# UTILIZATION OF THE HEALTH EXTENSION PROGRAM SERVICES IN AKAKI DISTRICT, ETHIOPIA

NAME: **Mulugeta Debel Bultume**

STUDENT NUMBER: **3073964**

SUPERVISOR: **Prof. David Sanders**

CO- SUPERVISOR: **Prof. Damen H/Mariam**

A mini-thesis submitted in partial fulfillment of the requirements for the Master's degree in Public Health (MPH) in the School of Public Health, University of the Western Cape.

2012

Key words;

1. Health extension workers
2. Primary Health Care
3. Ethiopia
4. Oromia Regional State
5. Akaki District
6. Federal Ministry of Health
7. Health Sector Development Program (HSDP)
8. Maternal Mortality
9. Insecticide Treated Nets (ITN)
10. Millennium Development Goal (MDG)

Abstract

Introduction: The Health Extension Program (HEP) is an innovative, community based comprehensive primary health care program that Ethiopia introduced in 2003. It gives special emphasis to the provision of preventive and promotive services at community and household level. However, utilization of the HEP packages is low and reasons for this underutilization are not well known.

Aim: The aim of this study is to assess the availability and utilization of the Health Extension Program Service in Akaki District of Oromia Region, Ethiopia.

Methodology: Quantitative study using a **cross-sectional survey design**. The study was conducted in Akaki District of Oromia Regional State in Ethiopia with 79,162 inhabitants. Random sampling was used to select 355 households. A structured data collection tool/ questionnaire was employed to collect data from the study participants. Data were analyzed using SPSS for Windows version 19. Descriptive statistics were used to analyze socio demographic characteristics of the study participants and to assess the availability and utilization of each service component.

Result: The response rate of the study was 100% with complete data obtained from 335 (94.4%) of the households. The majority (93.1%) of respondents were women. The availability of HEP services as described by the household visit of Health Extension Workers (HEWs) is very high with 86.6% visiting at least monthly and 11.3% visited sometimes. There was a highly significant association between the health extension workers' visit to households and health extension service utilization during pregnancy (OR=16.913, 95% CI 8.074-35.427 at p<0.001). HIV testing utilization showed a tenfold increase among households who received education. Participation of households in the Model family initiative was another key factor associated with high levels of HEP services utilization.

iii

Conclusion and Recommendations: Though HEP services are available for most households, the frequency of household visits by HEWs and the involvement of Households in model family training greatly influenced service utilization. Improving frequency of services availability at household level and consistent health education will greatly improve services utilization.

UNIVERSITY *of the*
WESTERN CAPE

DECLARATION

I declare that the work presented herein is original and that it has not been submitted for any degree or examination in any other university or institution for the award of a degree or certificate and that all sources of information and data used or quoted have been duly indicated and acknowledged.

Mulugeta Debel Bultume Debel

2012

Acknowledgements

My deepest gratitude first goes to my Supervisor Prof**. David Sanders** and co-Supervisor Prof**. Damen H/Mariam** who gave me their constructive and supportive comments from the very beginning of proposal development until the completion of this paper. Secondly, I would like to greatly acknowledge Dr Abera Bekele for his material and technical software application support. Thirdly, I would like to thank Akaki District Health office for their collaboration during data collection and Oromia Regional Health Bureau for helping me at all levels to finalize my thesis. I would like to extend my foremost gratitude to Western Cape University School of Public Health. I would like to thank the Integrated Family Health Program (IFHP) and WHO, (Ethiopia) for its funding to undertake this study. Finally, my special and heartfelt gratitude goes to my wife Sr. Zewditu Huluka and my sweet children Mekdes and Ruth Mulugeta for their unlimited practical and emotional support during my tutorial trips to the Republic of South Africa, data collection, supervision, my fieldwork.
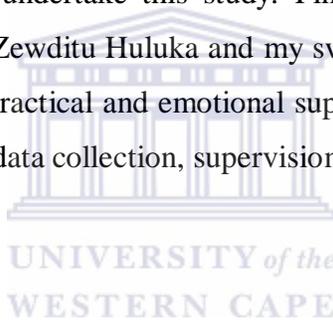
Glossary of Acronyms

AIDS	Acquired immunodeficiency Syndrome
ART	Anti Retro Viral Therapy
CHA	Community Health Agents
CHW	Community Health Worker
CI	Confidence Interval
CPR	**Contraceptive Prevalence Rate**
CSA	Central Statistics Authority
DF	Degree of Freedom
EDHS	Ethiopian Demographic and Health Survey
EPI	**Expanded Program of Immunization**
FMOH	Federal Minstry of Health
HEP	Health Extension program
HEW	Health Extension worker
HSDP	Health Sector Development Program
HIV	Human immunodeficiency virus
ITN	Insecticide Treated Net
MOH	Ministry of Health
OR	Odds Ratio
ORHB	Oromia Regional health Bureau
STI	Sexually Transmitted Infection
TB	Tuberculosis
TBA	Traditional Birth Attendants
WHO	World Health Organization

Table of Contents

List of Tables

1. Introduction

1.1. Background

Ethiopia compares poorly to other low-income Sub-Saharan countries with respect to population health status (Federal Ministry of Health (FMOH), 2009). The major causes of these unacceptably poor health outcomes are associated with preventable infectious illness and malnutrition (FMOH2005). Close to 80% of illnesses in Ethiopia are attributed to communicable diseases (FMOH, 2009). In 2010 malaria, respiratory tract infections and intestinal parasitosis were the major causes of outpatient visits to health care facilities (FMOH, 2010).

According to the Ethiopian Demographic and Health Survey of 2000, 52% of children under the age of five years suffered stunting due to malnutrition, while 26% of children were severely stunted. Similarly, 47% of the children were underweight, and 16% of them were found to be severely underweight (Health Sector Development III (HSDP III) HSDP III, 2005). In addition to malnutrition, poor hygiene and environmental health contributes to the high prevalence of water borne and water washed diseases. The proportion of households using treated and safely stored water was about 8%. Although the latrine coverage has improved significantly across the country, latrine utilization is still very low (31%). Only 7 % of households practice hand washing with soap (FMOH, 2010).

During the last two decades, the HIV/AIDS epidemic has posed critical challenges to the already weak health care system. In 2009, about 1,030,000 people were living with HIV/AIDS and of these 289,732 needed antiretroviral therapy (ART) (MOH, 2010). Currently the adult HIV prevalence in the country is estimated to be 2.1% and the total number of deaths due to HIV/AIDS so far amounts to 44,751.

In HSDP III (FMOH, 2005), it was stated that the underlying causes for all these health problems in Ethiopia are poverty, illiteracy (especially among women), inadequate access to clean and safe water, poor or no sanitation and inadequate access to health services. Moreover, the high population growth rate imposes an enormous demand on

the health care services. There is also an increased need and demand for reproductive health care services that help to address issues of gender inequality, the practice of early marriage, female genital cutting, unwanted pregnancy, closely spaced pregnancy, unsafe abortion, and sexually transmitted infections (STIs) including HIV/AIDS.

1.2. Problem Statement

Even though more than 30,000 health extension workers have been deployed to deliver the health promotion and disease prevention services, as well as a few targeted curative services, at household and community level, several challenges have been reported in the implementation of the HEP. Recent Oromia Regional Health Bureau Reports (ORHB, 2009) have shown that encouraging results have been achieved only in some components such as latrine construction, immunization and prevention of HIV/AIDS activities but the success in other components such as tuberculosis control activities, first aid, improved housing, increasing institutional deliveries and antenatal follow up is still low. The reasons for low utilization of these components are not known.

1.3. Rationale for the study

This study intends to identify the status of health extension program utilization by the community. Such evidence will inform the necessary public health actions to be taken by local and national program managers.

2. Literature review

The use of community health workers (CHWs) to increase the reach of health services has been a part of various health programs in many developing countries in the 1970s (Kong, 2008). Studies have shown that the provision of health care services at community level through community volunteers and workers with substantial involvement of the community has reduced morbidity and mortality due to diseases of public health concern (WHO, 2003). This includes the provision of affordable, acceptable and accessible quality services through full participation of the community

in decision-making (Lawn, 2008, p 919). Below some experiences of community-based interventions in primary health care services are reviewed.

Progress in primary health care since Alma-Ata was assessed in 30 low income and middle-income countries with the highest annual reduction of mortality among children less than five years of age. Most of these countries had involved community health workers who helped to increase coverage of immunization, family planning and nutrition promotion with reductions in inequity (Rohde et al, 2008, p 950).

Another review of multi-purpose community health worker programmes for primary health care assessed experiences of community health workers in supporting antiretroviral treatment. This assessment showed that community-based extension of health services is essential for antiretroviral treatment scale-up and implementation of comprehensive primary health care (Hermann et al, 2009). However, this same study and others (Pereze *et al*, 2009) suggest that there are eight issues to be considered as essential for the success of CHW programmes. These eight issues include: 1) selection and motivation where CHWs should be selected on the basis of their motivation to serve the community they will be working in; 2) initial training where the length and content depend on the prior knowledge and the tasks and roles to be fulfilled by the future CHWs; 3) Simple guidelines and standardized protocols so as to ensure quality of the work of the CHWs; 4) Supervision, support and relationship with the formal health services for continued quality of service provision by CHWs; 5) Adequate remuneration/career structure so that the CHWs spend reasonable time on health service provision; 6) political support and regulatory framework; 7) alignment with broader health system strengthening; and 8) flexibility and dynamism. According to this study, therefore, these eight essential issues need to be analyzed and well accounted for so as to make the CHW programs successful.

In another review, Haines et al (2007) pointed out four major determinants of the success of community health worker programs summarized as: 1) National socioeconomic and political factors that affect interactions between mobilized and well-

informed communities, community-based workers, and formal health services to result in the rapid spread of child survival interventions with simultaneous mortality reduction; 2) Community factors where the mobilization of specific communities may play an important part in the improvement of maternal and newborn health; 3) Health system factors where harmonization between the formal health system and CHW programs is required for their effectiveness; and 4) International factors may affect the capacity of governments to finance health systems.

Furthermore, studies suggest that a chain of the following events in the operational component of any CHW programs should occur to contribute to the performance of such programs (UNICEF & WHO, 2006). This chain of events includes establishing the roles and responsibilities of CHWs and identifying the competencies CHWs need to successfully carry out the tasks assigned to them; establishing criteria and methods for recruitment of CHWs; carrying out competency-based training; providing tools to enhance and maintain performance after competency-based training, including job aids and algorithms; taking actions to maintain performance after competency-based training, including supervision and support; and measuring performance after competency-based training to identify problem areas and provide feedback based on monitoring and evaluation.

Lewin *et al* (2010) in their Cochrane review have shown that community based programs implemented by lay health workers have promising benefits in promoting immunization uptake and improving outcomes for acute respiratory infections and malaria, when compared to usual care. In a similar review of literature, Lehmann and Sanders (2007) agreed with the effectiveness of such programs but aired concerns over their utilization due to poor community introduction of the programs, which often then leads to political tensions between traditional hierarchies and the structures set up under the new regime or due to a preference for formal, established health services.

Another multi-national study conducted by Bhutta and colleagues (year of publication not indicated) has also indicated that community based health service provision is effective in reducing maternal and child mortality as well as mortality due to

communicable diseases such as malaria. Inadequate and irregular supportive supervision, lack of equipment and non- functional equipment, insufficient initial and continuing education, and low status of remuneration, however, were reported to have hampered the effectiveness of community based health services provision as well as utilization in study countries. Similarly, studies reviewing the effectiveness of programmes that have aimed to increase access to health care through the involvement of community health workers report variations in quality and sustainability. Lack of support for human resource quality assurance mechanisms have been identified as factors significantly contributing to such disappointing results.

An unpublished program report from Nepal (WHO, 2007) shows that community based health service provision through female community health volunteers significantly increased service coverage. These female volunteers were tasked with activities such as health education, health promotion, community mobilization, providing community based services and referring patients that need care by health care providers with better training.
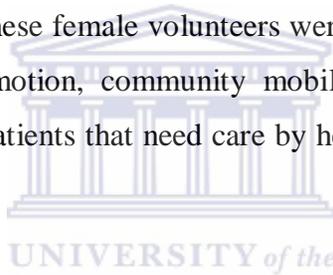
In Ethiopia, a range of community health service activities have been implemented since the early 1970s with the emphasis on accelerating primary health care. Traditional Birth Attendants (TBAs) and Community Health Agents (CHAs) were in unique positions in that they knew local populations and their health needs. They were involved in a wide range of primary health care activities that ranged from health awareness creation, coordination of immunization and environmental sanitation, constructing latrines and treating various infections to making home visits and delivering and immunizing babies (Ministry of Health, 1985). However, by the beginning of the 1990s very high turnover and non-functionality of these CHWs was observed due to a combination of program deficiencies, particularly lack of remuneration, refresher courses, and supervision (HaileMariam and Pickering, 1991; Ayele, Desta, and Larson 1993).

However, Ethiopia is a country with a desperately low number of skilled health manpower making the referral linkage non-functional. There are only 0·02 physicians and 0·24 nurses and midwives per 1000 people, compared with the WHO minimum recommended standard of 2·3 per 1000 (Loewenberg, 2010). To fill the gap of this pressing need the country is depending on less skilled community based health care service providers, health extension workers, who are assisted by community volunteers.

The Ethiopian Health Sector Development Plan (HSDP)-III (FMOH, 2005) acknowledges that there is a very high unmet health care need in rural Ethiopia that needs to be addressed through rapid expansion of PHC services. The Health Extension Program (HEP) was one of the strategies designed to address this unmet need. The HEP is a core component of the broader health system in Ethiopia where the strategies for interventions focus on household and community. The overall goal of this program is to create a healthy society and reduce rates of maternal and child morbidity and mortality (FMOH, 2007).

HEP is a community- based health service delivery program whose educational approach is based on the *diffusion model*, which holds that community behavior is changed step by step: training early adopters first, then moving to the next group that is ready to change. Those resistant to change would gradually be conditioned to change because of changes in their environment (Unlin and colleagues, 2005). It is an innovative comprehensive primary health care program that Ethiopia introduced in 2003 (Awash, 2007). This community based program especially emphasizes the provision of preventive and promotive services at the household level.

The program has sixteen packages that are further grouped into four major components (MOH, 2005). The first one focuses on the improvement of family health services such as maternal and child health, family planning, immunization, adolescent reproductive health and nutrition. The second area is prevention and control of communicable diseases. This component addresses the most dominant communicable diseases such as TB, HIV/AIDS, and malaria and also focuses on first aid and emergency measures. The

third area deals with hygiene and environmental sanitation which includes excreta disposal, solid and liquid waste disposal, water supply and safety measures, food hygiene and safety measures, healthy home environment, control of insects and rodents and personal hygiene. The last component is health education and communication, which is an area that is crosscutting.

To implement this program more than 30,000 health extension workers were trained and deployed in each kebele (the lowest administrative unit) (Tilahun, 2007; MOH, 2005), All HEWs are females except in some pastoral areas, with a minimum of 10th grade education and recruited from the kebeles where they are assigned to work after one year training. These HEWs devote 75% of their allocated working hours to visiting families in their homes and performing outreach activities in the community. The house-to-house activity starts by identifying households to serve as role models. The model households are considered early adopters of health practices as trained by the HEWs in line with heath extension packages. They help diffuse health messages, leading to the adoption of the desired practices and behaviors by the rest of the community (Bilal and colleagues, 2010). The rest (25%) of their time is spent at the health post to provide preventive services such as immunizations and injectable contraceptives. In addition, HEWs provide basic curative services for selected common communicable diseases such as malaria, diarrhea, intestinal parasites and childhood pneumonia (MOH, 2005).

There are a few studies that have been conducted to describe the utilization of the health extension program in the country. The first was a cross-sectional survey conducted in 2008 in the southern part of Ethiopia to assess the progress in the implementation of the health extension program (Abebe, 2008). Structured questionnaires were used to assess the success of the program, availability of resources and describe major constraints. Health extension workers were interviewed at the health post level along with families who were certified as properly utilizing the health extension program (model families) and some model households were observed. The results of this study showed that bed net utilization was increased by 60%, which in turn decreased the incidence of malaria

by 30%. Family health service coverage and latrine construction and utilization were also improved.

There is anecdotal evidence that the HEWs have contributed to the high coverage of bed net utilization. Similarly, Abrha *et al* reported that HEWs have brought considerable improvement in women's utilization of family planning, antenatal care and HIV test uptake (Abrha, et al, unpolished material). Parallel to the expansion of health extension packages to promote health and prevent diseases, the Government of Ethiopia has undertaken massive construction of health centers where mid level health workers are deployed. Like HEWs, health workers in these health centers are also providing family health services.

Abraha and Nigatu (2009), in their time-series study by modeling trends of health and health related indicators in Ethiopia, have reported that there was a sharp increase in health services coverage such as CPR and EPI in 2006 and 2007. The researchers have attributed this sharp rise in the service coverage to the deployment of more Health Extension workers to rural health posts who are primarily focusing on promotive and preventive health care services. The EDHS latest report (CSA, 2011) also revealed that the HEWs are in the forefront in providing family health services. The report highlighted that 9% of the ANC and 27% of the modern contraceptive service recipients reported to have received the services from the HEWs. This is consistent with the notion of the health extension package that the HEWs are considered the main change agents for health in the community (FMOH, 2005). The package has tasked them with mobilizing and empowering households and communities to take responsibility for their own health by involving them in the planning and execution of community health activities and services.

Tedbabe (2009) evaluated the performance of volunteers in providing Community Case Management for diarrhea, fever and pneumonia – in a pre-HEW setting in Liben Woreda, Oromia Regional State in Ethiopia (Woreda (also spelled as Wereda) is an administrative division of Ethiopia managed by a local government. Woredas are composed of a number of Kebeles which are the smallest unit of local government in

Ethiopia (Library of Congress, 2011). The result of this evaluative study showed that volunteers treated 4787 cases of which 36% were malaria, 26% were pneumonia and 14% were conjunctivitis and 12% were watery diarrhea with some dehydration. Volunteers were able to identify 2.5 times more children with the above illnesses than all the health facilities in the district. This finding strongly suggests that community volunteers greatly increased coverage of health care. This study also revealed that facility based health education services by health care workers were inferior to community-based education in mobilizing the community to seek health care services when there are symptoms of the above diseases. In this same study, Tedbabe and colleagues (2009) stated that health extension workers who are better in terms of training and education background than the community case management (CCM) workers[1] could be able to make community based interventions more effective. The report also highlighted that the health extension workers were highly valued and accepted by the communities they work with. The report, however, pointed out that the training, supervision, role in the MOH team, career-ladder options, and planned commitment of the health extension workers need review.

In line with this, a cross-sectional survey conducted in 2005 to assess the knowledge and utilization of Insecticide Treated Nets (ITNs) in 17 malaria endemic districts reported high levels of knowledge and utilization of ITNs (Abebe, 2008). This study found out that 91.1% of the respondents knew that ITNs are important to control malaria. About 60% of the respondents said that ITNs are useful to control malaria through prevention of mosquito bites. Though the overall utilization was 81.6%, the ownership of nets varied. For example, 93.7% of households in Dire Dawa town had ITNs as compared to 17.6% of households in Afar Region where the community is nomadic/pastoralist. This study recommended that special emphasis should be given to vulnerable people such as nomadic communities. However, the results of this study

---

[1] CCM workers were individuals selected from the community (usually CHWs) who were less educated and less trained than HEWs and perform less complicated tasks (Rapid Diagnostic Tests) and dispense expensive anti malarial drugs like Coartem®. They also treat pneumonia with inexpensive drugs like cotrimoxazole to help achieve Millennium Development Goal 4. [*Ethiop. J. Health Dev.* 2009;23(1):120-126]

need some cautious interpretation as the extremely high ITN utilization rate in the town may not be due to the involvement of community health workers, but due to the better awareness and access to health information from mass media like TV and radio.

In an interventional community trial study by Datiko and Lindtjorn (2009) in the SNNPR to investigate whether involving health extension workers in TB control would improve case detection rates, it was reported that the case detection (122.2% Vs 69.4%, p<0.001) and treatment success (89.3% Vs 83.1%, p=0.012) rates were significantly higher in the communities where the health extension workers were involved. Statistically significant numbers of females with TB were diagnosed (149% Vs 91.6%, p<0.001) and successfully treated (89.8% Vs 83.1%, p=0.05) in the interventional kebeles as compared to control kebeles. This is in line with the fact that the HEWs are all females, with very few exceptions, and easily accepted by the female beneficiaries in the communities they serve.

Negusse and colleagues (2007) in their assessment of initial community perspectives on the health extension program in Walkait, Ethiopia, indicated that the efforts of the HEWs have been well recognized by the community members in helping them change behaviors that were barriers to their health. The report, however, reveals that the low levels of knowledge reported by participants regarding the major communicable diseases were worrisome. This report points out lack of follow up, non-standard environment of health-promoting information, and lack of administrative support to be partly responsible for sub optimal program performance.

The range of evidence presented herein suggests that the HEP in Ethiopia has tremendously contributed to the improved health service coverage as well as reduced mortality and morbidity especially among mothers and children. Bilal and colleagues (2010) attribute the effectiveness of the HEP to many factors among which are 1) government leadership and political commitment, 2) multifaceted or system approach utilized in implementing the program, 3) mobilization of financial support from development partners, and 4) implementing innovative training strategy whereby

TVETs were used for theoretical teaching and health centers used for practical attachments.

Several socio-cultural factors have been noted to influence the use of existing health care services in Ethiopia (MOH, 2010). These factors include educational status, local beliefs, access to health care facilities and income of the households. For example, the decision to choose the place of delivery for pregnant women is not determined by herself but by the husband or other senior family members such as the mother in-law or older sisters in-law, who may prefer home delivery (Warren, 2010). In 2009, the government of Ethiopia planned to increase skilled birth attendance to 32%. However, three very populous regions in the country were able to increase skilled delivery services to only 12% of the pregnant women (Koblinsky and colleagues, 2010; Messelech, 2009). This very slow progress in increasing the number of deliveries at health institutions is a major challenge to achieving the Millennium Development Goal of reducing maternal mortality through the promotion of delivery at health facilities (Kwast, 2009).
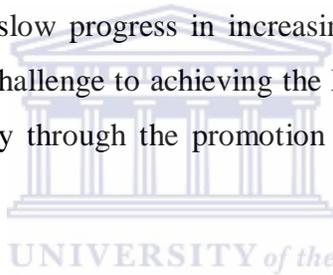
In an attempt to assess technical and scale efficiency among the health posts in Tigray region, Sebastian and colleague (2010) reported that only 25% of the health posts were functioning efficiently. Despite the documented contribution of the HEP in increasing the health service coverage, Sebhatu (2008) also reported that there are a number of challenges that derail the progress anticipated through this program. Lack of attention to the details of working conditions and to human resources management, absence of institutional arrangements for management of health extension program at all levels, absence of regular supportive supervision, and under-equipment of the health posts were some of the challenges found to have negatively affected the program. Similarly, lack of communication and negotiation skills among HEWs, lack of equipment and drugs in health posts, inadequate means of transportation for HEWs and patients on referral and slow or weak involvement of stakeholders were reported by Banteyerga and colleague (2008) to remain obstacles to the optimal functioning of HEP.

From the utilization and community participation point of view of the HEP in Ethiopia, very little is known. Banteyerga (2011), however, has shown that local leaders, religious leaders, and associations of youth, women and farmers actively participate during construction of pit latrines, vaccination, and community meetings. The study revealed that the community members confessed that by doing simple things at home they could protect themselves from diseases.

Unlike in Tigray, there is no region specific study on the HEP in Oromia Region. Therefore this study was aimed to assess the availability of components of health extension program and service utilization in Akaki districts of Oromia Region

3. Aim and Objectives

3.1. Aim of the study

The aim of this study is to assess the availability and utilization of the Health Extension Program Service in Akaki District of Oromia Region, Ethiopia and the main explanatory factors in the utilization of these services.
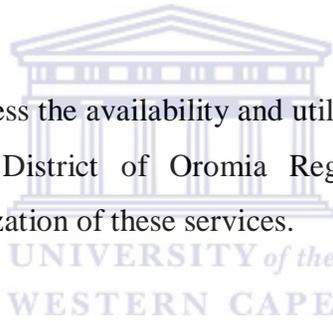
3.2. Objectives

1. To identify the components of health extension program (HEP) packages that are being offered by Health Extension Workers (HEWs) in Akaki District;
2. To assess the knowledge and awareness of the community about the components of the Health Extension Program Package;
3. To describe the components of HEP package that have been utilized by the community;
4. To identify the reasons why some components of the health extension program have not been utilized by the community.

4. Methodology

4.1 Study area

The study was conducted in Akaki district of Oromia region. Akaki district is one of 304 districts found in the region. Akaki district is found in the Finfine Zuria Liyu zone

of Oromia region and the capital town of the district is about 33km away from Addis Ababa (the capital city of the country). The district has 28 kebeles with a total population of 79,162 according to projections based on 2007 Central Statistic Authority (CSA) population census of Ethiopia.

4.2 Study Design

A cross-sectional survey design was used to conduct this research.

4.3   Study population and sampling

The study population of this survey is a sample of the population of Akaki district.

4.4 Study unit

The study units were randomly selected households from the study population.

4.5 Study participants

The study participants were randomly selected women household heads. In the absence of women, men household heads were included in the study.

4.6 Sampling

Mix of non-probability and probability sampling methods was employed to select the study units. Akaki woreda was purposively selected based on its representativeness of the regional context of the Health Extension Program while multi-stage sampling method was used to select the households. Nine kebeles were randomly selected from a sampling frame of alphabetically listed 28 kebeles of the woreda, each having an average of 1,000 households. Furthermore, 355 households were randomly selected from alphabetically listed households in the selected nine kebeles. This sample size includes an additional 10% of households to compensate for possible non-respondents.

Step one – sampling/ identification of kebeles.
o   Alphabetically prepared list of names of all selected kebeles in Akaki woreda on card
o   Selected nine kebeles randomly

o Systematic random sampling, with a sampling interval of two, was used to select nine kebeles out of the total of twenty-eight.

Step two- Random selection of households from selected kebeles

o All households in the selected nine kebeles were listed alphabetically to construct a sampling frame from which the study units (sample households) were selected. The list of the households was obtained from the census enumeration.

o Households were randomly selected in such a way that each household had an equal chance of being selected.

o Assuming the first household as an index, systematic random sampling was used to select the study households until the required sample size was obtained. The proportion of the sample size and list of households of nine kebeles were determined and using the first list as an index, the study households were selected using systematic random sampling till the sample size was met.

o Women heads of the household were the main target respondents while male respondents were interviewed in the absence of the women head after repeated visits.
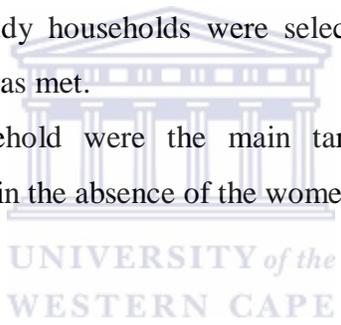
Sample Size determination

Sample size is calculated to achieve a 95% Confidence Interval (CI) of width ± 5% (within 5% of) the value of the proportion of the population utilizing health services in the region (30% or 0.3). Using two sided α with 95% confidence and margin of error determined at 0.05, the sample size was calculated as follows:

$$N = Z^2 * P (1-P)/d^2$$
$$= (1.96)^2 * (0.3) (0.7)/ (0.05)^2$$
$$= 323 \ households$$
$$= 355 \ (with \ 10\% \ for \ non\text{-}response)$$

Within each selected household, the female head (the mother or the wife) of the household was interviewed. In cases when the mother or the wife was not available (after repeated calls), the husband (or the male head of the household) was interviewed in a few households.

4.7   Study Period

The study was conducted from November 5, 2011 to November 26, 2011

4.8   Data collection tool

A structured questionnaire was developed in English and then translated to Afaan Oromo (which later on was translated back to English to ensure consistency) to suit the participants. Data collectors who speak the same language as the study participants administered the questionnaire to collect the data. The tool covered all components of the Health Extension Program and socio-demographic characteristics of the participants.

4.9   Data collecting team

Two teams were deployed for data collection to shorten the duration of data collection. These teams were led by one health extension supervisor who was able to advise about any uncertainties related to the services provided by the health extension program.

4.10   Analysis

Data were analyzed using SPSS version 19.0. Summaries of each variable were presented in the form of percentages, tables, and graphs. Descriptive analysis was done to assess the availability of each service component and the role of the various socio-demographic factors in the utilization of services. Binary logistic regression was used to uncover statistically significant associations between service utilization and the other covariates. Backward stepwise elimination was used to omit the variables that were less important to the model on the basis of probability of the likelihood-ratio statistic based on the maximum partial likelihood estimates. The variables that did not have significant importance to the models were eliminated one at a time starting with the least important. Each elimination step was followed by a likelihood ratio (LR) test to test the significance of difference between the models before and after elimination of the particular variable. LR test p-value of 0.05 was used as the cut-off point whereby an

eliminated variable had to be re-included in the model if the difference was found to be significant.

Significant explanatory variables were characterized by odds ratios that were significantly different from one, p-values that were smaller than 0.05 and 95% confidence intervals that did not include 1.

4.11   Ensuring data quality

The study team members were selected based on their experience of the health extension program[2], their ability to speak the local language and previous experience of data collection.

The data collection tool was pretested before wider field application; and modified according to the findings from the field pretest. All members of the research team attended training on use of the tool. The assessment protocol was used as a reference for discussion. Additional support was provided during supervision through regular meetings. The questionnaire was prepared in English, translated into Afaan Oromo, and back translated to English in order to ensure consistency.

4.12 Data management

After data collection, the principal investigator and supervisors reviewed the completed questionnaires in hard copy before data entry was made. An experienced and qualified professional who is well acquainted with the objectives and the variables of study performed the data entry. Data cleaning was executed with the same software package by running frequencies and cross tabulation to identify missed variables. Variables relevant for analysis were chosen and documented in a new file. Finally, from 355 total raw individual data obtained, 335 valid individual data sets were made ready for statistical analysis.

---

[2] Experience of health extension program 'refers to Health care workers who are working on the HEW program such as Health extension supervisors, nurses and Health Officers. They also hold a minimum qualification of a diploma in a health profession.

4.13 Ethical Considerations

Approval to conduct the study was obtained from the local Ethical Review Committee at the Oromia Regional Health Bureau and the Research Ethics Committee at the University of the Western Cape. Informed consent was obtained from the study participants and they were assured that the documented personal information would be confidentially kept.

4.14 Dissemination of results

The study findings will be disseminated to Akaki woreda health office, Federal Ministry of Health, Regional health Bureau including Zonal health office and other concerned partners working on the Health Extension program.

5. Results

5.1 Socio-demographic characteristics

This study was done in Akaki district of East Shoa zone, Oromia region. A total of nine kebeles had participated in this study a total sample size of 355 households. The response rate in the study was 94.4% with complete data obtained from 335 households. The majority, or 93.1% of respondents, were women with males accounting for only 6.9% of the respondents. More than 80% of the respondents were in the reproductive age group with the largest proportion in the age group of 25-29 years old (19.4%), while the least represented age group observed was between 15-19 years (1.5%). Almost all (98.2%) of the study participants were farmers and only 6 (1.8%) of the study participants mentioned their occupation is not farming. The majority of the respondents had never enrolled in formal education (72.8%) and 26.9% of the respondents had attended only primary school (grade 1-8). Those who had attended secondary school totaled only 0.3% or one participant.

The household family size ranged from one to eleven and the most frequent family size was four (17.6%) and the average family size was 4.8. Majority (60%) of them have family size less than or equal to five family members, which is similar to the national average family size. The remaining 40% had six or more members while 13.7% of them had eight or more persons. The livelihoods of respondents were dependent on agriculture (98.2%) and a few of them (1.8%) get their income from other sources.

Table 1: Socio-demographic characteristics of respondents, Akaki District, Oromia region, November 2011

Variables n=335		Frequency	%
	15-19	5	1.5
	20-24	30	9.0
	25-29	65	19.4
Age group	30-34	58	17.3
	35-39	55	16.4
	40-44	41	12.2
	45-49	30	9.0
	>49	51	15.2
Sex	Male	23	6.9
	Female	312	93.1
Occupation	Farmer	329	98.2
	Others	6	1.8
Education	Not educated	244	72.8
	Grade 1-4	67	20
	Grade 5-8	23	6.9
	Grade 9-12	1	0.3
Responsibility in HH	Husband	23	6.9
	Wife	312	93.1
Family Size	<3	63	18.8
	3-5	138	41.2
	6-7	88	26.3
	>7	46	13.7
Source of income	Agriculture	329	98.2
	Others	6	1.8

5.2 Coverage of Health Extension Program

In general, HEWs had visited 97.9% of households and 86.6% of the households were visited at least once per month by HEWs. . Out of the total households included in the study, 57.9% were selected for model family training and almost all of them were selected by HEWs. The report also showed that the households have benefited from visit by HEW's during which time they provide education pertinent to hygiene, family planning, nutrition and other HEP components 29% reported that they haven visited every week while 20% and 37.6% have been visited biweekly and monthly respectively. Only 7.2% of the selected households received model family training at home. The remaining 45.7% and 47.2% received the training at kebele and sub kebele level respectively.

Table 2: Coverage of health extension program services and model house training among study respondents, Akaki District, Oromia region, November 2011

Variables		Frequency	%
Selected for model Family	Yes	194	57.9
	No	139	41.5
Frequency of HEWs visit	Once a week	97	29.0
	Once every two weeks	67	20.0
	Once a month	126	37.6
	Sometimes	38	11.3
	No	139	41.5
Who selected Model HH	HEWs	194	57.9
	By Kebele officials	3	.9
	Other	138	41.2
Participated in Model family training	Yes	174	51.9
	No	133	39.7
Level of Model family training	Kebele Level	153	45.7
	Sub-Kebele Level	158	47.2
	House Hold Level	24	7.2

5.3 Hygiene and sanitation

About two thirds (66.6%) of the study participants reported having a toilet facility and the remaining one third did not have any toilet. All of those who had a toilet had a traditional pit latrine and those without practised open defecation. Despite the presence of a latrine in most households, only 55.8% of the family members use the latrine always and 14% of family members only use the latrine sometimes. About 46.3% of those who have a toilet facility also have a hand-washing facility and 96.1% study participants reported that they wash their hands before and after eating; most of them (90.7%), used soap as detergent for hand washing and 7.5% of study participants did not use any detergent for hand washing.

Table 3: Availability and utilization of hygiene and sanitation Facilities at Akaki District, Oromia region, November 2011

Variables n=335		Frequency	%
Availability of toilet	Yes	223	66.6
	No	112	33.4
Type and use of toilet	Traditional	223	66.6
	Open defecation	112	33.4
Family toilet use	Always	187	55.8
	Sometimes	47	14.0
	Never	101	30.2
Presence of Hand Washing Facility with Toilet	yes	155	46.3
	No	175	52.2

Forty-five percent of the households dispose of dry waste in a pit where only 25.4% of them dispose in pits with a cover and the remaining 19.7% use open pits. A considerable proportion (20.3%), however, reported that they burn dry household waste. The vast majority do not have any drainage system for liquid waste management while only 17.6% have liquid waste disposal drainage. Less than one in ten households has access to a safe water supply. More than 80% get their drinking water from a running

water source and pond. Food is kept covered in 97.9% of households and 76.7% have shelves for keeping utensils.

5.4 Communicable disease control

Health extension workers (HEWs) provide HIV/AIDS education to a majority of households (87.5%). Nearly three-fourths of them have HIV counseling services and two-thirds of them have HIV testing services. Health education is available to more than three-quarters of the households by HEWs about tuberculosis and nine out of ten seek medical services for tuberculosis symptoms. Only 29% reported the existence of malaria in their vicinity and 22.1% have bed nets as a protection in their household.

Table 4: Availability of HIV/AIDS education and counseling and utilization of HIV testing services at Akaki District, Oromia region, November 2011

Variables n=335		Frequency	%
HIV/AIDS education by HEWs	Yes	293	87.5
	No	41	12.2
HIV/AIDS counseling	Yes	249	74.3
	No	86	25.7
HIV testing	Yes	219	65.4
	No	115	34.3

5.5 Family health and model family

Family health is one of the major components among the four major intervention thematic areas of the health extension program (HEP). Health education on family planning use for reproductive age groups at household level has been given to 84.8% by HEWs. Similarly, 65.4% of households have health education on nutrition by HEWs. Nearly two-third of the mothers have ever used family planning while the majority (56.7%) of them have ever used injectable family planning followed by pills 6.3Pregnancy related services were rendered to 73.4% of the mothers and 64.5% of children under five are fully immunized

Table 5: availability and utilization of family health services at household level at Akaki District, Oromia region, November 2011

Variables n=335		Frequency	Percent
Family Planning education by HEWs	Yes	284	84.8
	No	50	14.9
Use of HEW service during pregnancy	Yes	246	73.4
	No	86	25.7
HEWs Visit of house hold	Once a week	97	29.0
	Once every two weeks	67	20.0
	Once a month	126	37.6
	Sometimes	38	11.3
Under five children immunized	All	215	64.2
	Some	58	17.3
	None	61	18.2

The proportion of individuals who have got services during pregnancy and family planning is higher among households visited by HEWs every month as compared to those visited less and this is significant with X^2 of 14.986 and 21.267 at p-value of 0.000. Similarly, the proportion of households with a toilet facility is higher among the households visited frequently by HEWs as compared with those households visited sometimes with X^2 test of 5.018 at p-value of 0.025. However, HIV testing does not significantly related to frequency of house visits by health extension workers. The other details are shown in Table 6.

Table 6: proportion of service uptake compared to the frequency of HEWs household visit of Akaki district, Oromia region November 2011

| Variables | | | HEW HH Visit | | | | |
			once per month	some times	Total	X^2	P-Value
Toilet facility	Yes	Count	202	19	221		
		%	91.4%	8.6%	100.0%	5.018	0.025
	No	Count	88	18	106		
		%	83.0%	17.0%	100.0%		
Family Planning by HEWs	Yes	Count	255	22	277		
		%	92.1%	7.9%	100.0%		
	No	Count	34	15	49	21.267	0.000
		%	69.4%	30.6%	100.0%		
Availability of bed net	Yes	Count	71	3	74		
		%	95.9%	4.1%	100.0%		
	No	Count	217	34	251		
		%	86.5%	13.5%	100.0%	5.104	0.024
Use of HEW service during pregnancy	Yes	Count	224	18	242		
		%	92.6%	7.4%	100.0%		0.000
	No	Count	63	19	82	14.986	
		%	76.8%	23.2%	100.0%		
Number of immunized children	All	Count	202	13	215		
		%	94.0%	6.0%	100.0%		
	Some	Count	44	12	56		
		%	78.6%	21.4%	100.0%		
	None	Count	43	12	55	17.654	0.000
		%	78.2%	21.8%	100.0%		
HIV/AIDS Testing	Yes	Count	189	26	215		
		%	87.9%	12.1%	100.0%		
	No	Count	101	11	112	0.379	0.538
		%	90.2%	9.8%	100.0%		

24

5.5. Knowledge, Use and Reasons for not using HEPs

Among the study participants, only 40% knew all components of the health extension program packages and the remaining 60% did not know all components. However, the majority of the study participants knew the personal hygiene component (83%) followed by environmental hygiene (72.8%) and family health (72.8%). Though a significant proportion of study participants knew all the components of the HEP, only (14%) of those who knew all components have utilized all packages. The main reasons for not using the services are thinking some components are not important (27.5%) followed by the explanation that they had not done all the necessary preparation such as latrine construction (23.6%) and some state that these actions are costly (22.4%).

Table 7: Proportion of study participants knowledge, utilization and reasons for not using HEP at Akaki district, Oromia region, November 2011

		Frequency	Percent
Do you know all components of HEP	Yes	134	40.0
	No	201	60.0
Know personal hygiene	Yes	278	83.0
	No	57	17.0
Know environmental hygiene	Yes	244	72.8
	No	91	27.2
Know Family health	Yes	239	71.3
	No	96	28.7
Knows about communicable disease (HIV, TB and Malaria)	Yes	247	73.7
	No	88	26.3
use of all HEP packages	Yes	47	14.0
	No	288	86.0
Reason for not using HEP	Don't think important at all	42	12.5
	Some components are not important	92	27.5
	Didn't do all necessary preparation	79	23.6
	Some are costly	75	22.4
	No response	47	14.0

Cross tabulation and chi-square test were performed to explore the relationship between the knowledge of family health and utilization of family health services components. Among those who knew the family health components of HEPs, 72.3% of them received family planning services offered by HEWs at household level and even a higher proportion (77.2%) used services during pregnancy. The association between knowing the family health component and use of services during pregnancy was strong at X^2 =18.793 with df =1 and p-value 0.000.

Table 8: Proportion of study participants who knew family health components and those who used family health services at Akaki district, Oromia region, November 2011

			Knows Family Health Component			X^2	P- Value
			Yes	No	Total		
FP offered by HEWs	Yes	Count	207	77	284		
		%	72.9	27.1	100.0		
	No	Count	31	19	50	2.87	0.24
		%	62.0	38.0	100.0		
Use of HEW service during pregnancy	Yes	Count	190	56	246		
		%	77.2	22.8	100.0	18.79	0.00
	No	Count	46	40	86		
		%	53.5	46.5	100.0		

A similar trend of services utilization is observed in the personal hygiene category among the study populations. The majority or 87.7% of those who knew the personal hygiene component of HEPs used toilet always, followed by 83% of those who knew the component use toilets sometimes[3]. Also 88.4% of study populations who knew

---

[3] Sometimes here denotes that household members sometimes use toilets and practice open field defecation at other times

about personal hygiene, have hand washing facilities with the toilet and this association is significant at $X^2 = 7.672$ with df=1 and p-value of 0.015.

Table 9: Proportion of study participants who knew personal hygiene components and those who used personal hygiene services at Akaki district, Oromia region, November 2011

| | | | Knows HEP of personal hygiene | | | X^2 | P- Value |
			Yes	No	Total		
Family Toilet utilization	always	Count	164	23	187		
		%	87.7	12.3	100.0		
	sometimes	Count	39	8	47		
		%	83.0	17.0	100.0	8.393	0.015
	Never	Count	75	26	101		
		%	74.3	25.7	100.0		
Any hand washing facility in the toilet	Yes	Count	137	18	155		
		%	88.4	11.6	100.0		
	No	Count	136	39	175	7.672	0.022
		%	77.7	22.3	100.0		
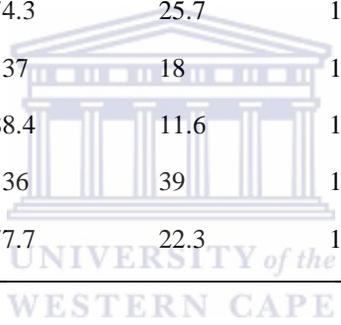
5.6 Availability and utilization of HEP services

The cross tabulation, trends and descriptive analysis demonstrate that the utilization varies by frequency of visits by HEWs. Majority of the study population (96.9%) use services during pregnancy among households frequently visited by health extension as compared to those visited less. The association between services utilization during pregnancy and frequency of visit is significant at P-value <0.001 with $X^2 = 50.0$. Similarly, the use of family planning is much higher among those frequently visited by HEWs. The X^2 test also shows significant association between frequency of visit and use of family planning services at P-value < 0.001 with X^2=40.65 at df=1 (table 9). HIV testing utilization is highly associated with the availability of health education at household level by health education. The degree of association is X^2=39.611 at p-value < 0.001 and the odds of the association is OR=9.039 with 95% CI 4.136 to 19.75).

Table 10: Association of frequency of HEWs visits to households and HEW service utilization at Akaki district, Oromia region, November 2011

Variables			Frequency of HEW visit (% calculate down the columns)					X^2	P- Value
			Once a week	Every two weeks	Once a month	sometimes	None response		
Use of HEW service during pregnancy	Yes	Count	94	50	80	18	4		
		%	96.9	74.6	63.5	47.4	57.1		
	No	Count	3	16	44	20	3		
		%	3.1	23.9	34.9	52.6	42.9	50.07	0.00
Family planning services by HEWs	Yes	Count	95	56	104	22	7		
		%	97.9	83.6	82.5	57.9	100		
	No	Count	2	10	22	16	0	40.65	0.00
		%	2.1	14.9	17.5	42.1	0		
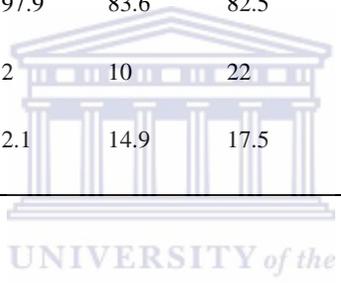
5.7. Availability and utilization of HEP services, and the model families

The study finding shows that the households that were selected as model families were significantly better in owning toilet facilities (X^2=28.67, p-value=0.00), in utilizing their toilets (X^2=39.17, p-value=0.00), hand washing practices (X^2=32.6, P-value=0.00), using family planning services (X^2= 17.7, p-value = 0.001), and HEP services during pregnancy (X^2= 21.94, P-value=0.00). Please refer to table 9 for details.

28

Table 11: Availability and utilization of HEP services among model families, Akaki district, Oromia region, 2011

Variables			Included in the model family (% calculated down the columns)				X^2	P- Value
			Yes	No	No response	Total		
Availability of toilet facility	Yes	Count	151	72	0	223		
		%	77.8	51.5	0	66.6		
	No	Count	43	67	2	112	28.67	0.00
		%	22.2	48.2	100	33.4		
Toilet utilization of family members	Always	Count	124	63	0	187		
		%	63.9	45.3	0	55.8		
	Sometimes	Count	36	11	0	47	39.17	0.00
		%	18.6	7.9	0	14		
	Never	Count	34	65	0	101		
		%	17.5	46.8	0	30.1		
Hand washing facilities in the toilet	Yes	Count	11	40	0	155		
		%	59.3	28.8	0	46.3		
	No	Count	76	97	2	175	32.6	0.00
		%	39.2	69.8	100	52.2		
Family planning services by HEWs	Yes	Count	177	105	2	284		
		%	91.2	75.5	100	84.8		
	No	Count	16	34	0	50	17.7	0.001
		%	8.2	24.5	0	14.9		
Use HEW services during pregnancy	Yes	Count	160	84	2	246		
		%	82.5	60.4	100	73.4		
	No	Count	32	54	0	86	21.94	0.00
		%	16.5	38.8	0	25.7		

5.8   Multivariate analysis

Multivariate analysis was done only for HIV testing and use of services during pregnancy as a result of the fact that other outcome variables have no significant association observed with the independent variables and according to EDHS 2011 Pregnancy related services uptake and HIV related services are among the least achievements which are believed to be improved by health extension program. Hence I used both out comes to see the performance of the program and also to discover the factors which impacts these variables. Accordingly the crude OR relationship between HIV testing and covariates was examined; and the findings in table show that HIV education was the only factor that had a statistically significant relationship with HIV testing (OR=10.343 95% CI of 4.470 to 23.935 at $p<0.05$). The odds ratio of 10.34 indicates that the HIV testing uptake is ten times higher among those who were educated on HIV testing at household level than those were not educated or counseled for testing. The other covariates (Age group, education and frequency of HEW visits) do not have a significant association with HIV testing.
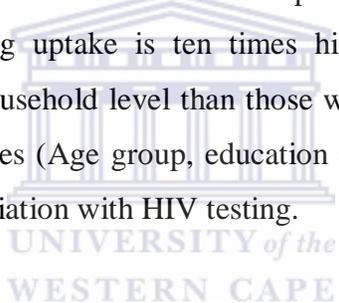
Table 12: Analysis of Binary Logistic Regression by crude odds ratios (OR) and 95% confidence intervals (CI) for HIV testing, Akaki district, Oromia region, 2011

			95% C.I. for EXP(B)	
	P-value	OR	Lower	Upper
HIV Education(1)	0.000	10.343	4.470	23.935
Age 15-24	0.200			
Age 25-49	0.404	0.707	0.314	1.595
Age >49	0.643	1.263	0.471	3.387
Education	0.595	1.168	0.659	2.071
HEW VISIT	0.075	0.445	0.182	1.086
Constant	0.093	0.495		

Higher age and frequency of HEW visit at household level are the two independent variables found to have had statistically significant association with use of HEP services during pregnancy. Utilization of HEW services was found to be more than seven times higher among the individuals aged >49 years than among those in the reference category, i.e., 15-24 years (OR=7.18, P<0.05) Similarly, utilization of same services was 3.5 times higher among those who were visited by HEWs at least once in a month than those who were not visited (OR= 3.534, 95% CI 1.626-7.680, P<0.05)

Table 13: Analysis of Binary Logistic Regression by crude odds ratios (OR) and 95% confidence intervals (CI) for Use of HEP service during pregnancy, Akaki district, Oromia region, 2011

			95% C.I. for EXP(B)	
	P-value	OR	Lower	Upper
Age 15-24	0.000			
Age 25-49	0.894	0.933	0.339	2.569
Age >49	0.001	7.181	2.287	22.554
Education	0.019	0.400	0.186	0.858
HEW VISIT	0.001	3.534	1.626	7.680
Constant	0.007	0.247		

6 Discussion

This study tried to examine utilization of the Health Extension Program services and factors that influence service utilization. The socio-demographic profile of the study population revealed that more than 80% of the respondents are in the reproductive age group with the highest proportion in the age range 25-29 years old (19.4%), while the least represented age group observed was 15-19 (1.5%). Almost all or 98.2% of the study participants are farmers. The majority of the respondents had never enrolled in formal education (72.8%) and 26.9% of the respondents had attended only primary school (grade 1-8).

The average family size among the study population was 4.8. The majority (60%) of them have family size less than or equal to five family member which is similar to the national average family size. The remaining 40% have a family size of six or above while 13.7% of them have a family size of eight or more. Most respondents depend on agriculture for their livelihood (98.2%) and a few of them (1.8%) get their income only from other sources.

According to the Ethiopian Demographic and Health Survey (EDHS) of 2000, 2005 and 2011, the country's stated ideal family size among the women has declined from 5.3 in 2000 to 4.5 in 2011 and in a similar pattern it declined from 5.2 in 2000 to 4.8 in 2011 among the men . This shows that the finding for this study is in line with the national EDHS for 2011. When disaggregated by residence the TFR for rural by EDHS 2011 is 5.5 while this study's finding is below the EDHS finding. This is probably because of the geographic location of the study area, which is classified among one of the accessible districts in the region and in the country. The location is also only 40 kilometers away from the capital city of the country.

About two thirds (66.6%) of the study participants reported having a toilet facility. Despite the presence of a latrine in most households, only 55.8% of the family members always use the latrine and 14% of family members use the latrine sometimes. About 46.3% of those who have a toilet facility also have a hand-washing facility with the toilet. The national HEP survey conducted shows 66.4% of the people had access to an

improved toilet facility, which is the same finding as in our study. In the national HEP survey consistent use of toilet facility was reported to be 36.2% while only 13.3% used the toilet facility hygienically. However, better practices have been observed in this study where 55.8% used toilet consistently and 46.3% use the facilities hygienically. Even though the pattern of toilet utilization and hygienic situation is low in both studies as compared to those who have a latrine facility, the level of consistent latrine utilization and hand washing is higher in this study than in the national survey. This might be explained by the geographical location of this study site which is situated closer to the Ethiopian capital.

The toilet coverage for Oromia region is 68% and nearly similar to the finding in this study. The Ethiopian health indicator report for 2010 showed latrine coverage of 75%. The level is higher than in this study may be because of the inclusion of urban data where higher latrine coverage is expected. Statistically significant greater access to toilet facilities was observed among people from households that were model-families (about 63.9%) compared to other households with X^2=39.17 at df=1 (table 10), which indicates the effectiveness of model-family approach in modifying the behavior of households in adopting safe hygiene practices. Some of the differences in the access to toilet between the model and other households may be explained by the fact that model families the selection criteria of households to participate as a model household requires pre-existing facilities as well as readiness to adopt new health behaviors (Bilal and colleagues, 2010). However, consistent and hygienic utilization of toilet facilities was relatively low. This should be reinforced through continuous and consistent intervention by HEWs. A similar pattern and significant association was observed by educational status where almost two-thirds of those who attended primary school reported good access to a toilet facility and 63.2% of them utilized a toilet consistently.

To assess the housing conditions of the sampled households, data were collected on the presence of separate sleeping rooms and availability of separate kitchen and kitchenware shelves and a shelf for keeping household utensils. In the households

surveyed, separate kitchen, kitchenware shelf, separated room for poultry and shelf for keeping household utensils were found in 69.6%, 51.9%, 51% and 76.7% respectively. According to the national survey, the percent of households with a separate place for animals was 54.2%, and slightly more than a third (38.3%) of respondents reported that they had separate sleeping room(s), and the overall average number of sleeping rooms per household was 1.4 rooms. About 44% of respondents reported that they had a separate kitchen, and 39.4% had kitchenware. According to the national survey of 2010, the proportion of separate place for animals in Oromia region was 49.5%, separate kitchen 38.7% and kitchenware shelves was 36.3% (FMOH, UNICEF, 2010). The finding shows there is a similar pattern of hygienic practice between both studies though there seems significant variation between the study and national average findings. The variations observed between the two studies are due to the geographic variation and region specific programs including socio-economic status of the community.

Proper disposal of dry waste is practiced among 45.1% and only 25.4% dispose in a pit with cover. About 20.3% of households reported that they burn the solid waste and 19.7% reported that they throw the solid waste into a pit with a cover. The other households reported that they throw the solid waste on to the farm, into an open pit, or anywhere. Similarly, the national survey shows one in five households practiced the use of sanitary and environmentally sound methods of disposing of solid waste (refuse and rubbish).Only 16% of the households reported burning and 6% reported use of covered pit disposal.(FMOH, UNICEF, 2010)

According to the study, finding nearly three-fourths had had HIV counseling and two-thirds of them had HIV testing. However, the national study shows the HIV testing uptake was 27% in 2010 and the regional average is 20%. The trend of HIV testing in the region and in the country in years 2005, 2007 and 2010 was 8%, 6% and 27% for national and 2%, 7% and 20% in Oromia respectively. The trend shows a progressive increase and the 2010 finding of the region and the country is similar to the study finding.

There is a significant association observed between the health extension visit to the household and the health extension service utilization during pregnancy. The association is highly significant with OR=16.913 at p< 0.001 (at 95% CI OR is 8.074-35.427 at p<0.001). The study revealed that ever use of family planning services was reported by about two thirds of the study population. The majority (56.7%) of them have ever used injectable family planning, followed by pills (6.3%) and the least used modern method among study population is long term contraceptive implants (1.5%0 followed by use of condom (0.6%) The national HEP survey shows a similar pattern to this study where 45.1% had ever used any of the modern contraceptive methods. Injections and pills were more ever used than other methods (38.3% and 15.5% respectively) and the least used methods were diaphragm (0.2%) followed by male and female sterilization (0.1%) . The 2010 national health indicator reports national and Oromia region contraceptive acceptance rates as 61.9% and 61.6% respectively, which is lower than our study finding and the explanation for this may be the time difference between this study and the report.
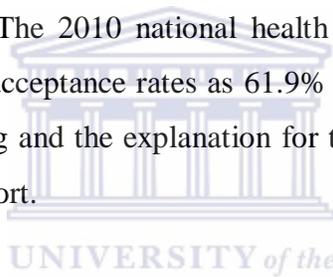
In the majority of kebeles, HEWs had noticed a significant impact or change in all HEP packages following the implementation of the model-family initiative in the kebele. Accordingly, the top nine HEP service packages provided by HEWs were effectively utilized where 76.3%, 91.3%, 81.0% and 97.1% of the targeted households, utilized services of Immunization, family planning, latrine construction and utilization respectively. The national 2010 country report and national survey of HEP show a significant association of model family and utilization of the above-mentioned activities (FMHO, 2010).

According to the study finding 40% of the study targets know all the components of the health extension program and only 14% use all components of the health extension program. According to the national survey conducted, the majority of the respondents (81.2%) had heard about the Health Extension Program but not all the components and 71.1% in Oromia region had heard of the HEP services. Overall, 37.3% of the

35

respondents or their household members had visited the HEWs/health post proactively and this proportion is about 36.3% in Oromia region. Compared to the proportion of respondents who visited the HEWs at health posts, a relatively higher proportion (43.3%) of respondents reported that HEWs visited their home at least once during the month prior to the time of the assessment. Also our study finding shows a similar proportion of frequency of house hold visits to the national survey though the rate of services utilization is different.

A large majority of the study participants knew the personal hygiene component (83%), followed by environmental hygiene (72.8%) and family health (72.8%). The national study finding shows that the five top services mentioned by respondents were family planning (61.9%), immunization (41.2%), health education (38.4%), and antenatal care (26.6%), and HIV/AIDS education (25.8%).

The cross tabulation and chi square test revealed that one of the key factors for services utilization is availability of services as determined by the frequency of visits of HEWs to households and provision of health education. The binary logistic regression analysis also revealed that service utilization is strongly associated with access to and availability of services. There is also a strong association between HIV testing and health education as well as the association seen between model family and family size, personal hygiene and use of health services during pregnancy. However there was no remarkable association or influence observed between services utilization and socio demographic variables.

7 Strengths and Limitations of the study

7.1. Strengths

- The study collected primary data with a well standardized data collection tool.

- This was a population based study rather than facility based or program based which yields a more robust assessment of services access and utilization.

- The study is unique and focused on one of the major health program in the country. It has provided good information for planning, strategic design and review of policy.

7.2. Limitations

- The study is only quantitative and did not gather qualitative data to triangulate the results and explore the issues

- The sample size and scope of study were limited to analysing performance of the HEP rather than perceptions of the community. Also a trend analysis of the performance of the HEP was not undertaken
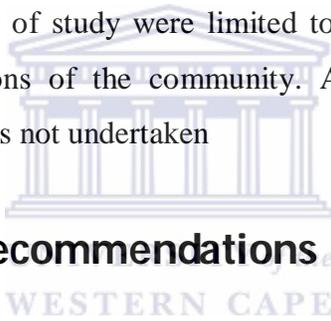
8. Conclusions and recommendations

8.1. Conclusions

- The study revealed that the services of nine major health extension program components are available at household level. These are: personal and environmental hygiene, communicable disease, and Family Health services including the model household training initiated recently.

- Forty percent of the families had a larger family size than the average national family size despite the high proportion of family planning use among the study population.

- Based on the findings of this study access to improved human excreta disposal facilities construction has increased significantly though consistent utilization is relatively low and less than half the households have a hand washing facility with the toilet.

- Hand washing before and after eating, hygienic handling of water and food as well as the presence of separate kitchen and separate house for animals is high and this may indicate awareness of communicable diseases

- Though there is good water management at home, few households have access to safe water.

- The behavior modification in improvement of household sanitation and hygiene situations observed among model-family households shows that training of model-family is an effective behavior modification approach. Some of the differences in the access to toilet between the model and other households, however, may be explained by the fact that model families the selection criteria of households to participate as a model household required pre-existing facilities as well as readiness to adopt new health behaviors

- Significant services utilization and health seeking behavior is observed with the availability of health education and awareness creation at household level. This is positively associated with the frequency of HEWs visits.

- The proportion of community members who know about all the components of HEP is low for a program conducted in their vicinity for the last five years. Moreover, a much lower proportion of the population uses the services when compared to knowledge of the program.

- However, it is encouraging that a significant number of households know of the existence of the major components of the HEP and this supports the need for further work in promoting their utilization.

- A significant proportion of the study population thought that some components of the HEP are not important to consider and others did not undertake the necessary arrangements such as for construction of latrines. Hesitance in constructing latrines may be understood from its expense point of view and further study may be required suggest affordable ways of doing this. These factors are key issues which affect the utilization of all components of the HEP and need to be addressed appropriately.

8.2. Recommendations

- It would be strategic to enable the community to identify and promote locally appropriate options of improved toilet facilities as a method of safe human excreta disposal.

- There is a need to promote and ensure consistent and hygienic utilization of latrines in addition to promoting their construction through consistent follow up and education by health extension workers. Reasonable emphasis need to be put on the need to use locally available materials so as to overcome constraints related to cost.

- The local administration should work with the health office and all concerned in improvement of safe water supply

- The model-family initiative should be aggressively implemented to change the behavior of households in: motivating households to construct and hygienically use latrines; utilization of family health services such as family planning, pregnancy related services and immunization; as well as improving health seeking behavior for communicable diseases. Though HEP services are accessible for most households, the frequency should be increased and provided consistently to enhance service utilization and health seeking behavior of the community.

- All stakeholders, including government (policy makers, planners, local government such as community leaders and district health offices), partners and HEWs should promote the health extension program packages using different community forums and gatherings. In addition to this community promoters and mobilizers should be deployed to assist the HEWs in creating awareness among communities about HEP components and enhance the service seeking behavior.

- As recommended by the implementation strategy of the HEP, HEWs should spend 75% of their time at community level visiting households to provide services. Thus, increasing home visits by HEWs would be important in creating awareness and utilization of HEP services.

- Future studies should explore perceptions of the community of the HEP and trends in the HEP performance.

9. References

1. Kong S, Brown M. Community Health Workers: Ethiopia, U.S. Agency for International Development 1300 Pennsylvania Avenue NW Washington, DC 20523, 2008

2. Abebe A, Teshome G/M, Girmay M, Meshesha B, Seife B, Aklilu S, Assessment of Distribution, Knowledge and Utilization of Insecticide Treated Nets in Selected Malaria Prone Areas of Ethiopia Ethiop.J.Health Dev. 2008;22(3)

3. Abebe B, Mengistu K, Mekonnen T. Preliminary Assessment of the Implementation of the Health Services Extension Program: The case of Southern Ethiopia. Ethiop. J. Health Dev. 2008;22(3)

4. Awash T, Yayehyirad K, Asfawesen G, Samuel G, klilu S, Hailay D and Yemane Y. Study of the Working Conditions of Health Extension Workers in Ethiopia. Ethiop. J. Health Dev 2007;21(3)

5. Ayele F, Desta A, Larson C. (1993). The functional status of community agents: A trial of refresher courses and regular supervision. *Health Policy and Planning* 8, no. 4: 379–84.

6. Charlotte Warren, Care seeking for maternal health: challenges remain for poor women. Ethiop. J. Health Dev 2010;24

7. Ulin PR, Robinson ET, Tolly EE. Qualitative Methods in Health: A fi eld Guide for Applied research. San Francisco: Jossey Bass; 2005.

8. Perez F, Ba H, Dastagire SG and Altmann M (2009). The role of community health workers in improving child health programmes in Mali. *BMC International Health and Human Rights* 2009, 9:28

9. Datiko DG, Lindtjorn B (2009) Health Extension Workers Improve Tuberculosis Case Detection and Treatment Success in Southern Ethiopia: A Community Randomized Trial. PLoS ONE 4(5): e5443. doi:10.1371/journal.pone.0005443

10. FMOH (2007). Health Extension Program in Ethiopia, Addis Ababa, 2007

11. FMOH, Health and Health Related indictor 2001, Addis Ababa 2009

12. FMOH, Health and Health Related indictor 2001, Addis Ababa 2010

13. FMOH (2005). Health Sector Strategic Plan (HSDP-III) 2005/06-2009/10.

14. Loewenberg S (2010). World report: Ethiopia struggles to make its voice heard. www.thelancet.com volume 376

15. FMOH (2005). National Strategy for Child Survival in Ethiopia. Family Health Department, July 2005.

16. CSA (2011). Ethiopian Demographic and Health Survey. Addis Ababa, 2011

17. Tedbabe Degefie, David Marsh, Abebe G/mariam, Worku Tefera, Garth Osborn and Karen Waltensperger. Community case management improves use of treatment for childhood diarrhea, malaria and pneumonia in a remote district of Ethiopia. Ethiop. J. Health Dev. 2009;23 (2)

18. Ethiopia. Library of Congress. Retrieved 17 May 2012.

19. HaileMariam D, Pickering J. (1991). Determinants of Community Health Agent functionality in Arsi Region. *Ethiop J Health Dev* 5, no. 1: 11–15.

20. Negusse H, McAuliffe E, and MacLachlan M (2007). Initial community perspectives on the Health Service Extension Programme in Welkait, Ethiopia. Human Resources for Health 2007, 5:21 doi:10.1186/1478-4491-5-21 Health Sector Strategic Plan (HSDP-III) 2005/6-2009/10. Planning and Programming Department, 2005

21. Health Sector Development Program IV 2010/11 – 2014/15, Addis Ababa 2010 (first draft unpublished)HSDP III Independent Review Team. Ethiopia Health Sector Development Program (HSDP III) Mid-Term Review, Volume I Component Report. Addis Ababa, 2008. Ministry of Health. (1985). *Primary Health Care Review.* Addis Ababa: Ministry of Health.

22. Abrha A, et al. The Contribution of the Health Extension Program in Promoting Comprehensive Primary Health Care in Tigray, Ethiopia: the case of maternal health. Mekelle University, unpublished material

23. WHO, Nepal Country office (2007). Female Community Health Volunteers

24. Lehmann U and Sanders D (2007). Community Health Workers: What do we know about *them?* The state of the evidence on programs, activities, costs and impacts on health outcomes of using community health workers. WHO, Evidence and Information for Policy, Department of Human Resources for Health Geneva, January 2007

25. Lewin S, *et al* (2010). Lay health workers in primary and community health care for maternal and child health and the management of infectious diseases (Review). *The Cochrane Collaboration. Published by JohnWiley & Sons, Ltd, 2010*

26. Bhutta ZA, Lassi ZS, Pariyo G and Huicho L. Global Experience of Community Health Workers for Delivery of Health Related Millennium Development Goals: A Systematic Review, Country Case Studies, and Recommendations for Integration into National Health Systems. WHO and Global Health Workforce Alliance

27. Abraha MW and Nigatu TH (2009). Modeling trends of health and health related indicators in Ethiopia (1995-2008): a time-series study. *Health Research Policy and Systems* 2009

28. Herman A, et al (2007). Achieving child survival goals: potential contribution of community health workers. *Lancet* 2007; 369: 2121–31

29. Sebasitan MS & Lemma H (2010). Efficiency of the health extension programme in Tigray, Ethiopia: a data envelopment analysis. *BMC International Health and Human Rights* 2010

30. Hermann K, Van Damme W, Pariyo G, Schouten E, Yibeltal A, Cirera A and Massavon W (2008). Community health workers for ART in sub-Saharan Africa: learning from experience – capitalizing on new opportunities. *Human Resources for Health* 2009, 7:31 1478-449

31. UNICEF & WHO (2006). Management of Sick Children by Community Health Workers: Intervention Models and Programme Examples. The United Nations Children's Fund (UNICEF)/ World Health Organization (WHO), 2006

32. Rohde J, Cousens S, Chopra M, Tangcharoensathien V, Black R, Bhutta AZ, Lawn JE (2008). 30 years after Alma-Ata: has primary health care worked in countries? The Lancet, Volume 372, Issue 9642, Pages 950 – 961

33. Kwast B. Preliminary results from the national EmONC baseline assessment 2007-2008 by FMOH, UNICEF, UNFPA, WHO, AMDD. National Workshop to Address Community Maternal and Neonatal Health in Ethiopia. Addis Ababa, 2009

34. Lawn JE, Rohde J, Rifkin S, Were M, Paul VK, Chopra M. (2008). Alma-Ata 30 years on: revolutionary, relevant, and time to revitalise. The *Lancet*, **372 (9642)**: 917-927.

35. Koblinsky M, Tain F, Gaym A, Karim A, Carnell M, Tesfaye S. Responding to the maternal health care challenge: The Ethiopian Health Extension Program. Ethiop. J. Health Dev. 2010;24

36. Messelech A. All Roads Lead to Health Extensionu Program. National Workshop on Addressing Community Maternal & Neonatal Health in Ethiopia. Addis Ababa, 2009.

37. Sebhatu A (2008). The implementation of Ethiopia's Health Extension Program: An overview. Addis Ababa, September 2008

38. Banteyerga H & Kidanu A (2008). Rapid Appraisal of Health Extension Program: Ethiopia Country Report. The L10k Project of JSI, Miz-Hasab Research Center, Addis Ababa, 2008

39. MoFED, 2005. The millennium development Goals need assessment synthesis report, development planning and research department, Addis Ababa

40. MOH, Final Report on the Safe Motherhood Community-Based Survey, Ethiopia. Report on the Safe Motherhood Community Based Survey, Ethiopia FMOH Ethiopia March 2006. Ethiop. J. Health Dev 2010;24 Special Issue 1

41. Bilal NK, Herbst CH, Zhao F, Souca At, and Lemiere C (2010). Health extension program in Ethiopia. In: Improved Access and Coverage for Rural Poor, 2010.

42. MOH and HAPCO'. Single point HIV prevalence Estimate, 2007

43. MOH, 2005; Health service extension implementation guideline. Ministry of health. Addis Ababa July, 2005

44. MOH, 2005. Health sector strategic plan III, planning and programming department Addis Ababa.

45. MOH. The Accelerated Coverage of PHC in Ethiopia: 2005-2009. Addis Ababa, 2005.

46. ORHB, 2007. Regional Annual Performance Report. Addis Ababa

47. Tilahun Gidey, Mengistu Asnake and Jennifer Wilder. Ethiopia's Health Extension Program: Pathfinder International's Support 2003-2007, Addis Ababa, 2007

48. WHO, 2003. Community contribution to TB care: practice and policy. WORLD HEALTH ORGANIZATION – GENEVA

49. Banteyerga H (2011). Ethiopia's Health Extension Program: Improving Health through Community Involvement. *MEDICC Review*, July 2011, Vol 13, No 3

50. FMOH and UNICEF, Evaluation of Health Extension Program Rural Ethiopia, 2010

51. CSA, Ethiopia Demographic and Health Survey 2005, Addis Ababa, Ethiopia, ORC Macro Calverton, Maryland, USA September 2006.

52. CSA, Ethiopia Demographic and Health Survey preliminary report 2011, Addis Ababa, Ethiopia, MEASURE DHS, ICF Macro Calverton, Maryland, USA.

10. Annex

10.1. Tables

Variables n=335		Frequency	Percent
Hand washing	Yes	155	46.3
	No	175	52.2
	Total	330	98.5
Hand washing time	Before eating	1	0.3
	After eating	4	1.2
	Both before and after eating	323	96.4
	Total	328	97.9
	Open pit	66	19.7
	Pit with cover	85	25.4
Where you dump the garbage/Rubbish	Open field	42	12.5
	Burning	68	20.3
	In to farm	67	20.0
	Total	328	97.9
Drainage for liquid waste disposal	Yes	59	17.6
	No	271	80.9
	Total	330	98.5
Drinking water Source	Pipe	28	8.4
	River	142	42.4
	Spring	27	8.1
	Pod	136	40.6
	Total	333	99.4
Drinking water safety	Cover	219	65.4
	Adding bleach/Chlorine	38	11.3

	Cleaning the water source	30	9.0
	Fencing the surrounding	16	4.8
	Other	30	9.0
	Total	333	99.4
Separate kitchen	Yes	233	69.6
	No	101	30.1
	Total	334	99.7
Kitchen Ware shelf availability	Yes	174	51.9
	No	159	47.5
	Total	333	99.4
Availability of Poultry room	Yes	171	51.0
	No	160	47.8
	Total	331	98.8
Shelf for keeping household utensils	Yes	257	76.7
	No	75	22.4
	Total	332	99.1
Foods kept covered	Yes	328	97.9
	No	6	1.8
	Total	334	99.7
Any Tuberculosis Education by HEWs	Yes	258	77.0
	No	73	21.8
	Total	331	98.8
what to do when there is cough for > two weeks	Visit HC for Sputum examination	100	29.9
	Nothing, unless it is severe	17	5.1
	Visit HC for diagnosis and treatment	200	59.7
	Take traditional medicine	17	5.1
	Total	334	99.7

Malaria situation in your area	Yes	97	29.0
	No	236	70.4
	Total	333	99.4
Availability of bed net	Yes	74	22.1
	No	259	77.3
	Total	333	99.4
About Nutrition by HEW in the last 12 months	Yes	219	65.4
	No	51	15.2
	No Response	65	19.4
	Total	335	100.0
Educated by HEW How to Nourish Children	Yes	264	78.8
	No	65	19.4
	Total	329	98.2
Number of immunized children who are under five	All	215	64.2
	Some	58	17.3
	None	61	18.2
	Total	334	99.7
Are you selected to become model family	Yes	194	57.9
	No	139	41.5
	Total	333	99.4
Why you are selected to become model family	Volunteered	120	35.8
	Need to be clean & Healthy (>75%)	215	64.2
	Total	335	100.0
Do You or your family member participated in model family training	Yes	174	51.9
	No	133	39.7
	No Response	28	8.4
	Total	335	100.0

Who gives model family training in your kebele	HEWs	230	68.7
	By Kebele officials	2	.6
	Other	1	.3
	No	102	30.4
	Total	335	100.0
Level of model family training received	Kebele Level	153	45.7
	Sub-Kebele Level	158	47.2
	House Hold Level	24	7.2
	Total	335	100.0

Table 14: Proportion of study participants knowledge, utilization and reasons for not using HEP at Akaki district, Oromia region, November 2011

Variables n=335					95% C.I. for EXP(B)	
		Frequency	P-value	OR	Lower	Upper
HIV Testing	Yes	218	0.001	2.644	1.515	4.617
What to do for TB symptoms	Visit Health Center for Sputum examination	99	0.054			
	Nothing, unless it is severe	17	0.234	1.998	0.640	6.243
	Visit Health Center for diagnosis and treatment	200	0.869	0.949	0.508	1.773
	Take traditional medicine	17	0.028	3.774	1.157	12.306

Table 15: Analysis of Binary Logistic Regression by adjusted odds ratios (OR) and 95% confidence intervals (CI) for knowledge and use of HEPs, Akaki district, Oromia region, November 2011

10.2.   *Questionnaires*

Data collection questioners for Utilization of the Health Extension Program services in Akaki District, Ethiopia

Session I: Socio demographic Data

1.   Age _____

2.   Sex_____

3.   Occupation _____

4.   Level of education

   a.   Not educated

   b.   Grade 1-4

   c.   Grade 5-8

   d.   Grade 9-10/12

   e.   Graduated from colleges/universities

5.   What is your responsibility in the household

   a.   Husband

   b.   Wife

   c.   Other _____(specify)

6.   What is the size of your family _____

7.   What are the sources of income for your family?

   a.   Agriculture

   b.   Petty Trade

   c.   Others

   d.   Total
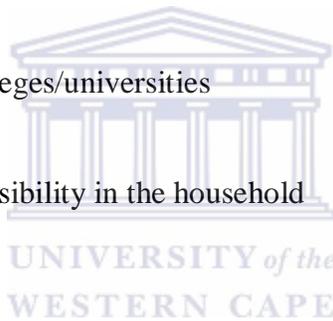
Session II: Hygiene and sanitation

8. Is there any toilet facility available in your home?

   a.   Yes

   b.   No

9. What kinds of toilet facility do members of your household use?

   a.   Traditional

   b.   Open defecation

   c.   Others

10. Do all members of the family use the latrine?

    a.   Always

    b.   Sometimes

    c.   Never

11. Is there hand-washing facilities attached with toilet?

    a.   Yes

    b.   No

    c.   No Response

12. When do you wash your hands?

    a.   Before eating

    b.   After eating

    c.   Both before and after eating

    d.   No Response

13. What do you usually use to wash your hands?

    a.   Soap

    b.   Ash

    c.   Others _____

    d.   Nothing is used

    e.   No response

14. What do you do with your garbage/ refuse/ rubbish?

    a.   Thrown into open pit

    b.   Thrown in to pit with cover

    c.   Thrown anywhere

    d.   Burning

    e.   Thrown to the farm

15. Do you have drainage for the liquid waste disposal

    a.   Yes

    b.   No

    c.   No response

16. What is the main source of drinking water for members of your household?

    a.   Pipe

    b.   River

    c.   Spring

    d.   Pod

    e.   No response

17. What do you usually do to the water at home to make it safer to drink?

    a.   Cover

    b.   Add bleach/chlorine

    c.   Clean the water source

    d.   Fencing the surrounding

    e.   Others_____(specify)

    f.   No Response

18. Did you have a separate kitchen?

    a.   Yes

    b.   No

    c.   No Response

19. Have you constructed a kitchenware shelf?

    a.   Yes

    b.   No

    c.   No Response

20. Do you have a separate room for poultry?

    a.   Yes

    b.   No

    c.   No Response

21. Do you have a shelf for keeping household utensils?

    a.   Yes

    b.   No

    c.   No Response

22. Are foods kept covered?

    a.   Yes

    b.   No

    c.   No Response

UNIVERSITY of the
WESTERN CAPE

Session III: Communicable disease prevention and control

23. Have been educated about HIV by HEWs
    a.   Yes
    b.   No
    c.   No Response

24. Have you been counseled for HIV test?
    a.   Yes
    b.   No
    c.   No Response

25. Have you been tested for HIV?
    a.   Yes
    b.   No
    c.   No Response

26. Have you ever been educated about Tuberculosis by HEWs?
    a.   Yes
    b.   No
    c.   No Response

27. What do you do when there is cough for more than two weeks?
    a.   Visit Health Center for sputum examination
    b.   Noting, unless it is severe
    c.   Visit health center for diagnosis and treatment
    d.   Take traditional medicine
    e.   No Response

28. Is there Malaria in your area?

    a.   Yes

    b.   No

    c.   No Response

29. If yes to question 27, do you sleep under the bed net?

    a.   Yes

    b.   No

    c.   No Response

Session IV: Family health

30. Have you been ever visited by a **Health Extension Worker** who talked to you about family planning?

    a.   Yes

    b.   No

    c.   No Response

31. Do you (or your family) use health extension worker service during pregnancy?

    a.   Yes

    b.   No

    c.   No Response

32. In the last 12 months, you visited by a health extension worker who talked to you about nutrition?

    a.   Yes

    b.   No

    c.   Not response

33. How many under five children in your family are fully immunized?

    a.   All

    b.   Some

    c.   None

    d.   No Response

34. Have you been educated by the health extension worker on how to nourish your children?

    a.   Yes

    b.   No

    c.   No Response

35. What type of contraceptive method have you ever used?

    a.   Pills

    b.   Injection

    c.   Implants (Norplant, implanon, godell)

    d.   Condom

    e.   Do not use

    f.   Other_____(specify)

    g.   Do not use any due to menopause

36. How frequently do HEWS visit your home

    a.   One a week

    b.   Once every two weeks

    c.   Once a month

    d.   Some times

    e.   No Response
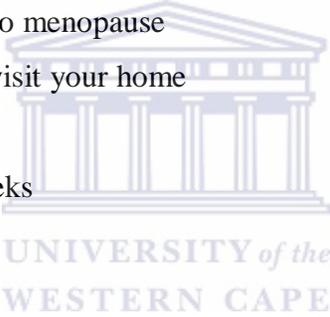
Session V. Model Family.

37. Has your household been selected to be trained to become a model household/model family in the health extension package program?

    a.   Yes

    b.   No

    c.   No respond

38. Why was your household selected for model household training?

    a.   Volunteer to be model household

    b.   We need to be clean and healthy and our hygiene is above 75%

39. Who was involved in selecting you to become a model household?

    a.   HEWs

    b.   By kebele officials

    c.   No selected

40. Was your household investigated for living and health conditions by HEWs before training started?

    a.   Yes

    b.   No

    c.   No respond

41. Have you or any family member ever participated in the model family training?

    a.   Yes

    b.   No

    c.   No respond

42. Who usually provide the training on model family in this kebele?

    a.   HEWs

    b.   By kebele officials

    c.   Others

    d.   No

43. At what level is your household receiving model family training?

    a.   Kebel level

    b.   Sub-kebele level

    c.   Household level

44. Who usually visit your home to provide the training required to become model family?

    a.   HEWs

    b.   No response
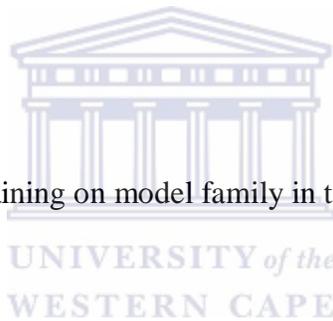
45. **Do you know all components of health extension program?**

    a.   Yes

    b.   No

46. **Which of the followings are components of the package of HEP? You can answer more than one**

    a.   Personal hygiene

    b.   Environmental hygiene

    c.   Family health

    d.   TB, HIV Malaria

47. **Do you use all packages of the health extension program?**

    a.   Yes

    b.   No

48. **If the answer for Q 47 is no, why you do not use? Because**

    a. You do not think it is important at all

    b. Some components are not important for you

    c. You did not do all necessary preparation (e.g. Latrine not prepared)

    d. Some are cost (boiling water for large family size)

    e. 99