

DETERMINANTS OF COMMUNITY HEALTH AGENT
FUNCTIONALITY IN ARSI REGION

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DAMEN HAILE MARIAM, MD
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Determinants of Community Health Agent
Functionality in Arsi Region

by

Dr. Damen Hailemariam

Department of Community Health / Faculty of Medicine

Approved by the Examining Board:

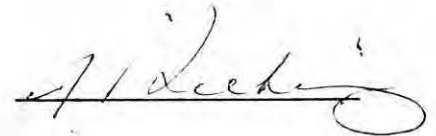
Dr. Tadesse Alemu

Chairman, Department Graduate
Committee



Dr. Joyce Pickering

Advisor



Dr. Ascher Segall

Examiner



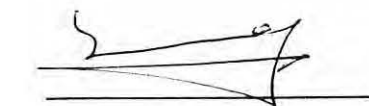
Dr. Gary Peckeles

Examiner



Dr. Asfaw Desta

Examiner



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SUMMARY

A comparative case-control study to assess the determinants of community health agent functionality was done in two Arsi Awrajas, in mid-southern Ethiopia. This was a census study which was conducted by interviewing 347 CHAs from a structured questionnaire. The first objective was to describe the situation of the CHAs trained for the two Awrajas up to the end of 1987. The other objective was to elucidate the determinants of CHA functionality by comparing the attributes of the functional CHAs (cases) with that of the non-functional ones (controls). An attempt was made to elucidate the determinants of these attributes. The findings revealed that only 25.8% of the CHAs interviewed were performing 50% or more of the activities mentioned in their job description. 45.6% of the CHAs were found to be performing no activities at the time of the interview, i.e. a point prevalence of attrition rate of 45%. Comparing cases and controls showed that there was strong associations between CHA function and community support for the CHAs (RR = 72.4 with 95% CI 35 - 153). The other factor which was seen to be associated with function was supervision by health institutions (Odds of being functional when supervised being 28 with 95% CI of 15 - 53). Other factors which were found to be positively related to CHA functionality were: presence of health post, provision of drugs and stationary to the CHA, and establishment of an active health committee with the CHA being an executive member.

These findings emphasize the importance of the provision of proper community and health system support for the success of the community health services program.

INTRODUCTION

One of the most important elements in any health service delivery system is the deployment and maintenance of adequate and qualified personnel to increase access to the population of that specific target area. The type and qualification of health personnel who take care of people's health may vary from time to time and from place to place, ranging from specialist doctors to lower level auxiliaries. The use of auxiliaries to substitute for or assist doctors has been a controversial issue between those who say that this is loss of quality care and those who try to balance health care expansion with the available resources (1).

One of the recent advances in the world health care system is the concept of primary health care. Its emergence is based on, among other factors, the disenchantment and criticism of the professionally oriented medical care model (2,3,4). One of the elements of the Primary Health Care (PHC) concept is the use of the community health worker, who is defined as, a man or a woman who can read and write, and is selected by the local community or with their agreement to deal with the health problems of individuals and the community (5,6). The community health worker (CHW), besides increasing health care access and availability, is the single most important force for promoting community involvement in health (one of the basic principles of PHC). The training and use of local health personnel who are geared to the specific problems of an area, is cheaper and more appropriate in addition to promoting self reliance in the particular communities

involved. Based on this, various types of local health personnel have been trained and deployed in many parts of the world.

Ethiopia, being one of the countries that signed the Alma-Ata charter, has almost a decade of training and use of community health workers (both in the form of Community Health Agents (CHAs) and Trained traditional Birth Attendants (TBAs)). As mentioned in the 10 year perspective plan of the country, PHC is the health policy of the government. To achieve PHC, emphasis has been placed on training auxiliaries with a target of providing one CHA and one TBA for every 1000 people, by the end of the plan period (1993/94) (7). Thus up to the end of 1988, 13,085 CHAs and 11,762 TBAs had been trained and returned to their respective communities (personal communication, Ministry of Health (MOH), Division for Community Health Services, & Health Stations).

It has been repeatedly mentioned that the community health service (CHS) program in Ethiopia is having problems partly due to lack of remuneration of CHWs. Of the trained CHWs more than 75% are not functional (8,9). Despite this fact, the training of CHAs and TBAs is still continuing.

In this study, an attempt has been made to assess the determinants of functionality of CHAs who had been trained up to the end of 1987. In the two districts of Arsi region covered by this study, a total of 641 CHAs and 628 TBAs have been trained. 582 of the 641 CHAs were trained before 1987, and the rest were trained in 1988(10). By comparing the functional CHAs with the

nonfunctional ones, and by analyzing the attributes of each group, it is hoped that the main factors which determine CHA functionality will be elucidated.

Although the study population was the 582 CHAs trained in two districts of Arsi , the similarity of training and use of CHAs all over Ethiopia may make the study results nationally applicable. It is hoped that this will result in suggestions and recommendations for the betterment of the whole program.

LITERATURE REVIEW

HISTORICAL DEVELOPMENT OF THE CHW SCHEME

The history of man putting his health and life at the mercy of another goes back to ancient times. Herodotus described the practice of 'the whole people as physician' in Babylon prior to the stage of special doctor for others, as follows:

'.....They bring out their sick to the market place, for they have no physicians; then those who pass by the sick confer with him about the disease, to discover whether they have themselves been afflicted with the same disease, or have seen others so afflicted, thus the same treatment as that by which they escaped a similar disease, or as they have known to cure others may help him.....' (11).

Thus, the use of health care practitioners with different degrees of skill is not a new practice. Using medical auxiliaries who receive short practical training suited to local community needs can provide at least a better standard of health care than is now available to those most in need of it (12). Even though it is known that developing countries are short of doctors, members of the junior professionals or allied health professionals are usually just as scarce (2).

The experience of using auxiliaries is quite extensive. The history of use of auxiliaries in health goes back for at least four centuries in societies as diverse as Russia, Jamaica and Fiji. Post colonial Africa has also an extensive history of using this type of health personnel, such as medical assistants in the Sudan, Uganda, Kenya, Malawi, Nigeria and health assistants in Ethiopia (1) The training and use of peasant doctors

in China to provide basic health care which was started in the 1960's was a major turning point in the history of the village health worker concept (12,1). One can also mention the North American village health aides who were introduced in Alaska in 1947 to provide primary medical care in isolated native villages and even urban settings (1).

Most of the auxiliaries used until recently were those who were giving their services as government employees or attached to certain institutions for their remuneration. The concept of the CHWs who are generally local inhabitants given a limited amount of training to provide basic health needs, such as promoting preventive activities and giving simple curative services, relevant to their specific area has received greater emphasis with the emergence of the PHC concept (6). They are expected to remain in their home villages or neighborhood as part-time workers. They may be volunteers or may receive salary or other form of remuneration. They are generally not, however, civil servants or professional employees of the government. Even before the PHC approach was launched there were many Village Health Worker (VHW) programmes in different countries which differ from country to country in their specific details. In 1978, VHW activities were reported in more than 45 countries (13). Successful rural health projects using village health workers (VHWs) share the experience and knowledge of treating health locally and with simple means (14). The advantages cited of using indigenous health practitioners at any level include: their ability to fully understand the needs and expectations of the

people they serve, avoidance of cultural & language barriers, and the task orientation in training of such programmers (15).

Thus the emergence of the PHW or VHW concept by WHO was aimed at increasing availability of existing health services (by expanding the outreach services of health stations) besides providing basic health services in places where there had been nothing or practically nothing before (12).

The name given to these community health workers varies from country to country and even from program to program in the same country eg. Village Health Workers (VHWs) in Afghanistan, Community Health Workers (CHWs) in Bangladesh, Community Health Aides (CHAs) in Brazil, Barefoot doctors in China, Community Health Agents (CHAs) in Ethiopia, Village Health Aides (VHAs) in India, promoters in Peru, Cadres in Indonesia, Aid post orderlies in Papua New Guinea, etc, etc (16). The name CHW seems more preferable to VHW or PHW, since these people are also found in urban areas and the term primary can embrace almost all health workers (17).

Despite widespread experience in the training and use of CHWs worldwide, little evaluative research has been made available to date. Most of the works published have been mainly descriptive. They have, however, demonstrated the facts such as the higher service coverage achieved by CHWs than the previous health care delivery systems and higher rates of utilization by the poorer section of the population (13). Of course, it is difficult to see the impact of using CHWs within a short period of time, because many of the benefits of CHW activities are

indirect and require several years to show results (16). Evaluations of CHW programmes have shown a weakness in maintainance of these programmes, especially when they were established by donor agencies (4), even to the extent of raising doubt as to the cost effectiveness of CHWs. Some have even warned that unless CHW programmes are properly maintained, they may end up doing more harm than good (18). Some authors have perceived CHWs as replicas of the original Chinese "barefoot doctors", and have felt that a culturally inappropriate model is being pushed upon people (19,20).

Many of the weaknesses and seeming failures of the CHW, programmes arise from lack of community support and failure to provide backup from health systems (8,9). The cause of inadequate community support has been ascribed to the misunderstanding of the CHW's role by local power holders (21). It has also been ascribed to the economic prospects of the poor countries which make them unable to support and finance CHW schemes (22). There is also a possibility that the existing medical system may have felt threatened by CHWs making them reluctant if not resistant to support them (23). The other factor repeatedly mentioned is the possibility of abuse in the selection and recruitment procedures which may result in either the selection of an inappropriate individual who is unfit for the job or hurried selection without sufficient preparation of the community to be served (17,18). Lack of supervision and inservice training from Health institutions (HIs) has been also found in many places to adversely affect CHW performance (24).

Supervision of Peru village health workers was not only for maintenance of CHW function, but also for detection and correction of mistakes the CHW may commit especially when he is alone and isolated (25).

The positive experiences which have resulted from a variety of CHW schemes in different countries are also noteworthy. Even though the government's political commitment and backup is crucial, the advantages of community financed schemes over government or donor stipend projects have been seen as fostering a spirit of self reliance and decision making power for the community in Senegal (26,27).

SELECTION OF CANDIDATES

The criteria for selection of CHWs throughout the world vary, but most include maturity as evidenced by age, sex, literacy and residence in the community. Willingness to serve the community with zeal and dedication is one of the criteria for choosing barefoot doctors in China (16,18,28). More mature, middle aged CHWs have been seen to perform better than younger ones and to be able to secure the confidence of villagers in countries as diverse as Sudan, Jamaica and Peru (28). Younger CHWs have in general been noted to have a high drop-out rate (1), which also increases the turn over of the CHW and the ineffectiveness of the whole system (16). Many of those who drop out do so to better themselves by moving out of the community.

Preference for the selection of the male sex usually arises from the nature of the work which may need much travel like in

Costa Rica and Venezuela. However, in Botswana and Solomon Islands, females were preferred (especially married ones) since they were less likely to move away from the community (28). Leslie in his review of the Indian experience criticized the choice of males over females on the basis that the most vulnerable groups are women and children who are dependent for their health needs on mothers. Both groups would be best served by women (19).

In Costa Rica male health workers were, however, observed to visit more homes although the preference of one sex over another may be purely a cultural issue (27). In China, the barefoot doctors are 50% males and 50% females (16). Even in Iran, where culture strictly observes separation of sexes, both men and women have been found to be equally effective as CHWs (1).

Views on the educational status of the potential trainees also vary. A minimum level of elementary education is needed in countries like Botswana, Burma, Yemen, Ghana, Papua New Guinea and Philippines. Some also recruit illiterates like in Colombia and the Khavar project in India. Generally, it is believed that CHWs with higher than elementary education are less likely to continue working as CHWs (1,28). Barefoot doctors on the other hand all completed middle junior schools and are chosen for their intelligence (18). In cases where illiterate CHWs were selected, it was arranged in such a way that performances requiring recording be done by another family member (1). There is also a report that in Gambia where the illiterates were chosen the drop-out rate was very low (17). A record system was also designed in the Gambia for drug administration by illiterate health workers (29).

Nevertheless most countries have used a CHW with educational status which enables him to record, report and interpret local data (30).

Community involvement in selection has been shown to enhance the quality of the candidate in countries such as Costa Rica, Guatemala and Thailand. In countries where selection was accomplished by the community leaders alone, it was found to be open to abuse in favour of selecting relatives of the leaders as in Solomon Islands and Botswana. The involvement of local health staff in the selection has also been shown to be useful in Burma, India and Iran (19,28). In the Saradidi health project in Kenya the village health helpers (VHHs) who were selected by full community participation have continued to work with no drop-outs (31,32). Amor Ben Youssef has also reported that in Tanzania the villagers are choosing their own medical aids (33). However, community participation in selection can also go wrong if it is done without properly informing and stimulating the people and if it is dominated by misguided leaders as has been reported in Afghanistan and other countries (16).

TRAINING

The period of training of CHWs varies from place to place, ranging from 5 days to be followed by inservice training in Thailand to 2 years in Iran. In most countries such as Afghanistan, Burma, Costa Rica, Ghana, Guyana, India, Jamaica, Mozambique, Solomon Islands and Venezuela it lasts between 3 to 6 months (28). The initial pre-service training of barefoot doctors also takes from 3 to 6 months (16). The inservice

training of the barefoot doctors continues at their working place by using mobile medical teams (34). The community health representatives in the James Bay Cree (Canada) were trained for a period of 1 year (24). The shortage of qualified and adequate trainers has been noted everywhere. In some countries, like Thailand, the trainers were not even interested and not clear about the concept and policy of the training (28).

REMUNERATION BY THE COMMUNITY

The remuneration (in cash and/or in kind) for CHWs has been a vital issue in many programs. Often this implies a need for additional resources; and remuneration is one thing that motivates the CHW to keep working. One reason cited in favour of paid workers over unpaid volunteers is that villagers and even the CHWs themselves may feel the work to be of lower quality if it does not involve remuneration. Volunteers also have been seen to have high turn over (1). Numerous sources of funds have been mentioned such as the government through the budget, the community by reallocating and through fund raising activities, and by instituting fee-for-service activities (28). CHWs should not necessarily be salaried; instead they may be exempted from required communal work as in Tanzania (1). State remuneration is practiced in countries like Botswana, Costa Rica, Iran, Jamaica, Liberia and Papua New Guinea. Some of these countries also report that government paid CHWs have less commitment to the community than those supported by the community itself. Community commitment was also less for government paid CHWs. Community remuneration either in cash or in kind is practiced in

most of the countries. Remuneration is by cash contribution from the community for Kenya's CHWs, payment through community cooperatives in Philippines, and payment from profit made by village pharmacies in Mali (28). Community Health Representatives (CHRs) of Inuit and Indian communities in Canada are salaried by the Canadian government (24). Village health helpers (VHHs) in the Saradidi program of Kenya were supported by funds both from fee-for-service activities and income generating cooperative schemes (31,32). China's barefoot doctors are supported by contributions from commune members and from fee-for-service activities (34). In some cases they are also given, as members of productive brigades work points (additional work - points are also provided to them as bonuses) for their health activities (35).

Low remuneration has also been cited as a cause of high attrition rate as in the Kassa-Palghar nutrition project in India (28).

DRUGS AND LOGISTICS

Much discussion still centers on whether CHWs should have drugs or not. Effectiveness of CHWs is partly related to their ability to provide drugs. The Lampang pilot project in Thailand faced problems due to failure to meet the expectation of the population in terms of drug supply (28). The CHW often needs to be able to offer some curative services both for remuneration reasons and in order to establish credibility (19). This is true particularly for common but life threatening conditions such as

gastroenteritis in infants. A patient if treated for his ailments will be ready to hear what the health worker teaches about prevention (36,3). CHW's inability to deal with common conditions like malaria may also reduce people's respect for him (37). The success of the Obadan project in Nigeria is ascribed among other factors, to the ability of CHWs to dispense drugs bought by donations and contributions from the people (38).

SUPERVISION AND CONTINUING EDUCATION

Continuing education and supervision have been repeatedly mentioned as indispensable to CHW activities. The performance of any health worker depends to a large extent on the quality of supervision provided. This may vary from place to place. For those situated very far from supervisors emphasis should shift to providing more continuing education (1). Technical supervision can be given by health institutions while administrative supervision is provided by local community leaders, as seen in the Saradidi project in Kenya (17,31,32).

ETHIOPIAN EXPERIENCE

In Ethiopia, CHWs were first tried in 1960's in the northern regions (especially Gondar), but failed due to lack of community and health institutions support (39). Later in 1976 as part of the Basic Health Services program supported by UNICEF, CHSs were again tried, but still encountered many problems and the program was left to be restarted in 1979 (40).

Ethiopia's current health policy with its roots in the 1974 socialist revolution and the 1976 National Democratic Revolution

(NDR) program declaration, emphasizes disease prevention and control with priority given to rural health services. The policy has been consolidated by the adoption in 1978 of PHC. The comprehensive 10 year health sector perspective plan (for the period 1984/85-1993/94) has set a target of training 32,000 CHAs. An equal number of TBAs are also expected to be trained by the end of the plan period (7).

The need for CHA training is based on the principles of self reliance and promotion of community participation, in addition to providing more access to health services and increasing coverage. Based on this, a curriculum for training of CHAs was developed in 1978 (41). According to the curriculum the trainee is to be selected by the community, the health institution around the kebele giving guidance and assistance during the process. The preference is for one who can read and write, is interested in serving the community and preferably with age above 45 years. The job description of a CHA is also clearly depicted in the curriculum (41). (see annex I for the job description of CHAs, the course outline of CHA training is also shown in annex II.)

CHWs are expected to be supported by the community while the Ministry of Health is responsible for their training and supervision. The main activities of CHWs in Ethiopia are : giving health education, improving environmental sanitation and water supply, providing first aid and referring patients to the nearest health institution, performing Maternal and Child health care at their level, participating in the control of endemic and epidemic diseases, registering births and deaths occurring in the

community and collecting and reporting data to the next higher level of health service unit (42).

Despite the training up to 1988 of 13,085 CHAs and 11,762 TBAs, the 1985 PHC review had revealed that 75-80% of CHAs have poor support either from their local communities or from health institutions. This review also mentioned the overambitiousness of the CHA training target for the 10 year plan period. Its findings have shown that only a few of the health institutions have a satisfactory knowledge of CHAs and TBAs in their catchment areas (8). Another study, done by Meche et, al. in three different administrative regions, which surveyed 58 CHAs has revealed a 38% attrition rate in CHAs. The reason for this was lack of community support. In this particular study health institutions support, even though not clearly defined, was said to be adequate (9). Another study in an awraja in Sidamo administrative region has found only 26.8% of the CHAs to be functioning (43). Some unpublished reports also attribute CHW nonfunctionality to low remuneration and health institution support which emanate from : improper orientation of the community, wrong selection, lack of trained trainers and inadequate capacity of health institutions to support CHAs (44).

The training of CHAs in Ethiopia is conducted in health centers for 3 months and at Agarfa (a multi-purpose agricultural training centre) for 5 to 6 months.

Of the 734 CHAs trained up to the end of 1987 in Arsi Administrative area, 582 were in the two study awrajas (see annex

for some features of the study area). Meche et, al.'s study, which is mentioned above, sampled the two districts included in the present study. Thus 9 of the 58 CHWs surveyed by Meche et, al. came from the same awrajas as this study.

Thus despite continuous input both by the government and community to train CHWs, most of those trained were nonfunctional. In Meche's study of 1984, 38% total attrition was found (9). Madebo in 1986 has shown that of the 437 CHAs trained for Sidamo region only 26.8% were working (43). A baseline survey in 1988 in Chilalo awraja has also shown that only about 25% of the trained CHAs perform 50% or more of the activities mentioned in their job description, and some of them can't even be traced as to their whereabouts (45). An unpublished study in Buno Bedele Awraja, Illubabor region, has also reported that of the 221 CHAs studied only 45 (20.4%) were performing four or more of the tasks mentioned in their job description (46).

STUDY OBJECTIVES

GENERAL OBJECTIVES

The present study has two aims. The first is to describe the situation in the two study districts with respect to CHAs. The second is to look at how functional CHAs differ from nonfunctional ones. It is hoped that this analytic look at CHAs will result in useful conclusions and recommendations.

SPECIFIC OBJECTIVES

1. To determine the level of functionality of the CHAs trained in the two awrajas up to the end of 1987.
2. To see the demographic and social factors which may affect CHA functionality.
3. To see the effect of community remuneration on functionality by comparing remuneration status of the functional versus the non-functional CHAs.
4. To see the effects of health system support and nearness of health institution on CHA functionality.
5. To see the effect of the selection pattern of a CHA on its functionality.
6. To see the contributions made by the availability of logistics such as health post, drugs and stationary on the functionality of a CHA.
7. To further see the factors which are associated with whether a CHA is supported or not, by their community and the health system.

MATERIALS AND METHODS

DESIGN

The study is a cross-sectional design using a case-control analysis, with functioning CHAs as cases and nonfunctional CHAs as controls. The cases and the controls were determined after interviewing all CHAs and classifying them as to functionality. Since it is dealing with point-prevalent cases it is a cumulative incidence case-control study.

POPULATION

The source population for the study was all the CHAs trained for the two awrajas of Arsi Administrative area (Chilalo & Ticho) up to the end of 1987. The study was a census survey, thus the study population was all the CHAs trained up to that period (n = 582), excluding those not found at their kebeles during data collection. A total of 347 CHAs were interviewed. In addition, a chairman of the CHA's kebele was interviewed for the study. The number of chairmen is less than the number of the CHAs, because on occasion there were more than one CHA in a kebele. Heads of health stations having the CHA's kebele in their catchment area were also included in the study. Here one health station head may be interviewed for several CHAs. Although the number of community leaders and health station staff interviewed were less than the number of the interviewed CHAs, since every response is considered as a single entity we had overall 347 responses each from the community leaders and the health station

staff for the analysis.

The inclusion of community leaders and health institution staff was done to further see what determines their support besides helping to validate the results obtained from interviewing the CHAs.

Sample Size Estimation :- Since this is a census study, rather than a sample survey, sample size calculations and significance testing are not strictly indicated. However, this study could be thought of as a sample from all of Ethiopia and for this reason it may be useful to consider these points.

Thus if we assume:

P1 = proportion of nonfunctional CHAs with support = .25

P2 = proportion of functional CHAs with support = .5

$\alpha = .05$

B = .1

$$N = \frac{(Z_{\alpha})^2 \{ 2P1 (1 - P1) + Z_{\beta}^2 \{ P1 (1 - P1) + P2 (1 - P2) \} \}}{\Delta^2}$$

= 86 cases, then assuming that 25% of all CHAs to be

functional, $4 \times 86 = 344$ must be interviewed to get 86 functional ones. Data indicated that 344 CHAs could not be found in Chilalo Awraja alone. Thus Ticho Awraja, a neighboring awraja, was included in the study.

MEASUREMENT

Outcome Measurement: - In this study the outcome of interest is functionality of a CHA. This was measured by assessing the activities of the CHA and by comparing this with the job

description and giving functionality scores as follows :-

FUNCTIONALITY SCORING (*From the job description*)

1. Home visiting :- No = 0
 - Occasionally (once or less in 3 months) = 1
 - Frequently (at least once in a month) = 2
2. Giving Health education :- No = 0, Occasionally = 1, Regular = 2
3. Environmental health activities :- 0 - 2 (as above)
4. MCH/EPI (Maternal and Child Health care and Expanded Program of Immunization) activities :- 0 - 2 (as above)
5. Reporting epidemics :- No = 0
 - No epidemics up to now = 1
 - Regularly = 2
6. Birth and death registration :- No = 0
 - one only = 1
 - both = 2
7. Illness registration :- No = 0
 - Occasionally = 1
 - Regularly = 2
8. Giving first aid and drug treatment :- No = 0
 - one only = 1
 - both = 2
9. Referring patients :- No = 0
 - Occasionally = 1
 - Regularly = 2
10. Sending report to health stations :- No = 0
 - Occasionally = 1
 - Regularly = 2

MAXIMUM SCORE = 20

FUNCTIONAL CHA (CASE) = THOSE SCORING 10 AND ABOVE

NONFUNCTIONAL CHA (CONTROL) = THOSE SCORING LESS THAN 10

As some of the elements in the job description of the CHA are general and difficult to measure, an attempt was made to break these down into concrete activities that could easily be asked about. For example, the first item in the job description is co-ordinating and motivating the community for involvement in health care activities. It was felt that this might better be measured by asking about home visits and health education. Thus, the number of items in the functionality scale does not correspond exactly to the job description. Each item on the functionality scale was given equal weight. Although in some villages, certain aspects of the CHA's job are more important than others, this may be reversed in other villages. Thus it was felt most reasonable to assign equal weights to each item.

Exposure Measurement :- The information on exposure was found from the CHA, the community leaders, and the health station staff.

One questionnaire was used for each CHA to both determine functionality (dependent variable), and attributes (independent variables). The same questionnaire had sections to be answered by the community leaders and health institution staff for the respective CHA.

The questionnaire was first developed in English and then translated to Amharic. It was given to the interviewers in Amharic language, although the interviewers were also able to

communicate in both Amharic and Oromogna (the local language) with the respondents. The questionnaire is found in annex III.

DATA COLLECTION

The method used to collect data for measurement of outcome and exposure was a structured interview with questionnaire as described above.

Interviewers who had completed grade 12 were trained for 3 days. Health staff (sanitarians and nurses) who were acting as research assistants in each wereda (subdistrict) supervised the interviewers. The interviewing was done in almost half of the cases by calling the CHAs to the wereda health institution and in the remaining cases by the interviewers going to the kebeles of the CHAs.

The questionnaire was pretested in a subdistrict of one of the two awrajas. The necessary amendments were then made before the actual data collection took place.

Interviews were carried out only with full consent of the person being interviewed. Before each interview, the study's objectives were clearly explained mentioning that the aim of the study was neither to evaluate the performance of the individual nor to blame anyone for weaknesses, but to gather information and opinions that might lead to eventual improvement in the situation. Each respondent was assured that the information provided would be confidential and used only for the purpose of research.

It was hoped that the assurance of confidentiality and nonevaluation would help the CHAs to be honest with their answers. In addition, it was hoped that the use of interviewers who were not health staff would both improve the honesty of the responses, and result in less interviewer bias. Bias resulting from prevarication was also controlled by the inclusion of community leaders and health institution staff for the validation of the CHAs' responses. The attempt made to locate all the available CHAs in the two awrajas was done to reduce any selection bias. An attempt was made to control recall bias by: limiting the questions to recent activities of the CHA (maximum 3 to 6 months), since the study is interested in point prevalence.

Data was entered and analysed in an SPSS-PC package program.

METHOD OF ANALYSIS

The steps followed in the analysis of the results of this study were the following:

1. *Descriptive analysis:*

- Describing the whereabouts of the CHAs trained up to now in the two awrajas.
- Describing the proportion of functional and non-functional CHAs.
- Describing some of the socio-demographic attributes of the CHAs trained.

2. *Bivariate analysis:-* To determine any association between categories of functionality and the different

exposures faced by these categories with respect to attributes.

3. *Multivariate analysis*:- To further see the relative importance of the various exposures attributable to CHA functionality.

List of items from the job description of CHAs were given scores of 0, 1, and 2 (ie, 0 to 1 in activities with dichotomous scale and 0 to 2 with activities in a multi interval scale). The maximum score which could be obtained was 20, and the minimum 0 (see above). Those who scored 10 or more were classified as functional (ie, they were doing 50% or more of the tasks in their job description), and those scoring below 10 as nonfunctional for this particular study.

Determining this, the next step was to see the different exposures experienced by the functional and the nonfunctional groups especially with respect to community and health institution support. The frequency and type of exposure in cases with that of the controls was then compared. An attempt was made to further look into the reasons for giving or not giving support to assess the determinants of the latter. In addition to support from health institutions and the community, an attempt was also made to look at what other factors play a role in determining CHA functionality.

RESULTS

GENERAL CHARACTERISTICS OF THE TRAINED CHAs

The situation of the CHAs trained up to the end of 1987 in the two awrajas is described in Table 1. The main reason for not interviewing all the CHAs was that they could not be traced inspite of repeated visits.

The age distribution of the 347 CHAs interviewed is seen in Figure 1. As seen most of the CHAs (77.2%) are between the ages of 20 and 34. The median age at interview is 28 years.

Of the 347 CHAs interviewed only 7 (2%) were females. See Table 2 for educational status of the interviewed CHAs. Almost all the CHAs were literate. More than half have more than elementary education.

FUNCTIONALITY

The functionality score of the 347 CHAs interviewed can be seen in Figure 2. As seen 159 CHAs were not performing any activity at the time of the interview, resulting in an attrition rate of 45.8%. If one adds the cases not interviewed (excluding retraining) the actual attrition rate is higher. Some 99 CHAs or 28.6% were performing less than 50% of the activities required in the job description; 89 CHAs or 25.6% were found to perform 50% or more of the activities mentioned in the job description. This last group is considered functional for this particular study.

ATTRIBUTES ASSOCIATED WITH FUNCTIONALITY

Table 3 shows attributes of the functional CHAs compared with the nonfunctional ones.

TABLE 1
 PRESENT STATUS OF CHAs
 (Chilalo/Ticho, 1989)

OUTCOME	AWRAJA		TOTAL	%
	CHILALO	TICHO		
Interviewed	215	132	347	59.6
Returned to school	7	4	11	1.9
Taken other job	32	25	57	9.8
Went for retraining	1	2	3	0.5
Dead	4	1	5	0.9
Unable to trace*	115	44	159	27.3
Total trained	374	208	582	100.0

(*Those who could not be traced in spite of repeated visits and inquiries.)

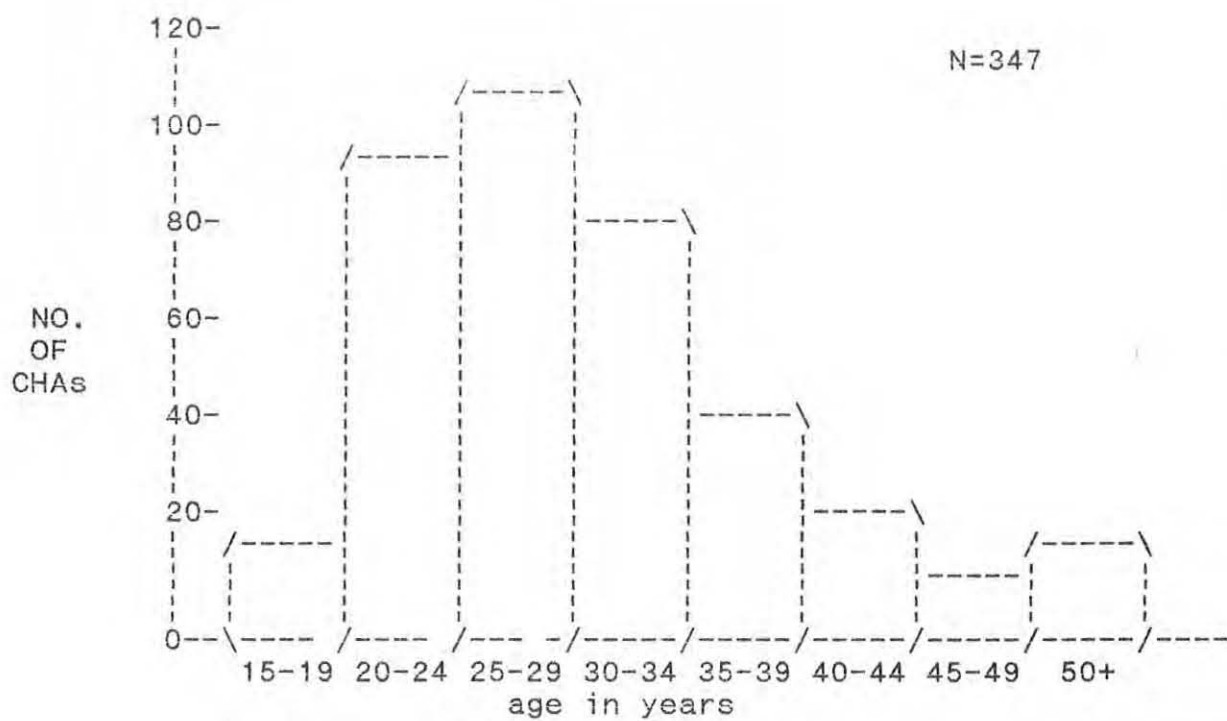


Figure 1. Age distribution of interviewed CHAs.
(Chilalo/Ticho, 1989)

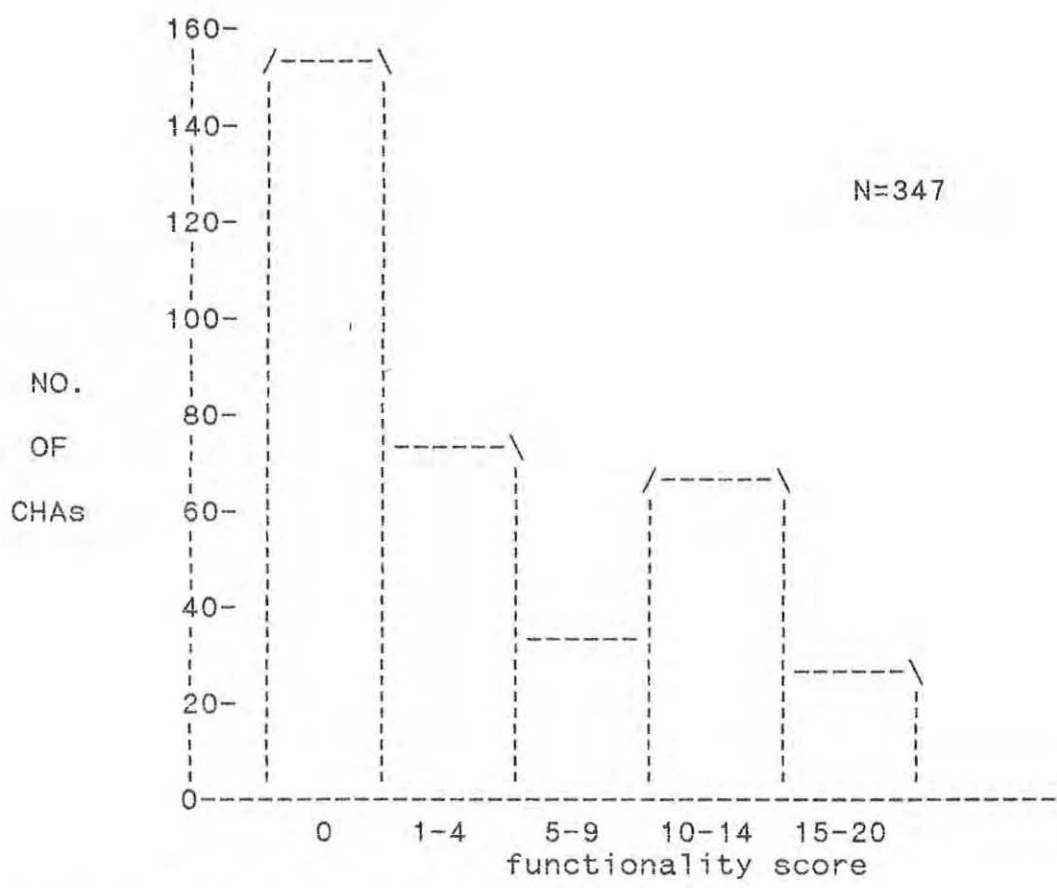


Figure 2. Functionality score of interviewed CHAs.
(Chilalo/Ticho, 1989)

TABLE 2
 EDUCATIONAL STATUS OF THE INTERVIEWED CHAs
 (Chilalo/Ticho, 1989)

EDUCATION	NO OF CHAs	%
Illiterate	2	0.6
Literacy campaign	27	7.8
Elementary school (Less than or equal to grade 6)	139	40.0
Junior secondary (Grades 7 and 8)	142	40.9
Senior secondary (Grades 9 to 12)	37	10.7
Total	347	100.0

TABLE 3
CHARACTERISTICS OF FUNCTIONAL AND
NONFUNCTIONAL CHAs (Chilalo/Ticho, 1989)

COMPARISON VARIABLE	CASES		CONTROLS	
	(freq.)	(%)	(freq.)	(%)
Age				
≤ 27 years	39	43.8	133	51.5
> 27 years	50	56.2	125	48.5
Marital status				
Single	18	20.2	34	13.2
Married	71	79.8	224	86.8
Size of household				
1-3	24	27.0	96	37.2
4-5	34	38.2	83	32.2
≥ 6	31	34.8	79	30.6
Educational status*				
≤ grade 6	40	44.9	127	49.2
> grade 6	49	55.1	131	50.8
Selection *				
By community	78	87.6	137	53.1
By leaders only	11	12.4	121	46.9
Place of training*				
Nearby Health centre	75	84.3	206	79.8
Agarfa	14	15.7	52	20.2
Presence of health committee*				
None or nonfunctional	36	40.4	239	92.6
Functioning	53	59.6	19	7.4
Place of CHA in the committee*				
No place	5	5.7	30	24.2
Only a member	1	1.1	23	18.3
As an executive	80	93.2	69	57.5
Community support*				
No	12	13.5	237	91.9
Yes	77	86.5	21	8.1
Supervision from HI*				
No	17	19.1	224	86.8
Yes	72	80.9	34	13.2
Refresher course*				
No	28	31.5	199	77.1
Yes	61	68.5	59	22.9
Presence of drugs*				
No	65	72.7	250	97.0
Yes	24	27.3	8	3.0
Presence of Health Post*				
No	52	58.0	246	95.4
Yes	37	42.0	12	4.6
Presence of registration book*				
NO	86	25.8	125	79.1
YES	103	74.2	33	20.9

* Significant associations

COMMUNITY SUPPORT

Of the Community leaders who responded that they gave no support in cash or in kind, the reasons given for not supporting were:

56.9% - expected the CHA to be supported by the government.

27.7% - were not aware that the CHA needs to be supported.

12.4% - no capacity to support the CHA.

When we look at the CHAs who get support from the community 86.4% were those selected by the involvement of the community. On the other hand, of those CHAs who were selected by the community 67% were getting supported.

Besides giving remuneration in cash or in kind, other types of community support were also examined including the presence of a registration book, presence of health post, presence of drugs, and presence of an active health committee. (see Table 3)

Questionnaires were examined for discrepancy between the response given by the CHA and the respective community leader and health institution staff, very few discrepancies were found.

HEALTH INSTITUTION SUPPORT

Only 20.3% of the clinic staff who responded to the interview participated in the selection of the particular CHA. 6.3% of the clinic staff responded as having no awareness as to the presence of a CHA in the particular kebele.

Only 14% of the clinic staff gave regular supervision, and 15.2% claimed to have given the CHA drugs at least once in the past.

The reasons given by the clinic staff for not supervising the CHAs were:

- 21.4% - felt that there was no point in supervising CHAs who are not supported by their community.
- 26.4% - felt that it wasn't worth supervising the CHAs, because the CHAs were not interested in being supervised.
- 52.2% - ascribed their inability to lack of budget.

When we consider the distance of CHAs who are supported by clinics 86.4% were within 5 k.ms of the particular clinic. Of those who are within 5 k.ms distance of the clinics 47.6% were getting supervised.

DETERMINING THE SIGNIFICANCE OF ASSOCIATIONS.

When functionality was cross tabulated with various determinant variables, statistically significant chi square values were found for the following:

- Community support (p < .0001)
- HI supervision (p < .0001)
- Refresher course (p < .0001)
- Educational status of the CHA (p < .01)
- Presence of health committee (p < .0001)
- Selection by the community (p < .001)
- Place of CHA in the health committee (p < .0001)

Presence of drugs ($p < .0001$)

Presence of registration book ($p < .0001$)

Presence of health post ($p < .0001$)

No significant associations were found between functionality of the CHA and the following variables:

age of the CHA ($p > .05$).

place of the CHA in the kebele

leadership ($p > .05$).

marital status of the CHA ($p > .05$).

type of the kebele of the CHA

(whether urban or rural) ($p > .05$).

size of the household ($p > .10$)

In addition some of the independent variables were cross tabulated with each other to further see the determinants of support, significant associations were found between the following :-

community support x participation of the community in the CHA's selection ($p < .05$)

supervision x health staff participation in the CHA selection ($p = .001$)

supervision x nearness of the CHA to the health station ($p <$

STRENGTH OF ASSOCIATIONS

Rate ratios (odds ratios) were calculated for significant associations with 95% confidence interval. The results can be summarized as in table 4.

TABLE 4
STRENGTH OF ASSOCIATION FOR SOME VARIABLES
(Chilalo/Ticho, 1989)

ODDS OF BEING.....	WHEN....	RATIO	95% C.I.
Functional	supported by community	72.4	34.0, 153.0
Functional	supervised by clinics	28.0	14.6 , 53.4
Functional	getting refresh- ern course	7.3	4.5 , 12.2
Functional	having drugs	11.5	4.9 , 27.0
Functional	having health post	14.6	7.1 , 35.7
Getting comm- unity support	community part- icipate in selec.	3.0	1.2 , 8.2
Getting super- vised	clinic staff part- icipate in selec.	3.1	2.7 , 8.2
Getting super- vised	situated within 5 k.ms of clinic	5.3	3.0 , 10.0

MULTIPLE REGRESSION

Multi variate analysis was attempted to separate the effects of the various factors which determine the functionality of a CHA. For this procedure we have recoded and computed new variables as follows:-

1. CHA = The sum of positive attributes of the CHA (education > 6 grade, selection & his place in the kebele Health committee).
2. COMM = The sum of items reflecting community support (remuneration, participation in selection, materials, health committee).
3. HI = The sum of items reflecting health institution support (supervision, refresher course, nearness, awareness and participation in the CHA selection).

Then with functionality being the dependent variable, and the above being the independent variables a step wise regression gave the following result (see Table 5).

The result of the regression analysis implies that the model has accounted for about 48% of CHA functionality. Of this percentage 41% was accounted for by community support, 5% was accounted for by health institution support, and the rest 2% was accounted for by the CHA's personal attributes.

Table 5
 ESTIMATED PARAMETERS AND COVARIANCES
 FOR A MULTIPLE REGRESSION MODEL THAT RELATES
 VARIOUS SUPPORTING FACTORS
 FOR CHA FUNCTIONALITY
 (Chilalo/Ticho, 1989)

VARIABLE	PARAMETER	B	SE(B)	T	SIG T
X ₀ =intercept	B ₀	-1.15244	.65462	-1.76	.0798
X ₁ =comm	B ₁	1.18940	.15773	7.54	.0000
X ₂ =hi	B ₂	0.81480	.18120	4.50	.0000
X ₃ =cp	B ₃	0.10511	.12277	1.75	.0810

$$R^2 = .47504$$

DISCUSSION

In this study it is shown that the proportion of functional CHAs (considering functional to be those who did at least 50% of the job description) to be about 26% in the two Arsi awrajas, with 46% being completely inactive. The study also has revealed that CHA functionality is associated with remuneration by the community and health institution supervision (OR = 72.4 & 28 respectively). Community support was again seen to be associated with whether or not the CHA was selected by the community (OR = 3). Participation in selection and awareness of the presence of CHAs by clinic staff were also found to be associated with health institution support. Clinics are also found likely to support CHAs if they are situated nearer to them.

The problem of maintaining the activities of CHWs is encountered in many countries and projects which have trained them. Even though the literature on attrition rates is scanty, there were reports citing a 20% attrition rate in rural health assistants in Costa Rica, 25% attrition rate in the simplified medicine program in Venezuela and 60% drop out in a project in India (28). Meche et al; in 1984 have also reported a total attrition rate of 38% in their survey of CHAs in 3 Ethiopian regions. This may imply a 62% functionality for the CHAs surveyed, however, the definition of functionality used in this study may be less specific, since further seeing of the responses can reveal that only half of these seemingly functional

CHAs were performing 50% or more of the tasks in the job description (9). Madebo G. in 1986 has also reported that only 26.8% of the CHAs trained for Sidamo region were working (43). Furthermore a baseline study for Chilalo Awraja in 1988 has revealed that only a quarter of the CHAs were performing 50% or more of the activities in the job description(45). An unpublished study in Buno Bedele Awraja has also revealed that of the 221 CHAs studied only 45 (20.4%) were functional when functionality was defined as performing at least four of the items mentioned in the job description (49). Furthermore, the methodology used to assess functionality in this latter study seems similar to the one used in the present study.

The reasons given for such high attrition rate of CHWs vary from place to place, but in general there are 2 main reasons for this. The first is that there is inadequate community support for CHWs. The second reason is that the health system gives inadequate support for them (28). The reasons why there is inadequate community and health system support for CHWs range from inappropriate selection of CHWs to the lack of a proper structure to evaluate their training programs (17).

That community support is vital to the functioning of CHAs is an established fact. In this study community support for remunerating CHAs (in cash or in kind) is shown to be strongly associated with function. The odds of being functional when remunerated by the community versus when not remunerated is 72 (95% CI = 34 , 153). The proportion of functionality attributable

to community remuneration is $84\% = \frac{(86.5 - 13.6) \times 100\%}{86.5}$

Besides remuneration in cash or in kind community support can also be in the form of providing logistics like health posts, drugs and stationary, and establishing an active health committee.

Various studies have shown the direct relationship between CHW function and community support. The fact that barefoot doctors were paid for their work at the same rate as their normal agricultural or factory employment has no doubt helped to make the system in China successful (18). Even though most of the village health helpers in the Saradidi project were volunteers it was shown that all would like to receive payment in kind or in cash for their services (31). Freunds et al., in their comparative evaluation of PHC in rural Zambia has shown that one of the difficulties of sustaining CHWs was that more than 60% of the 1023 CHWs who responded to their study were not getting any support, either in kind or in cash (47). In Meche's study where a 38% attrition rate was found, only 41% of the CHAs were remunerated, although the study didn't look at the association between support and functionality (9). The 1985 PHC review in Ethiopia has also suggested that one of the main causes of high attrition is lack of remuneration (8). The high drop out rate in the Kassa-Palghar project of India was reported to be due to low remuneration as well (28).

The communities who didn't support CHAs gave two major reasons for this. The first was that they either expected the CHA to be

supported by the government (56.9%), or they were not aware that the CHA needs to be supported (27.7%). The second major reason was (in 12.4% of cases) lack of capacity to support the CHA. Thus, the major reason seemed to be lack of awareness of the responsibility to support the CHAs. Freund's study in Zambia has also shown that lack of community support stems from lack of understanding of the role of CHWs (47). Unpublished reports in Ethiopia also suggest that lack of community orientation and understanding are major reasons for lack of support for CHWs (44). In view of this fact, making the community aware of the benefits of CHW programs together with creating financial resources to support them is a vital issue. Some income generating mechanisms that have been tried in the literature are the resale of drugs in Peru (23) and prepaid health insurance in Philippines (1,28). In addition to money collected for fee-for-service activities, income generating cooperatives were used in the Saradidi (Kenya) project (31,32). The possibility of using traditional Ethiopian social systems such as *okub* and *edir* to support CHWs must also be considered here, especially in urban areas.

The other forms of community support which this study identified to be associated with CHA functionality are: provision of drugs, the presence of a health post and the presence of an active health committee with the CHA as an executive member.

Even though CHWs are expected to focus on preventive activities, having no drugs when they are faced with patients can reduce people's respect for them, making them less effective even

in preventive work (37). Anderson et al., have shown that the CHWs role in trachoma control in Somalia by using them to deliver tetracycline to 90% of the children (48). Drug dispensing has also been shown to have an advantage as a means of remunerating VHHs in Kenya (32) and the health promoters in Peru (25).

The presence of a health post, besides institutionalizing the CHW can represent an infrastructure and continuity of the health system at that level. The medical aids in Tanzania are reported to have health posts for treatment of minor ailments (33). Health posts should not necessarily be constructed on a uniform design everywhere which can be expensive. They can be constructed with the available resources. Out of the 17 CHAs surveyed in Sidamo, 82% have health posts of which all except two were single rooms (43).

The presence of a health committee is a strong support for CHWs. Besides connecting them with the development committee which determines any support they receive, it also helps to mobilize the community. The result is incorporating the CHW's role into the existing power structure (47). Petit has emphasised this as the community development dimension of the PHC approach (22). In the Saradidi project village health committees were responsible for the support of village health helpers (31,32). The success of the Obadan project in Nigeria was also largely ascribed to the health committees(38).

The other fact which is revealed in this study is that community support is strongly associated with their involvement

in the CHA's selection ie, 86.4% of CHAs that got support had the community involved in their selection. The involvement of the community in the whole program was said to be the major factor in the success of the Saradidi project(31). Waklbulcho M. in Ethiopia has also recently shown that communities were more willing to support CHWs if they were involved in their selection (49).

The other major finding of this study is that health institution support to CHWs is vital. This is either in the form of supervision (odds ratio of being functional when supervised versus when not supervised being 28 CI = 14.6 , 53.4) or continuing education (odds ratio of being functional when had had continuing education versus when hadn't had being 7.3 with CI = 4.5 12.2). Since health system support is the link of the CHA with the system, it also gives him credibility and importance in the face of the community he serves. Claudettee Lavalley in the James Bay Cree Community Health Representatives program has found the program's performance to suffer from lack of supervision and support from clinics in 75% of cases, although her evaluation wasn't analytic enough to show correlation (24). This study has also revealed that only 30% of the CHAs got regular supervision by clinics. Meche et. al,'s finding that 92% of the non functioning didn't get any refresher courses is also in line with the present study which found that 80% of the non functioning CHAs didn't get refresher courses (9).

The attempt to elucidate factors which determine Health Institution support to CHAs has shown that: support is given if

the CHA is within 10 K.M. of the clinic (odds of being supervised if the CHA is within 10 K.M. compared to if he lives farther than this being 7.5 with 95% CI = 4 , 14); and if the staff has participated in selection of the CHA (odds ratio 3.1 with 95% CI = 2.7 , 8.2). The Primary Health Care Review has also shown that 54% of the clinics hadn't supervised CHWs within the last 3 months and only a few of these units have a satisfactory knowledge of the CHWs in their area.

In addition to making sure that Health Stations have enough resources to supervise CHAs, it is equally important that the health workers at this level be fully oriented and prepared to support the CHWS. Peter A. Berman, et, al, in their review of six large scale CHW programs suggest that the existing medical system may feel threatened by CHWs resulting in potential difficulties for success of these programs (23).

It should be remembered, that as a cross sectional study, this study can only show association, rather than cause and effect. It is possible that it is the CHA's functionality that stimulates community and health institution support. However, I believe it is likely that it is the support which determines functionality. For example, community participation in selection of the CHA is strongly associated with functionality. Clearly, selection comes before functionality in time. The same is true to a lesser extent of health institution involvement in CHA's selection. Furthermore, a study in Gondar region of Ethiopia has shown that the performance of CHWs, and thus the standard of service they provide, could be raised after training courses and

proper follow up (50).

The non response rate may introduce bias into the calculated odds ratios. The worst case assumption (half of the non respondents are functional and not supported by their communities while the other half are nonfunctional and supported by their community.) for the effect of community support on functionality, still shows an odds ratio of 1.96. (95% CI = 1.34 , 2.86). However, this is very unlikely to be the case. I believe that one can safely assume that, the true odds ratio, whatever the actual value, shows a significant association between community support and CHA functionality.

A further limitation of this study is that it dealt with the process, ie CHA functionality, rather than the real outcome of interest, which is change in the health status of the community.

CONCLUSION & RECOMMENDATIONS

This study has demonstrated the low rate of functionality of CHAs in the two awrajas studied, which is consistent with other studies done in Ethiopia.

In addition we have shown that for the proper functioning of CHAs, the technical support from health systems and the administrative support from communities is indispensable. Besides this, the availability of drugs and health post enhances CHA functionality. Presence of active health committees, besides helping as a support for the CHA, helps to incorporate his health activities with the overall development and also promotes community participation.

Although one might argue that the association between support and functionality was obvious, I believe that it is useful to document this relationship in a scientific manner. This is more likely to have an influence on policies and practices concerning CHW support than unsubstantiated claims. In addition, this study has shown the dual importance of two kinds of support, HI and community, and emphasizes the significant role of HI support. This is important for health managers, because HI support is more amenable to change by the health care system than community support.

Therefore, on the basis of this study it is recommended that:-

1. Communities be made aware of the benefits of CHAs and try to produce income generating activities to support them, either

in the form of handicrafts and cooperative farms or drug revolving funds.

2. Health systems should also be organized in such a way that they give due support and control for the CHAs. Budget reallocation and change of personnel attitude in order to supervise and follow CHAs when the former are in outreach programs should be done.
3. A mechanism for timely distribution of essential drugs for CHAs should be created.
4. Health posts should be established at every kebele for the CHAs, and should not be delayed just in order too have a certain number of rooms.
5. Health committees should be formed at every kebele. These committees should be actively maintained by making the CHAs executives in them (either chairmen or secretaries).

ANNEXES

ANNEX I.

47

JOB DESCRIPTION OF A CHA(41)

1. *To coordinate and motivate the community for involvement in health care activities.*
2. *Giving health education based on the prevailing health problems in the kebele.*
3. *Promoting and coordinating of environmental health activities aimed at control of communicable diseases.*
4. *Giving maternal and child health care services.*
5. *Giving treatments for certain specific local conditions (including first aid treatment) and referring patients to the next health care level.*
6. *To collect, compile and report different health information. (including record of vital events and cultural medical practices)*
7. *Performing administrative activities that help him implement his plans.*
8. *Performing other health related activities which are given to him form his supervisors.*

ANNEX II.

COURSE OUTLINE FOR CHA TRAINING(41)

48

(TOTAL HOURS 472)

SUBJECT	HOURS OF PRACTICE	HOURS OF THEORY	%AGE OF TOTAL
Maternal & child health	36	30	14
Transmission & prevention of communicable diseases	6	8	3
Environmental sanitation	60	40	21
Nutrition & balanced diet	12	16	6
Health education	39	8	10
Examination & treatment	70	60	28
Precautions in handling & use of drugs & equipments	6	6	3
Collection of health info.	6	8	3
Traditional medicine	3	8	2
Orientation & evaluation		20	4
Practical education		30	6
Total	238(50.4%)	234(49.6%)	100%

QUESTIONNAIRE

I. PART TO BE FILLED BY THE CHA

- 1. Awraja _____
- 2. Wereda _____
- 3. Kebele _____
- 4. CHA number _____
- 5. Population in the kebele _____
- 6. Age of the CHA _____
- 7. Sex : Male____
Female____
- 8. Occupation of the CHA (besides health activity):
Farmer____
Other____
- 9. Current position of the CHA in the kebele leadership
No _____
Yes _____ Specify _____
- 10. Marital status : Single _____
Married _____
Divorced _____
Widowed _____
- 11. Number of the household _____
- 12. Any current disability : No _____
Yes _____
- 13. Educational status : Illiterate _____
Literacy campaign _____
Grade school _____
Last grade completed _____
- 14. By whom were you selected ?
Community _____
Leaders only _____
Clinic staff _____
Do not know _____
Forgotten _____
Others _____ Specify _____
- 15. Place of training : Agarfa _____
Nearby health center _____
Others _____ Specify _____

16. When did you finish training : 19_____ 50

17. Who subsidized your training : Community _____
Health Institutions _____
Others _____ Specify _____

18. Topics covered during training :
Control of Communicable diseases _____
Environmental health _____
Nutrition _____
Health education _____
Maternal and Child Health care _____
Diagnosis and Treatment of diseases _____
Handling of drugs and supplies _____
Health Information _____
Traditional medical care _____
Other topics (specify) _____

19. Was the training adequate for your work ? No _____
Partially _____
Yes _____

20. When did you start work after training ? Never _____
Immediately _____
After some time (specify) _____

21. How long have you been working ? Months _____

22. Do you give the following services ?

- Home visiting : No _____
Yes _____ how often in the past month? _____
Days ago of your last visit _____
- Health education : No _____
Yes _____ How often in the past month? _____
Days ago of last session _____
- Environmental health activities : No _____
Yes _____ How many days ago? _____
What was the last project? _____
- MCH/EPI activities : No _____
Yes _____ How many days ago? _____
What? _____
- Reporting epidemics : No _____
Yes _____ Days ago of last report _____
- Birth register : No _____
Yes _____ Days ago of last register _____
- Death register : No _____
Yes _____ Days ago of last register _____
- Illness register : No _____
Yes _____ Days ago last register _____
- Giving first aid : No _____
Yes _____ Days ago of last _____
For what? _____
- Giving drug treatment : No _____
Yes _____ Days ago of last _____
For what? _____

- Referring patients : No _____
 Yes _____ Days ago of last _____
 For what? _____
- Reporting to health stations : No _____
 Yes _____ How often in 6 months? _____
 Days ago of last _____
 What do you report? _____

23. Do you give injections? No _____
 Yes _____
24. If you are not working at present, when did you stop work?
 Months _____
25. What hindered you from working?
 Lack of remuneration by the community _____
 Lack of health system supervision _____
 Lack of own interest _____
 Lack of health post _____
 Lack of drugs _____
 Lack of stationary _____
 Others (specify) _____
26. If you are working is any one of the above still problems?
 No _____
 Yes _____
27. Do you have a health post? No _____
 Yes _____
 Under construction _____
28. Do you get drugs? No _____
 Yes _____
 Occasionally _____
29. Do you have a register? No _____
 Yes _____
30. Is there another CHA in your kebele? No _____
 Yes but nonfunctional _____
 Yes and functional _____
31. Is there a TBA in your kebele? No _____
 Yes but nonfunctional _____
 Yes and functional _____
32. Is there a health committee in the kebele? No _____
 Yes but nonfunctional _____
 Yes and functional _____
33. What is your place in the health committee? None _____
 Only a member _____
 An executive _____
34. Who supports you in cash or in kind? No one _____

12. If no, why? _____ 53

13. Are you part of the group who determine support? No _____
Yes _____

14. Who so you think should support the CHA? community _____
Government _____
Others (specify) _____

15. Any suggestion to solve the problem _____

III. PART TO BE FILLED BY HEALTH STATION STAFF

1. Distance in km of the kebele from the health station _____

2. Awareness of the presence of the CHA : No _____
Yes _____

3. Involvement in his selection : No _____
Yes _____

4. Do you think CHAs help to improve the health of the
community? No _____
Yes _____
Indifferent _____

5. What do you think are the duties of a CHA? _____

6. Does the CHA do his activity? No _____
Yes _____
Partially _____
Do not know _____

7. Does he report to You ? No _____
Yes _____ how often in 6 months? _____
Days ago of last? _____

8. Do you supervise him? No _____
Yes _____ how often in a year? _____
Days ago of last _____

9. Do you give him refresher courses? No _____
Yes _____ how often in a year? _____
Days ago of last _____

10. If no to 8 and 9, why? _____

11. What do you think his problem is? _____

12. Any solution you may suggest? _____

- ሌሎች /ይገለጹ/ 10
19. ሥልጠና ያ ለሥራው በቂ ነው ብለው ይገመታቸው
- በፎ አይደለም 1
 - በከፊል 2
 - በቂ ነው 3
20. ሥልጠና ከጨረሱ በኋላ ሥራ የጀመሩት
- ወዲያው ነው ? 1
 - እንዲያውም ሥራ አልጀመሩም 2
 - ከተወሰኑ ወራት በኋላ ነው የጀመሩት 3
 - ከሰንት ወር በኋላ
21. ሥራ ያን የጀመሩ ከሆነ ሰንት ጊዜ ነው በሥራ ያ ላይ የቀዩት _____ ወራት
22. የሚከተሉትን ገልጋሎቶች ይሰጣሉ?
- ቤቶችንና በሽቶችን በቤታቸው መገባገት
- አላደርገውም _____ 1
 - አደርጋለሁ _____ በወር ሰንት ጊዜ 2
 - የመጨረሻ ገብኝት ያ
 - ከሰንት ቀናት በፊት ነበር
- የጤና አጠባበቅ ተምህርት፡- አልሰጥም _____ 1
- እስጠላሁ _____ ባለፈው
 - ወር ሰንት ጊዜ ሰጡ 2
- ለመጨረሻ ጊዜ የሰጡት ከሰንት ቀናት በፊት ነው
- የአካባቢ ጤና አጠባበቅን የሚመለከቱ ሥራ ያች
- አልሠራም _____
 - እሠራለሁ _____ ባለፈው ወር ከሰንት ቀናት
 - በፊት ሠረ 2
 - ምንድን ነበር የሠረት
- ክትባትንና የእናቶችና ሀይማኖት ጤናን የሚመለከቱ ክንዎኔዎች
- አላከናወንም _____ 1
 - አከናወናለሁ _____ ባለፈው ወር ከሰንት ቀናት
 - በፊት አከናወኑ 2
 - ያከናወኑት ምን ነበር

ወረርሽኝ ሲነሣ ሪፖርት፡- አሳደርገም 1
 አደርጋለሁ ከሰንት ቀናት በፊት 2
 ነው

ለመጨረሻ ጊዜ ሪፖርት ያደረጉ

የልደት ምዝገባ፡- አሳካ ሂደት 1
 አካ ሂደት የመጨረሻ ምዝገባዎ ከሰንት 2
 ቀን በፊት ነበር?

የሞት ምዝገባ፡- አሳካ ሂደት 1
 አካ ሂደት የመጨረሻ ምዝገባዎ ከሰንት 2
 ቀን በፊት ነበር?

በሽተኞቹን ምዝገባ፡- አሳካ ሂደት 1
 አካ ሂደት የመጨረሻ ምዝገባዎ 2
 ከሰንት ቀን በፊት ነበር

የመጀመሪያ ዕርዳታ፡- አሳደርገም 1
 አደርጋለሁ መጨረሻ ያደረጉት ከሰንት 2
 ቀን በፊት ነው?
 ለምን ነበር? _____

ለበሽተኞቹ መድሃኒት፡- አልሰጥም 1
 አሰጣለሁ መጨረሻ የሰጡት ከሰንት ቀን 2
 በፊት ነው?
 ለምን በሽታ _____
 ምን _____

በሽተኞቹን ወደ ክሊኒክ ፡- አልክም 1
 አልካለሁ መጨረሻ የሳኩት ከሰ 2
 ንት ቀን በፊት ነው?
 ለምን ዓይነት በሽታ ነበር?

ለክሊኒክ ሪፖርት አሳቀርብም 1
 አቀርባለሁ በ6 ወር ስንት ጊዜ 2
 መጨረሻ ሪፖርት ያረጉት ከሰንት ቀን በፊት ነው?
 ምን ምን ሪፖርት አደረጉ _____

23. መርፈ፡- አልወጋም 1
 አወጋለሁ 2

24. ሥራዎን የጣዖክናውኑ ከሆነ ከሰንት ወራት በፊት ነው
 ሥራዎን ያቀሙት _____

- የገንዘብ ድጋፍ ስላቱ 1
- የኅብረተሰብ ድጋፍ ስላቱ 2
- የጤና ድርጅት ቁጥጥር ስላቱ 3
- የራስዎ ፍላጎት ስለሌለዎ 4
- የመገልገያ ዕቃዎች ስላቱ 5
- መድሃኒት ስላቱ 6
- የጤና ኪሳ ስለሌለዎ 7
- በሌላ ምክንያት ይገለጻ 8

26. ሥራዎን እ.ኤላሁ ከሆነዎ ከላይ ከተጠቀሱት ቸገሮች የትኛዎ አጋጥሞ ያታል
 አላጋጠመኝም

27. የጤና ኪሳ:- የለዎትም 1
 አለኝ 2
 በመሠረት ላይ ነው 3

28. መድሃኒቶች ያገኛሉ? አላገኝም 1
 አገኛለሁ 2
 አንዳንድ ጊዜ በኛ 3

29. መዘገብ አለዎት? አዎ
 የለኝም

30. ከርስዎ ሌላ በቀበሌዎ ሌላ የጤና ተጠሪ የለም 1
 አለ ገን በሥራ ላይ አይደለም 2
 አለ በሥራዎ ላይ ነው 3

31. በቀበሌዎ የሰለጠነኛ የለም ይ አቀላጅ የለኛም 1
 አለኛ ገን ሥራዎን አታከናውንም 2
 አለኛ ሥራዎንም ታከናውናለኛ 3

32. በቀበሌዎ የጤና ስሜት የለም 1
 አለ ገን ምንም አያከናውንም 2
 አለ ተገባሩንም በተገቢው ያከናውናል 3

33. አርስዎ በጤና ስሜት ውስጥ ብቻ አለዎ የለኝም 1
 አለኝ ቦታው ይገለጻ 2

34. ሥራዎን ሲያከናውኑ ማኅበር ይጋፍ የሚያደርግልዎ

- ሕብረተሰቡ _____ 1
- መንግስት _____ 2
- ማንም አያደርግልኝም _____ 3
- ሌሎች _____ ይገለጹ

35. የሚያገኙት ይጋፍ ዎንድነው ?

- ደመወዝ ከሆነ _____ ስንት በር 1
- አምራች ሆነው ነጥብ የሚሰጥዎ ከሆነ _____ ዝቅተኛ 2
- _____ ወባከለኛ _____
- _____ ከፍቶኛ _____
- ሥራዎን ሌሎች የቀበሌ አባሎች ይሠሩልዎታል _____ 3
- _____ ሌላ ይጋፍ _____ ይገለጹ

36. ከአካባቢዎ ጤና ድርድር ክትትልና ቀጥጥር ይደረግልዎታል

- አይደረግልኝም _____ 1
- ይደረግልኛል _____ በዓመት ስንት ጊዜ 2

37. የተሰጡት ትምህርት ተሰጥቶቻት ያውቃሉ ?

- አሳውቅም _____
- ተሰጥቶኛል _____ ከስንት ወር በፊት _____
- የት _____
- ስለምን _____

1. በቀበሌው ሥራ አመራር ያለዎ ቦታ ይገለጽ _____
2. የቀበሌ ጤና ተጠሪ የሕብረተሰብን ጤና ለማሻሻል ይረዳል ብለው ይገመታሉ
 - አልገምትም 1
 - አገምታለሁ 2
3. ዎንዎ ሃሳብ የለኝም 3
3. በቀበሌዎ የጤና ተጠሪ መኖሩን ያውቁ ናራል ?
 - አላውቅም
 - አውቃለሁ ስሙ _____
4. በጤና ተጠሪዎ አመራረጥ ሳይ ተሳትፎ ዋል ?
 - አልተሳተፍኩም 1
 - ተሳትፌላለሁ 2
5. የጤና ተጠሪው ዎን ዎን ገልጋሎት አንዲያበረከት ነበር የሚጠበቁት ?
6. የጠበቁትን ያህል ነው ተጠሪዎ በሥራው ሳይ ያለ
 - አይደለም 1
 - አዎ 2
 - በከፊል ብቻ 3
7. የቅበሌ ጤና ተጠሪው አንደ ተገቢው የሚሠራ ከሆነ ይህ ሊሆን የቻለው ለዎን ይመስልዎታል ? _____
8. ሥራውንስ በተገቢው የሚያከናውን ከሆነ ለዚህ ዎክንዳቱ ዎንድነው ይሳሉ ? _____
9. ለመሆኑ የጤና ተጠሪው ድጋፍ ያገኛል ? አደገኝም 1
 - ያገኛል 2
10. ድጋፍ ከገኘ ከዎን መንገድ _____
11. ድጋፍ ከላገኘ ለዎን _____
12. ድጋፍ አንዲያገኘ ከሚወሰኑት አባላት አንዱ ነዎት ?
 - አይደለሁም 1
 - ነኝ 2
13. ተጠሪውን ማን ሊደግፈው ይገባል ይሳሉ ?
 - ሕብረተሰቡ 1
 - መንግሥት 2
 - ሌላ ይገለጹ 3
14. የቀበሌ ጤና ተጠሪውን ችግር ለማሻሻል ሌላ የሚሰነዘሩት አስተዳዳሪ ከሌሎች

1. ቀበሌው ከክርስቲያን ያለው ርቀት በኪ.ሜ _____

2. በቀበሌው የጤና ተጠሪ መኖሩን ያውቃሉ

አሳውቅም _____

1

አውቃለሁ _____

2

3. ተጠሪው ሲመረጥ ተሳታፊ አድርገው ነበር ለርስዎ ወይም ሌላ /

አሳደረግኝም _____

1

አደርገናል _____

2

4. የቀበሌ ጤና ተጠሪ የሕብረተሰቡን ጤና ለማሻሻል ይረዳል ብለው ይገመታሉ

አዎ _____

1

አልገመትም _____

2

ኃሳብ አልሰጥም _____

3

5. የቀበሌ ጤና ተጠሪ ተገባሮች ምንድናቸው ብለው ይገመታሉ -

6. የቀበሌ + ጤና ተጠሪው ሥራውን ያከናውናል

አዎ _____

1

አያከናውንም _____

2

በክፍል ያከናውናል _____

3

የጭቀው ነገር የለም _____

4

7. ለርስዎ ሪፖርት ያደርጋል

አያደርግም _____

1

ያደርጋል _____ በፊት ስንት ጊዜ

2

መጨረሻ ሪፖርት ያቀረበው ከስንት ቀናት

በፊት ነው ::

8. ከትንሽ ያደርገላቸዋል?

አሳደርግላቸዋል _____

1

አደርግላቸዋል _____ በዓመት ስንት ጊዜ

2

ባለፈው የገባችሁት ከስንት ቀናት በፊት ነበር

9. ሌላ ምን ድጋፍ ያደርገላቸዋል / በመድሃኒትና በዕቃዎች ረገድ /

አሳደርግላቸዋል _____

1

አደርግላቸዋል _____ በዓመት ስንት ጊዜ

2

ባለፈው መድሃኒት የሰጡት ከስንት ቀናት በፊት ነው

10. ደጋፍና በትኩል የሚያደርጉለት ከሆነ ለምን አያደርጉለትም

11. ችግሩ ምንድነው ብለው ይገመታሉ

12. ለችግሩ መፍትሄ ሃሳብ ከሠነዘሩ

የምሳሌ ሰው ስም _____

ፊርማ _____

ቀን _____

ANNEX IV

SOME FEATURES OF THE STUDY AREA

ARSI REGION. (see also reference No. 45 on Chilalo Awraja).

Geography :

- Mid-southern Ethiopia
- Area = 24,600 sq. km.
- Consists of 3 Awrajas (Arba Gugu, Chilalo and Ticho).

DEMOGRAPHY.: Total population in 1987 = 1,860, 606

	Urban	Rural	
Male	59044	865309	924353
Female	68503	867750	936253
Total	127547	1733059	1,860,606

EDUCATION.: Educational facilities available (1987)

AWRAJA	KINDDERGARTENS	ELEMENTARY SCHOOLS	JUNIOR SEC.	SENIOR SEC.
Arba gugu	7	80	8	2
Chilalo	32	209	30	9
Ticho	15	85	8	3
Total	54	374	46	14

HEALTH SERVICE FACILITIES.: (1987)*

AWRAJA	HOSPITALS	HEALTH CENTERS	HEALTH STATIONS
Arba gugu	-	2	24
Chilalo	2	4	65
Ticho	-	1	30
Total	2	7	119

* The figure includes both MOH and non-MOH Institutions.

REFERENCES

1. Storms, D.M. 1979. *Training and use of auxiliary health workers: lessons from developing countries*, American Public Health Association International health programs monograph series, No. 3.
2. King, M. 1966. *Medical care in developing countries (A symposium from Makerere)*, Oxford University Press.
3. Walt, G., & Vaughan, P. 1981. *An introduction to the PHC approach in developing countries*. Ross Institute of Tropical Hygiene publication No. 13. London School of Hygiene and Tropical Medicine.
4. Gray, C.S. 1986. *State sponsored PHC in Africa: the recurrent cost of performing miracles*, Social Science and Medicine Vol 22, No. 3, 361 - 368.
5. WHO. *Alma-Ata 1978. primary Health Care*.
6. WHO. 1980. *The Primary Health Worker*.
7. National committee for central planning. 1984. *Health sector 10 year-plan (1985-1994)*. English version.
8. Ministry of Health. 1985. *Primary Health Care Review*, .
9. Mechie, H., Dibaba, T., and Bennett, J. 1984. *The training and use of CHAs in Ethiopia*, Ethiopian Journal of Health Development, Vol. 1, No. 1, 31 - 39.
10. Arsi Regional Health Department. 1988. *Annual report of health services in Arsi Administrative region, for 1987/88*.
11. Garrison, F.H. 1929. *An Introduction to the History of Medicine*, 4th edition.
12. *The Principles and Practice of PHC*. 1979. Contact: special

series No. 1, April, 1979.

13. Berman, P.A. 1984. *Village Health workers in Java, Indonesia: Coverage and equity*, Soc. Sci. and med. Vol. 19, No. 4, 411 - 422.
14. Bogaert, M.V.D. 1983. *PHC as a rural communication, current issues*, Assignment children, Vol 63/64, 59 - 67.
15. *The Community Health Medic in Indiana America*. 1974. *The medical assistant*, Public health papers No. 60.
16. UNICEF. 1983. *Training Community Health Workers, Information for action issue paper*.
17. *Joint WHO/UNICEF Intercountry workshop in PHC, Country experiences in PHC, AFRO, WHO Brazaville, 1982 (Final report Nazareth, Ethiopia, 8 - 19 February, 1982)*
18. Skeet, M. 1986. *Community Health workers, promoters or inhibitors of PHC*, International Nursing Review, Vol. 32 No. 2, 55 - 58.
19. Leslie, C. 1985. *What caused India's massive Commuunity Health Worker scheme: a sociology of knowledge*, Soc. sci. and med Vol. 21 No. 8, 923 - 930.
20. Ronaghy, H.A., and Solter, S. 1974. *Is the Chinese 'barefoot doctor exportable to rural Iran*, The Lancet, June 29, 1331 - 1333.
21. Twumasi, P.A., and Freund, P.J. 1985. *Local politicization of PHC as an instrument for development : a case study of CHWs in Zambia*, soc. sci. and med. Vol. 20 No. 10, 1073 - 1080.
22. Petit, P.L. 1985. *Problems of rural health workers*, Tropical Doctor, January, 44 - 45.
23. Berman, P.A., Gwatkin, D.R., and Burger S.E. 1987. *Community-based health workers: head start or false start towards health for all?*

Soci. Sci. and Med. Vol. 25, No. 5, 443 - 459.

24. Lavalley, C. 1987. *Evaluation of the Community Health Representatives program serving the James Bay Cree, Dept. of Community Health, Montreal General hospital.*
25. Harrison, P. 1987. *Basic health delivery in the third world, New Scientist, 411 - 413.*
26. Jancloes, M., Seck, B., De Velden, L.V., and Ndiyae, B. 1985. *Financing Urban Primary health services, Tropical Doctor, 15, 98 - 104.*
27. Bender, D.E. 1987. *Bridging the gap: The VHW as a corner stone of the PHC model, Soc. Sci. and Med. Vol. 24, No. 6, 515 - 528.*
28. Ofosu-Amaah, V. 1983 *National experiences in the use of Community Health Workers, WHO, Geneva.*
29. Greenwood, B.M., Bradley, A.K., Greenwood, M., and Oldfield, F.S.J. 1987. *short report : A record system of drug administration by illiterate VHWs, Transactions of the Royal Society of Tropical Medicine and Hygiene, 81, 534 - 535.*
30. Auvert, B., Van Look, A.F., Huong Du, L.T., Boutin, P.H., Monier, J.L., Emmanuel, X., Gilbos, V., and Bennillouche, 1986. *A hand-held decision-aid system designed for rural health workers, Computers and Biomedical Research, 19, 80 - 89.*
31. Kaseje, D.C.O. 1987. *Community Participation and leadership in the Saradidi, Kenya Rural Health Development Program. Annals of Tropical Medicine and Parasitology, Vol. 81, supp No. 1,*

46 - 55.

32. Kaseje, D.C.O., & Spencer, H.C. *The Saradidi, Kenya Rural Health Development program, ibd 1 - 12.*
33. Benyoussef, A., and Christian, B. 1977. *Health Care in developing countries, Soc. Sci. and Med. Vol 11, 399 - 408.*
34. Rifikin, S.B. 1973. *Health care for rural areas, Medicine and Public health in the people's republic of China. No. 73 - 67, 141 - 152.*
35. *PHC - The Chinese experience. 1983. Report of an Inter-regional Seminar, WHO, 1983.*
36. Chen, L. C. 1986. *PHC in developing countries : Overcoming operational, technical and social barriers, The Lancet, 1260 - 1265.*
37. Hollnsteiner, M.R. 1982. *The participatory imperative in PHC. Community participation : Current issues and lessons learned, UNICEF, Assignment Children, 59/60.*
38. Akenzua, G. I., Izogie, J.M., Ozigbo, E. and Osuhir, P.C. 1984. *Obadan Project in Bendel State of Nigeria, Journal of Tropical Paediatrics, Vol. 30, 310 - 312.*
39. *Ministry of Health. 1978. Health Services in Socialist Ethiopia, September, 1978.*
40. *Ministry of Health. 1978. PHC status in Revolutionary Ethiopia, July, 1978.*
41. *Ministry of Health. 1977. Curriculum for training of CHAs, Amharic edition) October, 1977.*
42. *Ministry of Health, Planning and Proqraming Bureau. 1988. Comprehensive Health Service Directory 1986/87 MOH, Addis Ababa, August, 1988.*

43. Madebo, G. 1986. *Community Health Services in Ethiopia: Use of CHAs and TBAs in Sidama Awraja (Sidamo)*. Masters thesis , Addis Ababa University School of Graduate Studies, September, 1986 (unpublished).
44. Ministry of Health. 1986. *Report on PHC workshop held at Arba Minch. February 27 - March 1, 1986* (Unpublished)
45. Haile Mariam, D. 1988. *Health Profile and Action Plan for Chilalo Awraja (Mid-Southern Ethiopia)*, (Unpublished).
46. Mohammed, S. 1988. *Health Profile and Action Plan for Buno Bedele Awraja (Western Ethiopia)*, (Unpublished).
47. Freunds, P.J., and Kalumba, K. 1985. *Monitoring and Evaluation of PHC in rural Zambia*, Soc. Sci. and Med. 13, 137 - 146.
48. Anderson, J.D.C., and Bentley, C.C. 1986. *Role of community health workers in trachoma control*, Tropical Doctor, 1986, 16, 66 - 69.
49. Wakbullcho, M. 1988. *Community participation in health services*. A masters thesis, Addis Ababa University, School of Graduate Studies, (unpublished).
50. Okubagzhi G.S. 1988. *Fulfilling the potential of traditional birth attendants*. World Health Forum. Vol 9, 426 - 431.

