



**ADDIS ABABA UNIVERSITY
FACULTY OF MEDICAL
SCHOOL OF PUBLIC HEALTH**

**ASSESSMENT OF OPTIMAL BREASTFEEDING AMONG WORKING
AND STAY-AT-HOME MOTHERS IN BAHIR DAR TOWN AMHARA
REGIONAL STATE, NORTH WEST OF ETHIOPIA**

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Acronyms

AAU	Addis Ababa University
ANC	Antenatal Care
ARHB	Amhara Regional Health Bureau
CF	Complementary Feeding
DHS	Demographic and Health Survey
EBF	Exclusive Breastfeeding
EDHS	Ethiopian Demographic Health Survey
EPI	Expanded Program on Immunization
IYCF	Infant and Young Child Feeding
MOH	Ministry of Health
PBF	Predominant Breastfeeding
PNC	Postnatal Care
SPH	School of Public Health
TTBAs	Trained Traditional Birth Attendants
UTTBAS	Untrained Traditional Birth Attendants
UNICEF	United Nations International Children Fund
WHO	World Health Organization

ABSTRACT

Background: Optimal breastfeeding practice is essential for the healthy growth and development of children during their early life. It improves the nutritional status and reduces the chances of contracting infection. Studies have shown that globally 70.0% of infants are sub-optimally breastfed, which is major contributor to infant mortality.

Objectives: This study is aimed at assessing and comparing mother's knowledge, practices and determinants on optimal breastfeeding among working and stay-at-home mother's having children 0-23 months of age.

Methods: A cross-sectional community based study was conducted on 825 mothers aged 17-49 years having children 0-23 months of age residing in Bahir Dar town Amhara Region April, 2010. Modified EPI cluster sampling technique was applied to select households. Experienced interviewers and qualified supervisors were employed and a pre-tested questionnaire was utilized for this purpose.

Four FGDs among mothers (segregated by working status) complemented the quantitative survey

Results: Three hundred seventy one (92.2%) working and two hundred seventy six (65.4%) stay-at-home mothers had satisfactory knowledge on breastfeeding practice, [AOR: 3.36, (1.94, 5.81)]. Mothers with formal education, those attended ANC follow up and gave birth at health institution were more likely to have satisfactory knowledge on breastfeeding practices [OR: 2.25, 95%CI :(1.14, 4.43), (OR: 6.14, 95%CI: (3.18, 11.85) and (OR: 1.85, 95%CI :(1.05, 3.26)] respectively compared to their counterparts.

The prevalence of exclusive breastfeeding practice was 34%, 95%CI:(31%-37%) for working and 71.3%, 95%CI : (68.2%-74.4%) for stay-at-home mothers and the working status of the mother was significantly associated with exclusive breastfeeding practice, that those mothers who were working were less likely to practice exclusive breastfeeding than those who were stay-at-home[AdjusteOR:0.30,95%CI:(0.20,0.46)]. the median duration of EBF for working children was 4 months and 6 months for stay-at-home .

Conclusions and Recommendations: Overall the study indicates that the maternal knowledge on breastfeeding practice was satisfactory. However, there is inadequacy of optimal breastfeeding practice especially exclusive breastfeeding for the first six month of life among working compared to stay-at-home mother. This would increase the risk of infant morbidity and mortality.

Approximately three in four working and one in three stay at home initiated complementary feeding at appropriate time. The findings indicate that both groups of mothers don't have optimal child feeding practices, although the forms of suboptimal behavior are different. Therefore, the government, health workers and community members should work on strengthening the optimal breastfeeding practice by encouraging, supporting mother's to breastfed their children optimally.

1. INTRODUCTION

Breast milk is the safest and most natural food for an infant (1). beside to this; optimal breastfeeding has several important health benefits to the infant and mother these include: social, economic, nutritional, developmental, immunological, and other health benefits (2). Unfortunately, infant and young child feeding practices world-wide are not optimal. Global monitoring indicates that only 39% of all infants world-wide are exclusively breastfed at less than 4 months of age and timely complementary feeding rate is similarly low with a global average of 60% in 2002 (3). Studies showed that attributing factors for not optimally feeding are maternal and child. Among factors the leading one is that in recent times, in many developing countries, labor force participation by women in the childbearing ages has increased rapidly and women attempt to combine their roles as workers and mothers.

On global basis 42% of women over age 15 are in the labor force. African women, produce as much as 80% of the food, and supplement family income by working in the formal and informal sectors as traders and producers (4). In developing countries, the percentage of women in the paid labor force increased from 28% in 1950 to 32% in 1985 (5).

The Ethiopian government policy on women aims at creating an opportunity that encourages women's participation in the labor force. Hence, the percentage of women in the labor force is increasing from time to time (6). Maternal employment usually results in a loss of child care time; presumably the mother is therefore less available for breastfeeding and making frequent meals, etc., however, it is possible that non-working mother also spends relatively little time in child care, or that important care giving behaviors continue to be performed if there are adequate substitute care takers (7). Little is known about how these challenges affect infant feeding choices (8). In a recent recommendation, the World Health Organization (WHO) urged its member states to strengthen activities to protect, promote and support exclusive breastfeeding for 6 months as a global public health recommendation, and to provide safe and appropriate complementary foods, with continued breastfeeding for up to 2 years of age or beyond (9). According to this recommendation Ethiopia has developed the national strategy on Infant and Young Child Feeding (IYCF) and implementing through out the country (10).

2. Statement of the problem

Based on several studies done in Ethiopia, breastfeeding is nearly universal but the proportion of exclusive breastfeeding up to 6 months is less than optimal recommendation as well as complementary feeding frequently begins too early or too late, and foods are often nutritionally inadequate and unsafe. Currently, suboptimal breastfeeding estimated to cause 18% of infant deaths, accounting for the loss of over 50,000 infant's lives every year and this varies minimally across the regions.

The low prevalence of EBF in most developing countries including Ethiopia is attributed to various maternal and child factors such as place of residence, age of the child, mother working outside home, maternal age and educational level, access to mass media and economical status by several researchers. So achieving optimal infant and young child feeding requires an integrated, comprehensive strategy that includes community based interventions as well as policy, health services and it is more of the challenge of mothers to attempt combined role as a worker and mothers. So this study was designed to compare knowledge, practice and determinant factors on optimal infant feeding practice between working and stay home mothers in Bahir Dar town Amhara regional state.

3. Literature review

3.1. Breastfeeding Practices

Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants; it is also an integral part of the reproductive process with important implications for the health of mothers. As a global public health recommendation, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health (11).

More than 10 million children under the age of five die each year. Forty one percent of these deaths occur in sub Saharan Africa and another 34% in South Asia a, major contributor to their death is poor breastfeeding practices (3).

Based on 2005 EDHS breastfeeding is nearly universal in Ethiopia, with 96 percent of children born in the five years preceding the survey having been breastfed at some time. The proportion of children ever breastfed ranges from a low of 93 percent in Addis Ababa to a high of 99 percent in Harari. However, the percentage of children ever breastfed does not vary much by other background characteristics (12). A study in Ethiopia reveals that poor breastfeeding practices currently cause 18% of infant deaths, accounting for the loss of over 50,000 infant lives every year, between 2000 and now, it was estimated that 412,000 infant deaths would have been due to poor breastfeeding practices (13). Breastfeeding is complex and is constructed and practiced within the social environment in which women live. Variations do exist in breastfeeding initiation and duration amongst different socio-economic and cultural groups (14).

Breastfeeding counseling and lactation support programmers in the work environment can contribute to success, in a study of working mothers in Turkey, concluded that support for breastfeeding women should involve longer leave from work and improved breastfeeding conditions at work (15).

A prospective, controlled intervention trial among working mothers conducted in Santiago, Chile, revealed Breastfeeding support that included anticipatory counseling combined with monthly postpartum clinical follow-up visits significantly increased the proportion of working women who exclusively breastfed their infants to 6 months of age

(53% of women in the intervention group compared with 6% of women in the control population). Most of the working women who maintained exclusive breastfeeding expressed and stored their breast milk (16).

3.2. Early Initiation of breastfeeding

Breastfeeding immediately upon an infant's birth ideally within one hour stimulates the production of the mother's breast milk. It also helps the mother's uterus contract, reducing the risk of heavy bleeding or infection. Feeding infants colostrum (the yellowish milk) produced by the mother's breasts during the first days after childbirth as early as possible is important for a newborn's health. Because it contains high concentrations of carbohydrates, protein, and antibodies (acting like a vaccine to prevent infections) and will not irritate the newborn's intestines, as other liquids will (17).

Early initiation of breastfeeding practices throughout the world is controversial that different studies done in different countries show as follows: A study done in Tanzania showed that breastfeeding initiation was universal, and on demand both in urban and rural areas. However, it was initiated within six hours of delivery by 84% of rural mothers and 93% of urban mothers ($p < 0.001$) (18). Similarly, study in Namibia indicated that most (65.8. %) mothers, initiated breastfeeding within 30 minutes of birth, while 100 (32.6%) took an hour, a day and or more days. Five (1.6%) of the mothers never breastfed. Study in Bangladesh also showed a very small percentage (5.12%) of infants received a breastfeed within 4-6 hours (19).

The 2005 EDHS shows that more than two in three children are breastfed within one hour of birth (69 percent) and 86 percent within one day of birth (20).

3.3. Prelacteal feeding

These practices of Prelacteal feed as food/liquid (such as sugar water, water, butter, castor oil) given to the infant before initiating breastfeeding for the first time is common , These practices are not necessary and may interfere with establishing good breastfeeding practices during the first days of the baby's life. A study conducted by Justin (2005) on factors that influence exclusive breastfeeding in Windhoek district in Namibia, showed that (26.1%), were given prelacteal feeds because of delayed milk production, another 6

(26.1%) because who were ill, 5 (21.7%) because of low birth weight (LBW), 4 (17.4%) for other reasons and 2 (8.7%) because the mothers were ill(21).

Another study done in India, shows that majority of infants (62.9%) were fed by 4-6 hours after birth, either with sugar water, castor oil or diluted cow's milk, and Sugar dissolved in boiled cooled water was the commonest feed (22).

A study done in infants visiting hospitals in La Paz, Bolivia on Breastfeeding intentions, patterns, and its determinants shows that prelacteal feed had been given to (17%) infants, formula to 10.4%, tea to 5.2%, honey to 0.2%, salt to 0.2% and a special diet because of illness to 0.8%. No data were recorded as to the amount of prelacteal feed given (23).

According to 2005 EDHS twenty-nine percent of children were given a prelacteal feed, that is, something other than breast milk during the first three days of life (24).

3.4. Exclusive breastfeeding

Global monitoring indicates that only 39% of all infants worldwide are exclusively breastfed and the prevalence of exclusive breastfeeding rarely exceeds 30% in most regions of the developing world (12). In spite of a global recommendation to implementing ideal infant feeding practices and exclusively breastfeed infants up to six months, many mothers around the world do not adhere to the practice.

In rural and urban Tanzania, early supplementation with water was a particularly widespread practice and premature complementation using thin porridge was common in both urban and rural and took place earlier in the rural area. By three months of age, 89% of rural and 80% of urban infants were given porridge. ($P < 0.02$). Despite a breastfeeding initiation rate of 66.7 % (24).

In Hong Kong, only 13.4% of breastfeeding mothers met WHO recommendations (to practice exclusive breastfeeding for the initial six months) (23). Study done in Bolivia in infants visiting hospital La Paz, showed that about 75–85% of the infants less than three weeks of age were exclusively breastfed, and during the following 1–2 months, about 40% of the infants were exclusively breastfed. And the rate of exclusive breastfeeding then gradually declined, reaching 20–25% among six-month-old infants. No infants were exclusively breastfed after 6 months of age. The exclusive breastfeeding rate in infants

under four months of age was 46% (n = 246, percentages were adjusted for the sizes of the age sub-groups). The median duration of exclusive breastfeeding was three months (n = 508) (Kaplan-Meier survival curve). Short exclusive breastfeeding duration was correlated with the use of prelacteal feeds ($p < 0.0001$) (20).

Another study reported that duration of exclusive breastfeeding in Sao Paulo, Brazil, was longer among factory workers who had support for breastfeeding at work, did not do shift work, and did not work on weekends (24).

3.5. Complementary feeding 6 months and beyond

Infants are particularly vulnerable to malnutrition and infection during the transition period when complementary feeding begins. Optimal complementary feeding depends on accurate information and skilled support from the family, community and health system. Inadequate knowledge about appropriate foods and feeding practices is often a greater determinant of malnutrition than the lack of food (18). The EDHS results also indicate that complementary foods are not introduced in a timely fashion for many children. At 6-8 months of age, 14 percent of children continue to be exclusively breastfed (12).

4. Objectives

4.1. General objective:

To assess and compare the knowledge, practice and determinants of optimal breastfeeding among working and stay-at-home mothers in Bahir Dar town.

4.2. Specific objectives:

- ⇒ To determine and compare the knowledge on optimal breastfeeding among working and stay-at-home mothers.
- ⇒ To measure and compare current practice of optimal breastfeeding among working and stay-at-home mothers.
- ⇒ To identify factors influencing optimal breastfeeding practice among these two groups of mothers.

5. METHODOLOGY

5.1. Study Area

The study was conducted in Bahir Dar town the capital city of Amhara National regional state and Bahir Dar city administration covering an area of 160 Sq. km. This town is located 565 Km far from Addis Ababa in the North West direction. The majority of residents are Amhara in ethnicity and Orthodox in religion. The town is administratively divided in to 17 urban and 4 rural kebeles.

According to the 2007 population and housing census of Ethiopia, the population of the town was 231,370 of which 112,961 were males and 118,409 females, the proportion of the children less than two years constitutes 5% of the total population (26). The health service of the town is provided by seven governmental and six non governmental health facilities.

5.2. Study Design

A community based comparative cross sectional study was conducted using qualitative and quantitative methods to assess knowledge, practice and determinants of optimal breastfeeding among working and stay-at-home mothers having children 0-23 months of age.

5.3. Source and study population

Source populations: were all mothers having children 0-23 months of age and who were residents of Bahir Dar town.

Study population: All mothers having children 0-23 months of age who were living in selected ten kebeles in the town.

5.4. Inclusion criteria

All mothers having children 0-23 months of age and residing at Bahir Dar town were included.

5.5. Sample size determination

5.5.1 Quantitative

The sample size (n) required for the study was calculated using Epi-Info stat cal function with the following assumption

⇒ Confidence level; 95%

⇒ Power 80%

⇒ Ratio 1:1

⇒ Difference of 10% on practice of optimal breastfeeding was assumed between working and stay-at-home mothers and it gives 407 working and 407 stay home mothers plus 5% of non response rate which makes total of n= 856

5.5.2- Qualitative

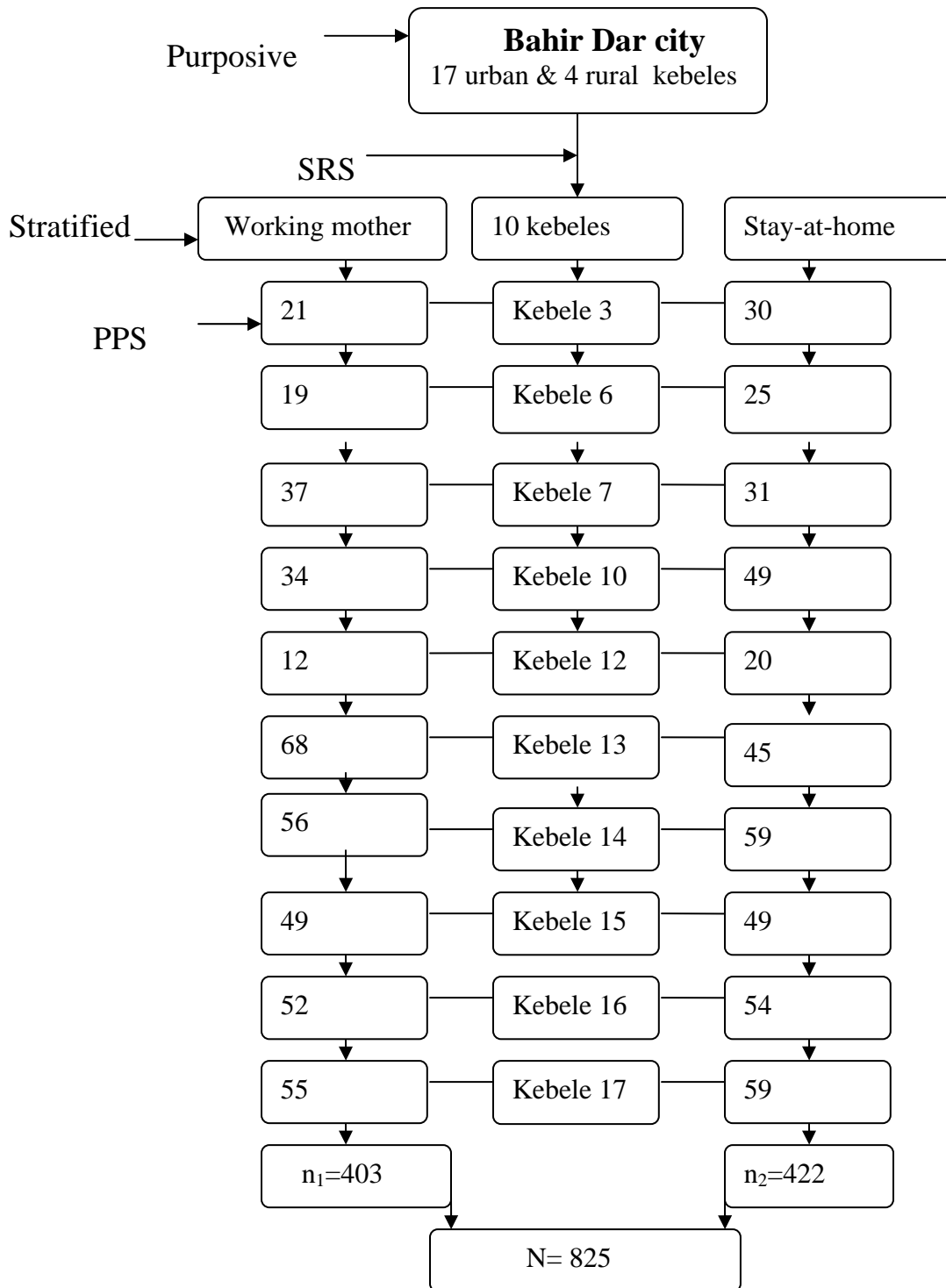
By using a purposive sampling method a total of four sessions of focused group discussion two from working and two from stay-at-home mothers were conducted. Each FGD comprises of 6-8 volunteer participants. The focus group discussion was used in order to supplement the result of quantitative information on determinant factors of optimal breastfeeding practice between working and stay home mothers.

5.6 - Sampling procedure

For this study, from a total of 17 urban Kebeles found in the town administration 10 Kebeles were selected using simple random sampling method. In order to identify working and stay-at-home mothers, a total enumeration (census) of mothers having children 0-23 month of age in the selected 10 "Kebeles" were undertaken. Data were collected between March 21, 2010, and April 29, 2010. Therefore, 7565 households were enumerated that comprised a total of 964 pregnant and 3915 mothers having children 0-23 months of age were identified of which 1025 were working and 2890 were stay-at-home mothers. The total 856 samples were distributed to 10 selected "kebeles" depending on the proportion of the mothers obtained by the census.

The first house with in the kebele was selected by rolling a stick and following the random direction pointed by the stick. Then to select the household Modified EPI cluster sampling technique was used. If there was more than one mothers having children 0-23 of age in a household one of them was selected randomly using a lottery method. In cases of non-response after repeated visit (three times), the next house hold was included in the study.

Figure I. Schematic presentation of the sampling procedure.



SRS= Simple random sampling

PPS= proportionate to population size

5.7 Methods of data Collection

A standardized and structured questionnaire was developed for the purpose of data collection after reviewing relevant literatures (26, 27) ten urban health extension workers for data collection and two health officers for supervision were recruited before data collection. Training for data collectors and supervisors were given for three days by preparing and using training manual. Pre-test was conducted to identify the potential problems for the proposed study and also to reduce information bias related to measurement, misclassification, recall, interviewers, inter and intra-observer bias., 30 mothers having children 0-23 months of age were pre-tested in one of non-selected Kebeles in the town.

5.8. Data Quality

The questionnaire was initially prepared in English, and then translated to Amharic for field purpose. Then the Amharic version was translated back to English to check for any inconsistencies or distortion in the meaning of words or concepts.

Ten data collectors' urban health extension workers, two health officer supervisors and the principal investigator were involved in data collection process. Before data collection the principal investigator provided training and guideline for data collectors and supervisors on how to interview mothers.

The questionnaire was pre-tested in order to assure whether the instrument is efficient enough to meet the objective of the study or not and 30 mothers having children 0-23 months were involved in the pre- test. Consequently, based on the feedback obtained from the pre-test the questionnaire was reviewed. Each data collector team was assigned in specific Kebeles. Each supervisor supervised designated data collectors within a delineated Kebeles. All forms were reviewed every night by the supervisors and investigator those with errors were returned to the interviewers for revisiting.

5.9. Qualitative part of the study

5.9.1. Focus Group Discussions

A total of four focus group discussions were conducted two from working and two from stay-at-home mothers after the collection of Quantitative data in order to generate more information about optimal breastfeeding practices among working and stay-at-home mothers.

5.9.1.1. Methodology

A minimum of six and maximum of eight respondents participated in the focus group discussions. Each session took time span of one hour. The groups were made homogenous in terms of employment status, age, and marital status. This helped the participants to talk freely what ever they know. Settings were arranged with privacy for participants, comfortable situation (location), avoiding noisy areas, non-threatening environment and easily accessible location.

The focus group discussion interviews were moderated by the investigator. Non-probability purposeful sampling was employed to select potential participants. Tape recorder was arranged to record the discussion process. The main ideas recorded were analyzed with the focus group discussion the qualitative data were analyzed after the analysis of quantitative data. Themes that emerged regarding the topic area were identified; different positions or dimensions that emerged were summarized and analyzed in the final write up.

5.10. Data Analysis

After completing data collection the data was categorized and coded by principal investigator and EPI 6 software was used for data entry and cleaning Then, the data was exported to SPSS program and analysis was done using SPSS version 16 computer packages, descriptive summary using frequencies, proportions, means and cross-tabs was computed as needed to present study results. Chi-square and OR with corresponding 95%

CI was used to determine relationships between certain variables and multiple logistic regression was also used to control for possible confounders among variables that were associated with the optimal breastfeeding among working and stay-at-home mothers. Results were described using tables and figures, P-value less than 0.05 will be considered as statistically significant.

5.11. Study variables

5.11.1 Dependent variables:

- ❖ Exclusive breastfeeding
- ❖ Immediate initiation of breastfeeding
- ❖ Timely initiation of complimentary feeding

5.11.2 Independent variables:

Five categories of factors will be associated as independent variables

- ❖ Socio-economic and demographic variables; type of family, family size, Income, maternal/paternal education and occupation (Working and stay home mothers)
- ❖ Child characteristics; Age, Sex, birth order
- ❖ Maternal Caring and characteristics; age, number of children ever born, ANC visits, use of extra food during lactation.

5.12. Operational definitions

1. Working mother:-all mothers who are employees in governmental/private organizations.
2. Stay-at-home: -are mothers who stay or works at home.
3. Optimal breastfeeding practices means: - Early initiate breastfeeding in the first hour after birth, breastfeed exclusively for about six months, timely introduction of complementary feeding at the age of 6 month and continue breastfeeding for two years or more.
4. Exclusive breastfeeding (EBF):- meaning those who had received nothing but breast milk from their mothers until six months of age.
5. Timely complementary feeding (CF) means introduction of solid, semisolid or soft foods in addition to breast milk to the infant at the age of 6-8.9 months.

5.13 Ethical considerations

Before the study began the ethical approval and clearance was obtained from the Research Ethics Committee at the School of Public Health, and AAU Faculty of Medicine Institutional Review Board (IRB) then an official letter from SPH, AAU was written to Amhara regional health bureau and Bahir Dar city administration from which letter of cooperation to each kebele was written. Study participants were given any information they need, Informed consent from each respondents was obtained before data collection. Participation was voluntary, anyone who was not willing to participate in the study was excluded, and confidentiality was maintained by avoiding leveling of names.

5.14. Dissemination of the results

The findings of this study will be disseminated to FMOH, Amhara regional health bureau, Bahir Dar City Administration health office, and to different Organizations that will have a contribution to improve the status of optimal breastfeeding practice in the working and stay-at-home mothers in the region. The findings will also be presented at various seminars and workshops and it will be published in a scientific journal.

6. Results

6.1. Quantitative Result

6.1.1 The socio demographic characteristics of the study subjects

A total sample of 825 respondents (422 stay-at-home and 403 working mothers) were studied, only 25 working and 6 stay-at-home respondents did not respond, (22 mothers refused and 9 were not available for interview at the appointed time), making the response rate (96.4%), [(98.6% stay-at-home and 94.2% working)]. The mean age of mothers in this study was 29.8 ± 6 years for stay-at-home and 29.8 ± 4.5 years for working mothers (range: 17-49 years).

Majority of mothers 334(79.1%) stay-at-home and 325 (80.6%) working mothers were Orthodox Christian by religion. While less than 20% of both study groups constitutes Muslim, Protestant, Catholic and other religion followers (Table 1).

The ethnic composition of the study participants shows that nearly all mothers 383 (90.8) stay-at-home and 365(90.6) working mothers were Amhara followed by Tegre, Agew, Oromo and others respectively. Among all respondents 378(93.8%) working and 378(88.9%) stay-at-home mothers were married and 5(1.2%) single, 12(3%) divorced and 8(2%) widowed were from working and 23(5.5%) single, 18(4.3%) divorced and 6(1.4%) widowed were stay-at-home mothers respectively.

The majority of mothers 383(93%) working and 147(34.8%) stay-at-home were educated secondary and beyond, with only 113(26.8%) stay-at-home mothers who were illiterate. The average monthly family income of working and stay-at-home mothers ranges the lowest less than 600 for stay-at-home and the highest ranges greater than 1001 Ethiopian birr (Table 1).

Table 1: Socio- demographic characteristics of mothers having children 0-23 months of age Bahir dar, Amhara region, March, 2010

Variables	Stay-at-home n=422 No. (%)	Working n=403 No. (%)	Total	P-value
Age of mother (Years)				
17-27	204(48.3)	124(30.8)	328(39.7)	P<0.001
28-38	192(45.5)	259(64.2)	451(54.7)	
39-49	26(6.2)	20(5.0)	46(5.6)	
Religion of mother				
Orthodox	334(79.1)	325(80.6)	659(79.9)	P<0.001
Muslim	76(18.0)	34(8.4)	110(13.3)	
Protestant	10(2.4)	37(9.2)	47(5.7)	
Catholic	2(0.5)	6(1.5)	8(1.0)	
Others	0(0)	1(0.1)	1(0.1)	
Marital status of mother				
Single	23(5.5)	5(1.2)	28(3.4)	P<0.001
Married	375(88.9)	378(93.8)	753(91.3)	
Divorced	18(4.3)	12(3.0)	30(3.6)	
Widowed	6(1.4)	8(2.0)	14(1.7)	
Educational status of mother				
Illiterate	113(26.8)	1(0.3)	114(13.8)	P<0.001
Primary	162(38.4)	19(4.7)	181(22.0)	
Secondary & above	147(34.8)	383(95.0)	530(64.2)	
Average monthly income				
<=600	175(47.3)	25(6.2)	200(25.9)	P<0.001
601- 1000	115(31.1)	108(26.8)	223(28.8)	
1001- 2000	49(13.2)	171(42.4)	220(28.5)	
> 2001	31(8.4)	99(24.6)	130(16.8)	
Owner ship of the house				
Privately Owen	161(38.2)	178(44.2)	339(41.1)	0.079
Rental	261(61.8)	225(55.8)	486(58.9)	
Total	422(100)	403(100)	825(100)	

6.2 Maternity and maternal health care service related characteristics of the mother

Mothers who had previous breastfeeding experience and the information on breastfeeding that a mother receives during ANC, at the time of delivery and soon after delivery are important to mothers to breastfed their child optimally.

During the survey most mothers 42.7% stay-at-home and 43.9% working mothers were primiporous, nearly all mothers 386(91.5%) stay-at-home and 399(99%) working mothers had attended ANC at least once in their 2nd trimester period .the use of ANC service is strongly related to the mothers level of education, mothers educated secondary and beyond were more likely to receive ANC service.

The proportion of births delivered in a health facility was low among stay-at-home mothers compared to working, the study shows that 385(95.5%) working and 322(77.5%) stay-at-home mothers were delivered in health institutions and the remaining in both group were delivered at home being assisted by HEWs, TTBAAs, UTTBAAs and/or relatives., only 141(35%) working and 101(23%) stay-at-home mothers had followed PNC after delivering of their young child (Table 2).

The age range of children considered in this study was 0-23 months, which is an optimal age range for breastfeeding. Based on this 189 (46.9%) children from working and 168(39.8%) from stay-at-home mothers were aged less than 12 months where as 214(53.1%) children from working and 254(60.2%) from stay-at-home were 12-23 months of age. The mean age of children from working were 11.8 ± 6.5 months and of stay-at-home mothers were 12.9 ± 6.7 months. While 193 (47.9%) and 203(48.1%) children from working and stay-at-home respectively were male and 209(51.9%) and 219(51.9%) were female. (Table 2).

Table 2: Distribution of maternal health and health care utilization Bahir Dar, Amhara region, March, 2010

Variables	Working n (%)	Stay-at-home n (%)	Total n (%)	P-Value
ANC follow up				
Yes	399(99.0)	386(91.5)	785(95.2)	0.000
No	4(1.0)	36(8.5)	40(4.8)	
Counseled on BF				
Yes	313(77.7)	243(56.6)	552(66.9)	0.000
No	90(22.3)	183(43.4)	273(33.1)	
PNC follow up				
Yes	142(35.0)	101(23.9)	243(29.5)	0.000
No	262 (65.0)	321(76.1)	582(70.5)	
Place of delivery				
Home	18(4.5)	95(22.5)	113(13.7)	0.000
Health Institution	385(95.5)	327(77.5)	712(86.3)	
Delivery assisted by				
HWs	386(95.8)	327(77.5)	713(86.4)	0.000
TTBAs	10(2.5)	31(7.3)	41(5.0)	
UTTBAAs	2(0.5)	12(2.8)	14(1.7)	
Others	5(1.2)	52(12.4)	57(6.9)	
Age of young child				
0-6 months	75(18.6)	66(15.6)	141(17.1)	0.12
7-11	114(28.3)	102(24.2)	216(26.2)	
12-23	214(53.1)	254(60.2)	468(56.7)	
Birth order				
1 st child	177(43.9)	180(42.7)	357(43.3)	0.000
2 nd child	136(33.7)	110(26.5)	246(29.8)	
3 rd child	71(17.6)	75(17.8)	146(17.7)	
4 th and above	19(4.7)	57(13.7)	76(9.2)	
TOTAL	403(100)	422(100)	825(100)	

HWs = Health workers.

TTBAs= Trained traditional birth attendants.

UTTBAAs = Untrained traditional birth attendants.

6.3 Assessment of Mothers Knowledge on breastfeeding

Mothers were assessed whether they had adequate knowledge about the breastfeeding practice or not. Practices related to breastfeeding such as early initiation of breastfeeding, exclusively breastfeeding, feeding of colostrum, whether they know use of feeding colostrums before delivery, over all the superiority and other uses of breast milk was mentioned in different ways to ascertain the level of mothers' knowledge.

The point was calculated for knowledge about breastfeeding based on five knowledge related questions. Those mothers who answered four and above out of five questions were considered as having satisfactory knowledge, while those who answered three and below were labeled as having unsatisfactory knowledge on breastfeeding. Based on this assumption, only 276(65.4%) stay-at-home and 371(92.1%) working mothers had satisfactory knowledge on breastfeeding practices (Table3).

After scoring the knowledge on breastfeeding practice it was tested in order to determine whether it had association with the back ground characteristics of the mother or not.

Hence, working mothers had more likely satisfactory knowledge on breastfeeding Practice compared to stay-at-home mothers. [Adjusted OR: 3.36, (95%CI: 1.94, 5.81)] furthermore place of birth showed significant association with maternal knowledge those mothers who were delivered at health institution had more likely sufficient knowledge than those mothers who delivered in their home [Adjusted OR: 1.85, 95%CI: (1.05, 3.26)] (Table3).

On the other hand, education of the mother was assessed whether it had association with the knowledge on practice of breastfeeding or not and those mothers who were educated secondary and above level had more likely sufficient knowledge than illiterate mothers. [AOR: 2.25, 95%CI (1.14, 4.43)] this could be explained by that education is good instrument to gain knowledge (Table3).

Table 3: Assessment of association of selected variables with mothers Knowledge on breastfeeding practice Bahir Dar, Amhara region, March, 2010.

Variables	Mothers knowledge on breastfeeding		COR(95%CI)	AOR(95%CI)
	Satisfactory n,(%)	Unsatisfactory n,(%)		
Mothers employment status				
Working	391(92.1)	32(7.9)	6.13,(4.05,9.27)*	3.36,(1.94,5.81)*
Stay-at-home (r)	276(65.4)	146(34.6)	1.00	1.00
Age of mother				
17-27 years(r)	244(74.4)	84(25.6)	1.00	1.00
28-38	396(81.8)	82(18.2)	1.54,(1.09,2.18)*	1.13,(0.71,1.82)
39-49	34(73.9)	12(26.1)	0.97,(0.48,1.97)*	0.81,(0.32,2.09)
Marital status of mother				
Single(r)	12(42.9)	16(57.1)	1.00	1.00
Married	558(79.7)	142(20.3)	5.14(2.38,11.09)*	2.34,(0.92,5.96)
Divorced	64(77.1)	19(22.9)	5.33,(1.66,17.12)*	4.40,(1.06,18.26)
Widowed	13(92.9)	1(7.1)	17.33,(1.98,151.40)*	6.36,(0.60,67.36)*
Mothers education				
Illiterate(r)	65(57.0)	49(43.0)	1.00	1.00
Primary	115(63.5)	66(36.5)	1.31,(0.81,2.12)	1.16,(0.66,2.05)
Secondary &above	467(88.1)	63(11.9)	5.58,(3.54,8.80)*	2.25,(1.14,4.43)*
ANC follow up				
Yes	631(80.4)	154(19.6)	6.14,(3.18,11.85)*	1.66,(0.69,3.98)
No(r)	16(40.0)	24(60.0)	1.00	1.00
PNC follow up				
Yes	196(80.7)	47(19.3)	1.21,(0.83,1.75)	0.89,(0.58,1.38)
No(r)	451(77.5)	131(22.5)	1.00	
Average monthly income				
<=600	175(47.3)	25(6.2)	1.00	
601-1000	115(31.1)	108(26.8)	3.26,(2.21,4.80)*	1.57,(0.91,2.70)
1001-2000	49(13.2)	171(42.4)	5.15,(2.94,9.02)*	0.90(0.46,1.76)
> 2001	31(13.2)	99(24.6)	5.29,(2.67,10.48)*	1.01,(0.47,2.17)
Place of birth				
Home(r)	60(53.1)	68(46.9)	1.00	
Health institution	557(82.4)	140(17.6)	4.14,(2.73,6.29)*	1.85,(1.05,3.26)*
Total	617	208		

* P value <0.005

6.4. Assessment of mother's breastfeeding practice

6.4.1. Breastfeeding Practices

Adequate nutrition is critical to child development. The period from birth to two years of age is important for optimal growth, health and development. Due to this reason breastfeeding is supported both nationally and internationally as a superior means of infant feeding that has many short and long term benefits for mothers and babies.

Globally, breastfeeding in the first hour after birth and exclusive breastfeeding for the first 6 months of life is on the rise, and early initiation of breastfeeding is universal in most developing countries, cessation and early introduction of complementary food have been observed in a substantial proportion of cases. The changes in the types of complementary foods used and the breastfeeding duration are analogues to the changes observed in industrialized countries after mid 19th century. Many of the associated factors are also similar (urbanization, female participation in labor force. increased availability of processed milk and their promotion by companies) (22). During our survey in Bahir Dar the breastfeeding experience was 401(99.5%) of working and 416 (98.6%) stay-at-home mothers had breast feed at some time and only 8 mothers questioned had not breastfed their infants due to their illness. and out of all studied mothers 330(81.9%) of working and 392(92.9%) of stay-at-home were currently breastfeeding.

6.4.2. Assessment of early initiation of breastfeeding and prelacteal fed

Early initiation of breastfeeding is encouraged for a number of reasons. Mothers benefit from early suckling because it stimulates breast milk production and facilitates the release of oxytocin, which helps the contraction of uterus and reduces postpartum blood loss. The first breast milk contains colostrum, which is highly nutritious and has antibodies that protect the new born.

The specific time point at which the infant first put to the breast was assessed based on the proportion of children 0-23.9 months of age that 347(86.1%) working and 315 (74.7%) stay-at-home mothers had initiated breastfeeding within less than an hour after birth .while 43(10.7%) working and 82(19.4%) stay-at-home mothers initiated with in greater than an hour, a day and more than days (Table4).

Among a total 28 un married mothers only 17(60.7%) mothers started breast-feeding within an hour after birth, while out of the married mothers, 616 (81.6%) initiated breast-feeding for the same time. 38(9.4%) working and 119(28.1%) stay-at-home mothers had given prelacteal feed that is some thing other than breast milk during the first three days of life of the infant. the prelacteal feeds used by the majority mothers was fresh butter, castor oil and boiled water with sugar (Table4).

Table 4: Distribution initiation of breastfeeding, prelacteal feed and other feeding practices Bahir Dar town Amhara region, March, 2010

Variables	Working n(%)	Stay-at-home n(%)
Initiation of breastfeeding		
Immediately	347(86.1)	315(74.7)
After hours	43(10.7)	82(19.4)
After days	11(2.7)	19(4.5)
Totally breast milk not given	2(0.5)	6(1.4)
Prelacteal fed given		
Fresh butter	7(18.4)	20(16.9)
Fresh butter& boiled water with sugar	1(2.6)	9(7.6)
Caster oil	3(7.9)	4(3.4)
Boiled sugar with water	26(68.4)	83(69.7)
Tea	1(2.6)	1(0.8)
Others	0(0)	2(1.6)
Are you still breastfeeding		
Yes	328(81.3)	386(91.4)
No	73(18.1)	30(7.1)
Is the infant feed colostrum		
Yes	383(95)	351(83.17)
No	18(15)	71(16.83)
Exclusively breast feed	137(34)	301(71.1)
Complementary food given	35 (8.7)	16(3.7)
Do you ever breast fed		
Yes	221(54.8)	397(89.8)
No	182(45.2)	43(10.2)
Total	403(100)	422(100)

6.4.3. Assessment of exclusive breastfeeding

Mother's milk alone can fully nourish a baby for the first six months of life. Exclusive breastfeeding helps maintain infant health, promotes growth and development, and increases chances of survival. Breast milk is easy for the baby to digest. During their first six months of life, infants do not need any supplementation (additional food or liquids), not even water. Breast milk has enough water to quench infants' thirst, even in arid or tropical climates.

Therefore, mothers were asked about their child feeding practice and whether they were exclusively breastfed or not for the stated period and the exclusive breastfeeding rate was 137(34%) for working and 300(71.1%) for stay-at-home mothers. the median duration of EBF for working children was 4 months where as for stay-at -home mothers was of 6 months of age.

6.4.4. Assessment of Timely Complementary Feeding

From the age of 6-8.9 months, babies need introduction of solid, semi-solid or soft foods in addition to breast milk. Other foods then provide additional nutrients for normal growth and development. Nonetheless, breastfeeding continues to make an important nutritional contribution well beyond the first six months. Breastfeeding can and should continue through the child's second year and beyond. Breast milk provides the growing child with energy, protein, and other nutrients such as vitamin A and iron, where other nutrients are scarce, breast milk can continue to provide half or more of the young child's nutrients.

Among all study mothers 63 working and 73 stay-at-home mothers had children 6-9 months of age out of those 54(73.9%) working and 22(34.9%) stay-at-home mothers introduced complementary feeding timely to their children, the rest introduced either earlier or later. The reasons for early initiation were: they need to teach the child to eat, mothers felt it was the right age to do so, they felt that they did not have enough milk and they return to work. While, for late initiation it was difficult to reach fair conclusion but majority of mothers were reported that they expect when the child starts complementary food the stool will have smell and they fear smell of stool.

6.5. Logistic regression analysis for Initiation and exclusive breastfeeding

6.5.1 Initiation of breastfeeding

Mothers were asked when they put the infant on breast for the first time. The percentage of children who were breastfed early were higher among working compared to stay-at-home mothers; however, there was no statistically significant difference in the timing of initial breastfeeding by sex of the infant, maternal age, marital status and birth order. Working mothers were 2 times more likely to initiate breastfeeding within the first hour of life compared to stay-at-home mothers [OR: 2.26, 95%CI ;(1.39, 3.68)].

Place of delivery had significant association with early initiation of breastfeeding, those mothers who delivered at health institution being more likely to initiate earlier than those mothers who delivered at home [OR: 2.98, 95% CI:(1.96,5.03)]. Moreover, mothers who were counseled on breastfeeding while they were following ANC were significantly more likely to have early initiation of breastfeeding compared to mothers who were not counseled on breastfeeding during their ANC follow-up (OR: 7.76,95%CI :(4.34,13.86)] see Table5.

Compared to illiterate mothers, the mothers with secondary and above education were more likely to initiate their children than those who were illiterate [OR: 2.09, 95%CI: 1.12, 3.88)] see Table 5.

Table5. Assessment of association of initiation of breastfeeding by maternal health service utilization Bahir Dar, Amhara Region, March,2010.

Characteristics	Early initiation of breastfeed		COR (95% CI)	Adjusted OR (95%CI)
	Yes (n, %)	No (n, %)		
Mothers employment status			1.00	1.00
Working	349(86.6)	54(13.4)	2.26,(1.39,3.68)*	1.69(0.89,3.21)
Stay-at-home (r)	321(76.1)	101(23.9)	1.00	1.00
Age of the mother				
17-27 years(r)	246(75.0)	82(25.0)	1.00	1.00
28-38	385(85.4)	66(14.6)	1.22,(0.76,1.97)	0.92,(0.49,1.74)
39-49	39(84.8)	7(15.2)	0.56,(0.24,1.31)	0.45,(0.14,1.39)
Educational status of mother				
Illiterate(r)	79(69.3)	35(30.7)	1.00	1.00
Primary	132(72.9)	49(27.1)	0.77(0.36,1.60)	1.02,(0.05,1.18)
Secondary & above	419(86.6)	71(13.4)	1.20,(0.61,2.36)	2.09(1.12,3.88)*
ANC follow up				
Yes	642(81.8)	143(18.2)	4.91,(2.42,9.96)*	1.68,(0.66,4.24)
No(r)	28(70.0)	12(30.0)		
Counseled on breastfeeding				
Yes	478(86.6)	74(13.4)	7.98,(4.70,13.52)*	7.76,(4.34,13.86)*
No(r)	192(70.3)	81(29.7)	1.00	1.00
Place of delivery				
Home (r)	76(67.3)	37(32.7)	1.00	
Health institution	594(83,4)	118(16.6)	2.98,(1.76,5.03)*	32.87,(1.87,577.37)*
Delivery assisted				
HWs	596(83.6)	117(16.4)	5.44,(2.95,10.02)	0.09,(0.01,1.84)
TTBAs	29(70.7)	12(29.3)	6.33,(1.72,23.19)	5.98,(1.49,23.96)*
UTTBAAs	8(57.1)	6(42.9)	6.50,(0.79,53.46)	6.86(0.76,61.0)
Others(r)	37(64.9)	20(35.1)	1.00	
Total	670	155		

* p-value < 0.05

6.5.2 Exclusive breastfeeding

Data were collected from mothers about exclusive breastfeeding practices and Bivariate and multivariate logistic analysis was done for selected socio demographic factors which influence exclusive breastfeeding status.

Compared to stay-at-home mothers, working mothers were more likely to practice exclusive breastfeeding to their children [Adjusted OR: 0.30, 95% CI :(0.20, 0.46)] Table 6.

This could be explained by that working mothers spent most of their time out of their house and consequently they were unable to provide breast milk to their children as they can not take their babies with them during working hours.

After adjustment was done in logistic regression, average monthly family income was associated with exclusive breastfeeding and those mothers who earned higher income (greater than 1,001 Ethiopian birr) were less likely to exclusively breastfed their children compared to mothers who earn less (less than 600 birr).[Adjusted OR:0.50, 95%CI:(0.28,0.88)] Table 6.

Those mothers who were educated up to secondary and beyond level were less likely to exclusively breastfed their children compared to those mothers who were illiterate [Crude OR:0.17 ,95%CI : (0.10,0.27)] but had no significant association after adjusting for other socio demographic factors.

Those mothers who were married were less likely to exclusively breastfeed their children than mothers who were single [Crude OR: 0.36, (95%CI: 0.15, 0.86)] but the association was lost after adjusting for other socio demographic variables.

Table 6. Assessment of predictors of exclusive breastfeeding Bahir Dar, Amhara region, March, 2010.

Characteristics	Exclusive breastfeeding		COR (95%CI)	AOR (95%CI)
	(Yes) n, (%)	(No) n, (%)		
Women's employment status				
Working	137(34.0)	121(28.7)	0.20,(0.15,0.27)*	0.30,(0.20,0.46)*
Stay-at-home (r)	301(71.1)	266(66)	1.00	1.00
Age of the mother				
17-27 years (r)	200(61)	128(39)	1.00	1.00
28-38	214(47.5)	237(52.5)	0.57,(0.43,0.77)*	0.83(0.56,1.22)
39-49	24(52.2)	22(47.8)	0.69,(0.37,1.29)	1.02,(0.46,2.25)
Marital status of the mother				
Single(r)	21(7)	7(25)	1.00	1.00
Married	364(52.0)	336(48.0)	0.36,(0.15,0.86)*	0.76,(0.26,2.21)
Divorced/separated	46(55.4)	37(44.6)	0.43,(0.14,1.33)	0.56,(0.14,2.27)
Widowed	7(50)	7(50)	0.33,(0.08,1.28)	0.58,(0.11,3.09)
Educational status of the mother				
Illiterate(r)	92(80.7)	22(19.3)	1.00	1.00
Primary	126(69.6)	55(30.4)	0.54,(0.31,0.96)*	0.97,(0.50,1.87)
Secondary & above	220(41.5)	310(58.5)	0.17,(0.10,0.27)	0.59,(0.29,1.16)
Average monthly familyincome				
<=600 birr.(r)	155(77.5)	45(22.5)	1.00	1.00
601-1000	107(48.0)	116(52.0)	0.26,(0.17,0.40)*	0.47,(0.28,0.78)*
1001-2000	84(38.2)	136(61.8)	0.17,(0.11,0.27)*	0.50,(0.28,0.88)*
>2001	57(43.8)	73(56.2)	0.22,(0.14,0.36)*	0.69,(0.37,1.28)
ANC follow up				
Yes	410(52.2)	375(47.8)	0.46,(0.23,0.93)*	1.23,(0.46,3.26)
No(r)	28(70.0)	12(30.0)	1.00	1.00
Counseled on BF				
Yes	277(50.2)	275(49.8)	0.71,(0.52,0.93)*	1.26,(0.86,1.94)
No(r)	28(70.0)	12(30.0)	1.00	1.00
Delivery assisted by				
HWs	356(49.9)	357(50.1)	0.42,(0.23,0.76)*	1.31,(0.08,19.94)
TTBAs	31(75.6)	10(24.4)	1.31,(0.53,3.27)	0.99,(0.32,3.05)
UTTBAAs	11(78.6)	3(21.4)	1.55(0.38,6.30)	1.32,(0.22,7.77)
Others(r)	40(70.2)	17(29.8)	1.00	1.00
Total	438	387		

*P-value <0.05

6. II. Qualitative Findings

A total of four FGDs were conducted; two from working and two from stay-at-home mothers. Each FGD comprised of six mothers having children 0-23 months of age. According to the opinion of participants breastfeeding is not the main problem in their community. However, participants noted that, under special circumstances such as during illness, mothers could introduce other foods to their children before the appropriate age.

Most working mothers mentioned that they exclusively breastfeed their children up to 1-2 months while they are in maternity leave and they start to introduce formula or cows milk depending on their economy to familiarize the baby to formula feeding before they resume work.

According to stay-at-home mothers, the purpose of starting giving gruel, formula or cows milk is to acquaint the child with other foods in addition to breastfeeding within the age of 4-6 months of age.

" If I had enough money, I prefer to feed my child with formula milk because it is good food for health and growth of child." A27 years old and married stay-at-home mother.

However, as illustrated by the following quotes, others disagreed with the interference of work with exclusive breastfeeding by noting that it is still possible to continue breastfeeding despite the inconveniences they have.

"Breastfeeding needs commitment of the mother and I give the child breast milk at night and early in the morning and leave him with expressed breast milk to be given until I return back to home at lunch time". A 30 year old working mother.

"... I give breast milk to my child on demand and I will take him with me when ever I leave my house and fed my breast..." A35 year old stay-at-home mother.

Most of the participants from working and stay-at-home do not know advantages of breast milk and disadvantages of formula milk.

According to the opinion of stay-at-home mothers breastfeeding can be interrupted some times for certain days when they depart away from their house due to different social and health related reasons.

Most of the discussants from working mother agreed that the reasons for not breastfeeding their children were their early returning to work after maternity leave. To solve this, working mothers suggested to have 2-3 working hours leave daily to feed their children which should be facilitated by employers.

7. Discussion

The purpose of the present study was to assess and compare the knowledge and practice of optimal breastfeeding especially early initiation, exclusive breastfeeding and timely complementary feeding among working and stay-at-home mothers, however breastfeeding practices were more diversified and characterized by the late initiation of breastfeeding, administration of substances other than maternal milk, and the introduction of foods within less than 6 months of age following the infant's birth. These various practices of infant feeding have an important impact in terms of public health.

The present survey indicated that 371(92.1%) working and 276(65.40%) stay-at-home mothers had satisfactory knowledge on breastfeeding, the high proportion of satisfactory knowledge among working mothers could be explained as that working mothers were highly educated than stay-at-home mothers and it is consistent with the study done at Jimma (67%) for stay-at-home mothers (25).

Moreover, the knowledge of mothers about breastfeeding practices depends on attendance of formal education, antenatal follow-up and those who were counseled benefit of breastfeeding and related topics.

In our study 399(99%) of working and 386(91.5%) stay-at-home mothers were attended ANC out of these attendees only 313(56.4%) working and 243(43.6%) stay-at-home mothers were counseled on breastfeeding this shows that mothers who have attended antenatal clinic and counseled on breast-feeding while they were following ANC were found to be more likely of having satisfactory knowledge about the benefits of breast-feeding.

The majority 328(81.3%) working and 386 (91.4%) stay-at-home mothers were breastfeeding their children at the time of survey and most 349(86.6%) working and 321(76.1%) stay-at-home mothers initiated breastfeeding within less than an hour of delivery and the prevalence of breastfeeding among working and stay-at-home mothers was similar with the study by Kirk Dearden, Mekibib Altaye, Irma Demate in urban Guatemala(2002)(31).

An other study done by Bekele Shimeles survey in Akaki beseka among factory workers and housewives which shows 100% initiation of breastfeeding among both groups, which is consistent with our study but the initiation rate is higher compared to our study in Bahir Dar(26).

In the present study exclusive breastfeeding rate was 134(34.1%) for working and 301(71.1%) for stay-at-home mothers, the lower rate of EBF among working mothers might be explained by the fact that when women are better educated, the opportunity for employment is eminent and thus the opportunity to stay-at-home and practice EBF is compromised this is consistent with the study done in Guatemala that mothers who worked out side the house were significantly less likely than mothers who did work away from house to exclusively feed 8% verses 21 % respectively; but the EBF is lower as compared to ours study(31).

The results from our study are consistent with other studies that point mothers work outside the home as one of the greatest deterrents to exclusive breastfeeding. the study done in Bangladeshi Housewives and paid tea-pluckers ,Pakistan women who were not employed outside the home were significantly more likely to exclusively breast-feed(29,30).

The median duration of exclusive breastfeeding for working and stay-at-home mothers was 4.1 months and 6 months for working and stay-at-home mothers respectively when compared to the study done in Akaki beseka factory workers and housewives which had the mean duration of exclusive breastfeeding for factory workers was 1.91 months and 3.29 months for housewives when both study results compared Bahir Dar towns mean exclusive breastfeeding duration is longer than akaki (26).

The majority of working mothers supplemented diet at 2-3 months of age as compared to stay-at-home mothers introduce at 4-6 months of age. The reason for early introduction of supplementary food as indicated by majority of working mothers was return back to work and the reason given by stay-at-home mothers was different and difficult to reach fair conclusion.

Accordingly mothers of children age 6-9 months were asked if they were started timely complementary feeding or not, out of which 54 (73.9%) working and 22(34.9%) stay-at-home mothers were started complementary food to their children.

8. Strengths and limitation of the study

8.1. Strengths

- The study explored the status of infant and young child feeding behaviors according to occupation status of mothers using appropriate design which has been one of the important research gaps in the area.
- The study employed both quantitative and qualitative methods which helped in triangulation of findings.

8.2. Limitations of the study

- Recall bias is the main limitation of the study that mothers may not recall the time of early initiation of breastfeeding, exclusive breastfeeding and timely complementary feeding.
- Exclusive breastfeeding was not calculated based on the 24 recall which made comparison with some of previous research works difficult.

9. Conclusions

- Knowledge on the benefits of breastfeeding practice was generally high among working and stay-at-home mothers; those who were educated, attended ANC, and counseled during their antenatal visits being more likely to have good knowledge.
- The study indicates that working mothers were more likely to have early initiation of breastfeeding compared to stay-at-home mothers.
- Mothers' employment status, Education, ANC follow-up, place of delivery and delivery assistance were found to be significant predictors of early initiation of breastfeeding.
- It was interesting to note that despite their better knowledge on benefits of breastfeeding, working mothers had lower levels of exclusive breastfeeding.
- Mothers' employment status, age of mother, average monthly family income, ANC follow-up, place of delivery and delivery assistance were found to be significant predictors of exclusive breastfeeding.
- The proportion of mothers who introduced complementary feeding timely were higher among working compared to stay-at-home mothers.

10. Recommendations

Based on the findings the following recommendations are forwarded;

- Given the significant problem of suboptimal breastfeeding behaviors, it is high time to accelerate efforts aimed at full scale implementation of the existing Infant and Young child feeding strategy.
- Adequate support should be given to all employed mothers to protect their right to breastfeed.
- Proper counseling on infant and young child feeding should be intensively provided at all service delivery health institutions to pregnant and postpartum women.
- Relevant stakeholders should be involved in a package intervention which could include training of service providers at health facility and community level and making

breastfeeding counseling important part of services during ANC, delivery and PNC follow up.

- Public education and promotion of breastfeeding should be under taken through the education system and the media.
- Since breastfeeding behavior is largely culture and context specific, further research needs be done to see stability of the associations found in different regions and across time.

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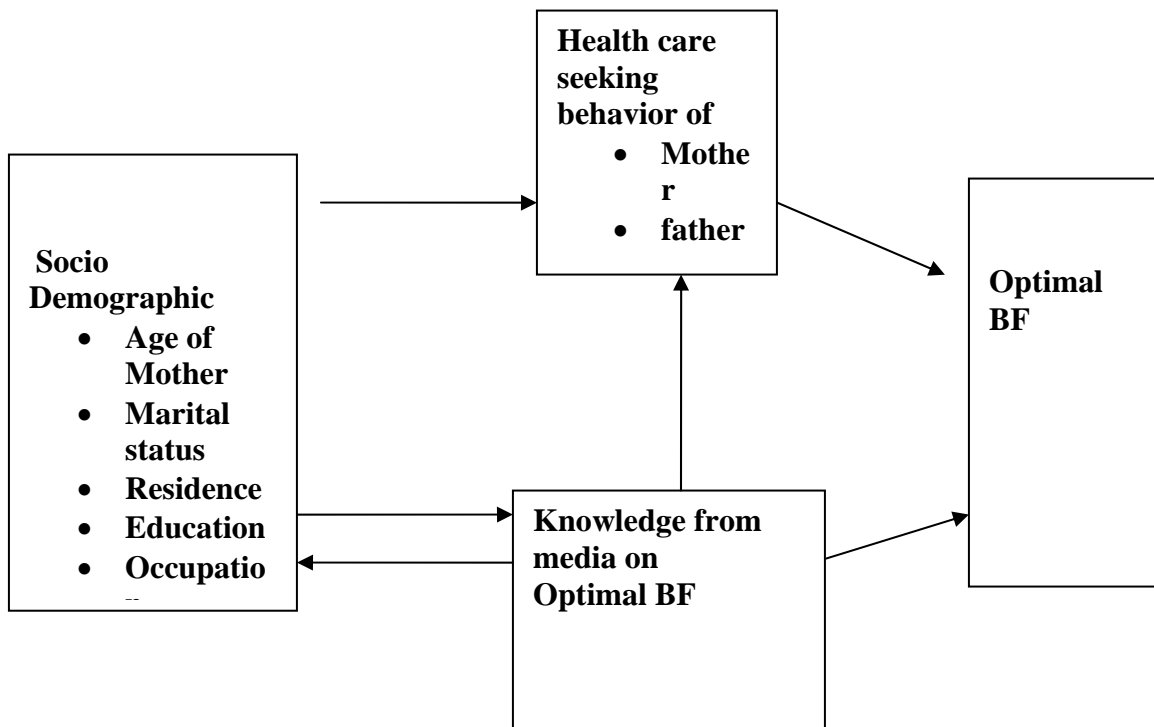
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12. Annexes

Annex II. conceptual frame work

Figure 2. Conceptual frame work which shows factors related to optimal breastfeeding



Annex III: Quantitative Questionnaire (English)

Addis Ababa University- Faculty of Medicine School of Public Health

Study information sheet

A study on assessment and comparison of knowledge, practice and determinants of optimal breastfeeding between working and stay-at-home mothers in Bahir Dar town, North West of Ethiopia.

Mothers employment status 1. Working_____2. Stay-at-home _____001 .Record number._____ 002. Region_____003. City_____ 004. Kebele_____ 005.House number_____

My name is -----I am one of the data collectors for the study being conducted by Addis Ababa University, faculty of medicine at Bahir Dar town on mothers having children 0-23 months of age. The research will assess and compare knowledge, practice and influencing factors of optimal breastfeeding between working and stay-at-home mothers. The study does not cause any harm other than expensing you 30 minute for interview. I would also like to assure you about the confidentiality of information and the information will be only used for this research and you have full right to reject, participate or interrupt the interview at any time. The information that you will give us is very important to meet the objective of the study and generate appropriate information necessary for interventions strategies and policy formulation on optimal breastfeeding.

For detail information you can contact the investigator through **cell phone** 0918-764960 and **e-mail** gzatamir@yahoo.com

If you are willing, we can continue.

Thank you

If they are not willing, do not force them to participate in the survey

Thank you!!

Informed consent form

I the undersigned have been informed that the purpose of this research project is to assess and compare the knowledge, practice and influencing factors of optimal breastfeeding between working and stay at home mothers having children 0-23 months of age. I have been informed that I am going to respond to this question by answering what I know and practice concerning optimal breastfeeding. I have been informed that the information I give will be used only for the purpose of this study and does not cause any harm other than expensing 30 minute for interview, my identity and the information I gave will be treated confidentially. I have also been informed that I can refuse to participate in the study or not to respond to the questions I am not interested and totally stop the interview at any time in the process. Finally I have given contact address of investigator through cell phone or e- mail to ask questions.

Based on the above information I agree to participate in the research voluntarily with the hope of contributing (on behalf of one) to the effort of knowing the use of breastfeeding to the infant, mother and community.

Signature of respondent's _____ date: _____

Interviewer name-----Signature-----date-----

Supervisor's name _____signature ----- date-----

The out come is(thick one)

Complete_____

Incomplete_____

Others specify_____

Annex III Consent format for Focus Group Discussion

Introduction:-

Welcome to this focus group discussion

My name is -----and my colleague name is -----We are here to discuss with the group about the knowledge, practice and major challenges identified on optimal breastfeeding. there is no right or wrong answer and, Now we will discuss some thematic areas of optimal breastfeeding knowledge and experiences. All comments, both feel free to express your knowledge and experience honestly and openly. Your name will not be mentioned to protect your confidentiality. You have also the right to answer or not for questions which might be inconvenient for you. However, your information is very important to evaluate and improve the program. Are you willing to participate in this discussion? (YES or NO)

If no, thanks her/him and stop in here. If yes, thanks her and continue the discussion.

Date of Discussion _____ Time started: _____ Time ended: _____

Interviewer facilitator _____ Sig. _____

Name of note takers: _____ Sig. _____

Main Discussion areas for FGD

Perception about usefulness of breastfeeding

√Do you think proper breastfeeding is a problem in your community? If yes, how serious.

1. Important challenges of breastfeeding

2..Specific advantage of breastfeeding versus formula feeding

when did you initiated breast milk to your infant ? Did you give prelacteal food/ fluid tothe infant? if yes what that? Mention the type of food/fluid and use of it to the infant

Did you give colostrum to the child and do you know the use of it to the child?

For how many months the infant should feed only breast milk?

Is there any reasons not to exclusively breastfed your child? Mention some of the reasons?

When will you complement other foods in addition to breast milk?

Questionnaire for assessing, comparing the knowledge, practice and its determinants between working and stay-at-home mothers 15-49 years of age having children less than 23 months of age in Bahir dar city Amhara Region North west of Ethiopia

Section 1: socio- Demographic characteristics of all eligible Mothers.

S.No	Questions and filters	Response coding categories	Skip to	Code
201	Now I would like to ask you some questions about your back ground & house hold information How old are you? (Age in completed in years.)	_____(Years)		
202	What is your marital status?	1.Singl 2.Married 3.Married (separated) 4. Divorced 5.Widowed 99.Other (specify)_____		
203	What is your current educational status?	1.Illiterate 2. Read and write 3. Primary level(1-8) 4.Secondary level(9-12) 5.Collage level and above		
204	What is your religion?	1.Orthodox 2.Muslim 3.Protestant 4.Catholic 5.Other(specify)_____		
205	What is your ethnicity?	1Amara 2.Tigray 3.Oromo 4.Agew 99.Other(specify)_____		

206	What is your current employment status?	1.Not employed 2.working for cash 3.Not working for cash 99.other(specify)-----		
207	Is your husband employed?	1.Yes 2.No		
208	What is your husbands' educational status?	1.Illiterate 2.Read and write 3.Primary level(1-6) 4.Secondary level(7-9) 5.College level and above		

S.No.	Questions and filters	Response coding categories	Skip to	Code
209	What is the average monthly family income? * Probe for approximate number	_____ 77.Do not know		
210	What is the ownership of the house?	1. Privately owned 2. Rental 99. others specify _____		

Section -2: Core questions on History health care of the mother

S.No.	Questions and filters	Response coding categories	Skip to	Code
211	Now I would like to ask some questions about your maternity experience How many children are you borne alive?	Number of children borne Alive_____		
212	How many children do you have now alive?	Number of children_____		
213	Age of your infant/ child? (in months/ years)	_____		
214	Sex of the infant/ youngest child?	1.Male 2.Female		
215	Birth Order of the youngest child?	1.1 st child		

		2.2 nd Child 3.3 rd child 4.4 th child		
216	Have you attended antenatal clinic in any health facility while you were pregnant with the last infant/child?	1.Yes 2.No	If no skip to Q 219	
217	If the answer of Q216 yes how many times have you attended the anti natal clinic in specific health facility	Number of attended Antenatal Follow ups_____ 77.Do not Know		
218	How many months pregnant were you when you first received ANC for this pregnancy	1. 1 st trimester 2. 2 nd trimester 3. 3 rd trimester		
219	Where did you give birth to the youngest infant/child?	1.Home 2.Government Hospital 3.Government health center 4.Private Hospital 5. Private health center 99.Other (specify)_____		
220	Who assisted the delivery of the last infant/child?	1.Health professional 2.Trained traditional birth attendant 3.Non trained traditional birth attendant 4.Reletives/Friends/Neighbors 5. Health extension worker 99.Other (specify)_____		

S.NO.	Questions and filters	Response codeing category	Skip to	Code
221	Following your last delivery have you	1.Yes		

	attend postnatal clinic in any health facility?	2.NO		
222	If the answer to question 221 is yes, when?	1. 1week after delivery 2. 2week after delivery 3. 3&aboveweeks after delivery		

Section-3 Basic questions about mother's knowledge on breastfeeding

S.No.	Questions and filtering	Response categories and coding	Skip to	Code
223	During antenatal visit were you counseled about infant feeding	1.Yes 2.No		
224	Do you think it is appropriate to initiate breastfeeding 1 hour after safe delivery of the baby?	1.Yes 2.No		
225	Do you think feeding colostrum is important To the baby?	1.Yes 2.No		
226	Do you know the importance of feeding baby the first yellowish milk before delivery?	1.Yes 2.No		
227	Do you know that feeding children up to the age of 6 month breast milk alone with out even water is sufficient?	1.Yes 2.No		
228	Do you know about use of breast milk to the infant?	1.Yes 2.No		
229	For how long will you feed breast milk to your child?	Number of years-----		
230	The answer to Q228 is yes Where did you got the information about the use of breast milk to the infant?	1.From health professionals 2.Radio 3.TV 4.Grand mothers 5.Hasband 99.Others_____		

Section- 4: Basic questions about practice of breastfeeding of the infant

S.NO.	Questions and filtering	Response Categories coding	Skip to	Code
231	Now I would like to ask you some questions about breastfeeding practice of the infant Do you ever give breast milk to the infant?	Last birth 1. Yes 2. No	Next to last birth 1. Yes 2. No	second to last birth 1. yes 2.No
232	If the answer to Q231 is no what is your reason for not ever breast feed your infant?	1. No breast milk 2. Mother is sick 3. Child is sick 4. Mother is working 5. breast disease 6. No reason 7. I do not know		
233	How long after birth did you first put your infant to the breast? *Probe to answer in minutes /hours/days	Immediately-- Hours----- Days-----		
234	What did you give (feed) your baby immediately after delivery?	1. Fresh butter 2. Caster oil 3. Breast milk 4. Boiled sugar 5. Tea 99. Other(specify)-----		
235	Within the first three days after delivery before your breast milk began flowing regularly, did you feed the infant the fluid colostrum which comes from your breast?	1. Yes 2. No		
236	Are you still breastfeeding to your infant?	1. Yes 2. No		
237	How many times did you feed last night	Number of night times		

	between sunset and sunrise? * If the answer is not numeric, probe for approximate number	breast feed _____ Don't know _____																										
238	How many times did you feed Yesterday during the daylight hours? *If the answer is numeric Probe the approximate number	Number of daylight breast Feeding _____ 77.Don't Know																										
239	How many times did you feed breast milk per 24 hours?	Number of breastfeeding per 24 hours _____ 77.Don't Know																										
240	For how many months did you only breastfeed your infant/ child?	Months _____ 77.Don't know																										
241	Before the age of 6 month did you feed any thing in addition to breast to the child?	1. Yes 2. No																										
242	If yes to Q 241 what did you feed the child in addition to breast milk?	<table border="0"> <tr> <td></td> <td>Yes</td> <td>No</td> </tr> <tr> <td>Water/tea _____</td> <td>1</td> <td>2</td> </tr> <tr> <td>Sugar _____</td> <td>1</td> <td>2</td> </tr> <tr> <td>Cows milk _____</td> <td>1</td> <td>2</td> </tr> <tr> <td>Powder Milk _____</td> <td>1</td> <td>2</td> </tr> <tr> <td>Cereal based fluid _____</td> <td>1</td> <td>2</td> </tr> <tr> <td>Adult food _____</td> <td>1</td> <td>2</td> </tr> <tr> <td>Other (specify) _____</td> <td>1</td> <td>2</td> </tr> </table>		Yes	No	Water/tea _____	1	2	Sugar _____	1	2	Cows milk _____	1	2	Powder Milk _____	1	2	Cereal based fluid _____	1	2	Adult food _____	1	2	Other (specify) _____	1	2		
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S.No	Questions and filters	Response and coding	Skip to	Code
243	At what age would be given other drinks/foods to the child?	Number of complete months _____ 77.Don't know		
244	What age was when the infant / child was first given this additional drink/food?	Month _____		
245	Why did you started at this age?	1. return to work 2. Not enough milk 3. Baby is ill 4. mother is ill 5. to supplement breast milk 6. right age for complementation		

		7. to teach the child to eat food		
246	If the infant has not fed any thing except breast milk since now when do you plan to give additional diet? * Record complete months	Number of complete months ____ 77.Don't know		
247	Did the infant/child drink any thing from a bottle with nipple yesterday or last night?	1.Yes 2.No 77.Don't know		
248	What is your reason for never breast fed your infant?	1.No breast milk 2.Mother is sick 3.Child is sick 4.Breast disease 5.No response 77.Don't Know		
249	In your opinion for how long should the infant should breast milk only?	Number of complete months____ 77.Don't know		

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207	vKu ƒ e ^ > L + - " ; (Ä I " " Ø Áo > G < uf Ç ` LÃ Á K < } Ö Á m - < " Ä S K Ÿ ä M)	> ————— 1 ¼K - U ————— 2		
108	¼vKu ƒ ¼f U I ` f Á [Í e " È f ' - ;	ÁM } T \ ————— 1 T " uw " S } é ö ¼T × K 2 1- Á [Í (1 - 8 -) ; ö M — 3 2- Á [Í (9 - 12 -) ; ö M — 4 ç K Ä " ÿ³ uLÃ ————— 5		
109	¼u } cw ¼ " ` Ñ u = u > T " Ä e " f ' - ; S Me KT Ó - f Ä V ; \	> L - k - U ————— ————— 77		
210	¼T > \ uf ¼S •] Ä u ƒ	¼Ö M ————— 1 ¼ÿ Æ Ä ————— 2 KZ (ÄÑKê) ————— 99		

i ðM G&f æK" K& " %e" f %a %I;U " i f f M " T S KY~ Ø Áo <

} 1	Ø Áo < " f " ā ' @ + -	%S Me" S KÁ lØ` U Éw	Ø Áo + " %S ' KM > Óvw	S Me
211	>G< " ŸM ĩ " > " LKÉ Ò ` %T ÁÁ² < Ø Áo < " eÖ Æ nKG< ; U " ÁIM MÐ < uI " f " MÅªM ;	uIÄ " f %} " KÆ I " f w³f ulf ` _____		
212	u>G<< Ñ? U " ÁIM IÉ " f uIÄ " f >K< f ;	>G< uIÄ " f ÁK < I " f w³f ulØ ` _____		
213	%>G<< %S Ú [h MÐ eÉ T @ u " ^ f	_____ " ^ f		
214	%>G<< %S Ú [h MÐ eä	" " É _____ 1 cŸ _____ 2		
215	%>G<< %S Ú [h / MÐ u " K& pÅU } Ÿ } M Ä Ÿ u w	%S ÈS] Á M ĩ _____ 1 G& } - M ĩ _____ 2 fe } - M ĩ _____ 3		
216	%S Ú [h M ĩ " e ` Ñ < e Á K < % p È S " K& U ` S ^ i f f M > É ` Ñ - Á - n K <	> " _____ 1 %KU (>M } Ÿ ä } M G &) - 2		
217	%216 S Me > " Ÿ J ' p È S " K& U ` S ^ i f f M Á Á [Ñ u f Ö ? É ` ĩ f " e Ø e " f Ñ ? ; i f f M > É ` Ñ - ' u ` ;	%} Ÿ ä } K u f Ñ ? w³f ulf ` _____ > Leä - c - U _____ 77		
218	%S Ú [h M ĩ " % KÆ f % f ' - ;	uŸ _____ 1 uS " Ó e f J e ú ā M _____ 2 uS " Ó e f Ö ? x u Ä _____ 3 uÓM Ö ? x u Ä _____ 4 K L (Ä Ñ K) _____ 99		
219	%S Ú [h M ĩ " c = MÆ Áª K Å f T " ' u ` ;	%Ö ? uKS Ä _____ 1 %cKÖ ' < %MU É >ª L ĩ - 2 ÁM cKÖ ' < %MU É >ª L ĩ - 3 uŸ ² S É : e " f : Ç - Ô [u Ÿ - 4 %Ö ? > Ÿ e, " i " _____ 5 K L (Ä Ñ K) _____ 99		
220	%Ú [h M ĩ " Ÿ " KÆ u Ç L % É I [" K& %Ö ? U ` S ^ u T " - - U Ö ? É ` ĩ f i f f M > É ` Ñ - Á - n K <	> " _____ 1 %KU (>M } Ÿ ä } M G &) _____ 2		

YÖM :3 ¼>Ø u=ε" „ < " eK Ö ƒ T Ø v f " Ö k T @ Á L t - " ε - k f K T " p ¼} ² Ö Ë
 Ø Ä o

} 1	Ø Ä o < " f " ä ' @ t -	¼ S Me " S K Ä l Ø ` U É w	Ø Ä o t " ¼ S ' K M > Ö v w	S Me
221	I é ' < ε Ä } " K Ä u e " f Ñ ? ' - Ö ƒ T Ø v f S É S ` Á K u f Ä L K < ÿ > " É c - f u ä < ÿ J ' 00 Ä S ' Ó u < ÿ 24 c - f u ä < ÿ J ' c ~ " Ä S ' Ó u < ÿ 24 c - f u K Ä ÿ J ' k " „ < " Ä S ' Ó u <	" Ç Ä - ' < _____ c - f u l Ø ` _____ k - f u l Ø ` _____		
222	I é ' < ε " Ä } " K Ä ε e ÿ f e } - - k " ÿ Ö ƒ ¼ T > x - " u ÿ ð d i (ε " Ñ `) S Ø v f > K u f " ;	> " _____ 1 ¼ K U _____ 2		
223	ε " Ñ ` K I é ' < ε " Ä T ð p S - ÿ ² = u ð f Ä - n K < ;	> " _____ 1 ¼ K U _____ 2		
224	I é ' < K U " Á I M Ñ ? ' - - č ε " f " d Ä c Ö - ¼ ε " f Ö ƒ w % ε ¼ Ö v S q ¼ f ¼ T Ñ v - ; S Me " M } c Ö f i j K - - " k " ε " Ç Ä U ~ T ' n n f Á e ð M ð M	k " f u l Ø ` _____ " [f u l Ø ` _____		
225	" Ç Ä - ' < K } " K Ä I é " U " S c Ö f > K u f Ä L K <	K Ö p u ? _____ 1 ¼ > d ² Ä f _____ 2 ¼ ε " f Ö ƒ _____ 3 u ð L - č ¼ } u Ö u Ö e " ` _____ 4 h Ä _____ 5 K L (Ä Ö k e) _____ 99		
226	¼ ε " f Ö ƒ K I é ' < Ö k T @ ε " Ä K - Ä - n K < ;	> " _____ 1 ¼ K U _____ 2		
227	K 225 S M c < > " ÿ J ' f U I ` ~ " ÿ ¼ f > Ñ - <	ÿ Ö ? u K S Ä } - _____ 1 u Ç Ä _____ 2 u , K ¼ » " _____ 3 u Ö ² x _____ 4 ÿ " L I ε " f _____ 5 ÿ v K u ? _____ 6 K L (Ä K ê) _____ 99		

YÖM :4 KIÉ'<Ö ƒ ¼T Øvf MUÉ" u} S KY} ¼T Ǿ¼p S c[ā © ØÁo<

} 1	ØÁo<" f"ā'@+¬	¼S Me" S KÁ lØ` S Áw	ØÁo+ " ¼S' KM >Övw	S Me
228	>G<" ¼S Ú [h Ié" Mĭ" ¼Ö ƒ T Øvf" G<@ u} S KY} Ømf fÁo- <" MÖ Äpf eðMØKG& ¼S Ú [h¬ " Ié" Mĭ" ¼Ö ƒ " } f >Øw} ¬ f Á¬ nK<";	>" —————1 ¼KU (>LÖ vG&U) ———2	>LÖ vG&U ÝK<" Á ØÁo 230	
229	Ié'<ö ƒ " ÁÁLÖ uuf U ; "Áf U "É" '¬ ;	Ö Ǿ ? " } f eKT Ä " x ¬ 1 ue" f IS U —————2 uIé'< IS U —————3 uÖ ƒ IS U —————4 U ; " f ¼K~U —————5 >L¬ pU —————77		
230	Ié'<u} " KÁ ue" f Ñ²? '¬ Ö ƒ T Øvf ¼ÉS \Kf Ý>"É c¬ f uā < ÝJ' 00 ÄS 'Óu< Ý24 c¬ f uLÄ ÝJ' k" „ <" ÄS 'Óu<	" ÇÄ¬ ' ————— c¬ f ulØ` ————— k" f ulØ` —————		
231	" ÇÄ¬ ' <Ié'<u} " KÁ eey 3 k" f vK< Ó²⇒ „ < ÝÖ ƒ ¼T s x ¬ " uÝ ðdi >Øw} ¬ ā M";	>" —————1 ¼KU (>LÖ vG&U) ———2		
232	¼S Ú [h Ié" Mĭ" >G<" Ö ƒ " eÄÖ uƒ '¬ " ;	>" —————1 ¼KU (>LÖ vG&U) ———2		
233	K231 >" ÝJ' ufL" f "¬ eKf ìGÄ ÖMn eeyf " x É [e Ié'< e" f Ñ²? >Øw} ¬ ā M ulØ` S Me ÝM} cÖ f ijK¬ " lØ` eeyÝ~U ~ T 'nnf ÁeðMØM	uKƒ Ié'< ÄÖ uƒ w³f ulØ` ——— >L¬ k¬ U —————77		
234	ufL" f "¬ eKf ìGÄ " Øā eeyf ÖMp É [e Ié'< e" f Ñ²? >Øw} ¬ ā M ; ulØ` S Me ÝM} cÖ f ijK¬ " lØ` eeyÝ~U ~ T 'nnf ÁeðMØM	uk" Ié'< ¼Ö vuf w³f ulØ` ————— >L¬ k¬ U —————77		
235	Ié'<ö ƒ S Øuf S ðKÑ< e"È f '¬ ¼T Ä¬ lf " ¼T Ǿ uƒ ; S Mc<Ä 'uwL+¬	>" ¼KU KS Øuf cðMÓ — 1——2 Ié'<cÄkpe ———1——2 uý aÓ^U ——— 1——2 Ö ƒ cÄç`e ——— 1——2 e"Á>S ^ '~ ———1——2 KZ (ÄÑKê) ———99		
236	Ié'<Ý} " KÁ eey ³ É [e ¼} S Ñvt ¬ ¼U Ów >Ä ' „ < U "É" " +¬ ; S MMc<Ä 'uwL+¬ ÄI" " Øá o Ý6 " ` uā < KJ' Ié" " Ö ƒ uS Øvf LÄ ÁK ÝJ' '¬	>" ¼KU U "U >M} S ñuU -1——2 ¬ č hÄ ———1——2 uðL ¬ č eÝ` ———1——2 ¼Ýwf " } f ———1——2 ¼q`qa " } f ———1——2 ¼S p eIM ———1——2 ¼> a m U Ów ———1——2 KZ (ÄÑKê) ———99		
237	Ié'< KU " ÁIM Ñ²? U "U dÄcÖ ¬ Ö ƒ w% >Ö uƒ Ý" ` uā < ÝJ' 00 ÄS 'Óu<	¼Ö vvt ¬ " ^ f ulØ` ——— >L¬ k¬ U —————		
238	Ié'<Ý} " KÁ EU a eey >G<" Ýe" f	¼} Ö kcƒ k" f (" ^ f)		

	Ö ƒ ue}k` U "U }Ú T] U Ów }S Óx ¼T Á¬ p ŸJ' S † KT cĚS ` ¬ Ācuƒ ;	w³f _____		
239	ŸÖ ƒ " }f u}Ú T] KIé'<}Ú T] U Ów S eÖ f ¼ĚS \f S † ¬ ;	¼} ĚS [Kf Ń?____ >L¬ pU _____77		
240	ue`e >e}Ā¼f >"É Ié" Mĭ KU " ĀIM Ń?¼e"f Ö ƒ " }f w% S Ø vf Ā•[uā M ;	¼T Ÿ vuf Ń?¾ f w³f _____		
241	u>Ö nLĀ >"É Iç" ¼e"f Ö ƒ KU " ĀIM Ń?S Ø vf Ā•`uā M ;	" ^ f ulØ ` _____		
242	KS Ú [h Ié" Mĭ Ö ƒ T Ø vf Āt[Ö ƒ KU "É" ¬ ; ĀI"" Ø Āo ¼T S KY}¬ Ö ƒ T f vf Lt[Ö <e" „ <	uÖ ƒ " }f É`kf _____1 ue"f IS U _____2 uIé'< IS U _____3 uÖ ƒ IS U _____4 ue"f e^ S ĚS ` _____5 Ié'<>MÖ v uT K~ _____6 Iç'<}Ú T] S Ów T >eĚ uf >É T @eKĀ[c-7 e`Ó` " _____8 S Me ¼KU _____9 KĹ (Ā Ńkê) _____99		
243	Ié'<Ö ƒ S Ø vf Āt[Ø uf eĚ T @ e"f 'u` Ÿ" ` uā < ŸJ' 00 ĀS 'Óu<	eĚ T @ulØ ` _____		

Declaration

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or another university and that all sources of materials used for this thesis have been fully acknowledged.

Name: Gezahegn Tamir

Signature: _____

Date of submission _____

This thesis work has been submitted for examination with my approval as university advisor.

Name: Dr. Solomon Shiferaw

Signature: _____

Date: _____