

**IMMUNIZATION COVERAGE RATES ATTAINED BY HEALTH
CARE UNITS IN NORTH - EASTERN ARSI AND
FACTORS CHARACTERIZING THEIR PERFORMANCE**

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GEBISSA TOLESSA M.D.

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by

Dr. Gebissa Tolessa

DEPARTMENT OF COMMUNITY HEALTH,
FACULTY OF MEDICINE

Approved by the Examining Board.

Adanetch Kidanemariam, CNM.MPH.MSPH.Dr.PH
Chairman, Department Graduate
Committee



Prof. Dennis Carlson

Advisor



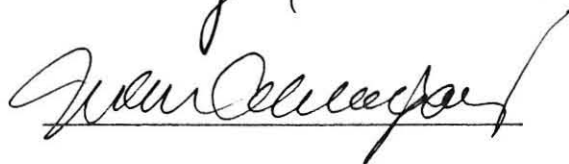
Prof. A. Segall

Examiner



Prof. N. Cunningham

Examiner



Dr. S. Shapiro

Examiner



Dr. GebreSelassie Okubaqzhi

Examiner



Dr. Derege Kebede

Examiner



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ABSTRACT

Low achievements in the Expanded Programme on Immunization (EPI) has been found to be one of the major health problems in the North-Eastern Arsi region of Ethiopia. This study was conducted to assess factors having influence on the attainment of EPI rates at the level of individual health care units. The factors studied were categorized as follows: a) Factors related to the health workers' knowledge, attitude and practice. b) Factors related to the the health care delivery system, with emphasis on the provision of EPI service. c) Factors related to the characteristics of the health care units, and d) factors related to the socio-cultural, demographic and other characteristics of mothers. Two health workers from each one of the 17 health care units were included in the study population and from the area serviced by each health care unit, 50 mothers of under-two children were selected. The study found that the immunization coverage rates attained by the individual health care units ranged from 18% to 96%. In the case of pregnant women the rate ranged from 12% to 96%. The mean immunization rates were 52.8% and 51% in the under-two children and pregnant mothers, respectively. Other findings were that daily EPI session, using occasions of mass meetings or other public gatherings for informing the public about EPI, weekly tracing of EPI defaulters,

and involving the community in EPI activities were found to be associated with high coverage. Mothers' educational status, attitude towards the health care system, and EPI, were positively associated with immunization coverage.

INTRODUCTION

The year 1990 marks the tenth anniversary of having carried out a pilot project in some regions of Ethiopia prior to the implementation of the Expanded Programme on Immunization (EPI) in most of the health care units in the country. However, publications of the United Nations International Children's Fund (UNICEF), in 1989 and 1990 reported the national coverage by DPT3 for children less than one year of age for the years 1987/88 to be 16 percent in Ethiopia (1,2).

The national coverage of under one children who took DPT3 was measured by the Primary Health Care (PHC) Review done by the Ministry of Health (MOH), in 1985. The review also found variations in the attainments of immunization rates between regions. The highest was found to be 77 percent in Kaffa, and the lowest to be 24 and 25 percent in Harrarghe and Addis Ababa respectively. When the children who took measles before the age of nine months and those who took DPT and polio vaccines before the age of two months were excluded, the National coverage was found to be as low as stated earlier(16%). The review also found that the percentage of pregnant women who took the two doses of TT - vaccine were below twenty percent. Variations similar to the preceding one were found between regions in this latter case, too.

However, the nationally set target of fifty percent to be achieved in the year 1985, and the progressive improvements made in the health resources required for attaining the goal are inconsistent with the results found by the review. The review also found some reasons for the failure observed in implementing EPI. It was found that the reasons were attributable to problems related to the health care system as well as the community (7).

Data obtained from the EPI and General Prophylaxis division in the MOH, indicate the actual Ethiopian EPI-coverage, as obtained from two data sources. The first being the national EPI-coverage survey finding - Ethiopia 1990 indicates fifty nine percent and sixty seven percent for children under fifty two weeks who took DPT3 and pregnant women who took TT2, respectively (4). The second source of data is the nine months EPI - report (January - September 1990) showing the percentage of under one children and pregnant women who have received similar doses to be forth six percent and seventeen percent, respectively (3). This shows that, yet, the National EPI - coverage is much lower than the goal set for the year 1990.

Annual reports of Arsi regional health department and that of the principal health center in north-eastern Arsi, in the years 1987/88 reported as thirty nine

percent for the region and thirteen percent for the Awraja, as proportion of the under -one children taking DPT3 (5, 6).

Thus, in analyzing the availability of immunization service and the optimum utilization of the service by the population, the following could be stated.

The decision to get a child vaccinated is usually expected from the parents (particularly the mother). Several studies have focused on characteristics of the mothers and how these vary between mothers of vaccinated and non-vaccinated children. The decision of a mother to make use of immunization service is influenced by many factors, among which some are controlled, to some extent by the local health institutions. The effects of the local health institutions to educate the community and mothers, the type and quality of the health care service offered, and the follow-up made by the health institutions may affect mothers' decision to utilize the available health care services. Of course, some other factors influencing mothers may be outside of the direct control of the health care system, such as mothers' formal education, family source of income, and others.

Health institution-related factors should be amenable to changes from the Awraja (district) health office. Thus, this study aims at discovering the associations between health care unit related factors and

their respective EPI coverage rates. It is hoped that this will lead to actions at the Awraja health management level, and at the local health institution level. The actions based on the findings of the study will later on aim at improving the prevailing coverage. In addition to the health care unit related factors, several issues related to the community are studied. These include, the socio-cultural, economic, and demographic characteristics of mothers, particularly knowledge, attitude, and practice in relation to EPI .

The last, but not the least aim of the study is to understand why some health care units achieve low EPI coverage. This may lead us to an understanding of not only the reasons why the attainment in EPI is low, but also why the rates of utilizing the other aspects of PHC are less than optimal.

OBJECTIVES**General Objective:**

The overall objective of the study is to find out determinant factors related to the health care system which are given by the characteristics of the health workers and the health care delivery system having effects on EPI coverage rates attained by health care units. Measuring the association between rates of immunization as well as some socio-cultural and demographic characteristics of the population, in particular mothers, and that of the health units is also included in the objectives of the study.

Specific Objectives:

1. To assess the factors related to the health workers' knowledge, attitude and practice having positive relation with health units' EPI coverage rates.
2. To analyze and determine the characteristics of the health care delivery system having relationship with immunization rates attained by health care units.
3. To find out the characteristics of the mothers and the health care units which determine rates of utilizing immunisation service, and thereby EPI coverage.

4. To discover the reasons for low EPI coverage rates, in the light of utilizing the findings of the study for analyzing the prevailing coverage, in particular in the study area.

Hypothesis:

There is a significant relation between the characteristics of the health care delivery system and the EPI coverage rates.

LITERATURE REVIEW

International EPI Rates:

In the literature on worldwide EPI coverage, publications of UNICEF are among the most comprehensive references. The State of the World's Children in 1989 has pointed out some global achievements in EPI, as well as other PHC programmes. It states that WHO launched the expanded programme on immunization in the year 1974, when fewer than 5% of children in the developing world were immunized. Three years later, the World Health Assembly resolved acceleration of the EPI programme to make immunization against the six vaccine preventable diseases available to every child in the world by the end of 1990. At the time, this universal goal seemed impossible. Yet in the past decade around eighty countries have accelerated their EPI programmes. China was expected to achieve the target two years ahead of schedule. Countries such as Botswana, Cuba, Egypt, and a few others have

reached or almost reached the target already. Others such as, Algeria, Brazil, Kenya, Mexico, and a few others will reach eighty to ninety percent coverage before the end of 1990. These achievements in EPI have resulted in the protection of over half of the children in the developing countries from vaccine preventable diseases (1).

However, about half of the children in the world are still at risk of being infected by these diseases. The 1990 "State of the World's Children" listed the national EPI coverage for Ethiopia for the years 1987/88 to be sixteen percent, as the rate of under one children who took DPT3 (2). This shows that Ethiopia is one of the developing countries with the lowest rates of EPI coverage.

Ethiopian EPI Rates:

The data from two sources (the National EPI Coverage Survey Finding - Ethiopia 1990, and EPI report, January - September 1990) obtained from the MOH indicate the actual national EPI coverage for Ethiopia. In particular, the EPI report, which is compiled by reports submitted by the various functioning health care units in conflict free areas in the country revealed the wide variations existing between regions. The highest rate in under one children who took DPT3 was reported from Borana

(80%), and the lowest from Ogaden (5%). The highest rate for pregnant women who took TT2 was reported from Arsi (25%), and the low rates reported (1%, 3%, and 4%) were from Assossa, Eritria, and Ogaden, respectively (3).

The national EPI coverage survey done in 1990 found that children under 52 weeks who have received DPT3 were 59%, and children in the same age group fully immunized were 58%. The percentage of pregnant women who are given TT2 were 67% (4). The survey was done only in population accessed by EPI. Thus, the differences observed in data obtained from the two sources on the national coverage could be attributed to the difference in the type of areas from where they are obtained.

Regional and Local EPI Rates in Arsi:

The annual report of Arsi regional health department in 1987/88 indicates that the overall regional EPI coverage from Arsi was 39%. However, the achievements at the level of Awraja varied widely ranging from a high of 66% in Ticho to a low of less than 20% in Galama, Sude, and Gedeb Awrajas (5). The EPI report obtained from the MOH indicates that the regional coverage for Arsi is 42% (3). All the rates refer to the under one children who have received DPT3. The annual report of Abomsa health center reported 21%, during the same years 1987/88, as the percentage of under -one children who have received DPT3 in one of the Awrajas in north - eastern Arsi. Wide variations in EPI rates attained by different health care units functioning in the awraja were also found (6).

Effects of Health Care System on EPI Rates:

The present health policy of Ethiopia originated from the declaration of the National Democratic Revolutionary Programme in 1976. The policy stressed the expansion of rural health services, disease prevention and control, promotion of self reliance and community involvement in health activities, as obtained from the PHC review done by the MOH in 1985.

Furthermore, it is stated in the review that the

basic principles and strategies underlying the Ethiopian policy of socialism are consistent with the PHC approach to achieve "HEALTH FOR ALL" by the year 2000. Hence the Ethiopian government welcomed the Alma-Ata declaration in 1978.

The primary health care review in 1985, although it is a study done only in areas accessed by EPI, concludes from its findings that the national EPI coverage for Ethiopia in 1985 was very low. In addition to this, the review pointed out that the reasons for the failure were attributable to factors related to both the health care system and the community. These factors which the review found from surveys of health care units and mothers include: wrong vaccination techniques, some obstacles in the population, such as cultural or religious barriers, and lack of information and motivation by the mothers. The review recommended that training of the health staff and provision of an effective health education could minimize the effects of the stated hinderance on EPI achievement in reasons attributed to both the health care units and mothers (7).

King stated that health personnel may be inadequately trained or educated to carry out the work that needs to be done, then, this and many other personal factors of the health workers result in gaps and weaknesses in the chain of events leading to health care,

rather than problems related to limited resources (8). Similar ideas are stated in the State of the World's Children 1990, as follows: it is not only a question of money and technology, it is also a question of the delivery systems and the infrastructure, the management skills and the training, and the use of all possible channels to inform and support parents in applying today's knowledge" (2).

A study done by the MOH on factors affecting or influencing utilization of immunization services found that sending mothers back-home, in particular in the outreach sites, without their children being vaccinated causes defaulting of more mothers during the subsequent EPI sessions (9). This finding, (also called "broken appointment") could cause higher drop-out rates if the reasons for the event are more attributable to the health care units than to problems related to mothers.

Another study done in Cameroon by Brown et al. found that a poor immunization system was associated with low EPI coverage. It was also found that factors such as, poor health education methods like using a language that most do not understand, and lack of tracing methods for finding defaulting EPI-eligibles or the unimmunized ones were found to have a relationship with a poor immunization system.(10). Research done by Gish in the United States found that integration of a high quality

curative service with the preventive services like EPI has an influence in the rate of utilizing the available health care services by the community (11). Thus, the integration of the PHC services, and providing them on daily basis is one way to attract people to utilize preventive services. Another study done in the United States which was a metaanalysis of the effects of nursing interventions on children and parents had some similarities with the preceding study, in that it deals with the know-how of attracting people to utilize health care services. It was found that mothers who previously were not complying with more prescriptions of medications had better compliance when the nurses started showing interest to inform and educate them on all the necessary aspects of utilizing medications (12).

Studies on some other aspects of PHC, such as community involvement, participating community health workers, and team working system in the implementation of PHC programmes found that these factors have influence on health service coverage, particularly EPI coverage (13, 10, 15).

Kloos and collaborators reviewed the utilization of selected hospitals, health centers, and health stations in central-southern Ethiopia. The findings were that among the children and mothers who started vaccination in the two towns of Wolkite and Merara, 99% of them

completed taking their full doses. But, among 29 children and six women who started vaccination in the rural areas, only 48 % of the children and none of the women completed taking their required doses. The investigators concluded from their findings that the observed differences indicate the influence of distance, socio-cultural barriers, and the relatively greater difficulty of follow-up of defaulters in the rural areas than in the urban settings (17).

Research done in one area of Bombay found that the immunization rate of 66 % achieved by health staff by providing door-to-door vaccination service was raised to 78% by involving the community. This latter result was attained by establishing an under five community based clinic, where, the members of the community were involved in follow-up of unimmunized children and school children helped in encouraging their siblings to be vaccinated. The study also found that there was reduction in cost, in addition to increases seen in coverage by the help and co-operation obtained from the school children and local voluntary agencies (13).

A comparative study done in a southern high province of Papua New Guinea had similar findings. An EPI rate of 74 percent attained by the traditional MCH team and 28 percent by the Aid post orderlies (APOs) was raised to 86 percent when both groups combined their efforts in providing EPI service (14).

Isenalumbe carried out an evaluation of home midwifery service in Benin, Nigeria. She gathered the opinions of the midwives and that of the mothers on the role of the traditional birth attendants in PHC. She found that both the midwives and mothers opted for the integration the traditional birth attendants into the organized health care system, so that they would be involved in the provision of all health care services for

mothers and children (15). Thus, the findings of this latter evaluative process supports the preceding studies. It shows that participating members of the community, such as volunteers, Community Health Agents, Traditional Birth Attendants, or any other individual or collective members of the community in PHC boosts health service coverage, including EPI rates.

Availability, accessibility, acceptance, and utilization of health care services are factors having effects on EPI rates. Their definitions are given by WHO as follows: availability is the ratio between the population of an administrative unit (district etc.) and the health facilities and personnel assigned to it. Accessibility is the number or proportion of a given population that can be expected to use a specified facility service, given certain physical (distance, travel time), economic (travel cost, fee. charged), or social and cultural (caste or language) barriers. Utilization is defined as the number or proportion of the population actively using given services, and this can be related to the number or proportion needing the service. However, it is stated in the same WHO series that different countries use different standards in applying these definitions (16).

In Ethiopia, the PHC review defined people living within twelve kilometres radius of the health care units

and five kilometres of the outreach sites as having access to the health care services offered at these places (7).

However, in actual fact, even those living within the prescribed limits from the health facilities or outreach sites may not be able to use the services due to various reasons or barriers (lack of transport facility, financial or cultural barriers).

Effects of Specific Factors on EPI Coverage:

Numerous factors can affect EPI coverage. Among these factors are, knowledge, attitude, and practice of mothers in EPI. In addition, factors like educational status, occupation and socio-cultural and religious beliefs are found. An investigation done in the United States by Hall and Dorvan revealed that married patients and patients with large family size showed significant association with higher satisfaction in medical care. This meta-analysis aimed at examining the relation between patients' socio-demographic characteristics and their satisfaction in medical care also showed that marital status and family size were significantly associated with greater age and less educational level. On the other hand, no relation was found for age, income, or sex as socio-demographic characteristics with satisfaction in medical care (18).

Markland et al. carried out an investigation of the socio-psychological factors affecting child immunization and found the following; the group of the population which has adequately immunized their children have clear or high levels of perception of diseases seriousness, higher age, and educational levels, smaller family size, greater media exposure than those whose children were inadequately immunized (19)

Nasseri et al. in their research on the determinants of partial participation in EPI programmes found that mothers' knowledge and motivation, residence in rural areas, and utilization of antenatal care showed positive association with EPI coverage (20).

In a research done by Amenu, on factors affecting the utilization of health stations, in Yererna Kereyer, Ethiopia, the following results were found: among the people utilizing the health care services offered in the health stations, people in the age group of fifteen to thirty four, literate, government employees, Amhara, and females were found to be the ones who most utilize the health stations. It was also found that mothers having knowledge on EPI, or those previously attending antenatal care are the ones who use EPI service more than those mothers lacking such experiences. In addition, people having favourable attitudes towards the health care system and also those having access to health information

on the radio were the ones who most utilize the health stations. Another study done by Tsegaye, in one area of Addis Ababa found that EPI attendants with low educational status are the ones who most often default. He also found that mothers who previously did not get vaccinated or if they have done so, did not complete their full dose, and those lacking adequate information and knowledge on EPI were the ones who most default (22).

MATERIALS AND METHODS**Study Design:**

A census type of cross-sectional study was the design utilized for carrying out the health care units' survey.

Study Population:

All the various types of health care units, health centers, health stations, and the non-MOH clinics were included in the study population. A total of twenty such health care units are providing PHC services, including immunization service in three awrajas that are found in north-eastern Arsi, which were previously one awraja at the time of implementing the study. The awrajas are Mertijeju, Arba Gugu, and Gololcha that constitute the study area. Three health care units were excluded from the study population due to logistic problems (distance and lack of road). Two health workers, the head of the health care unit and another randomly selected one participated in responding to written questions in all the remaining seventeen health care units. A complementary survey of sampled households within the population accessed by EPI under each one of the health care units was also carried out. The aim of this complementary survey was to obtain relatively reliable

data on EPI rates attained by the individual health care units in the under- two children and pregnant women. Some relevant data on socio-cultural, economic, and demographic characteristics of the population, in particular mothers, were also obtained from this survey. Owing to logistic problems, mainly time and labour cost, fifty mothers under each health unit (total eight hundred fifty) were sampled by systematically allocating mothers having EPI - eligible children.

Thus, sample size calculation was not done owing to the census character of the health units survey and due to the stated logistic problems in the case of mothers' surveys.

A 95% confidence limit was calculated on the prevailing EPI rates in one of the awrajas in the study area. Calculation of the confidence limit was used to estimate an EPI rate that will be obtained in the underlying population under each one of the health units. Thus, the 95% confidence limit on the existing rate, and by using a two sided test was found to be between (22.02, 3.98).

The concept underlying survey of mothers of EPI eligible children was to obtain data on immunization rates and other aspects related to mothers, as stated earlier.

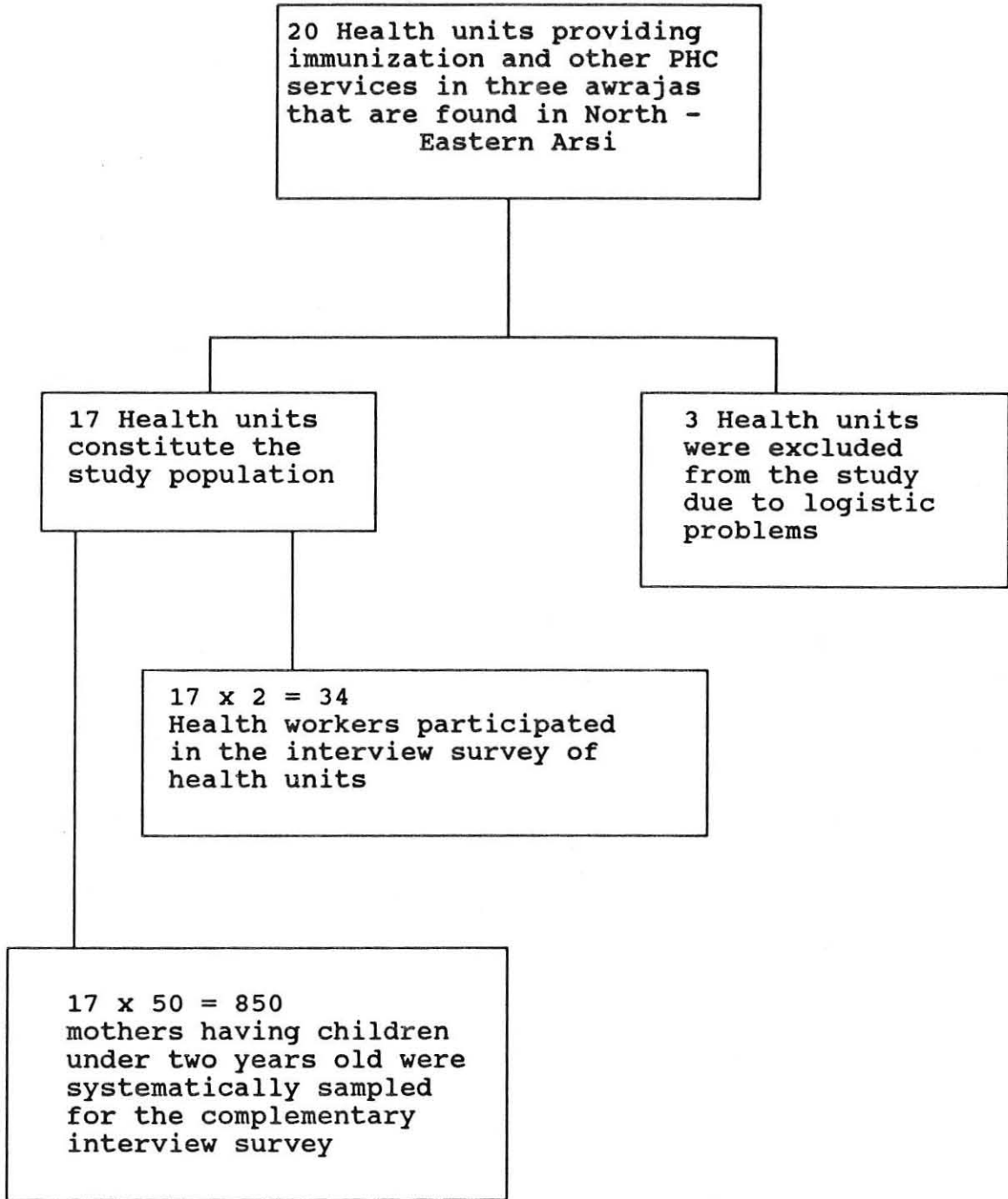


Figure 1. Framework Designed for Both Health Care Units' Survey and for the Complementary Sampled Mothers Survey.

Measurement:

The health care units' survey covered the general areas of:

- Health workers' knowledge, attitude, practice, and commitment in the provision of immunization service.
- Factors related to the characteristics of health units, such as physical environment, available facilities, size of the catchment population, and proportion of the catchment population covered by EPI.
- Factors related to the health care delivery system, with more emphasis on EPI.

The reasons underlying the health units' survey was to assess or find out factors included in the characteristics of the health workers that are associated with EPI coverage. The study also aimed at measuring the strength of the health units in the provision of the PHC services. In particular, immunization service on the basis of whether the techniques, strategies, or methods utilized are consistent with PHC approach or not were assessed and graded accordingly. Also, assessment of some characteristics of the health care units on immunisation coverage was included in the health care units' survey.

The household interview survey of mothers covered general areas of :

- Immunization rates attained in both EPI - eligible children and pregnant mothers by the health units in the population accessed by EPI.
- Factors related to the socio-cultural and other demographic characteristics of the mothers.
- Factors related to mothers' knowledge, attitudes, practices, and perceived benefits of EPI.

Definitions:

The definitions given below differs from the WHO standard definition of EPI coverage, in that under-two children fully immunized or regular attenders and pregnant women who took the two doses of tetanus vaccine are taken into account to yield immunization or EPI coverage rates for the health units studied. According to the present study, such definition was required to be able to measure the strength of the health units on the basis of their overall achievements in activities related to EPI. The definitions are:

- A fully immunized child is a child who has received BCG, DPT3, polio3 and measles before the age of two years, regardless of whether or not the child is late.
- A regular attender child is a child who has started getting vaccinated, and was still waiting for the

next appointment, regardless of whether or not the child started late.

- The immunization coverage rate of a health care unit is obtained from the survey of the 50 mothers with their under two children in its catchment area. Immunization coverage rate is the average of the per cent of children under two who are fully immunized or regular attenders, and the percent of women who received two doses of TT during their last pregnancy. A health care unit with an immunization coverage of $\geq 60\%$ is considered to have high coverage. A health care unit with an immunization coverage $<60\%$ is considered to have low coverage.
- "Strength of the health care system" is a composite variable calculated for health care unit as follows. Under the section of health care delivery system, questions 10 through 26 were used (Appendix A). The scores to these questions were summed. For less important items, the scores ranged from 0 to 2, for other items the ranges were from 0 to 4 or 5. For example, frequency of EPI session, daily = 4, weekly = 1, less than once a week = 0. Involving the community in EPI activities, yes = 5, no = 0.

- Mothers under each health care unit are said to have adequate knowledge if $\geq 50\%$ of them know at least two diseases prevented by EPI.
- Mothers under each health care unit are said to have a positive attitude if $\geq 80\%$ of them answer yes to one or more of questions 20, 21 and 22 in the questionnaire for mothers' survey (Appendix A).

Data Collection

An interview survey was used for data collection. Questionnaires were first prepared in English and then translated into Amharic versions (see appendix A). Translation into an Oromo version as a guideline for the mothers' survey was also done prior to carrying out a pilot study which was carried out in Keleta awraja (a neighbouring awraja to the study area). The pilot study which aimed at pre-testing the questions in Amharic and Oromo languages helped in making the necessary corrections in these two versions.

A physician, who is the principal investigator was involved in getting the consent of the participating health workers, and in undertaking of other tasks pertaining to the survey of health units. The interview survey of mothers was carried out by members of the awraja health management team organized in one of the awrajas in the study area.

There were two dependent or out-come variables in the finding of this study:

- Percentage of under two children fully immunized or regular attenders and each health unit studied.
- Percentage of mothers who received the two doses of TT - vaccine during their most recent pregnancy.

Data Analysis

The data was entered on an SPSS/PC+ statistical programme and analyzed using standard statistical techniques.

From the survey of mothers from the catchment area of each health care unit, the immunization coverage rate for each health institution was calculated, and the health care units dichotomized into units with high and low coverage as above. This is the dependent variable.

Frequency distributions were run for all independent variables. On the basis of inspection and the investigator's understanding, these variables were dichotomized. Cross tabulations were then made between the dependent variable (immunization coverage) and all independent variables, and Fisher's exact test was used to test significance levels.

"Strength of health care system", a composite variable defined above, was compared with immunization coverage for each health care unit by graphing.

RESULTSUnivariate Analysis:

A considerable number of factors have been studied under various categories of interest to the study. They are factors related to the characteristics of health workers, delivery of health care services, characteristics of health units, and characteristics of the population studied, particularly mothers. Details of the findings on the individual factors included in the major categories are provided in tables one through four.

Reasons for defaulting of EPI attendants including reasons for not being vaccinated are also found by the study. There were a total of 180 defaulters and 222 unvaccinated children (21.2% and 26.1%, respectively) among the 850 children studied in all the 17 health units. 32 (18%) of the defaulters attributed the causes for defaulting to the health care delivery system including health workers. The reasons given by mothers were: observing wound, fever, or some other symptoms of illness in their children after they got their children vaccinated. Very few mothers complained of having to wait too long or maltreatment by the health workers while they were attending EPI sessions. The majority of defaulting attendants, 141 (78%), blamed themselves for defaulting due to problems of their own such as having

been sick, away for some time or having used that day for other purposes.

The mothers whose children were not yet immunized were found to have almost the same reasons for not yet having their children vaccinated. Two hundred and eight (93.7%) of them said that they have a custom that prohibits leaving the house at least for the first two months after birth or delivery indicating that it is not good for the babies nor for the mothers.

It was also found from the community survey that the EPI rates attained by the health units in the under two children fully immunized or regular attenders varied from 18% to 96%, and the mean was 52.8%. Similarly, in the case of pregnant mothers who have taken the two doses of TT vaccine during their most recent pregnancy also ranged from a low of 12% to a high of 96%, and with mean coverage rate of 51%. More detailed information is provided in Table 5.

Table 1. Distribution of Health Care Units by Factors Related to the Health Workers.

Factors Related to the Healthworkers	No of Health Care Units	%
1. Qualification-head of health care unit		
- Physician	1	5.9
- Nurse	5	29.4
- Health assistant	11	64.7
2. Experience in provision of health care service		
- More than three years	12	70.5
- Two to three "	2	11.8
- Less than two "	3	17.7
3. Course, seminar, or training received on EPI		
- Yes	11	64.7
- No	6	35.3
4. Knowledge of EPI-vaccine contraindications		
- Adequate	1	6.0
- Inadequate	16	94.0
5. Knowledge on EPI-vaccine secondary effects		
- Adequate	17	100.0
- Inadequate	-	-

6. Belief in motivational power of polite behaviour on mothers attending EPI session		
- Strong	2	11.8
- Moderate	12	70.5
- Do not believe in	3	17.7
7. Priority in providing EPI service vs routine curative service		
- Prioritizes more the provision of EPI service	4	23.5
- Gives equal priority to both	11	64.7
- Gives less priority to provision of EPI-service	2	11.8
8. Level of effort devoted to increasing EPI coverage		
- A lot of extra effort	4	23.5
- Some " "	11	64.7
- No " "	2	11.8
9. Belief that being committed could yield better coverage, even if resources remain scarce		
- Strong	4	24.0
- Moderate	5	29.0
- Low(do not believe in)	8	47.0

Source: Survey of Health Care Units done by Gebissa T. (m.1)
(North - Eastern Arsi - 1990).

Table 2. Distribution of the Health Care Units by Factors Related to the Delivery of Immunization Service.

Factors Related to Delivery of Immunization Service	No of Health Care Units	%
1. Frequency of EPI service delivery		
- Daily	6	35.0
- Weekly	11	65.0
- Less than once a week		
2. Methods of informing about the availability and necessity of EPI service to the community		
- Conducted on occasions of mass meetings or through a responsible third person	11	65.0
- Never been conducted	6	35.0
3. Strategy used in screening all children visiting the health care units		
- Screen and vaccinate, if required so	1	6.0
- Screen and appoint for vaccination	1	6.0
- Do not conduct screening	15	88.0
4. Strategy used for the delivery of health education		
- Conduct in public gatherings or prior to delivery of preventive services like EPI	3	17.7
- Conduct prior to delivery of daily medical services	10	58.8
- Do not conduct	4	23.5
5. Frequency of tracing EPI defaulters		
- Weekly	2	11.8
- Monthly	4	23.5
- Do not conduct	11	64.7
6. No. of EPI re-surveillance done during the last eight months		
- Two or above	-	-
- One	15	88.0
- None	2	12.0

7. Broken appointment in any of the scheduled EPI - sessions during the last eight months in outreach EPI sites		
- No	13	76.5
- Yes	4	23.5
8. Community health workers participate in carrying out EPI activities		
- Yes	8	47.5
- No	9	52.5
9. Involving the community in carrying out EPI activities		
- Yes	8	47.5
- No	9	52.5
10. Collaboration of other government sectors that are available in the area in carrying out EPI activities		
- Yes	6	35.0
- No	11	65.0
11. Availability of annual health plan		
- Yes	16	94.1
- No	1	5.9
12. Strategies used in monitoring periodical achievements in EPI		
- Tables, graphs, charts, or others	8	47.5
- Nothing	9	52.5
13. Supervisory visits from which feedback has been given to the health care unit during the past eight months		
- one or two	16	94.1
- none	1	5.9

Source: Survey of Health Care Units done by Gebissa T. (North - Eastern Arsi. 1990).

Table 3. Distribution of the Health Care Units by Factors Related to Characteristics of the Health Care Units.

Factors Related to the Characteristics of Health Care Units	No of Health Care units	%
1. Type by ownership of health care units		
- MOH	11	65.0
- Non-MOH organization	6	35.0
2. No. of years since implementing EPI Programme		
- Five years or above	12	70.6
- Two to four years	4	23.5
- Less than two years	1	5.9
3. Distance in Kms. from the next higher health institution		
- Less than twenty Kms.	5	29.0
- Twenty to fifty "	3	18.0
- Sixty to ninety "	4	24.0
- Hundred or more "	5	29.0
4. Type of the road extending up to the next higher health institution		
- All weather road	10	59.0
- Dry " "	5	29.0
- No road " "	2	12.0
5. Available transport facility		
- Car	3	18.0
- Motorbicycle	1	6.0
- Bicycle or animal	7	41.0
- None	6	35.0
6. Magnitude of the health care units catchment population		
- Lower than the recommended level	9	53.0
- Approximately equal to the recommended level	7	41.0
- More than the recommended level	1	6.0
7. No. of supervisory visits and feedback made to the health care unit during the last eight months		
- Two or more	2	12.0
- One	14	82.0
- None	1	6.0

8. Proportion of the health care units' catchment population offered EPI - service at the static site (health care unit level)		
- 50 - 100%	14	82.0
- Less than 50%	3	18.0
9. Proportion of the health care units' catchment population offered EPI - service at the out-reach sites		
- 41% - 60%	1	6.0
- 10% - 40%	8	47.0
- None	8	47.0

Source: Survey of Health Care Units done by Gebissa T. (North - Eastern Arsi - 1990).

Table 4. Distribution of the Surveyed Population (Mothers of EPI - Eligible Children) by Selected Characteristics.

Factors Related to some Characteristics of Mothers		No.	%
1.	Age		
-	17 to 35 years	778	91.5
-	Less than 17 or more than 35	72	8.5
2.	Number of children		
-	Mothers having one to four	620	73.0
-	" " five or more	230	27.0
3.	Occupational status		
-	Housewives or dependents staying at home	612	72.0
-	Mothers engaged in activities outside the house	238	28.0
4.	Educational status		
-	Illiterate mothers	221	26.0
-	Mothers who attended literacy campaign	519	61.0
-	Mothers who attend elementary or higher level	110	13.0
5.	Family source of income		
-	Agriculture or daily income	756	89.0
-	Government employee or owner of establishments	94	11.0
6.	Awareness of the availability of EPI service		
-	Mothers who are aware of EPI schedule	604	71.0
-	Mothers who are not aware of EPI schedule	246	29.0
7.	Mothers attitude towards the health workers		
-	Favourable	689	81.0
-	Unfavourable	161	19.0
8.	Mothers' perceived benefit of EPI		
-	Mothers believing in the benefit of vaccination for their children	706	83.0
-	Mothers who don't believe in it	144	17.0

	Knowledge about EPI diseases		
	Mothers knowing more than two	136	
	Mothers knowing one or two	233	
	Mothers knowing none	481	
10.	Religious belief of mothers		
	- Islam	382	45
	- Orthodox Christians	468	55
	- Others	-	
11.	Ethnicity		
	- Oromo	396	46.
	- Amhara	448	52.
	- Others	6	0.
12.	Immunization coverage of under two children		
	- Fully immunized plus regular attenders	448	53.0
	- Defaulters	180	21.0
	- Unimmunized	222	26.0
13.	Immunization coverage of mothers during their most recent pregnancy		
	- Mothers who took the two doses of TT	405	47.6
	- Mothers who took only one dose	166	18.8
	- Unimmunized mothers	279	33.6

. Care Units by Immunization Coverage Rates of Under-Two Children and Pregnant Wo

Health	EPI Coverage rates attained in					
	Under- two children			Pregnantwomen		
	N	%	95% CI	N	%	95% CI
Aggu mission clinic	9	18.0	(28.6, 7.4)	6	12.0	(21.01, 2.99)
Memberhiwot clinic	15	30.0	(42.7,17.3)	22	44.0	(57. 8,30. 2)
Chole health station	17	34.0	(47.1,20.9)	13	26.0	(38. 2,13.8)
Mertifarm clinic	18	36.0	(49.3,22.7)	22	44.0	(57. 8,30. 2)
Tibestegent clinic	18	36.0	(11)	21	42.0	(55. 7,28. 3)
Moye health station	18	36.0	(11)	14	28.0	(41. 0,15. 0)
Golgota clinic	19	38.0	(51.5,26.4)	27	54.0	(67. 8,40. 2)
Guna health station	19	38.0	(11)	18	36.0	(49. 3,22. 7)
Golotcha health station	19	38.0	(11)	9	18.0	(26. 6, 7. 4)
Bolo health station	19	38.0	(11)	15	30.0	(42. 7,17. 3)
Arboye health station	29	58.0	(71.7,44.3)	21	42.0	(55. 7,28. 3)
Tesfahiwot health station	37	74.0	(77.3,50.7)	39	78.0	(89. 5,66. 3)
Abomsa health center	38	76.0	(87.7,64.2)	35	70.0	(82. 7,57. 3)
Teferiberhan health station	39	78.0	(89.5,66.5)	46	92.0	(115.8,68. 2)
Tumuga health station	39	78.0	(11)	37	74.0	(77. 3,50. 7)
Addishiwot health center	48	96.0	(133.3,78.8)	48	96.0	(133.3,78. 8)
Abadska clinic	48	96.0	(11)	41	82.0	(92. 6,71.4)
Total	449			434		
Mean	26.4	52.8%	(66.6,39.0)	25.5	51.0%	(64.9,37.1)

Bivariate Analysis:

A bivariate analysis was used to determine the relationships that could exist between the various variables studied. The variables were cross tabulated and the resulting associations were measured, and the statistical significance was tested by using Fisher's exact test.

The dependent variable was immunization coverage of health units. Immunization coverage was considered to be high if it was $\geq 60\%$, and low if it was $<60\%$.

Among the variables studied under health care delivery system, daily EPI session, weekly tracing of defaulters, involving the community in EPI activities, and directly informing the community during occasions like, mass meetings, on the availability and necessity of EPI were found to be positively associated with immunization coverage. Mothers' educational status, attitude towards the health care system including health workers, and towards EPI were also found to be significantly associated with immunization coverage. Immunization rate in pregnant mothers showed significant association with immunization rate in the under-two children indicating that health service utilization by mothers has influence on the rate of EPI utilization by under-two children. Two independent variables that showed a statistically significant relation were daily

sion and weekly tracing of defaulters. The different categories under which various factors were studied were also analyzed for possible overall relationships with immunization coverage. Only two of these categories, characteristics of the health care delivery system, and characteristics of the population resulted to have statistically significant associations with immunization coverage ($p < 0.00185$ and $p < 0.00041$, respectively). The relation found between the health care delivery system and immunization coverage shows that there is a close relation between the strength of the health care system and health units achievements in EPI, as depicted in (figure 2).

A bivariate analysis made on the other variables did not show statistically significant associations. The variables that were not associated with immunization coverage are given in (table 6). A bivariate analysis of the following variables did not show associations statistical significance; methods of EPI service, involving the community in EPI activities and mothers' attitude towards the health care system, and mothers' attitude towards EPI or their perceived benefit of the service and mothers' attitude towards the health care system. $P > 0.05$ in all the cases. Further information on the variables that are found to be statistically significant is given in table 6.

Listing the Variables that are Significant by Health Units Having an
Immunization Coverage.

Statistically	Health Units Having				P-Value with Fishers' Exact T.
	High Coverage		Low Coverage		
	N	%	N	%	
<u>Variables included in health</u>					
<u>Immunization system:</u>					
by EPI session	6	100.0	-	-	p<0.001
daily or less	1	9.1	10	90.9	
<u>Methods of informing the</u>					
<u>community on the availability</u>					
<u>and necessity of EPI</u>					
- In occasions of mass meetings	7	63.6	4	36.4	p<.05
- Through written notices, second person, or never informing	-	-	6	100.0	
3. Tracing EPI defaulters					
- Yes	6	100.0	-	-	p<.001
- No	1	9.1	10	90.9	
4. Involving the community in EPI activities					
- Yes	6	75.0	2	25.0	p<0.05
- No	1	11.1	8	88.9	
<u>B. Variables included in the</u>					
<u>characteristics of mothers:</u>					
1. Educational status of mothers					
- Less than fifty percent illiterate	6	75.0	2	25.0	p<0.05
- Fifty percent or more illiterate	1	11.1	8	88.9	
2. Mothers' attitude towards health care system or health workers:					
- Eighty percent or more having favourable attitude	6	75.0	2	25.0	p<0.05
- Less than eighty percent favourable attitude	1	11.1	8	88.9	
3. Mothers' attitude towards EPI					
- Eight percent or more having favourable attitude	7	63.6	4	36.4	p<0.05
- Less than or more having favourable attitude	-	-	6	100.0	

Table 7. Factors that are not significantly associated with immunization coverage.

<u>Variables that are not statistically significant</u>	<u>P- value with fisher's exact T.</u>
<u>Factors related to the health workers</u>	
1. Qualification of the health worker	p> 0.10
2. Course, seminar, or training received on EPI	P> 0.10
3. Knowledge on vaccine contraindication	p> 0.10
4. Health worker's belief in motivational power of polite behaviour	p> 0.10
5. Health worker's attitude towards EPI, in prioritizing the service vs routine curative service	p> 0.10
6. Health worker's effort in raising EPI coverage	p> 0.10
7. Health worker's belief in being committed may result in better attainment in EPI coverage	p> 0.10
<u>Factors related to the health care delivery system</u>	
1. Screening all children visiting health units, their immunization status	p> 0.10
2. Strategy for delivery of health education	p> 0.10
3. Number of re-surveillance conducted during the last eight months	p> 0.10
4. Community health workers participating in EPI activities	p> 0.10
5. Availability of intersectoral collaboration favouring in the carrying out EPI activities	p> 0.10
6. Monitoring periodical EPI achievements	p> 0.10
7. Availability of annual health plan	p> 0.10
<u>Factors related to the health unit</u>	
1. Type of the health unit	p> 0.10
2. No. of years since delivery of EPI service	p> 0.10
3. Distance in kilometers from the next higher health institution	p> 0.10

4. Type of available road p> 0.10
5. Type of transport facility p> 0.10
6. size of catchment population p> 0.10
7. Number of supervisory visits and feedback
made to the health unit during the last
eight months p> 0.10

Factors related to the population(mothers)

1. Mother's knowledge on EPI p> 0.10
 2. Mother's age p> 0.10
 3. Number of children p> 0.10
 4. Religion p> 0.10
 5. Ethnicity p> 0.10
 6. Occupational status p> 0.10
 7. Family source of income p> 0.10
 8. Mother's awareness about the schedule set
for the provision of immunization service p> 0.05
-

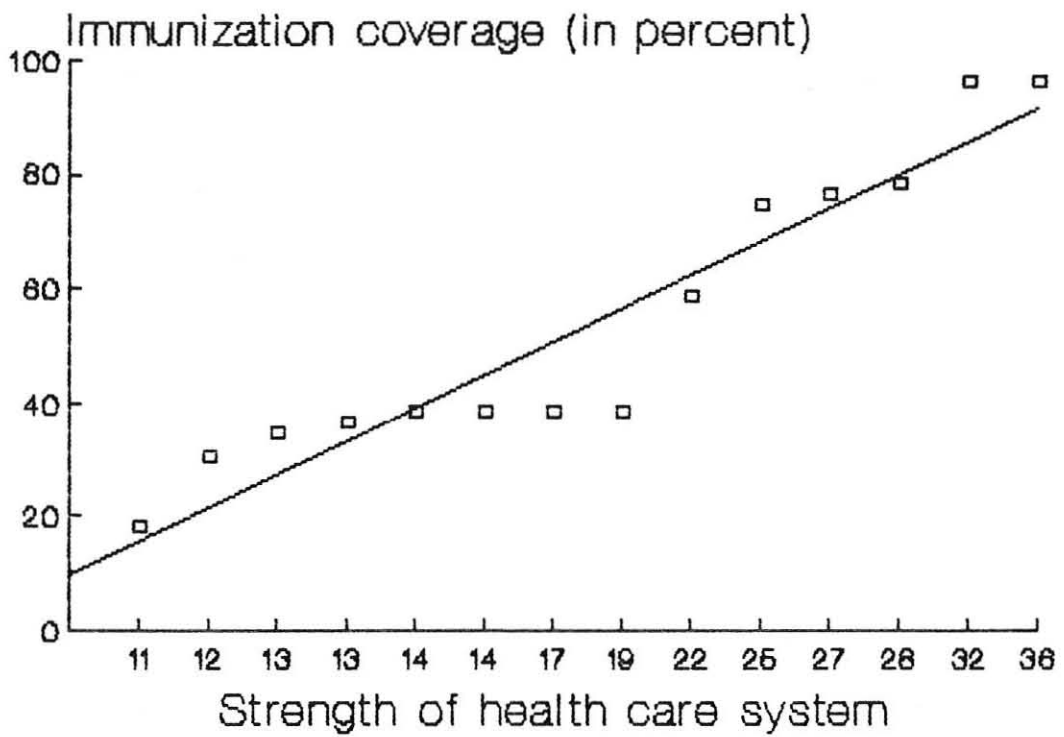


Figure 2 - Figure showing the strength of the health care system as graded by sum of the scores given for the items studied under the health care delivery system.

informing the community on the availability and necessity of EPI with Immunization coverage. other studies that have been done on characteristics of the population in relation to utilization of health services have findings similar to the present one (10,12,20,21,22).

Weekly tracing of EPI defaulters is also significantly associated with high immunization coverage. This is not surprising. Brown has found in his study that lack of tracing defaulters is one of the factors contributing to a poor immunization system (10). This suggests that tracing defaulters is an indicator of a good health care system. In relation to tracing defaulters, it is indispensable to identify the reasons for defaulting. The degree of success in raising coverage by tracing defaulters differs according to whether the factor causing defaulting is attributed to the community or to the health unit. In the latter case, disappointment of the population due to poor service by the health unit may be reflected in the communities' utilization of the service on subsequent occasions.

Involving the community in EPI activities or in any other PHC activities is a basic PHC principle. The relation found between immunization coverage and involving the community is expected due to many reasons. People are more likely to utilize a service that they feel they have participated in to bring to their

community. Thus, involving them in the follow-up and assessment of eligible requiring vaccination, including sharing responsibilities of organizing delivery of the health care services is likely to improve EPI rates. Findings of research done in other countries, such as the ones done in Bombay, Nigeria, and others have also shown this relationship (13, 14, 15).

Educational status of mothers was one of the variables studied that showed a significant relation with immunization coverage. It was found that the less the proportion of illiterate mothers in a population, the more the health units achieve high coverage in such a population, and vice versa. Many studies have shown similar findings in that high educational level is usually related to a high rate of utilizing health care services (19, 21, 22).

Two other variables, mothers' attitude towards the health care delivery system, and their perceived benefit of EPI were positively associated with immunization coverage. These factors are fundamental in that they are the ones marking the first paths towards the final decision that mothers reach to utilize these health services. An investigation done by Markland et al. on socio-psychological factors affecting infant immunization has findings supporting the present one (19).

There are several limitations to this study. The

DISCUSSION

As can be seen from Table 6, having a daily EPI session was found to be associated with high immunization coverage. The statistical significance of this relation could be attributed to the facts underlying daily EPI sessions, which implies not only provision of vaccination on daily basis, but also integration of all the PHC services on daily basis. Thus, this situation motivates the people, in particular mothers, when the availability of all the health care services that they need for their children and themselves could be provided to them in one day resulting in high achievements in coverage by the health units. This finding was supported by a study done by Gish (12). The association found by this study between immunization rate of pregnant women and under two children is also in favour of this finding..

Mothers are usually sensitive and attentive to all matters affecting the health of their children. However, if they have not been exposed to any media of information or event concerning their children's health, there is no way that they could be motivated to benefit their children or themselves of the available health care services. The ideas stated, so far, are in favour of the statistically significant relationship that this study has found between using occasions like, mass meetings in

first is that desirability bias may have affected the answers of various respondents. This is particularly true of the health workers, and probably mothers who were aware that the interview was being conducted by health workers.

A second limitation has to do with the small sample size used to measure immunization coverage. Although this was unavoidable for logistic reasons, it means that the confidence intervals around the estimate for immunization coverage is wide. As this is the dependent variable, it will be affected to some extent .

A third limitation is that in this study, only areas which had access to EPI services were surveyed in order to obtain the immunization coverage for the health unit. Health units that make efforts to expand EPI coverage by having many outreach sites, but achieve relatively low coverage at these sites may result in having lower rates than health units that have no outreach sites and only give service to the people living in the immediate vicinity.

CONCLUSION

The study intended to provide much needed information on the effects of the characteristics of the health workers and the health care delivery system on health service coverage, in particular EPI coverage. The relation between the characteristics of mothers and immunization coverage has also been considered. None of the factors related to the health workers and health unit were found to be associated with immunization coverage.

However, of the factors that have been studied under the characteristics of the health care delivery system, having a daily EPI session, informing the community about EPI services, tracing defaulters and involving the community were found to be associated with high immunization coverage. Of the characteristics of communities that were studied, having a high rate of literacy among mothers, and having a high proportion of mothers with a positive attitude towards the health care system and EPI services were found to be associated with immunization coverage. An association was also found between the immunization coverage of under- two children and of mothers, and between having a daily immunization session and tracing defaulters.

Further studies, to try to understand what motivates health workers to hold daily EPI sessions, trace

defaulters and inform and involve the community would be of interest. It would also be important to assess the training that is given to health workers in the area of EPI, as this study indicates that it appears to have no effect. In the meantime, this study gives information of practical use to those managing, in particular those supervising health services and institutions. The four areas noted, daily service, tracing defaulters, informing and involving the community can all be emphasized in the day to day delivery of health care services.

RECOMMENDATIONS

1. The 11 health units that are not giving EPI services on a daily basis and not tracing defaulters must be encouraged to do so. Frequent supervision and continuing education of health workers may be useful here.
2. The importance of informing and involving the community in EPI activities must be emphasized to health workers. This may be accomplished through both formal and informal means. Formal means may include activities such as strengthening the awraja health committee, and using mass organization leaders. Informal means may include simple communication with villagers, to inform them and to ask for their help. Health workers may well learn best how to do these things by watching health workers from units that have been able to do this successfully.
3. Meetings, seminars, or any other similar occasions to be undertaken at the awraja level should emphasize the need to encourage positive attitudes in mothers by the type of services by health workers.
4. The on-going literacy campaign should be supported, sustained, and extended to all possible areas in the community, especially areas with low literacy rates that are found by the study.

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APPENDIX A

Questionnaire for the survey of health care units and mothers designed for collection of data on the characteristics of health workers, health care delivery system, health care units, and mothers, including EPI rates (English version).

Questionnaire for the survey health care units' survey

Date _____

Identity No. of the:

Health care unit _____

Health worker _____

Instruction:

Read the following questions and respond by writing a mark 'X' in the space provided for the answer you think is correct, among the given choices.

1. What is your professional qualification ?

Physician _____

Nurse _____

Health assistant _____

2. For how many years did you work providing health care services?

One to two years _____

Three or more years _____

3. Did you receive any course, seminar, or training on EPI?
 Yes _____
 No _____
4. Do you think EPI eligible children having mild to moderate fever or diarrhoea could be vaccinated ?
 Yes _____
 No _____
5. Which one of the following symptom is included in the secondary reaction of some EPI - vaccines?
 Cough _____
 Fever _____
 Generalized body pain _____
6. Do you believe that defaulting of EPI - attendants could also be attributed to impolite approach of health workers with EPI attendants?
 Yes _____
 No _____
7. If you are to set priorities in the provision of vaccination service and routine curative service, what do you do?
 Give more priority to vaccination than curative service ____
 Give equal priority _____
 Give less priority to vaccination _____

8. If you are conducting an out reach EPI - session, what do you do for vaccinating maximum number of eligible appointed for that day?

Visit individual houses of appointed eligible and encourage them to utilize the service. _____

Wait as long as possible, for more people to come. _____

Vaccinate the ones that are already there. _____

9. Do you believe that by working hard, you can increase your present EPI coverage, even if, your health resources remain scarce?

Yes I strongly believe in it _____

Yes I moderately believe in it _____

No I don't believe _____

Instruction:

Respond to the following questions related to the health care delivery system of the health unit you are working in by writing a mark 'X' for the choice you think in true.

10. How many days per week do you offer immunization services at the level of the health unit? (4, 1, 0).

All the working days of the week _____

Once a week _____

Less than once a week _____

11. What methods do you use for informing the community about the availability and necessity of EPI (4,1,0)
 Occasions of mass meetings or public gatherings _____

Through some members of the community or written notices ____

Never used such methods to inform the community

12. How frequently do you conduct tracing of EPI defaulters (4, 1, 0) _____

Weekly _____

Monthly or less _____

Never conducted tracing of defaulters _____

13. What strategies do you use for delivering health education? (4, 1, 0).

Accommodating health education sessions with preventive services like, EPI sessions, mass meetings, in the schools and other public centers
 Usually, prior to provision of daily medical care services No strategy designed for the delivery of health education

14. Do you assess the immunization status of all children visiting the health unit for any purpose, other than for EPI - service?

Yes _____

No _____

15. If yes, what do you do after screening them?(4,1,0)

Vaccinate them immediately, if they require so

appoint them for some other day, they
require so. _____

Only advise the parents to get them vaccinated,
if they _____
require so _____

16. What strategies do you use for monitoring your
periodical achievements in EPI ? (2, 1, 0)

Tables, graphs, or charts _____

Only EPI - cards, or registries _____

Nothing _____

17. Do you involve any member of the community in
carrying out EPI - activities (5,0)

Yes _____

No _____

18. Do community health workers participate in carrying
out EPI - activities ? (5, 0)

Yes _____

No _____

19. Do other government sectors that are available in
your area collaborate with the health unit in
carrying out EPI -activities? (5, 0)

Yes _____

No _____

20. Had there been an occasion in the past eight months, when the health unit couldn't carry out an out-reach EPI - session according to the schedule ? (2, 0)
- No _____ Yes _____
21. If yes, explain what was the reason
22. Do you have a plan prepared for the health units EPI - activity of this year?
- Yes _____
- No _____
23. If yes, may you show it to me, (2, 1, 0)
- Contains all the objectives, targets, or goal set
 - " only some aspects
 - Doesn't give any idea on the most important aspects
24. How many EPI - resurveillances did you conduct during the past eight months (2, 1, 0)
- Two or more _____
 - Only one _____
 - None _____
25. Have supervisory visit been made to the health unit during the past eighth months? (2, 0)
- Yes _____ - No _____

26. If yes, how many times did you get feedbacks for the performed supervision ? (2, 1, 0)
- Two or more _____
 - Only one _____
 - None _____

Instruction:

Respond to the following questions by stating the correct answer about the health unit

27. State whether the health unit is a health center, health station or a non-MOH clinic.
28. For how many years did the health unit provide immunization service?
29. How distant is the health unit in kms. from its next higher health institution
30. State whether the available road between the health unit and its next higher health institution is all weather road 2 dry weather road or no road.
31. State the available type of transport facility used for carrying out EPI - activity
32. State the population that is estimated to live in the health units catchment area
33. State the number or proportion of the population living within ten kms. radius from the health unit or estimated number or proportion of the population offered immunization service at the level of the health unit

34. State the number or proportion of the health units catchment population offered immunization service in the out reach sites

Questionnaire for the survey of Mothers

Date _____

Identify no. of the

Health unit _____

EPI site _____

Child _____

Data collector _____

Instruction:

Respond to the following questions by selecting the answer you think is correct, among the given choices

1. In there a child in this house, who is less than two years old?
 - Yes _____
 - No _____
2. If yes, what is the sex of the child ?
 - Male _____
 - Female _____

3. If yes, has the child been vaccinated? (check or BCG scar.)
- Yes _____
- No _____
4. If yes, when did the child start getting vaccinated? (double check from the card)
- Before completing twelve months _____
 - Between twelve and twenty three months _____
5. If vaccinated, which one/ones of the following antigen has taken ?
- BCG _____
 - DPT1 _____
 - DPT2 _____
 - DPT3 _____
 - Polio1 _____
 - Polio2 _____
 - Polio3 _____
 - Measles _____
6. If not vaccinated, what is the reason for not being vaccinated?
- Mother not knowing the availability of EPI - service
 - Due to cultural barriers
 - Due to some personal problems of the mother
 - Due to problems related to the health unit

7. If the child is vaccinated, what is the actual vaccination state of the child ?
- Fully immunized _____
 - Defaulter _____
 - Regular attender _____
8. If the child is defaulter, what is the reason for being defaulter ?
- Problems attributable to the health unit _____
 - Problems attributable to personal problems of the mother _____
 - Problems attributable to uncontrollable events in the area, such as lack of security _____
9. Mother, did you get vaccinated during your most recent pregnancy?
- Yes _____
 - No _____
10. If yes, How many doses did you get before delivery ?
- One _____
 - Two and above _____
11. Mother, how old are you ?
- Less than seventeen years old _____
- Seventeen to thirty five years old _____
- More than thirty five years old _____
12. How many children do you have ?
- One to four children _____
 - Five or more " _____

13. What is your occupation ?
- House wife or dependent on parents _____
 - Government employee _____
 - Self employed in daily activities _____
14. What is your educational status ?
- Illiterate _____
 - Attended literacy campaign _____
 - Attended elementary or higher schools _____
15. What is your religious belief ?
- Islam _____
 - Christian _____
16. What is your ethnicity ?
- Oromo _____
 - Amhara _____
 - Other (Specify) _____
17. What is the source of income for the family?
- Agriculture _____
 - Salary _____
 - Daily income _____
 - Establishment like, bar, shop etc. _____
18. Do you know the days of the week, that vaccination service is available in the health unit in your area ?
- Yes _____
 - No _____

19. If yes which one of the following statements are true about it ?
- There is vaccination service on all the working days of the week _____
 - There is vaccination service on one or two working days of the week _____
20. Do you feel comfortable with the health care delivery system?
- Yes _____
 - No _____
21. Do health workers treat you well, when ever you are attending EPI session ?
- Yes _____
 - No _____
22. Do you believe, that your child will be benefited by being vaccinated ?
- Yes _____
 - No _____
23. Please, may you state all the EPI diseases that you know? _____

Appendix B - Questionnaire in Amharic Version

ፀደ ለግርኛ የተተረጎመ ለጤና ድርጅቶች

ጥናት የተዘጋጀ መጠይቅ

ቀን _____

የጤና ድርጅት ስም ቀጥር _____

የጤና ሠራተኛው ስም ቀጥር _____

መጠሪያ ጥያቄዎቹን ካነበብክ/ሽ/ በኋላ ተገቢውን መልስ ከተሰጡት
 መልሶች ውስጥ ምረጥና "x" ምልክት ለመልሱ በተሰጠው ቦታ
 አኑር ::

1. የተጠረቀህበት የሙያ ዓይነት ምንድን ነው?

ጠኪም _____

ነርስ _____

ጤና ረዳት _____

2. የሰንተ ዓመት የሠራ ልምድ አለህ?

ከአገጭ አሰክ ሁለት _____

ሶስት ወይም ከዚያ በላይ _____

3. የክትባት መርሀገብርን በተጠላክተ የደብዳቤው ክርስ ጫናር

ፀይም ሥልጠና አለ ፀይ?

አያን _____

የለም _____

4. መጠኑን ተከታትሎ ሆነ ተቀጥሎ ያሳገብህ ህዳሩት ምን ተባይ ይጥላሉ ይይ?

አያን _____

የለም _____

መሬት: ጤና ድርጅቱን በተመለከተ የሚከተሉትን ጥያቄዎች በግንባብ ተገቢነትን
መልስ በመስጠት "x" ያልክት ይይዩ መልሱን ያጻፉ

10. በሰዎች ስንት ቀን የክትባት አገልግሎት ይሰጣል?

በ የዕለት _____

በሰዎች ቁጥር _____

በሰዎች ካገዱ ጊዜ ያነሰ _____

11. ህብረተሰቡ የክትባት አገልግሎት ወረቀት ሆነ ጥያቄ ይረዳ ዘገድ

ለግባይቱ ያን ዘዴ ትጠቀማለህ?

ስብሰባ ይይዩ መሰላ ሁኔታዎችን _____

በህብረተሰብ ተወካዮች የቀበሌ ጤና አገልግሎት ሰጪዎች ይይዩ

በጽሑፍ ግስታይ ቁጥር _____

ከላይ የተጠቀሱትን አንዱንም አንድ ማድረግ _____

12. ከክትባት የቀረቱን አንዱንም ገና ያልጠቀሱትን በ የሰዎች ጊዜ ታስባላችሁ?

በ የሰዎች ቁጥር _____

በ የጊዜ ወይም ከዚያ በበለጠ ጊዜ _____

አንዲህ ያለ አሰባ አናካ ሂደት _____

13. የጤና ትምህርት ለመስጠት ያን ዘዴ ትጠቀሳችሁ?

በ የትምህርት ቤቱና በመሰላ አካባቢዎች _____

በ የዕለት መጀመሪያውን የጤና አገልግሎት ክፍሎች በላይ _____

በ የአውጭ ሁኔታ አንጦ የተሰጠ ዘዴ ማድረግ _____

14. የጤና ድርጅታችሁ የሚጠቀሙትን ሁኔታዎች ከሰርተፍኬት አላቸው ባለው

የጤና ድርጅታችሁ ያደርጋችሁት

20. ባለፈት ስዎንት ፎራት በተለይ በራሱ ገቢ ያትባት ባቢያ ከትባት
ባይሰጥ የቀረበት ቀን አለ ይወ?

አዎን _____

የለም _____

21. ወልሎ አዎን ከሆነ ያከገጃቸው ግለሰብ

22. የደው ተ የጤና ሥራ ዕቅድ ስለ አሳይ

የተደረገ ነው _____

ሁሉንም አያጠቃልልም _____

ቡድን ነገር ይገድለዋል _____

23. ባለፈት ስዎንት ፎራት ስንት ድጋፍ ያትባት አሁን ይገኙ ተካ ለይ ገልግል?

ሁለትና ካዚያ በላይ _____

አንድ ብቻ _____

ያንም _____

24. የጤና ደርጅታቸው ዓይነት

ጤና ጣቢያ _____

ክሊኒክ _____

የጤና ጥበቃ ያልሆነ ክሊኒክ _____

25. ለስዎንት ያወቃት ያህል የጤና ሰጪ ሰጪ ሰጪ የጤና ደርጅታቸው?

አዎንት ያወቃትና ካዚያ በላይ _____

አዎንት ያወቃት አንድ ያወቃት _____

የሆነው ያወቃት ያወቃት _____

26. የጤና ድርጅቶችህ ከበላይ ካለው የጤና ድርጅት በገዥ ኪሎ ጤተር ይርቃል?

ፊት ኪሎ ጤተር ከዚያ በላይ_____

ከ ሃምሳ እስከ ፊት ኪሎ ጤተር_____

ከ ሃምሳ በታች_____

27. ያለው የጤና ገዢ ላይ ነት ምን ዓይነት ነው?

በጋና ክረምት የሚያገለግል_____

ጤና ገዢ የለም_____

28. ለትግል ስራዎች ለገለገሉት ጤና ድርጅት ምን አለው?

ጤና_____

ጤተር ሳይክል_____

ሲብስት ርዕይ ክፍት_____

ደንብ_____

29. ከጤና ድርጅት ለገለገሉት ያገኛል ያሉ የጤና ተቋማት ሕዝብ ምን ያህል ይሆናል?

30. ከጤና ገዢው ሕዝብ ለምን ያህል የጤና ተቋማት ለገለገሉት ተገቢ ይሆናል?

31. የጤና ተቋማት ለገለገሉት ከተገኘው ሕዝብ ጋር ምን ያህል ከጤና ድርጅት

ለገለገሉት ያገኛል_____

ምን ያህል ከጤና ገዢ ጋር ጋር ይገናኛል_____

በከተባት ዕድሜ ክልል ያሉ ህጻናት እና ተፎ ግጥም

የተዘጋጁ መጠይቅ::

ፋን _____

የጤና ደርጅት ጠለያ ቀጥሮ _____

የከተባት ጣቢያው ዓይነት _____

የህጻኑ ጠለያ ቀጥሮ _____

ጥናተኛ ያዘጋጁ ገለበጠ ጠለያ ቀጥሮ _____

መጠይቅ: የግንኙነትን ጥያቄያቸው ካጠናቀቁ በኋላ ተገቢውን ይጻፉ

ከተሰጡት ምርጫዎች በጠቅላላ ይገንጥሉ::

1. ከሁለት የጦት በታች ዕድሜ ያሉ ህጻናት መካከል ስለ ጭንቀት?

አዎን _____ ለታችኛው _____

የአዎ _____ ስት _____

2. ጠለብ አዎን ከሆነ ህጻኑ ተከትሏል ጭንቀት?

አዎን _____

የአዎ _____

3. ጠለብ አዎን ከሆነ ጠቅላላ የጭንቀት

አዎ ሁለት ጭንቀት ስለጠቀሙ ነቱ _____

አዎ ሁለት ጭንቀት ካለፈው በኋላ ነቱ _____

4. የተከተሉ ከሆነ እስከ ዛሬ የተፈጸሙ ተከትሏል?

ሰጠኛ ነቱ _____

ዕረ ስህተት ጭንቀት _____

ጭንቀት _____

ጭንቀት _____

የልጅነት ልምብን የሚከላከለውን የመጀመሪያ ደረጃውን _____

ሁለተኛውን _____

ሶስተኛውን _____

የኩፍን መከላከያ _____

5. ያልተከተበ ከሆነ ለሌሎች ምክንያቶች ምን ነበር?

እና ቴት አገልግሎት መናፈግ ሲለጠፍ ቃቸው _____

ባህላዊ ተጽዕኖ በመናፈግ _____

በጭላጆች በተለይ እና ቴት በገጠማት ችግር _____

ቀደም ሲል የጤና ድርጅቶች ጭላጆችን በሞላ ሰባት ጭዶ በማሰብ የሆኑ _____

6. ህፃኑ ተከትቦ ከሆነ

ጤርሲል _____

አቋርጫ _____

እየተከተበ ነው _____

7. አቋርጫ ከሆነ ለማቋረጥ ምን አበቃነት?

ከጤና ድርጅቶች በመነጨ ችግር _____

ከቀጥጥር ጭጭ የሆነና ባከባባይ በነበረው ችግር _____

8. እና ቴት በሰርብ ጊዜ በነበሩት አርገዘና ጭቅቶች ተከትበው ነበር ጭዶ?

አዎ _____

የአዎ _____

9. መላሱ አዎ ከሆነ

ሁለቱ ተከትበዋል _____

አንዱ ተከትበዋል _____

10. እናት ዕድሜያ ስንት ይሆናል?

ከ17 ዓመት በታች_____

ከ17 እወት እስከ 35 እወት_____

ከ35 ዓመት በላይ_____

11. እናት ስንት ልጆች አሉዎት?

ከ1 እስከ 4 ልጆች_____

5 እና ከዚያ በላይ_____

12. እናት ሙያዎ አንድን ነገር?

የቤተሰብ ጥገና ወይም የቤት እወቤት_____

የወንገሥት ሰራተኛ_____

በራስ ጥረት የሚተገበሩ_____

13. የትምህርት ደረጃዎስ?

ያልተጻፈ_____

ወሠረተ ትምህርት የተከታተለ_____

አንደኛ ደረጃ ወይም ከዚያ ላይ_____

14. ለይዘት የሰጠው?

የእር ተደክሶ ክርስቲያን_____

እስላም_____

ሌላ/ የተለየ/_____

15. ብሔረሰብዎስ?

እርዎ_____

አዳራ_____

ሌላ / የተለየ/_____

16. የቤተሰቡ የገቢ ምንጭ ምንድን ነው?

ንብርና _____

ጭርብ ደመወዝ _____

የዕለት ገቢ _____

ባለድርጅት _____

17. የክትባት አገልግሎት የሚሰጥባቸውን ቀናቸ ለይተው ያረጋግጡ ወይ?

አዎ _____

የአዎ _____

18. የጤና ድርጅት በሚጠቀሙት የጤና አገልግሎት አሰጣጥ ይረካሉ ወይ?

አዎ _____

የአዎ _____

19. የጤና ሠራተኛዎች እናንተን እናቶችን በትህትና ያስተናግዳሉ ወይ?

አዎ _____

የአዎ _____

20. ክትባት ልጅዎን በበጎ ታ እንዳይጠቃ ይከላከላሉ ብለው ያምናሉ?

አዎ _____

የአዎ _____

21. እባክዎ የሚያውቁትን ክትባት የምንከተላቸውን በጎ ታዎቻችን ይጥቁሱልን

DECLARATION

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in this or any other University, and that all sources of material used for the thesis have been duly acknowledged.

Name Gebissa Tolessa MD

Signature 

Place Addis Ababa University

Date of Submission _____

This thesis has been submitted for examination with our approval as university Advisor(s).

Dr. Dennis Carlson



Advisor