare My voluntary consent to participate in this study with my signature as indicated below.

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

N.B this is to be signed face to face in the presence of the data collector. Please provide a copy Of this signed consent to the participant.

II. Questionnaires, English version.

Addis ababa university, college of health science,  
 School of public health, Department of RH/HSM

Questionnaires on the association between infant formula promotions and exclusive breast feeding practice among mothers of infants aged under six months in jigjiga, Ethiopia.

Code Number.....name of the facility.....  
 Addis ababa university, college of health science,  
 School of public health, Department of RH/HSM

Questionnaires on the association between infant formula promotions and exclusive breast feeding practice among mothers of infants aged under six months in jigjiga, Ethiopia.

Code Number.....name of the facility.....

Addis ababa university, college of health science,  
 School of public health, Department of RH/HSM

Questionnaires on the association between infant formula promotions and exclusive breast feeding practice among mothers of infants aged under six months in jigjiga, Ethiopia.

Code Number.....name of the facility.....

S No	Variables	Response and code	Skip
<b>Section 2 Socio demographic Characteristics of mothers/fathers.</b>			
101	How old are you?	_____ years old	
102	What is your ethnicity?	Somali.....1 Amhara.....2 Oromo.....3	

		Gurage.....4 Tigre.....5 Others_____	
103	What is your religion?	Muslim.....1 Orthodox.....2 Protestant.....3 Catholic.....4 Other Specify_____	
104	Have you ever attended school?	Yes.....1 No.....2	➔ 107
105	If yes, What is the highest level of school you attended?	Can't read and write.....1 Primary school (1-8).....2 secondary school grade( 9_12).....3 Certificate/Diploma.....4 degree and above.....5	
106	Specify your grade?	_____	
107	What is your occupation?  Remark: what's your main income generating activity	House wife .....1 Daily laborer... ..2 Farmer.....3 Student.....4 Government organization employee.....5 Private organization employee . . . . .6	

		Merchant. . . . .7 Petty trader. . . . .8 other, specify-----	
108	What is your marital status?	Single(never married).....1 Married .....2 Living together with a man as a husband and wife.....3 Divorced.....4 Widowed.....5 Separated.....6	→ 201    → 201 → 201  → 201
109	If you are married/living together with a man as husband and wife, Have your husband's ever attended school?	Yes.....1 No.....2	→ 112
110	If yes, What is the highest level of school he attended?	Can't read and write.....1 primary school(1-8).....2 secondary school grade( 9_12).....3 technical/vocational.....4 degree and above.....5	
111	Specify his grades?	_____	
112	What is your husband's/the man you are living with as a husband and wife Occupation?	Daily laborer... ..1 Farmer.....2	

	Remark: means your main income generating activity.	Student.....3 Government organization employee.....4 Private organization employee . . . . .5 Merchant. . . . .6 Petty trader . . . . .7 Other, specify _____	
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**Section 2. Questions related to House hold socio economic status (wealth index), housed hold assets and housing condition. Please give answer for the assets and service that available at your house hold as well as housing condi**

201	A Television?	Yes.....1 No.....2	
202	Radio/tape recorder ?	Yes.....1 No.....2	
203	Mobile telephone?	Yes.....1 No.....2	
204	Non-mobile/fixed telephone?	Yes.....1 No.....2	
205	Electricity?	Yes.....1 No.....2	
206	Electric stove?	Yes.....1 No.....2	
207	A kerosene lamp/pressure lamp?	Yes.....1 No.....2	
208	Rxcefrigerator?	Yes.....1 No.....2	
209	A watch/clock?	Yes.....1 No.....2	

210	Sofa?	Yes.....1 No.....2	
211	Table?	Yes.....1 No.....2	
212	Chair?	Yes.....1 No.....2	
213	A bed with cotton/sponge/spring mattress?	Yes.....1 No.....2	
214	Bajaj?	Yes.....1 No.....2	
215	Car?	Yes.....1 No.....2	
216	Who is the owner of the house you live?	Private (own).....1 Governmental.....2 Rent.....3 Other,specify.....4	
217	What is the Roofing material of your house?	Mud .....1 Wood.....2 Corrugated iron.....3 cement/concrete .....4 Other,specify_____	
218	What is the Flooring material of your house?	mud.....1 Parquet/polished wood.....2 Cement.....3 Ceramic tiles.....4 Carpet.....5 Others.....6	

219	Does your household own any livestock, herd or any animals?	Yes.....1 No.....2 → 221	
220	If yes, Which one do you have?	camel.....1 cows/oxen/bulls.....2 horses/donkey/mules.....3 goats.....4 sheep.....5 Others (specify)_____	
221	Does your household own any agricultural land?	Yes.....1 No.....2	
222	What is the average monthly income of the household?(in birr)	_____	

**section 3.Wash,Sanitation and Hygiene**



301	What is the main source of drinking water for members of your household?	Piped water ( in to Dwelling)... .....1 piped water in to yard/plot.....2 public tap/standpipe.....3 Rain water.....4 Tanker truck .....5 Cart with small tank.....6 Other,specify_____	
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302	What is the main source of water for washing and other purpose?	Piped in to Dwelling.....1 piped water in to yard/plot.....2 public tap/standpipe.....3 Rain water.....4 Tanker truck .....5 Cart with small tank.....6 Other,specify_____	
303	What kind of toilet facility do members of your household usually use?	flush to pit latrine.....1 ventilated pit latrine.....2 pit la pit latrine with slap.....3 Pit trine without slap.....4 composting toilet.....5 bush /field.....6 Other( specify)_____	
304	What type of fuel does your household mainly use For cooking?	Electricity.....1 Natural gas.....2 Biogas.....3 Charcoal.....4 wood.....5 Animal dung.....6 Others (specify)_____	

**Section 4. Maternal/infant health and health service utilization questions.**

401	How many children do you have currently?	_____ children	
402	Did you receive ANC service during your last pregnancy?	Yes.....1 No.....2	406
403	If yes where did you Receive ANC service?	Gov. Hospital.....1 Private hospital.....2 Health center.....2 Health post.....3 Private clinics.....4	
404	How many times did you receive ANC during last pregnancy?	Once.....1 Two times.....2 three times.....3 four times and above.....4	
405	Did you receive counseling concern about breast feeding during your ANC visit?	Yes.....1. No.....2	
406	Where did you give birth of this infant?	Hospital.....1 Private hospital. . . . .2 Health center.....3 Health post.....4 Private clinics.....5 Home.....6 On the way to a health facility. . . . .7 Other,specify_____	

407	What was the mode of your delivery?	Normal/vaginal.....1 C/S.....2	
408	What is the age of your infant?	_____ month old	
409	What is the sex of your infant?	Male-----1 Female-----2	
410	Did you receive PNC with in the first 24 hr of delivery?	Yes.....1 No.....2	501
411	If yes, where did you receive?	Gov,Hospital.....1 Private hospital.....2 Health center.....3 Health post.....4 Private clinics.....5 Home.....6 Othes,specify_____	
412	Did you receive counselling regarding, breast and complementary feeding practice during PNC service?	Yes.....1 No.....2	
<b>Section 5: breast feeding related questions.</b>			
501	Have you ever breast fed your current baby?	Yes.....1 No.....2	509

502	If yes to ever breast fed, has your infant fed breast milk In the last 24 hr?	Yes.....1  No.....2	 509
503	If your infant breast fed in the last 24 hr, how many times your infant did breast fed?	_____ times	
504	If your infant fed breast milk in the last 24 hr, does your infant fed other food/liquid in addition to breast milk?	Yes.....1  No.....2	 509
505	If yes, what was other foo/liquid that your infant fed in addition to breast milk?	Plan water.....1 Juice.....2 Soup.....3 powdered milk other than infant formula milk.....4 Fresh animal milk.....5 Infant formula milk.....6 Tea.....7 Other liquid specify_____	
506	If your infant fed other food/liquid in addition to breast milk, How many times your infant fed breast milk?	_____	
507	If your infant didn't fed breast milk in the last 24 hr, what was food/liquid that you're infant fed?	Plan water.....1 Juice.....2 Soup.....3 powdered milk other than infant formula .....4 Fresh animal milk.....5	

		Infant formula .....6 Tea.....7 Other liquid specify_____	
508	If your infant didn't fed breast milk in the last 24 hr, what was the reasons?	Going back to work.....1 I had illness.....2 Infant illness.....3 Decreased breast milk.....4 I had no time.....5 Because my infant was feeding infant formula .....6 Because breast milk can be replace by infant formula.....7 Other,specify_____	
509	Did you put your infant at your chest immediately after you give birth?  Remarks: that's does your skin and infant skin contact for a while after you delivery?	yes.....1  No.....2	
510	How soon after birth did you put your infant for the first time to breast feed?	Immediately Within 1 hr of birth.....1 1 hr up to 1 day.....2 After 1 day up to 3 days.....3 After 3 days.....4	512
511	If delayed more than 1 hr what were the reasons that made you delayed in breast feeding initiation?  Multiple answers are	C/s delivery.....1 Maternal illness.....2 Infant illness.....3 Delayed milk secretion.....4	

	possible.	Infant refusal.....5 Because I initiated infant formula.....6 Is not appropriate time to initiate.....7 Other specify_____	
512	Did you feed the first milk/colostrum to your baby?	Yes.....1 → 601 No.....2	
513	If you did not feed first milk/colostrum what the reason?	Infant unable to take as a food.....1 Is not good for infant health.....2 It's a tradition/culture.....3	
514	If you did not feed the first milk/colostrum what was your infant given after birth?	Plain water. ....1 Sugar or glucose water. ....2 powdered milk other than infant formula milk.....3 Animal milk..... 4 Sugar-salt-water Solution.....5 Fruit juice.....6 Infant formula.....7 Tea/infusions. ....8 Honey.....9 Fresh butter. ....10 Porridge.....11 Other, specify_____	
<b>Section 6. Infant formula related question.</b>			
601	Have you ever heard/seen any information talking about infant formula?	Yes.....1	

		No.....2	606
602	If you heard/seen, what kind of information were you did you received?  Multiple answers are possible	Infant formula is good for infant health.....1 Infant formula is good for infant Growth.....2 Infant formula make the infant smart.....3 Infant formula is good for infant intelligence.....4 Breast feeding can be replaced by infant formula feeding ...5 Infant formula has same nutritional benefits as breast feeding.6 I don't remember.....7	
603	If yes from where you did you received?	from radio.....1 Internet.....2 From health professionals .....3 From my mother .....4 From supermarket keepers.....5 From friends/family.....6 From TV.....7 From Gov. Hospital.....8 From private hospital.....8 From Health center.....9 Health post.....10 From Private clinics.....11 From pharmacies.....12 From supermarkets or shops. ....13 From internet.....14 other,specify_____	

604	If you heard/seen how many times were you heard?	_____ times	
605	If you heard /seen What was the last time you were exposed?	Before _____ months	→
606	Have you ever receive a sample of infant formula milk from health institution staffs?	Yes.....1 No.....2	
607	Have you ever fed infant formula to your current infant?	Yes.....1 No.....2	→611
608	If yes, has your infant fed infant formula milk in the last 24 hr?	Yes.....1 No.....2	→ 615
609	If you fed your infant infant formula milk in the last 24 hr, Why You gave?	Because breast milk is not enough. ....1 I had illness.....2 Infant illness.....3 I had no time to breast feed the infant.....4 Because infant formula better than breast milk.....5 Infant formula is good for infant growth ,health and intelegence.....6 Because Infant formula has same nutritional benefits as breast feeding.....7	

		Other, specify _____	
610	If your infant fed infant formula in the last 24 hr, From where you get/buy the infant formula milk?	From pharmacy/drug shops.....1 from supermarkets.....2 From shops.....3 I got freely/gift from company.....4 From family.....5 Other, specify. _____	
611	Did your previous infants ever fed an infant formula milk?	Yes.....1 No .....2	
612	Have you ever exposed any information talking about bottle and teats?	Yes.....1 No.....2	→ 614
613	If yes, Did your infant drinks anything from a bottle in the last 24 hr?	Yes.....1 No.....2	
614	Would you recommend formula feeding to anyone?	Yes.....1 No.....2	
615	If yes to whom would you recommended?	To my frineds.....1 To my family.....2 To my neighbors.....3 Others,specify_____	

### III. Kaqayb qaataha warqadii ogolaanshahisii laga saxeexayay (consent form).

Magaacygu waa \_\_\_\_\_. Hada waxaan ahay arday kaqalin jabinaya master nutrition jamacad adis ababa, koolejka cafimadka, skoolka cafimadka bulshada, qaybta nutritionka ama nafaqaynta. Hada/imika waxaan kaqashaqynayaa inan research sameyo oo kusabsan canaha caruurta yar lasiiyo xayaysiistooda dhibta ay ku hayaan naas nuujimta caruurta 6 bilood kayar.

#### **The study title:**

Wa ina aan badho xidhidhka ka dhexeya xayaysiinta canaha caruurta iyo naas nuujimta ee caruurta dadoodu kayartahy 6 biliid jigjiga, Ethiopia

#### **Ujeedada cilmi badhista**

Natiijada kasoo baxda in qorsha aya kudarsadaan xafiiska cafimadka heer degan ka cuncilka jigjiga iyo degmadabasi kor looqado naas nuujimta iyo in layareeya dhimashada iyo xanuunada laxidhiidh naas nuujin laanta ee ka imatay xayaysiinta caruurta. intaa waxaa dheer waa inan kuqalinjabiya research oo qaybka ah shuruudaha qalinjabinta

#### **Waqtiga iyo Shuruucda Imarayo:**

waan idin warysan doona sualah aan hayo waxayna qadan doonan waqtiyar , waxanan iniga codsanayaa inaad waqtiga isiisan.

#### **Faaidada iyo qatarta:**

Qatarta ay leedahy cilmi badhistani way yartahay marka laga reebo waqtiyar ooy qadanyso. Mana jirayso wax lacag ah oo lasiiyo kaqayb qataha lkiin natiijada kazoo baxda baadhitanka yaa faaido uyeelan doonta qorshynta dhanka caafimaadka.

#### **Xog dhawrista**

Xogta lahelu waa loo ilaalin doona cidkasta, wax ku cadaynayaa laguma sheegi doono qoraal ahaan. natiijada kazoo baxda badhista waxay katurjumi doonta guud ahaan bulshada. lama magic dhabi doono cidna.sualaha waxaa lagu khabyin doona number qarsoon .meel lagu sooracana mayeelan dono.

#### **xaqa:**

Kaqayb qatu wxuu uga qayb qadanayaa si tabaruca/iskiisa ah waxanad xaq uleedahay inaad kaqayb qadatid iyo inaad iska diidid.hadii aad rabtid inaad kaqayb qadatid waxad xaq uleedahy inaad kaqayb qadatid hadii adan rabina wad iska dayn karta .hadii aya jiraan sualo aad rabin inad kajawabin wad iska dayn kartaa.

**Halka laigala soo xidhiidhayo.**

Hadii wax fahfahin aad rabtrid igalasoo xidhidh fadlam

Qoraha badhistan: muse obsiye, email museibnuobsiye22@gmail.com or

Mob: 0915003357.

**Xaqiijin iyo si tabarucad ah uga qayb qaadasho.**

Waan aqriyaya/la ii aqriyay aniga. Wanan fahmay Ujeedada badhistan,,habracaa,Khatarta iyo faaidada,xog dhawrista,xaqa iyo meshaan kala xidhidhi lahaa hadaan ubahado inaan sualo waydo cidii aya qusaysay.waxaana laisiiyay fursad kastoon kuwaydiiyo sualo markaan ubahdo.wana ila i ogaysiiyay inan xaq uleeyahy inan kajwabin sualo an rabin haday jirnan inan kajawabo.sidaa daraaded waxaan cadaynayaa inan si iskayga ah uga qayb galay badhistan anoo kucadaynaya saxeexayga xaga hoose.

Saxexa kaqayb qataha: ----- saxeexa ururiya badhistan -----

N.B waxaa usaxexau kadhacayaa kaqayb qataha iyo ururiya iyakoo is hor fadhiya.

IV. Sualihii, Qaybtii somaliga (translated Somali questionnaires).

Jaamacad adis ababa, Kuliyaada caafimaadka, Qaybta nafaqaynta (Nutrition).

Wasualihii kusaabsanaa xidhidhka ka dhexeya xayaysiinta Cunooyinka loogu talagay caruurta lixda bilood kayar iyo nas nuujimta oo laga ururinayo hooyoyinka haysta caruurta lixda bilood kayar ee magalada jigjiga, Ethiopia.

Numberka Qaaska ah.....xarunta mageceeda.....

S No	Sualaha u kajawabyo kaqayb qatuhu.	Jawabta iyo Numberka qask ah	udhaaf
<b>Qaybta 1aad. xaalda hooyada iyo aabah.</b>			
101	Imisa jir ayaad tahay?	_____ sano	
102	Qoomiyaded tahay?	Somali.....1 Amhara.....2 Oromo.....3 Gurage.....4 Tigre.....5 Qoomiyad kale hadad tahay sheeg_____	
103	Diintad haysatid watee?	Muslim.....1 Orthodox.....2 Protestant.....3 Catholic.....4	

		kukale hadu jiro sheeg _____	
104	Waligaa wax iskoola makubiirtay	Haa..... 1 Maya..... 2	107
105	Haday haa tahay halkeed ka gaadhay wax barshada?	Waxba ma aqrin karo mana qori karo..... 1 Dugsiga hose (1-8)..... 2 Dugsga dhexe/sare ( 9_12)..... 3 Ilaa certificate/diploma..... 4 Degree iyo wixii kasareya..... 5	
106	Galaaskaad/fasalkaad kagaadhay sheeg?	_____ aad	
107	Mxad kashaqysaa?	Hooyo ayaan ahay aqalka joogta ..... 1 Xoogsato malmeed ayan ahady... ..... 2 Beeralay ayaan ahay..... 3 Ardayad ayaan ahay..... 4 dawlada ushaqeya..... 5 Shirkad gaar looleeyahay Ayaan ushaqeyya..... 6 Iskay ayaan uganacsadaa..... 7 Alaabaha Ayaan lawareega..... 8 Sheeg waxkale haday jiran _____	
108	Waa sidee xaalada	Aan guursan waligeed..... 1	

	lamaaned?	guursatay.....2 uwada nool sida oday iyo islaan laakiin aan isguursan...3 lafuray.....4 lagadhintay.....5 kala tagy bilaa furiin.....6	
109	Hadii xaladaada lamaaned tahay guursatay/ uwadanool sida oday iyo isalaan, Odaygaagu wax iskoola makuubiiray?	Haa.....1 Maya.....2	112
110	Hadii ha tahay in Odaygaagu skool kubiiray,halkuu kagadhay waxbarshada?	Waxba ma aqrin karo mana qori karo.....1 Dugsiga hose (1-8).....2 Dugsga dhexe/sare ( 9_12).....3 Ilaa certificate/diploma.....4 Degree iyo wixii kasareya.....5	
111	Galaaska/fasalka uu kagaadhay sheeg?	_____	
112	Hadii haa tahay inaad guursatay/uwada nooshihiin sida oday iyo islaan ,odaygagu muxuu kashaqeyaa?	Wa xoogsade malmeed .....1 Beeralay weeyaan.....2 Arday weyaan .....3 dawladu ushaqeya.....4 Shirkad gaar looleyahay ayuu ushaqeyaa.....5 Iskii ayuu uganacsadaa.....6 Alaabaha Ayaan lawareegaa.....7	

		Sheeg waxkale haday jiran _____	
<b>Section 2. su'aalahan soosocda waxay katurjumayaan xalada guud ee qoyska iyo dhaqaalaha qoyska.fadlan jawaab naga sii kuwa ku haboon xaladada.</b>			
201	Gurigaagu TV maleeyahy?	Haa.....1 Maya.....2	
202	Gurigaagu radion maleeyahy?	Haa.....1 Maya.....2	
203	Mobile maleedahay?	Haa.....1 Maya.....2	
204	Telefoonka leynka ah ee xafada ladhigto maleedahay?	Haa.....1 Maya.....2	
205	Laydh maleeyahay gurigaagu?	Haa.....1 Maya.....2	
206	Shawlada kooranka maleeyahay gurigagu?	Haa.....1 Maya.....2	
207	Gurigaagu laambad maleeyahay?	Haa.....1 Maya.....2	
208	Gurigaagu galaaseer/talaajad maleeyahay?	Haa.....1 Maya.....2	
209	Gurigaagu saacada gidaarka lagu dhajiyo maleeyahay?	Haa.....1 Maya.....2	
210	Gurigaagu maleeyahay fadhiga guryaha ladhigo?	Haa.....1 Maya.....2	

211	Gurigaagu maleeyahay miiska cuntada?	Haa.....1 Maya.....2	
212	Gurigaagu maleeyahay kursi lagu fadhiisto?	Haa.....1 Maya.....2	
213	Gurigaagu maleeyahay sariirta lagu seexo?	Haa.....1 Maya.....2	
214	Baabuur/gaadhi ma leedihiin?	Haa.....1 Maya.....2	
215	Bajaj ma leedihiin?	Haa.....1 Maya.....2	
216	Guriga aad kunooshihiin ayaa leh?	Anakaaleh.....1 Dawladaaleh.....2 Kiro ahaan Ayaan ugu jirnaa.....3 Hadii waxkale jiro sheeg_____	
217	Saqafka gurigiinu muxuu ka samaysanyahay?	Dhoobo.....1 Qoryo.....2 Jiingad.....3 Shiminto/shub sibidh ah.....4 Sheeg haday waxkale jiraan_____	
218	Dhulka/sagxada gurigaagu muxuu kasamaysanyahay/dhulka yaala?	Dhoobo.....1 Qoryo.....2	

		Sibidh.....3 Marmar .....4 Roog/ruumi.....5	
219	Qoyskaagu wax xoola'ah maleeyihiin?	Haa.....1 Maya.....2	221
220	Hadii wax xoola,ah ay leeyihin kuwan soosocdee kuwee ayay leeyihiin?  Jawaabo badan waa la ogolyahay?	Geel.....1 LO.....2 Fardo/dameero/baqal.....3 Riyo.....4 Ido'o.....5 Sheeg hadii wax kale leedihiin _____	
221	Qoyskaagu wax dhul beereed ah maleeyihiin?	Haa.....1 Maya.....2	
222	Bishi imisa riyaal ayaad biil ahaan uhshaan gurgoo dhan?(riyaal ahaan	_____riyaal	

**Qaybta 3aad.su”alah laxidhiidha nadaafada guriga iyo qoyska.**

301	Goobta idiinku muhiimsan eed Biyaaha aad kacabtaan waa halkee?	Bambada Guriga.....1 Barkad biyaha bambada gurigu kushubto... ..2 Bambada xaafaduhu kacabaan/xafadha dhexdeeda.....3 Biyaha roobka.....4 Taangiga biyaha oo baabuur saaran Ayaan kahelnaa.....5 Taangi yar oo biya'ah oo gaadhi dameer saran Ayaan ka	
-----	--	--	--

		helnaa.....6 Sheeg haduu wax kale jiro _____	
302	Goobta idiinku muhiimsan ee Biyaaha wax kumaydhaan ka heshaan waa halkee?	Bambada Guriga.....1 Barkad biyaha bambada gurigu kushubto...2 Bambada xaafaduhu kacabaan/xafadha dhexdeeda.....3 Biyaha roobka.....4 Taangiga biyaha oo baabuur saaran Ayaan kahelnaa.....5 Taangi yar oo biya'ah oo gaadhi dameer saran Ayaan ka helnaa.....6 Sheeg haduu wax kale jiro _____	
303	Musqul nuuce ah ayaad isticmaashaan?	Musqul foos leh .....1 Musqul kaneefsata tuubma xaga sare ah.....2 Musqul leh jaajur sibiidh ah oo lugaha lasaarto.....3 Musqul aan lahayn jajurka sibiidhka,ah ee lugaha lasaro...4 Musqul qorya lagu fadhiisto kasamysan .....5 Banaankaan iskaga saxaaroonaa.....6 Sheeg haday waxkale jiraan _____	
304	Shayga idiinku muhiimsan eed cuntada kukarstaan muxuu yahay?	koronto.....1 Gaaska cad.....2 Dabka laga dhaliyo saxaarada.....3 Kerosene.....4 dhuxul.....5 qoryo.....6 digada/xaarka xoolaha.....7 sheeg haday wax kale jiraan _____	

**Qaybta 4aad. Sualo laxidhiidha daryeelka caafimaadka ee lasiiyo hooyada/ilmaha .**

401	Imisa caruura ayaad lee hadahay hadal?	_____ caruura	
402	Maad qadatay daryeelka joogtada ah ee hooyada uurkalihi ay kaqadto xarumaha caafimaadka?	Haa.....1 Maya.....2	406
403	Hadii aad qatay halkee ayaad kaqadaty?	cusbitaaka dawlada .....1 cusbitaal gaar looleeyahay.....2 Health centerka/xarunta cafimadka e dawlda.....3 Health postga/rug cafimad.....4 Xarun cafimad e garka loleyahy/clinics.....5	
404	imisa jeer ayaad daryeelkas qadatey xiligii uurkan aad lahayd?	Mar Kaiya.....1 Laba jeer.....2 Sadex jeer.....3 Afar iyo wixii kasareeya.....4	
405	Maad heshay akhbaar kusabsan naas nujita markaad daryeelka joogtada qadan jirtay?	Haa.....1 Maya.....2	
406	Halkeed ku umushay ilmahan?	cusbitaalka dawlada.....1. Cusbitaal gaar looleeyahay.....2 health centerka/Xarun cafimad dawlada.....3 health postiga/rugta caafimadka.....4 Private clinics/Xarun cafimad e gar loleyahy.....5	

		Guriga.....6 anoo xarumaha cafimadka usocdaan wadada/dariiqo ku umulay.....7 hadii maalkale jirto sheeg_____	
407	Dhalmadu noocay ahayd?	Nooca caadiga ah .....1 Jeexitaan.....2	
408	Imisa bilood ayuu jiraa ilmahagu?	_____ bilood	
409	Jinsiga ilmahagu waa maxay?	Lab..... 1 Dhedig..... 2	
410	Ma qaadatay 24 saacadood ee ugu horeeyay umushaada daryeelka laqato marka la umulo?	Haa.....1 Maya.....2	501
411	Haddii aad qadatay halkeed ka qadaaty?	cosbitalka dawlada .....1 cosbital gaar looleyahy.....2 Xarunta cafimadka e dawladd.....3 health postiga/rugta caafimadka.....4 Xarun cafimad oo gaar looleyahy.....5 Guriga.....6 Malkale hady jirto sheeg_____	
412	Ma heshay talooyin kusabsan naas nuujinta iyo quudista ilmaha markaad qadanaysay daryeelkan?	Haa.....1 Maya.....2	
<b>Qaybta 5aad : sualo ku sahabsan naas nuujinta.</b>			
501	Waligaa ma siisay ilmahaaga naas?	Haa.....1	

		Maya..... .2	→ 509
502	Hadii haa tahay inuu naas nuugay/jaqay ilmahaagu, 24 saac ee lasoo dhafay ilmahaagu wax naas ah nuugay/jaqay?	Haa..... 1  Maya..... 2	→  507
503	Hadii ilmahaagu uu nuugay/jaqay naas 24 saacadood ee lasoo dhafay, imisa jeer ayuu qutay?	_____jeer	
504	Hadii ilmahaagu uu nuugay/jaqay naas 24 saacadood ee lasoo dhafay, ilmahaagu muu laqutay cuntooyin/cabitaano kale naaska?	Haa..... 1  Maya.....2	
505	Hadii haa tahay inuu laqutay naaska cuntooyinkale/cabitaanokale, waa maxay cuntooyinkale/cabitaanada kale ee uu laqutay?	Biyo cad.....1  Sharab juice.....2  Maraq.....3  canaha dasadaha an ahyn ku caruurta lixda bilood kayar loogu talagay..... ...4  cana xoolad/adhiga.....5  cuntooyika/cabitaanda caruurta lixda bilood kayar loogu talagay ..... ...6	

		Shah..... ...7 Sheeg Hadii waxkale ay jiraan _____	
506	Hadii uu ilmahaagu laqutay naaska cunooyin/cabitaano kale,imisa jeer ayuu ilmahaagu naas qutay?	_____	
507	Hadii ilmahaagu usan nuugin/jaqin wax naas ah, maxay ahayd cuntada ama cabitaaka uu qutay?	Biyo cad.....1 Sharab juice.....2 Maraq.....3 canaha dasadaha an ahyn ku caruurta lixda bilood kayar loogu talagay..... ...4 cana xoolad/adhiga.....5 cuntooyika/cabitaanda caruurta lixda bilood kayar loogu talagay ..... ...6 Shah..... ...7 Sheeg Hadii waxkale ay jiraan _____	
508	Hadii ilmahaagu usan nuugin/jaqin wax naas ah, 24saac ee lasoodhaafay,sobobtu waa maxay?	Shaqadaan kulaamayay.....1 Waan xanuunsana.....2 Ilmaha xanunsanaa.....3 Canaha naaska yaraday.....4 Waqti mahaysan.....5 Sobotoo ah ilmahaagu Cunooyinka/cabitaanada lixda bilood kayar loogu talagalay ayuu quudanayay..... 6Sobobto'ah canaha naaska waxaa badali kara cuntooyika/cabitaanda logutalagalaly caruurta lixda bilood	

		kayar.....7 Sheeg haday wax kale jiraan _____	
509	Ilmaha laabtaada maad saartay markaad umushay?  Ujeedo jidhkaaga iyo jidhka ilmahaagu in waqti ah ma iskudhajisanayeen?	Haa.....1  Maya.....2	
510	Markii aad umushay/dhashay, ilmahaagu naaska goormuu qutay?	Si dagdag ah oo ah sacadii laad ee ugu horaysay ee udhashy ayuu qutay.....1 Sacdadii laad ilaa malintii laad.....2 Malintii laad Ilaa malintii 3aad.....3 Malintii 3aad kadib ayuu qutay.....4	512
511	Haddi uu ilmahaagu dib uga dhacay inuu quuto naaska sacadii ugu horaysay ee udhashy, waa maxay sobabta keentay?	Waa la ijeexay.....1 Annaa xanuunsanaa.....2 Ilmaha xanuunsanaa.....3 Canaha naaska ayaa jirin oo dib udhacyo iman.....4 Ilmaha diiday inuu jaqo naaska.....5 Sobabtoo ah waxaan ubilaabay ilmaha cunooyinka/cabitaanada loogu talagalay caruurta lixda bilood kayar.....6 Waqti kuhaboon maha in loobilaabo naas nuujinta.....7  Wax kale haduu jiro sheeg _____	
512	Ilmahagu muuqutay caanihii ugu horeeyay/danbarkii markii udhashay?	Haa.....1  Mayaa.....2	410
513	Hadii uu ilmahaagu nuugin/jaqin canihii ugu	Ilmuhu muu muuqudan Karin caanaha ugu horeeya cuntahaan. ....1	

	horeeyay/danbarkii markuu dhashay, sababtu maxay hayd?	Canaha ilmaha uma fiicnayn.....2 Waa nuuc huuruuda oo cream leh.....3 Waa cunta dhaqameed.....4	
514	Hadii anad nuugiisiin/jaqsiin canihii ugu horeeyay ilmahaaga, maxay ahayeen wixii uu qutay ilmahaagu markii udhashy?	Biyo cad.....1 Sonkor iyo biyo la isku qasay.....2 canaha dasadaha e an ahyn ku lixda bilood loogu talagay ama.....3  Caana xoolad/adhi.....4 Sonkor iyo milix biyo lagu qasay.....5 Sharaab lashiiday/laridqay.....6 Cunooyinka/cabitaanada caruurta lixda bilood kayar loogu talagay. ....7 Shaaah.....8 Malab. ....9 Subag/burcad. ....10 Boorash.....11 Hadii wax kale ad siisay sheeg_____	
<b>Qaybta 6aad. cunooyinka/cabitaanada logu talagalay caruurta lixda bilood kayar suala laxidhidha.</b>			
601	Waligaa ma maqashay/aragtay intaad nooshay cuunooyinka/cabitaanda ilmaha 6 bilood kayar lasiiyo?	Haa.....1  Maya.....2	606
602	Hadii aad maqashay/aragtay macluumaad ama xog nuuce ah ayaad maqashay?	cuunooyinka/cabitaanda ilmaha 6 bilood kayar loogu talagalay waxay ufiicanyihiin caafimaadka ilmaha.....1 cuunooyinka/cabitaanda ilmaha 6 bilood kayar loogu talagalay waxay ufiicanyihiin korsiinta ilmaha.....2 cuunooyinka/cabitaanda ilmaha 6 bilood kayar loogu talagalay	

	Jawabo badan waad goobi kartaa	waxay imaha kayeelaan mid quruxbadan.....3 cuunooyinka/cabitaanda ilmaha 6 bilood kayar loogu talagalay waxay koriyaan maskaxda ilmaha.....4 cuunooyinka/cabitaanda ilmaha 6 bilood kayar loogu talagalay waxay badali karaan caanaha naaska .....5 cuunooyinka/cabitaanda ilmaha 6 bilood kayar loogu talagalay waxay lanafaqa yihiin caanaha naaska.....6 maxasuusto macluumaadkii.....7 hadii waxkale maqshay sheeg_____	
603	Hadii aad aragtay/maqashay halked ka heshay macaluumadkas?	Radiyahoga ayaan kamaqalay.....1 Khadkaan ka kamaqalay.....2 Xirfadale caafimadka ayaan kamaqalay.....3 Hooyaday ayaaa kamaqaly.....4 Supermarkeyd ka kuwa iibiya ayan kamqaly.....5 Saxiibaday/familigayga yaan kamqaly.....6 TVga ayaa ka arkay.....7 cusbitaalada dawlada ayaan ka arkay.....8 cusbitaalada Gaarka looleeyahaan ka arkay.....9 Xarunta caafimadka dawlada/health centerka ayaan k arkay.....10 rugaha caafimaadka/health postiyada.....11 Xarumaha garka looleyahy/private clinics ayan ka arkay.....12 Pharmasiga yaan ka arkay.....13 Macdarada/supermarket ama tukaandaan ayaan ka arkay ..... 14 Interneetkan ka arkay.....15 Sheeg melkale hady jirto _____	
604	Haddi aad aragtay/maqashay imisa jeer ayad maqashay?	_____jeer	

605	Hadii aad maqashay/aragtay, goortii kuugu /dambaysay eed goormay ahayd?	_____ bilood kahor	
606	Waligaa maka qaadatay ama may kusiiyena xirfad layasha caafimadku canaha caruurta 6da bilod kayar loogu talagalay?	Haa.....1 Maya.....2	
607	Ilmahaagu Waligii cunooyinka/cabitaanda caruurta lixda bilod kayar loogu talagalay muu qutay?	Haa.....1 Maya.....2	615
608	Hadii haa tahay inuu qutay ilmahaagu muuqutay 24 saac lasoodhafay cunooyinkaas/cabitaana daas?	Haa.....1 Maya.....2	615
609	Hadii uu ilmahagu qutay cunooyinka/cabitaanada caruurta 6 bilood kayar loogutalagalay 24kii saacadod ee lasoo dhaafay , sababta aad usiisay/quudisay maxay ahayd?	Sababtoo ah canaha naaska kumay kufilnayn. ....1 Sababtoo ah Waan xanuunsanaa.....2 Sababtoo ah Ilmaha xanuunsanaa.....3 Sababtoo ah Waqtii aan ilmaha kuqudiyo mahaysan.....4 Sababtoo ah cunooyinka/cabitaanada caruurta lixda bilood loogu talagalayod waxay kafiicanyihiin naas quudista.....5 Sababtoo ah cunooyinka/cabitaanada caruurta lixda bilood kayar loogu talagalay waxay ufiicanyihiin caafimaadka,korsiinta jidhka iyo ta maskaxdaba.....6 Sababtoo ah cunooyinka/cabitaanada caruurta lixda bilood kayar loogu talagalay waxay la nafaqayihiin caanaha naaska..7 Hadii sabab kale jirto sheeg.....6	

610	Hadii ilamahaagu quutay shalay caanaha, Halkeed ka iibsataa/ka heshaa canaha caruurta 6da bilood kayar?	Farmasiiyada waa wayn iyo kuwa yaryar.....1 macdarada/supermarketyada.....2 tukaanada.....3 si lacag la,aan ah/hadyad ahaan ayaan uga helaa shirkadaha soosaraa canaha.....4 Hadii sabab kale jirto sheeg_____	
611	Caruurtaadii hore waligood may quuteen cunooyinka/cabitaanada caruurta lixda bilood kayar loogu talagaly ?	Haa.....1 Maya.....2	
612	Waligaa malakulantay warar ka sheekaynaya masaasadaha iyo cinjirka caruurta afka loogaliyo?	Haa.....1 Maya.....2	→ 618
613	Hadii aad lakulantay ilmahaagu muukuquutay masaasad 24 saac ee lasoodhay?	Haa.....1 Maya.....2	
614	Waligaa makulatalisay qof inuu ilmihisa kuquudiyo cunooyinka/cabitaanada caruurta lixda bilood kayar loogu talagalay?	Haa.....1 Maya.....2	
615	Kuwee ayaad kulatalisay in caruurtooda ay ku quudiyaan cunooyinka/cabitaanda caruurta lixda bilood kayar loogu talagala?	Saaxiibadahay.....1 Familigayga/qoyskayga.....2 jaarkayga.....3 sheeg hadii dadkale jiraan_____	

## V. Curriculum vitae.

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### 1. PERSONAL INFORMATION.

Name : Musse obsiye Ibrahim.

Date of birth : February 19, 1989

Place of birth : Ayesha woreda

Nationality : Ethiopian

Marital Status : married

Sex : male

Address : Tel +251 91503357

: Dire dawa.

E-mail: museibnuobsiye22@gmail.com

### 2. LANGUAGES SPOKEN AND WRITTEN

- ❖ English:- V. Good.
- ❖ Somali:- mother tongue
- ❖ Amharic:- V. Good
- ❖ Affan Oromo:- Good.

### 3. EDUCATION:

Primary school: Alfalah school dire dawa.

New secondary and preparatory school, dire dawa.

University: Madawalabu University in B.SC. Degree in public Health

### 4. EXPERIENCES

1 year experience as a assistance lecturer at the college of health science, Jigjiga University:

### 5. HOPPY.

Reading material and watching news channels.

## VI. Declaration.

I the undersigned declare that this MSc thesis is my original work and it has not been presented for a degree in any other university. All source materials used for the thesis have been duly acknowledged.

Name of student: Musse obsiye

Signature: \_\_\_\_\_ Date \_\_\_\_\_.

Advisor: Mr.robelt yirgu (Bsc, Msc.)

Signature \_\_\_\_\_ Date \_\_\_\_\_

