**Addis Ababa University**

**College of Health Sciences**

# Assessment of the magnitude of attrition and exploring factors related to it among Health Extension Workers deployed in Oromia Region.

**BY Aberra Feyissa (Bsc)**

**Advisor: Professor Damen Hailemariam (MD, MPH, PhD)**

**A thesis submitted to the school of graduate studies of Addis Ababa University in partial fulfillment of the requirements for the degree of Masters in Public Health, College of Health Sciences, Addis Ababa University.**

**June, 2011**

**Addis Ababa**

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Over all I thank to GOD for the realized success!

**Lists of Acronyms/Abbreviations**

| | |
|---|---|
| **AAU-MF** | Addis Ababa University Medical Faculty |
| **CHWs** | Community health workers |
| **CSA** | Central Statistics Authority |
| **DHOs** | District Health Offices |
| **EC** | Ethiopian Calendar |
| **EDHS** | Ethiopian Demographic Health Survey |
| **EFY** | Ethiopian Fiscal Year |
| **EPHA** | Ethiopian Public Health Association |
| **FDRoE** | Federal Democratic Republic of Ethiopia |
| **FMOH** | Federal Ministry of Health |
| **HEP** | Health Extension Program |
| **HEWs** | Health Extension Workers |
| **HP** | Health Post |
| **HRD** | Human Resource Development |
| **HSDP** | Health Sector Development Program |
| **IRB** | Institutional Review Board |
| **MDGs** | Millennium Development Goals |
| **MMR** | Maternal Mortality Rate |
| **NGO** | Non-Governmental Organization |
| **ORHB** | Oromia Regional Health Bureau |
| **PASDEP** | Plan for Accelerated and Sustained Development to End Poverty |
| **PHC** | Primary Health Care |
| **PHCU** | Primary Health Care Unit |
| **RHB** | Regional Health Bureau |
| **SNNPR** | Southern Nations, Nationalities, and Peoples Region |
| **SSA** | Sub-Saharan Africa |
| **TVET** | Technical Vocational and Educational Training |
| **UNDP** | United Nation Development Program |
| **UNICEF** | United Nation Children's Fund |
| **WHO** | World Health Organization |
| **WoHOs** | Woreda Health Offices |
| **ZHOs** | Zonal Health Offices |

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*Abstract*

*Background: - The lowest health tier system of Ethiopia is Primary level health care, with one Primary Hospital, 5 health centers and twenty-five health posts at rural level, that one health post serves 3000-5,000 population. Two Health Extension Workers (HEWs) are trained and deployed in each health post at the village/kebele level to improve access and equity to basic health services, targeting households particularly women/mothers focusing on sustained preventive health actions and increased health awareness.*

*Objective: - To assess the magnitude of attrition, explore the whereabouts of the HEWs who have left their jobs and the possible factors related to those among Health Extension Workers deployed in Oromia Regional State.*

*Methods: - It is an exploratory cross sectional study done in Oromia Regional State. Data for the number of HEWs graduated, by the years of graduations from TVETs commission, number of HEWs who have left their jobs, and the whereabouts of HEWs who have left their jobs since 1997 EFY until 2001 EFY assessed and collected from all eighteen Zones of Oromia.*

*Three Zones (Guji, West Harerge and Nannewa Finfinne) from the Region and again three Woredas/Districts from each Zone were selected by the highest number of HEWs left their jobs/services, for the assessment of factors /reasons associated with attrition among HEWs deployed in Oromia Regional State.*

*Systematic random sampling method used to select Health Extension Workers in each Woreda/District, using the payroll list of HEWs in each District/Woreda Heath Offices as a sample frame. The total sample size of 118 respondents were selected from each Zone/District, based on proportion to size of the current number of Health Extension Workers or key informants in each Zone/District.*

*Results: - There were multiple reasons associated with the attrition of HEWs in the region, of which 87.4% of key informants mentioned low salary payment. One hundred ninety (20.7%) and 141 (15.3%) of HEWs that have left their jobs changed their jobs to other non-health category & left because of marriage respectively.*

***Conclusion: - In general, 12,766 HEWs were trained and deployed that fulfilled 99.2% of the need during the five years (1997 to 2001 EFY) period in Oromia Region, and the finding of this study showed that attrition rate of HEWs was 7.2% which is not high.***

## . Introduction

**1.1 Background:** Ethiopia is a signatory to the Millennium Development Goals (MDGs) whereby the government committed itself to significant improvement of the health of the nation by 2015. The country also signed the Alma Ata Declaration on "Health for All" through universal primary health care. In order to translate those commitments in to action, Health Extension Program (HEP) was designed as an efficient and effective health system in our country in 1996 EC, which is an initiative community, based health care delivery system, aimed at creating healthy environment as well as healthful living in the country. The main objective of HEP is to improve access and equity providing at village/kebele level, targeting households particularly women/mothers; focusing on sustained preventive health actions and increased health awareness. It also serves as effective mechanism for shifting health care resources from predominantly urban to rural areas, where the majority of country's population resides. Therefore, HEP is considered as the most important institutional framework for achieving the MDGs. HEP has been vigorously launched and the pilot was also implemented in 23 rural villages of Oromia Regional State in 1996 EC. Following positive results gained from the pilot program, the regional government decided to implement the HEP program in all rural villages (1).

**1.2 Problem statement:** Among the overall guiding principles for Human Resource Development (HRD) by WHO , addressing the importance of HEWs and considering HRD as a vital part of the health system are those that need due attention. With regard to Oromia Regional State, the existing human resource is grossly inadequate in quality and quantity and also far below any acceptable standards. The health sector is characterized by a high turnover coupled with internal as well as external brain drain. It is a common observation that human resource development, deployment, and retention has fallen short of the infrastructure development and have been the critical factors in the performance of the health system (2, 3).

**1.3 Rationale of the research and expected outcome:** creating an equitable distribution of the health workforce is needed by improving their motivation that may contribute to retention. Attrition among HEWs in the Oromia Regional State is a problem that assessing factors associated with the attrition among HEWs and exploring their whereabouts is crucial to come up with the necessary information for feasible recommendations to decision makers at different levels.

## 2. Literature Review

### 2.1 Health service Delivery system

The policy and service delivery program is one of the program within the division of health systems and service development aims at improving health services through better governance, financing, staffing and management informed by reliable and accessible evidence and research using the primary health care approach. Effective health service delivery depends on having some key resources: motivated staff, equipment, information and finance, and adequate drugs. Improving access, coverage, and quality of health services also depends on the ways services are organized and managed, and on the incentives influencing providers and users (4).

The philosophy of Primary Health Care (PHC) includes the interconnecting principles of equity, access, empowerment, community self-determination, and intersectoral collaboration. It encompasses an understanding of the social, economic, cultural, and political determinants of health that gives priority to those most in need and addresses health inequalities; maximizes community and individual self-reliance, participation and control; and involves collaboration and partnership with other sectors.

The Health Extension Program is a community based health care delivery system, designed to improve equitable access, strong focus on sustained preventive health actions, and increased health awareness at village/kebele level provided by the Community/Village Health Workers (4, 5).

Primary Health Care (PHC) program relies on village health workers to provide simple curative and preventive services to largely underserved communities in many countries and the rural primary health services program also aim to improve access of health care services and activities for rural and remote communities which gives community-based primary health care services greater flexibility in the range of services they can offer, including health promotion and preventive health activities (6, 7).

In PHC program services, Community Health Workers (CHWs) have the potential to play, an important role in strengthening weak health systems and has a great role in increasing access to the community (8).

### 2.2 The Health Extension Program in Ethiopia

The Health Extension Program (HEP) is at the grass roots levels of a community /Kebele/ village based preventive and promotive essential health services started its implementation by the strong political commitment of the Ethiopian Government in 2003. The HEP is designed to give services at village/kebele level covering sixteen health extension service packages categorized under disease Prevention, Family Health Service, Hygiene and Environmental Sanitation and Health Education and Communication as a cross cutting approach (1).

In 1991, only 43% of the Ethiopian population had physical access to modern health services. Health Posts and community health system had almost collapsed. So that our government had established a policy focused on the preventive and promotive components of health care as well as the development of inequitable and acceptable standard of health services for all segments of the population by the commitment and direction towards decentralization and democratization. Health Sector Development Program (HSDP) was set to address different programs in the framework of core strategies like Health Extension Program (9, 10).

The implementation of HEP involves recruitment of two at least tenth grade complete females from each village /Kebele, trained for year duration at Technical and Vocational and Educational Training Centers (TVETs), and deployed as Health Extension Workers. HEWs were preferred to be females because, more of the health services expected to be practiced were for women and children and that female HEWs could also make a good relationship, and facilitate effective communication by encouraging them as a role model for children and women living in rural communities (2, 11).

Health Service Extension Program strategy is a community based health care delivery system that can be seen as a part of the wider movement or reform from the more traditional forms of top-down development practice to the participatory development direction. The principles of HEP include identification and prioritizing health needs of the community by their involvement, interest, needs and wishes to contribute to health service extension by people's knowledge and skills to own and empower the program, especially involving women in all decision making process. In response to the health problem, the country's new health policy also focuses mainly on providing quality promotive, preventive, and selected curative health care services in an accessible and equitable manner to reach all segments of the population, with special attention to mothers and children, emphasis on establishing an effective and responsive health delivery system for those who live in rural areas (12, 13).

The main approach of HEWs in conducting their activities is identifying 60-75 households selected from each villages/kebeles every cycle by the Innovation theory in collaboration with the village/kebele administration after compiling base line data and training them for about 96 hours on the sixteen package programs. They will graduate when they are convinced and well informed of the interventions then demonstrate practical changes in the use of health programs, environmental and personal hygiene and serve as models in line with heath extension packages to others by expanding gradually until they cover the whole HHs in the village/kebele (***14, 15).***

The Oromia Regional Health Bureau's report for 2002 EFY indicates that 4,069,503 household were trained as model families in the region. The HEP has faced a number of challenges from the outset and some evidences were gathered also from the few systematic reviews done on the HEP and from the presentations made during the annual review meetings of HSDP and the like, which has been solved at different levels bringing to the majority of the program achievement today (16, 17).

### 2.3 Human Resources in the Public sectors

Human resources are the most crucial resources of an organization, that they significantly influence organizational productivity. Health workers themselves are central to sustaining a strong health workforce and health sector, and ensuring that human rights principles continue to inform the health system. This requires that health workers

understand and can promote human rights through their work in treating patients, through policymaking roles, and through advocacy. Loss of personnel that gradually reduced the size of work force also been cited as a primary barrier to reducing high rates of maternal mortality, and blamed for many other preventable deaths from other causes.

In Sub Sahara Africa, the density of health workers to population is much lower than the average and the minimum level of health workforce density required to achieve MDGs has been estimated at 2.5 per 1000 population (18).

The current 0.2 per 1000 population in Ethiopia clearly indicates the challenges ahead and insufficient human capacity in Ethiopia, as in many developing countries, to absorb, apply, and make efficient use of the interventions being contemplated through the various initiatives related to child survival. The World Health Organization's World Health Report 2006, Working Together for Health estimated that, Sub-Saharan Africa (SSA) is suffering from a shortage of more than 800,000 doctors, and an overall shortfall of nearly 1.5 million health workers. Therefore, the impact on health outcomes of the shortage and poor distribution of health care workers in developing countries, especially those in Sub-Saharan Africa, has recently received substantial international attention (19).

A recent study on Civil Service attrition in Gambia Region found out that there is need for a retention strategy to ensure that the Civil Service does not lose quality personnel and for launching of a major public sector reform with a view to enhancing service delivery by public sector institutions, comprehensive training plan for all sectors, attractive working conditions, and conditions of service, and security of tenure are considered mandatory to create highly motivated public service personnel (20).

Generally, there is shortage in number of different groups of professionals, mal distribution of professionals between regions, urban and rural setting, and governmental, nongovernmental, and private organizations. There is no policy specific to human resource development (HRD) for health and no proper mechanism to manage the existing health workforce. As HSDP I evaluation indicates, some of the measures taken seem to have limited the attrition to the private sector. However, a more recent MOH document implies that the measures "have not made significant impact on the problems". There is little information on migration (brain drain) in Ethiopia but there are clear indications that it is high and growing. In recognition of Human Resources for Health crises, Ethiopia's Federal Ministry of Health has developed Human Resources for Health strategy (HRH) as a first step to address health workforce challenges in the country (12).

In this regard assessment of the health workforce profile almost amounts to a census of health professionals working at varies levels conducted nationally to describe the country's health workforce situation in terms of professional categories and skill mix including Health Extension Workers which helps to determine the HRH needs of Ethiopia and will provide information for the development of the county's health

workforce strategic plan, which is expected to include the concern of attrition of health workers to be reviewed critically at policy and program level (5, 12).

In Ethiopia, all Health facilities including health posts will be staffed according to their respective standards. Through these interventions, the ratio of HEWs to population is expected to reach 1:2500. Human resource development strategy will be developed and implemented in order to address both the production and retention of the staff in the sector. According to the 2001EC Health and Health related indicators indicates the required number of HEWs for Ethiopia, about 30,000, has been fulfilled as 30,578 HEWs have been trained and deployed to the village/Kebele. Oromia Regional Health Bureau, Annual Report of 2001EC, also indicates that about 12,875 HEWs trained and deployed until 2001EC accounting for almost 100% coverage (16, 17, 21).

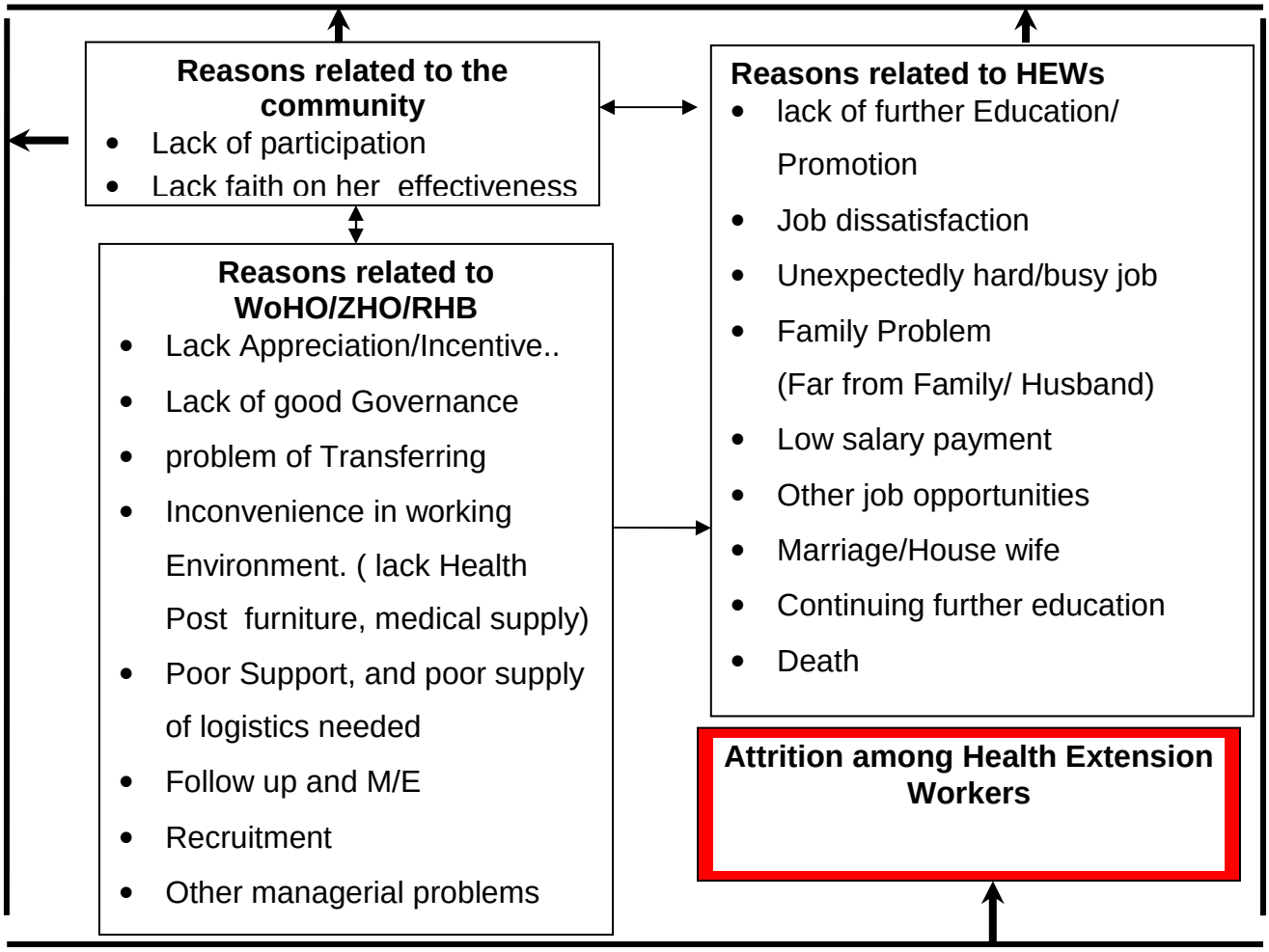
### 2.4 Reasons associated with the attrition of human resources

A study done on health workforce attrition in the public sector of Kenya shows that the main reason for health workers attrition (all cadres combined) at each level of facility was retirement, followed by resignation and death (22).

The Study of attrition of Sylhet district in northeastern Bangladesh done to investigate reasons for high rates of Community health workers (CHWs) also indicates that, motivation for becoming a CHW appeared to stem primarily from the desire for self-development, to improve community health, and for utilization of free time. The most common factors cited for continuing as a CHW were financial incentive, feeling needed by the community, and the value of the CHW position, in securing future career advancement. However, factors contributing to attrition included were heavy workload, night visits, working outside one's home area, familial opposition, and dissatisfaction with pay (8, 23).

As seen above from different literatures, the provision of accessible and equitable health services for rural community is now shifting health resources to the kebeles level. So that the designed human resource for health strategy needs more attention at all levels and the current poor planning, implementation, strategic information, monitoring, and evaluation of human resources also need to be improved. Emphasizing on increasing the number of low level and mid level health staffs to be trained and deployed in the rapidly increasing health facilities including the gap filling for the attrition of health extension workers are necessary (12).

**Figure 5. Conceptual Framework of perceived reasons for attrition among HEWs in Oromia**




Therefore, this particular study is needed and helpful in identifying the issues of HEWs attrition in Oromia Region and expected to recommend appropriate suggestions from the findings for the provision of immediate responses accordingly in addressing mechanisms to retain HEWs by our sector in collaboration with other relevant stakeholders at all levels.

## 3. Objectives

### 3.1 General Objectives

To determine the magnitude of attrition among Health Extension Workers deployed and explore the whereabouts of Health Extension Workers who have left their jobs and perceived reasons related to it, in Oromia Regional State.

### 3.2 Specific Objectives

1. To determine the magnitude of attrition among HEWs deployed in Oromia Region since 1997 to 2001 EFY;

2. To explore the whereabouts of the HEWs who have left their jobs in Oromia Region since 1997 to 2001 EFY; and

3. To explore perceived reasons for attrition among HEWs deployed in Oromia Region since 1997 to 2001 EFY.

## 4. Methods

### 4.1 Study design

An Exploratory Cross-Sectional study, having document reviewing.

### 4.2 Study Area and period

The study area was in Oromia Regional State, Three Zones and three Woredas/Districts selected by their highest number of HEWs leaving their jobs to explore the possible factors/reasons. The study was conducted from November to December 2010.

Oromia Regional State is one of the biggest National Regional States of Ethiopia stretching from south to east and west and shares internal borders with Benishangul Gumuz, Gambella, and SNNPR Regional States in the south and west, by Benishangul, Amahara and Afar Regional States in the north, with Somali Regional State in the east. Based on the current border delineation, the region covers an area of 359,619.8 square Kms, which is roughly 30 percent of the country's total land mass. Average households in the Region are 4.8 with population density of 82 people per square kilometers which partly varies among zones and woredas/districts. According to the summary and statistical report of the 2007 population and housing census report, Oromia's population is estimated to be 27,158,471, with about 1:1 sex ratio. As of Oromia Regional Health Bureau five years plan performance of HSDP iii, there were 41hospitals, 1008 health centers, and 5929 health posts owned by the Regional Government, Moreover the Region has 8 Hospitals, 5 health centers and 5 health posts owned by other governmental and nongovernmental organizations (10, 28).

In Oromia there are 378 physicians, 448 health officers, 5040 nurses (all category) and 287 midwifes with a health worker to population ratio of 76,075, 64,189, 5706, and 100,197 respectively; which shows health professional to population ratio is very low. One physician-serving ratio is 1: 10,000 for SSA as per WHO standard. There are also 12,875 Health Extension Workers (HEWs) in the Region currently on job with one to 2,234 population ratios (15).

### 4.3 Source Population

Key informants and document reviewed from zones in Oromia Regional State.

### 4.4 Study Subjects

Key informants were Health Extension workers who were currently on job from three Districts of each zone of three zones, Guji, West Harerge and Nannewa Finfinne. Documents were also reviewed from all zones of Oromia Region and Technical Vocational and Education commission of Oromia Regional state.

Sample size determination was not needed.

### 4.5 Techniques & procedures used for selecting key informants and reviewing documents.

Health Extension Workers currently on their jobs selected as key informants from three Zones (Guji, West Harerge and Nannawa Finfinne) and three woredas of these Zones by their highest number of HEWs who have left their jobs, for the assessment of perceived reasons associated with attrition among Health Extension Workers deployed in the Region. Totally, one hundred eighteen HEWs, 38 (32.2%) HEWs from Guji zone, Kurcha,Uraga,and Hambella Woredas, 55 (46.6%) HEWs from West Harerge zone, Guba Koricha, Habro and Chiro Woredas, and 25 (21.2%) HEWs from Nannewa Finfinne, Akaki, Baraki and Sululta Woredas who were currently on jobs and know at least one HEW who has left her job were selected as key informants from these nine woredas of three Zones mentioned.

Documents were also reviewed in each zone/woreda of Oromia region by developing questionnaires to determine the magnitude of HEWs left their jobs and to explore the whereabouts of HEWs who left their jobs. Data regarding the trained HEWs from Technical, Vocational and Educational commission of Oromia Regional state also considered.

### 4.6 Data Collection and Analysis procedures

Data collection formats and questionnaires related to the HEP program and HEWs were prepared and arranged for HEWs selected as key informants. Three HEP coordinators at the Zonal levels from selected Zones (Guji, West Harerge and Nannewa Finfinne) were identified, recruited and trained for one day to train Nine data collectors for two days, who have been working on the HEP at the selected Woredas/Districts on the purpose of the study, objectives, processes and techniques of data collection including the specific responsibilities of data collectors. The data collection was conducted at health post level and has taken a total of fifteen days.

Documents to be reviewed were also collected using different formats from each zone/woreda of Oromia region by the HEP coordinators at all Zones of Oromia Region after orienting the issues through telephone and finally analyzed. The HEP coordinators at the Zonal levels were supervised the data collection process at the woreda level and ensured the quality of the data collected.

Data quality regarding questionnaires for key informants and the collected documents/data to be reviewed was maintained through two days training of the data collectors and were crosschecked by the supervisors/coordinators of the Health Extension Program at each Zone and the principal investigator.

### 4.7 Ethical issues

The ethical clearance letter was obtained from Addis Ababa University College of health sciences, Institutional Review Board (IRB) and the Oromia Regional Health Bureau.

Permission was also sought and obtained from Zonal and Woreda/District Health offices to implement the study. Only data related to the study were collected and irrelevant data to the study objectives were not collected. Willingness of the individuals was considered; confidentiality and the rights of key informants were also protected.

### 4.8 Dissemination of findings

The study findings will be disseminated without any delay to the Oromia Regional Health Bureau, Zonal Health Offices, Woreda/District Health Offices, and other relevant bodies, after the completion of the academic process at Addis Ababa University.

It will also be submitted for publication in scientific journals.

## 5. Results

### 5.1 General Description of Trained and graduated HEWs

As data collected from Oromia Regional Vocational, Technical and Educational Training Commission, the total number of HEWs trained and graduated from the 18 TVETs of Oromia Regional State from 1997 to 2001 EFY were 12,766 covering 99.2% of the total needs, two HEWs as per the standard in the 18 zones of Oromia Region and of all HEWs graduates, 2212 (17.3%), 2899 (22.7%), 3069 (24%), 3724 (29.2%) and 862 (6.7%) were a graduates of 1997, 1998, 1999, 2000, and 2001 EFY respectively.

**Table 1: Number of HEWs trained and graduated from TVETs by EFY, Oromia Region, 2011**

| No of HEWs graduated from different TVETs of Oromia in the year 1997-2001 EFY | | | | | | |
|---|---|---|---|---|---|---|
| Ser No | Years of graduation | | | | | |
| | 1997EFY | 1998EFY | 1999EFY | 2000EFY | 2001EFY | Total |
| Total | 2212 (17.3%) | 2899 (22.7%) | 3069 (24%) | 3724 (29.2%) | 862 (6.7%) | 12766 (100%) |

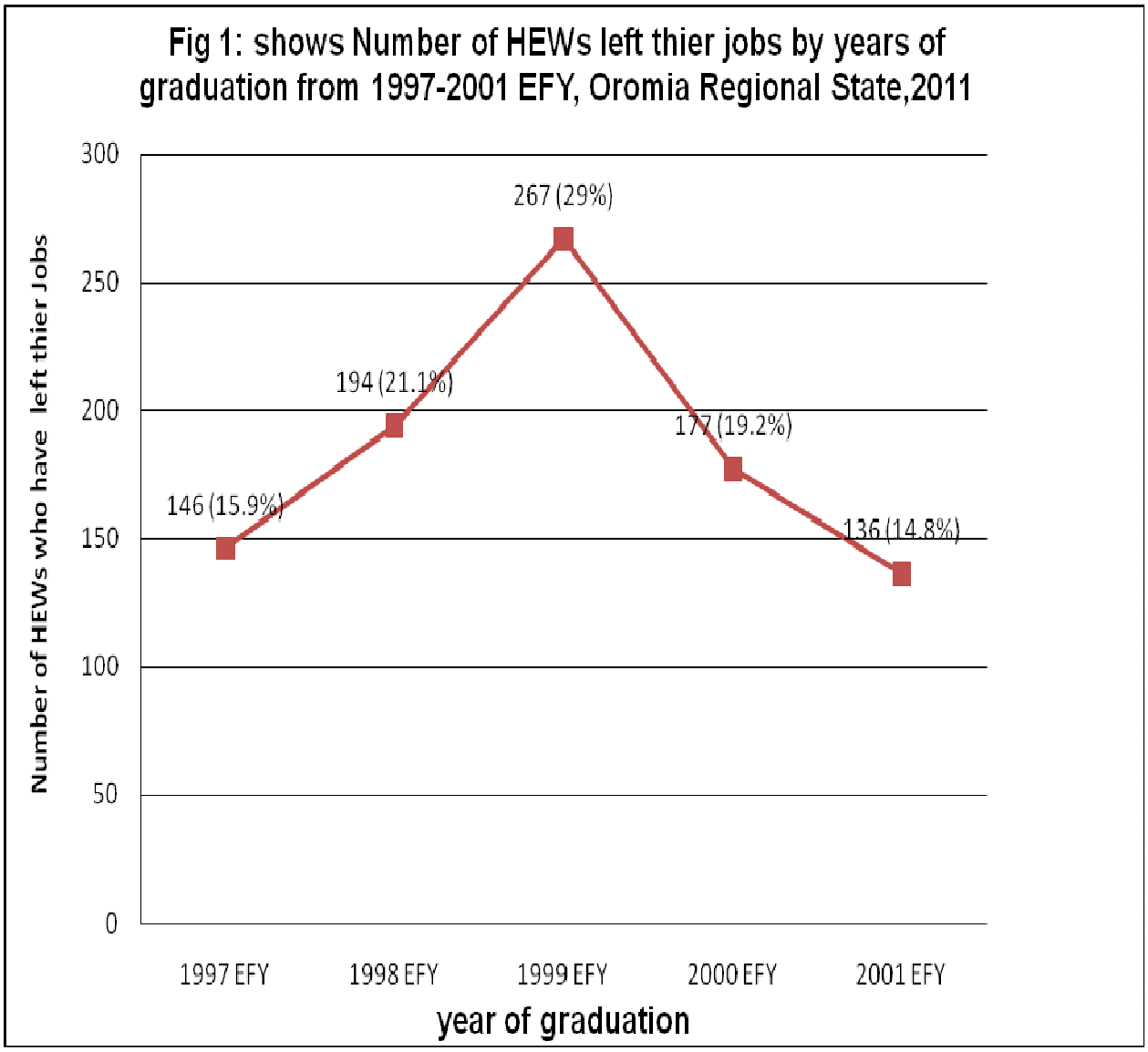
### 5.2 Attrition of HEWs

As Data collected from all zones in Oromia Region shows, of all 12,766 HEWs trained, graduated and deployed from the year 1997 to 2001 EFY, 920 (7.2%) of HEWs were left their jobs. Among all zones, West Harerge, Guji and Jima were the three Zones with the highest share of HEWs attrition (34%) from the region; and account 130 (14.1%), 100 (10.9 %) and 83 (9.0%) respectively; However, the three zones with the highest number of HEWs attrition from their total number of HEWs deployed were Guji, West Harerge and Nannewa Finfinne accounting the attrition rate of 19.8%, 16.2% and 15% respectively.

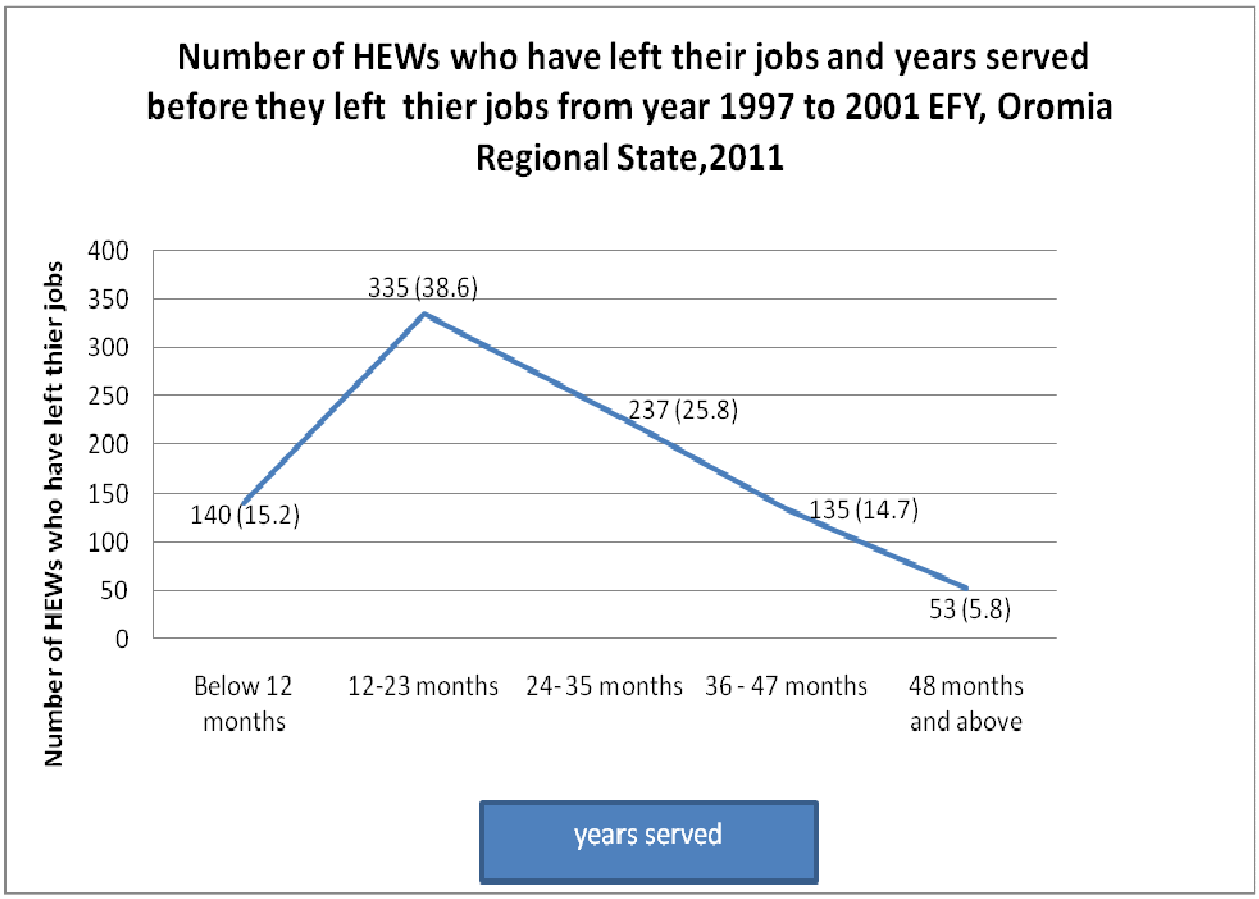
**Table 2:- Number of HEWs deployed from 1997 to 2001 EFY and those who have left their jobs by Zones, Oromia Regional State, 2011**

| Ser No | Name of Zones | Number of HEWs deployed till 2001EFY | HEWs who have Left their Jobs | |
|---|---|---|---|---|
| | | | Number | Percent |
| 1 | Arsi | 1017 | 36 | (3.5) |
| 2 | Bale | 776 | 48 | (6.2) |
| 3 | Borena | 531 | 51 | (9.6) |
| 4 | East Harerge | 941 | 60 | (6.4) |
| 5 | East Shoa | 602 | 54 | (9.0) |
| 6 | East Wollega | 605 | 20 | (3.3) |
| 7 | Guji | 506 | 100 | (19.8) |
| 8 | Horo Guduru Wollega | 375 | 12 | (3.2) |
| 9 | Ilu Ababora | 1000 | 60 | (6.0) |
| 10 | Jimma | 1070 | 83 | (7.8) |
| 11 | Kelem Wollega | 511 | 22 | (4.3) |
| 12 | Nannewa Finfinne | 306 | 46 | (15) |
| 13 | North Shoa | 502 | 43 | (8.6) |
| 14 | South West Shoa | 545 | 52 | (9.5) |
| 15 | West Arsi | 566 | 29 | (5.1) |
| 16 | West Harerge | 803 | 130 | (16.2) |
| 17 | West Shoa | 1104 | 54 | (4.9) |
| 18 | West Wollega | 1006 | 20 | (2.0) |
| | Average (Regional) | 12766 | 920 | (7.2) |

Of all 2212 graduates of 1997EFY, 146 (15.9%), of all 2899 graduates of 1998EFY, 194 (21.1%), of all 3069 graduates of 1999EFY, 267 (29%), of all 3724 graduates of 2000EFY 177(19.2%) and of all 862 graduates of 2001EFY, 136 (14.8%) of HEWs were left their jobs.




More than one third of HEWs who have left their jobs (38.6%) served for 12 to 23 months before they left their jobs and a few (5.8%) served for four years and above. The remaining 237(25.8%), 140(15.2%) and 135 (14.7%) served for 24-35 months, one year and below and 36-47 months respectively.




**5.2 The Whereabouts of HEWs who have left their jobs.**

Data collected from all zones indicates that, of all Nine hundred twenty HEWs who have left their jobs, more than one third (33.2%) were changed their job to other non health category. One hundred forty four (15.7%) were housewives (married) and cannot continue the governmental job in addition to bearing their children. One hundred eighteen (12.8%) were on higher education and Ninety nine (10.8%) shift their jobs to other working areas by promotion like Women Association and at different office levels etc. ninety three (10.1%) were up graded to other health category. Eight three (9%), fifty seven (6.2%) and twenty one (2.3%) were abroad, unknown and died during the study period respectively.

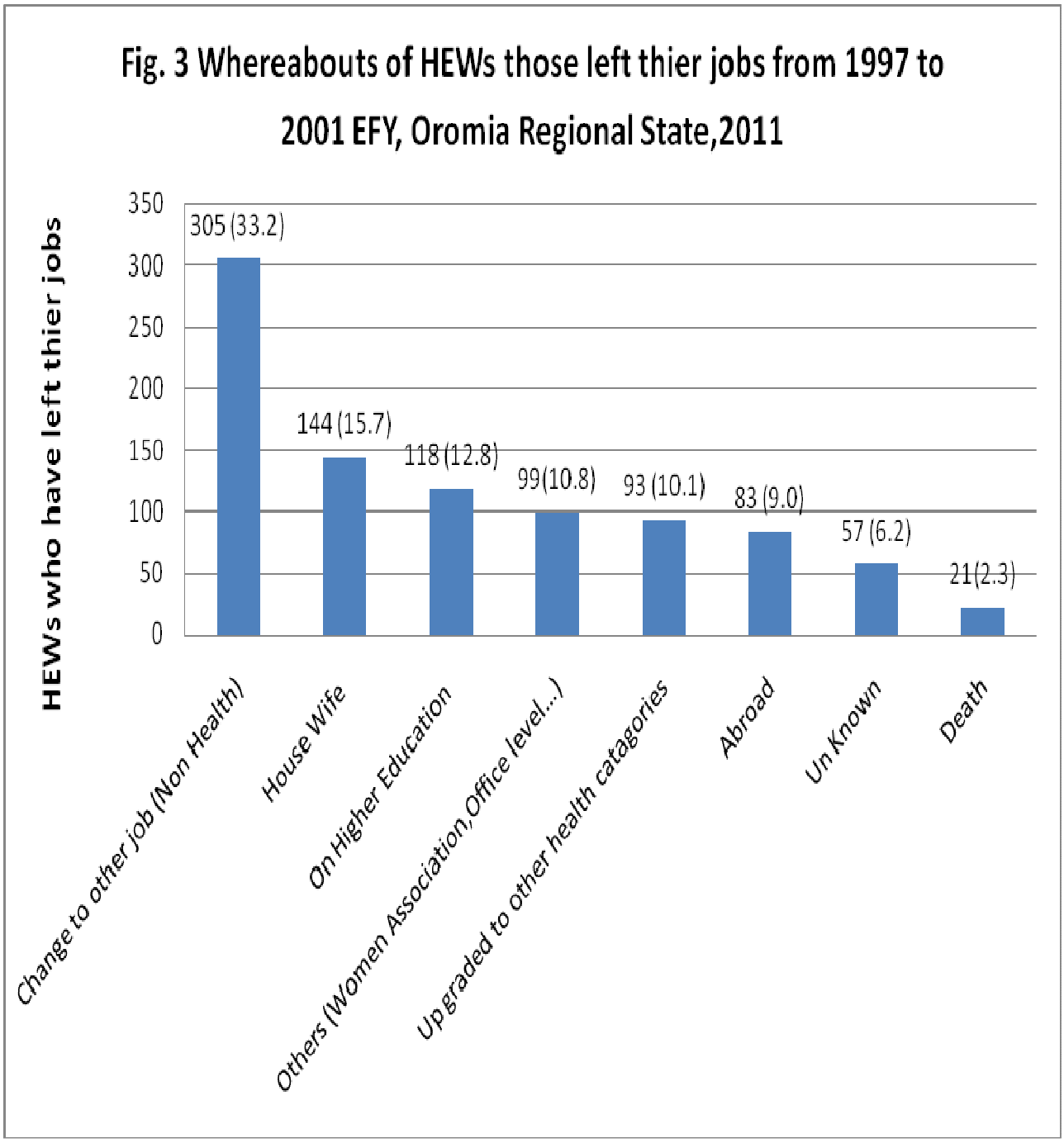


Fig. 3 Whereabouts of HEWs those left thier jobs from 1997 to 2001 EFY, Oromia Regional State,2011
HEWs who have left thier jobs
350
300
250
200
150
100
50
0
305 (33.2)
144 (15.7)
118 (12.8)
99(10.8)
93 (10.1)
83 (9.0)
57 (6.2)
21(2.3)
Change to other job (Non Health)
House Wife
On Higher Education
Others (Women Association, Office level...)
Upgraded to other health catagories
Abroad
Un Known
Death

### 5.3 Perceived reasons for attrition

Perceived reasons for attrition were identified from one hundred eighteen HEWs selected as key informants, working in different health posts requesting to fill questionnaires prepared at their working sites, for those who know at least one HEW who has left her job. They stated more than one or combination of perceived reasons for HEWs to leave their jobs.

About 84.7% of key informants mentioned perceived reason for HEWs to leave their jobs was low salary payment. 58.5%, 30.5% and 28% key informants mentioned lack of further education or promotion, Job dissatisfaction (unexpectedly hard/busy job), and Problem of transferring respectively.

**Table 3- Perceived reasons associated with attrition of HEWs from 1997-2001 EFY, Oromia Regional State, 2011.**

| S/No | Factors/Reasons | Frequency | Percentage |
|---|---|---|---|
| 1 | Low salary payment | 100 | 84.7 |
| 2 | Lack of further education or promotion | 69 | 58.5 |
| 3 | Problem of good governance | 36 | 30.5 |
| 4 | Job dissatisfaction ( unexpectedly hard/busy job) | 33 | 28 |
| 5 | Problem of transferring | 20 | 16.9 |
| 6 | Inconvenience in working environment (lack home, Health post furniture & med. supplies…) | 19 | 16.1 |
| 7 | Lack faith on her effectiveness or lack recognition/respection/undermined | 19 | 16.1 |
| 8 | Family problem (far from family/husband) | 17 | 14.4 |
| 9 | Get chance of other better job opportunity | 12 | 10.2 |
| 10 | Lack appreciation (no incentive/rewards) | 12 | 10.2 |

Key informants were described the detail of perceived reasons by the open ended questionnaires as summarized below.

#### 5.3.1 Low salary

The most common reason for HEWs for leaving their jobs was inadequate payment. Most of the key informants mentioned that HEWs are complaining about payment that, it is too little relating to the workload and the current market and face difficulty to support wider family. Burden of workload and activities increased over the years, yet payment was still unchanged, which brings about dissatisfaction and exacerbation of the situation.

### 1.3.2 Lack of further education /promotion

Another reason cited by 69 (58.5%) of key informants was lack of further education and promotion. No chance of education/promotion or upgrading exists so that some HEWs were searching for other job opportunities.

### 1.3.3 Problem of Good Governance

The problem of good governance was mentioned by 30.5% of the key informants. Supportive supervision and follow up were not regular and continuous in some health posts so that evaluation is not based on their performance. Level of appreciation /incentives/rewards from higher levels was also unattractive. Some health posts lack medical supplies and logistics, which can also bring about inconvenience in working environment.

### 1.3.4 Unexpectedly hard/busy job

About 28% of key informants mentioned, that HEWs need to go far way/distance every day and go door to door. Some HEWs face difficulty and lack time to be with their family/children. The HEP activities have been expanded without incentives of further education and salary increment to the HEWs.

### 1.3.5 Problem of transfer and family Problem (Far from Family/ Husband)

About one third (31.4%) of the key informants had reflected a concern of both transfer and family problems. Some HEWs were married but they were far from their families and need to be nearer. This usually happens when a HEW gets married to someone living outside the focal kebele. But among HEWs who have left their jobs that, most known by the key informants (68.6%) were recruited from towns, other zones, and regions and only 31.4% were recruited from their birth areas.

### 1.3.6 Lack of faith on their effectiveness or lack of recognition/ respect

About 16.1% of the key informants mentioned the problem of lack of faith on their effectiveness or lack recognition/ respect both community members and by some health personnel. This usually observed in those woredas/districts that lack good governance and where community awareness is very low.

### 5.3 Possible solutions suggested by the key informants to retain HEWs

Possible solutions were also suggested by the key informants to retain HEWs through an open ended questionnaire as seen below.

- Responding to the factors/reasons identified above;
- Fulfilling the rights of HEWs (annual leave, perdiem/allowance) while travelling to woredas/districts for work purpose;
- Awareness creation for the community to involve in the service provided by

the HEWs;

- Minimizing the current workload at health post level or assigning more than two health extension workers per kebeles/villages;
- Providing continuous supportive supervision and problem solving follow up and feed back from the relevant bodies; and
- Conducting trainings/capacity buildings.

## 6. Discussion

Attrition indicates that some Health Extension Workers were confident enough to seek opportunities beyond what their communities offered and make choices that benefit themselves and their families. Regarding the attrition of (7.2%) is not high relatively. However, measures to minimize the rate should be taken for the sake of health extension packages programs/activities in the communities. It is because attrition of HEWs had serious implications for the continuous effectiveness of the health extension packages in the community.

The kebele/Village council in collaboration with Woreda/District council will recruit females from their kebeles that complete grade 10 and be able to speak the local language by the criteria that they live in that community and know their culture that allow better integration. Local employment of women within the community also enables female empowerment and welfare gains. Though providing positions with community responsibility, economic independence and a reason for free mobility, facilitate the social adaptation and increase female leader ship and advocacy capacity. Therefore, women as healthcare providers are crucial for strengthening equitable healthcare system (11, 22, 24).

Concerning the whereabouts of HEWs who have left their jobs, 33.2% were changed their jobs to other non-health category. 9% of HEWs who have left their jobs during the study period were abroad. This may show part of little information on migration in Ethiopia. However, there are clear indications that are high and growing as mentioned in the study done on the Right to Health Workforce Planning by the physicians' health for human rights on August 2008 (18).

The main reasons associated with HEWs attrition showed in this study were; low salary payment, lack of further education/promotion, problem of good governance and job dissatisfaction/unexpectedly hard/busy job. Factors contributing to attrition of community health workers as the study of sylhet district in northeastern Bangladesh were also low salary payment, heavy work load and working outside the one's home area, which is revealed by this study (8).

29% of HEWs, were left their jobs in 1999 EFY. 136 (15.8%) HEWs also left their jobs from the 862 graduated/deployed in 2001EFY. Seven hundred thirty two HEWs, those accounting nearly 80% were served for three years and less before they left their jobs. Only about 188 (20%) were served for three to five years period indicating that could need a rule/agreement with the government body to serve for some limited years after graduated/deployed. According to the rule of Oromia Regional Health Bureau, 1998 EFY low-level health professionals were expected to give a minimum of three years in governmental health sector before leaving their jobs legally; whereas nothing was mentioned regarding the health extension workers (25).
Among HEWs who have left their jobs that, most known by the key informants (68.6%) were recruited from towns, other zones, and regions and only 31.4% were recruited from their local birth areas, that reveal the implication of permanent availability; that recruitment/selection criteria of birth area may help for the retention of HEWs.

**Strength and Limitation of the study**

Strength:-The study of attrition and exploration of factors associated with there among HEWs was not studied previously in the region, which gives insight and helps to identify intervention areas.

**Limitation:** - It was very difficult to get the needed data regarding attrition of HEWs.

## Conclusion

- The finding of this study shows that attrition of HEWs in the region was 7.2% is not high relatively.

- 33.2% of HEWs who have left their jobs changed their jobs to other non-health category. 15.7% of them left their jobs because of marriage and 9% of HEWs who have left their jobs were abroad during the study period.

- Factors/reasons that were associated with the attrition of HEWs in the region were multiple. 87.4% of key informants mentioned low salary payment. 58.5%, 30.5% and 28% of key informants also mentioned lack of further education/ promotion, the problem of good governance and job dissatisfaction respectively.

## Recommendations

- The Government has to create highly motivated HEWs by providing in-service trainings, and an attractive salary payment for the unexpectedly hard/busy job of Health Extension Program services as designed in the human resources for health strategy;

- Recruitment/selection criteria of HEWs, regarding birth area should be practiced which may help for the retention of HEWs.

- Further research needed for the topic in different regions to generalize the findings.

## 10. Annexes

### 10.1. References


1. FMOH, editor. Essential Health Service Package in Ethiopia. Addis Ababa: FMOH; August 2005.
2. FMOH. Best Practice in Health. Addis Ababa: FMOH19 Nov. 2006.
3. Ethiopia CfNHDi.Resource Development for Health in Ethiopia. EthiopJHealth Dec/09
4. Health service delivery. [Database on the internet].WHO.2011[cited jan,2011].
5. FMOH. HEP Implementation Guide line. Addis Ababa: MOH; July 2005.
6. ***Harmen H. Gray and James Ciroma***. ***Socio-economic planning sciences15 April 2002*** [cited 2002 ***15 April]***; 22(1).
7. ***Rural Primary Health Services Program*** [database on the Internet]. Australian Government Department of Health and ageing, Canberra.2008 [cited July, 2008].
8. Factors affecting recruitment and retention of community health workers in a newborn care intervention in Bangladesh [database on the Internet]. International Center for Diarrheal Disease Research, Bangladesh, Mohakhali, Dhaka, Bangladesh. 2010 [cited 3 May 2010].
9. FMOH. Health Sector Strategic Plan. September 2005:17.
10. FMOH. Health Policy of the Transitional Government of Ethiopia. In: FMOH, editor. Addis Ababa: FMOH; Sep.1993.
11. ***ORHB***. Health Extension Workers recruitment criteria. Finfinne: ORHB; 1997EC
12. WHO. Human Resources for Health Country Profile Ethiopia In: observatory Ahw, editor.: WHO; June,2010.
13. FDROE P. Statistical Report of the 2007 Population and Housing Census Report. December 2008.
14. Habtamu Argaw(MD M. The health extension program (HEP) of Ethiopia. In: office WEc, editor. Summary of concepts, progress, achievements and challenges. Addis Ababa: WHO Ethiopia country office; Sep 2007. p. 2-7.
15. FMOH. Model Family Implementation Manual. In: FMOH, editor. Addis Ababa: FMOH; 2005

16. ORHB. Five Years plan performance of HSDP III 1998-2002 EFY: Finfinne ORHB.june,2002 page 12-5

17. FMOH. Health Extension Program profile in Ethiopia. In: Center HEaE, editor. Addis Ababa
18. PHR. The Right to Health and Health Workforce Planning. Physicians Health for Human Right August 2008.
19. ORHB. Annual Report of Health activities Finfinne:ORHB; june 2001EC p. 20-6
20. Affairs DoSffaE. Republic of the Gambia Poverty Reduction Strategy 2007-2011. [approved copy]. November 2006:5.
21. FMOH. Health and Health Related Indicators. 2007
22. Health workforce attrition in the public sector in Kenya [database on the Internet]. Ministry of State for Planning, National Development and Vision 2030, Nairobi, Kenya.[cited 21 July 2009].
23. Village health Worker attrition and function levels in the ILE-IFE area of Nigeria. [Database on the Internet]. FMOH,University of Ibadan;Lagos.1993 [cited Jan, 1993].
24. ORHB. Annual Performance Report for 2007/08. Finfinnee: ORHB:August 2008
25. ***ORHB***. Rules for Health Professionals service years in Governmental health sectors. Finfinne: ORHB;1998EC

## 10.2 Structured questionnaires (English version)

**Questionnaires directed to key informants (HEWs on jobs) to assess the possible factors of attrition among Health Extension Workers deployed and, explore the whereabouts of there in Oromia Regional State፡ 2011**

Zone_____Woreda _____Kebeke _____

***Distance of woreda from the Zone (Km)? A.<5 B 5-10 C.10-15 D.15-20 E. >20***

**1)** What is your age?

1. 18 -20 yrs
2. 21-25 yrs
3. 26-30 yrs
4. >31 years.

**2)** What is your marital status?

1. Single 2. Married/Living together 3. Separated/divorced/widowed

**3)** For how many years did, you served as a HEW?

**1.** < 12 months **2**. 12-23 months **3**.24-35 months **4**.36-47 months **5**. ≥48 months

**4)** Do you know/heard that some (at least one) HEWs are leaving their job?

1. Yes 2. No

**5)** If yes, from which areas, most HEWs left their jobs were recruited to work?

**1.** Their birth area **2**. Nearest town **3**. Other region **4**. Un known

**6)** Please, would you suggest major possible factors/reasons for HEWs to leave their jobs?

---

---

---

**7)** Please, will you give us suggestion, to retain HEWs on their jobs? ----------

---

---

Thank you very much again for taking time to answer these questions!

***Data Collector Name ----------Signature ----------***

***Supervisor Name ----------Signature ----------***

**10.3 Structured questionnaires (Oromiffa version)**

Naannoo Oromiyaatti qo'annoo sababa Hojjatoonni Ekisteenshinii Fayyaa (HEF) hojii isaanii gadi lakkisanii baruuf gaafii namoota beekaniif (HEF hojii isaanii irra jiraniif) qophaa'e dhiyaate,Bara 2011

***Godina_____Aanaa _____Ganda/Araddaa_____***

***Aanaan Magaalaa Godinarraa Km hangam fagaata?A.<5 B 5-10 C.10-15 D.15-20 E. >20***

**1)** Umuriin kee Waggaa meeqa?

1. Waggaa 18 -20
2. Waggaa 21-25
3. Waggaa 26-30
4. Waggaa >31

**2)** Haala Fuudhaaf Heeruma keetii?

1. Hin heeruminne 2. Heerumeera 3. Hiikeera/addaan deemu/Du'aan

**3)** Akka HEF tti tajaajila waggaa meeqaa qabda?

1.< 12 months **2**. 12-23 months **3**.24-35 months **4**.36-47 months **5**. ≥48 months

**4)** Hojjattuu Ekisteenshinii Fayyaa Hojii ishee gadi lakkisite beekitaa/dhageessee?

1. Eeyyeni 2. Mitti (Hin dhageenye)

**5)** HEF hojii gadi lakkissan irra jireenyi isaanii dhaloota eessaatti turan ?

1. Toora itti dhalatanii 2. Magaalaa irraa 3. Naannoo biroo 4. hin-beekkamu

**6)** Ilaa -Mee; sababa gurguddoo HEF hojii isaanii gadi lakkisaniif naaf ibsitaa?

_____

_____

_____

***7)*** Ilaa -Mee; akkamitti HEF hojii isaanii akka hin lakkissinne ykn tursiissuu akka dandeenyu yaada kee naaf ibssitaa?

_____

_____

_____'

***"Yeroo fudhattee gaafii kiyyaaf deebii waan naaf kenniteef irra deebi'een si-galatoonfadha!"***

***Namaa ragaa kana funaane: - Maqaa _____Mallattoo _____***

***Suparvaayizara :- Maqaa _____ Mallattoo _____***

**10.4 Information sheet (English version)**

**(Certify the respondent's agreement before interviewing)**

**Addis Ababa University College of Health Sciences**

**Assessment of the magnitude of attrition and explore the possible factors related to it among Health Extension Workers deployed in Oromia Region.**

**Introduction**

My Name is ----------; I am working in ----------. I am the research team member of Addis Ababa University College of Health Sciences. I would like to inform you that you and I would have a short discussion concerning this study. Before we go to our discussion, I will ask you to listen carefully to what I am going to tell to you about the purpose and general condition of the study and tell me whether you agree or disagree to participate in this study.

I am interviewing key informants who know HEWs those left their jobs. The objective of this study is to assess the magnitude of attrition and explore the possible factors related to it among Health Extension Workers deployed in Oromia Region. Its benefit is to respond on factors associated with attrition rate as of recommendations given for different organizations at different levels.

You are selected to be one of the participants in this study. The study will be conducted through interview. The information you give us is confidential and will be used only for the study purpose. A code number will identify every participant and no names will be used. If a report of result is published, only summarized information of the total group will appear. The interview is voluntarily and you have the right to participate or not to participate at any time during the interview. Your refusal will not have any effect on services that you or any members of your family receive. However, your participation is important to fulfill the study in assessing factors /reasons for attrition among HEW in Oromia Regional State.

Are you willing to participate in the study? 1. Yes 2. No

Thank you! (If the study subject agrees to participate in the study, start interviewing)

**10.5 Information sheet (Amharic Version)**

**በአዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ**

**ስለ ጥናት መረጃ መስጫ ቅጽ (ቃለ-ምልልሱን ከመጀመርዎ በፊት የተመረጠዉን ሰዉ ስምምነት አረጋግጥ፡)**

**<u>መግቢያ</u>**

ስሜ ---------- ይባላል፡፡ የመጣሁት ከ----------ነዉ፡፡ በአዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ ጥናት ቡድን አባል ነኝ፡፡ እኔና እርስዎ ይህን ጥናት በተመለከተ አጭር ዉይይት እንደሚኖረን ልገልጽልዎት እወዳለሁ፡ ወደ ዉይይታችን ከመሄዳችን በፊት ስለ ጥናቱ አላማና አጠቃላይ ሁኔታ ገለጻ ስለማደርግልዎት በፅሞና ካዳመጡኝ በኋላ በዚህ ጥናት ዉስጥ ለመሳተፍ ፈቃደኛ መሆንዎንና አለመሆንዎን ስምምነትዎን እንዲገልጹልኝ እፈልጋለሁ፡

በዚህ ቃለ ምልልስ ዉስጥ የሚሳተፉት ስራቸዉን የለቀቁ የጤና አክስቴንሽን ሰራተኞችን የሚያዉቁ ሌሎች በሥራ ላይ ያሉ የጤና አክስቴንሽን ሰራተኞች ናቸዉ፡ የጥናቱ አላማ የጤና አክስቴንሽን ሰራተኞች ሥራቸዉን የሚለቁበትን ምክንያት ለማወቅና ለመልቀቅም ምክንያት የሆኑ ጉዳዮችን ለማወቅ ሲሆን ከጥናቱ በሚገኝ ዉጤትና አስተያየት መሰረት የተለዩ ድርጅቶች በየደረጃዉ ዉሳኔ በመስጠት ርምጃ እንዲወስዱም ያግዛል፡፡ በቃለ መጠይቁ ለማሳተፍም እርስዎ ተመርጠዋል፡ ቃለ ምልልሱ በመጠይቅ መልክ ይሆናል፡፡ እርስዎ የሚሰጡን መረጃ ምስጥሩ የሚጠበቅ ሲሆን ለዚህ ጥናት ብቻ የምንጠቀምበት ይሆናል፡፡ የእያንዳንዱን የጥናት ተሳታፊ ለመለየት መለያ ቁጥር እንጂ ስም አንጠቀምም፡ የዚህ ጥናት ዉጤትም የሚታተም ከሆነ ከሌሎች የጥናት ተሳታፊዎች ጋር ተጠቃሎ የሚቀርብ ይሆናል፡፡

ቃለ መጠይቁ በፈቃደኛነት ላይ የተመሰረተ ስለሆነ እርስዎ በዚህ ጥናት ዉስጥ የመሳተፍ ወይም ያለመሳተፍ እና ጥናቱን ያለመቀበል መብትዎ የተጠበቀ ስለሆነ በማንኛዉም ሰዓት ጥናቱን ልያቋርጡ ይችላሉ፡ በዚህ ጥናት ያለመሳተፍዎ እርስዎም ሆነ ቤተሰብዎ በሚያገኙት አገልግሎት ላይ ምንም አይነት ተፅዕኖ አይፈጥርም ቢሆንም ግን የእርስዎ ተሳትፎ በኦሮሚያ ክልል ስራቸዉን የለቀቁ የጤና አክስቴንሽን ሰራተኞች ምክንያት ምን እንደሆነ ለማወቅ የሚደረግ ጥናትን የተሟላ የሚያደርግና ጠቃሚ ነዉ፡፡

በጥናቱ ቃለ ምልልስ ለመሳተፍ ፈቃደኛ ነዎት? 1. አዎ ---------- 2. አይደለሁም ---------- አመሰግናለሁ፡፡ (ተሳታፊዉ በጥናቱ ለመሳተፍ ፈቃደኛ ከሆኑ ቃለ መጠይቁን ይጀምሩ፡፡)

**10.6 Informed Consent form (English version)**

**Addis Ababa University College of Health Sciences**

**Assessment of the magnitude of attrition and explore the possible factors related to it among Health Extension Workers deployed in Oromia Region.**

**Read the following paragraph for the selected person.**

My Name is ----------I live in ----------kebele. I understand all the information provided to me by the principal Investigator, the research conducted in our kebele requires my participation. If it is useful, I am willing to participate in the interview, provided that no information regarding me, like my Name and all answers given by me must be transferred to the third parity. It also understands that the nature of the study is maintaining confidentiality and privacy and my willingness is considered and my right I can stop at any point if there is any inconvenience. There for I am willing to participate in the interview

Are you willing to participate in the interview?

Yes, ---------- (continue the interview if the respondent says “yes”)

No, ---------- (Thank and stop here, if the respondent says “No”)

Signature ----------Date ----------

(Signature of the interviewer certifying the consent will be obtained verbally)

**10.7 Informed Consent form (Amharic version)**

**በአዲስ አበባ ዩኒቨርሲቲ የጤና ሳይንስ ኮሌጅ**

**የስምምነት ማረጋገጫ ቅጽ**

**ከዚህ በታች የተመለከተውን ቃለ-ምልልሱ ሊደረግለት ለተመረጠዉ ሰዉ ያንብቡ፡፡**

**ሥሜ ----------ይባላል፡ የምኖረዉ በ----------ከተማ ቀበሌ -----ነዉ፡፡ ጥናቱን በሚያካሂዱት ባለሙያ የተሰጠኝን መረጃ ሁሉ የተረዳሁ ስሆን ለጥናቱ የኔ ተሳትፎም ወሳኝ ነዉ፡፡ ጥናቱ ጠቃሚ በመሆኑም በሚደረግልኝ ቃለ-ምልልስ ለመሳተፍ ተስማምቻለሁ፡፡ ነገር ግን ስለ እኔ ምንም ዓይነት መረጃ በተለይም ስሜንና የሰጠሁትን ምላሽ ለሌላ ሶስተኛ ወገን ወይም ሰዉ አሳልፎ መስጠት አይቻልም፡፡ ጥናቱ የኔን ምስጢር ፍላጎት እና መብት የሚጠብቅልኝ ሲሆን ቃለ-ምልልሱን ጀምሬም ቢሆን ምቹ ሁኔታ ካልተሰማኝ በመካከሉ ላቋርጥ እንደምችል ተረድቻለሁ፡፡**

**ስለዚህ በቃለ-ምልልሱ ልሳተፍ ፈቃደኛ ነኝ፡፡**

**በቃለ-ምልልሱ ለመሳተፍ ፈቃደኛ ነዎት?**

**አዎን ----------(ምላሹ አዎን ከሆነ ቃለ-ምልልሱን ይቀጥሉ፡)**

**አይደለሁም ----------(ምላሹ አይደለሁም ከሆነ አመስግነዉ በዚያዉ ይቁሙ፡)**

**ፊርማ ---------- ቀን ----------**

**(የቃለ-መጠይቅ አድራጊዉ ስምምነት ማረጋገጫ የሚወሰደዉ በቃል ነዉ፡፡)**

## Declaration

I, the under signed, declare that this thesis is my original work and has been presented for a degree in this or another university and that all sources of materials used for this thesis have been used fully acknowledged.

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Signature: _____

Date: June 1, 2011

Place: Addis Ababa University College of Health Sciences

Date of Submission: June 1, 2011

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

Name: **Professor Damen H/Mariam** (**MD, MPH, PhD**)

Signature: _____

Date: June 1, 2011