REASONS FOR LOW EPI COVERAGE RATES IN THREE WOREDAS OF SOUTH - WEST ETHIOPIA

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Reasons for Low EPI Coverage Rates in Three Woredas of South - West Ethiopia

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DEDICATION

To the memory

of

my uncle, Major Tilahun Anbessie

and

his son, Pvt. Getachew Tilahun

both of whom gave their lives

to the good of this country.

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LIST OF ABBREVIATIONS

AAU	-	Addis Ababa University
BCG	-	Bacillus Calmette Guerin
DPT	-	Diphtheria, Pertussis, tetanus
EPI	-	Expanded Programme on Immunization
HIV/AIDS	-	Human Immuno-deficiency Virus/ Acquired Immuno-deficiency Syndrome
MOH	-	Ministry of Health
OPV	-	Oral Polio Vaccine
PHC	-	Primary Health Care
TT	-	Tetanus Toxoid
UNDP	-	United Nations Development Programme
UNICEF	-	United Nations Children's Fund
WHO	-	World Health Organisation

SUMMARY

Cross sectional surveys (EPI cluster survey and missed opportunity exit survey), interviews with health workers, focus group discussion, and observation of immunization activities, were conducted in three woredas of South Western Ethiopia to determine EPI coverage levels and to find out reasons for low coverage. The study was carried out from November 1993 to February 1994. It was found that the coverage rate was 42.1% for BCG, 24.4% for DPT3, 24.3% for OPV3, 28.8% for measles, and 32.3% for maternal TT2.

The study has indicated that religion, occupation, educational status and economic status of the parents and place of birth of the child have influence on starting or non starting of immunization of children while marital status of the mother and the number of under five children do not.

Defaulting for childhood immunizations is 31.7% while it is 26.1% for maternal TT. Reasons for defaulting are: different obstacles (48.5%), lack of information (36.4%), and lack of motivation (9.2%).

For maternal TT, starting of immunization was influenced by religion, occupational, educational and economic status of the couple, number of children under five and place of birth of child while it is not influenced by marital status of the mother.

Missed opportunity exit survey revealed that missed opportunity of immunization is 47.2% for women and 23.8% for children. Important reasons are lack of information (27.1%) and no offer from health workers (25%).

Focus group discussion of caretakers, discussion with health workers and observation of EPI activities were undertaken by the principal investigator to clarify and strengthen the survey findings and these revealed that indeed there are problems, correction of which may lead to the intended goal of universal child immunization.

Finally recommendations are made based on the study findings.

INTRODUCTION

In spite of advances in medical technology and the enormous amount of resources spent on health care services, health status indicators in many developing countries remain unacceptable. Poor nutrition, lack of sanitation, crowding, poor hygiene, and inadequate education are some of the factors resulting in high incidence of such preventable diseases as gastro-enteritis respiratory infections (including tuberculosis), measles, poliomyelitis, tetanus, pertussis, diphtheria, and other bacterial, viral and parasitic diseases (1).

In less developed areas of the world, up to one fifth of the population is under the age of five years and two fifths are below 15 years of age. These two groups are especially vulnerable to preventable diseases.

Children in the less developed world often have their defense mechanisms compromised from the start by low birth weight, and these are exacerbated by a series of stresses including weaning, vaccine preventable illnesses such as pertussis and measles, and repeated episodes of diarrhoea and malaria. Each event sets the child back in growth and development, and if the interval between events is too short, the child often succumbs.

Each year 3 million infants and children will die and another 3 million will become crippled, deaf, blind or mentally retarded because of six vaccine preventable diseases: diphtheria, pertussis, tetanus, poliomyelitis, measles, and tuberculosis. Between 20% and 35% of all the deaths in children under five years old are

associated with diseases preventable by immunization against these diseases. In areas of drought, economic chaos or war, this percentage is even higher (2).

From the time of Edward Jenner and of Louis Pasteur in 18th and in 19th centuries, respectively, vaccinations have been given in major cities of the world; and throughout the 20th century, many vaccines have been developed and immunisation programs introduced.

In 1974, the World Health Organization (WHO) established the Expanded Programme on Immunization (EPI). EPI has built upon the work of the successful smallpox eradication programme. The programme has been endorsed by all member states of WHO. In addition, UNICEF is an active participant in EPI, providing vaccines, training, cold chain equipment, and other support to national programmes (3).

The integration of immunization practices into routine health services has provided care givers with potential control over a substantial proportion of the disease and mortality that plagues less developed countries. Immunization programmes are preventing much sickness and saving many lives in developing countries. The widespread use of vaccines has resulted in the global eradication of smallpox, the near elimination of poliomyelitis, congenital rubella syndrome, tetanus, diphtheria, and the dramatic reduction in pertussis, measles, and mumps from North America and some of Western Europe and the Caribbean.

In developing countries as well, EPI has made important progress towards the goal of universal child immunization. Based

on information reported to WHO as of September 1992, global immunisation coverage for children by their first birthday was 85% for BCG (Bacillus Calmette Guerin) vaccine, 79% for three doses of DPT (diphtheria, pertussis, tetanus) vaccine, 81% for three doses of polio vaccine, and 78% for measles vaccine. However, for pregnant women in developing countries, coverage was only 42% for two doses of tetanus toxoid.

The lives of 3.2 million children are now being saved annually by immunization. In addition, EPI prevents disabilities due to poliomyelitis in almost 2 million children. However, while these global estimates are promising, they hide the less optimistic reality in certain developing countries. Despite being one of the most powerful and cost-effective means of preventing disease, immunization remains tragically under-utilized in these areas. As a consequence, diphtheria, pertussis, tetanus, tuberculosis, measles, and poliomyelitis remain uncontrolled and continue to take an unacceptable toll. It has been suggested that it would be possible to prevent a further 2 million child deaths each year, and to reduce substantially the impact of vaccine preventable diseases on child malnutrition and disability (4).

Not only is performance poor in these countries, but it actually appears to be worsening. Estimates of immunization coverage in 1991 reveal stagnation in many countries and slippage in some. This is of concern, because it suggests that the sustainability of past accomplishments is being threatened; and progress in reaching the "hard-to-reach" populations, who bear a

disproportionate burden from vaccine preventable diseases, is jeopardized. The worsening global economic situation is placing a severe strain on health systems and immunization programmes. In an increasing number of those low income countries most severely affected by debt and recession and their consequences, coverage is declining. This is not a result of failed technology, but an indication that the health sector investment has not succeeded in establishing sustainable health systems with a capacity to maintain and improve programme activities. Of particular concern is the African region which, despite progress, is still significantly below the global coverage for childhood immunizations (5). Ethiopia, one of Africa's least developed countries, is no exception. The six childhood diseases preventable by immunization (diphtheria, pertussis, tetanus, tuberculosis, measles, and poliomyelitis) are responsible for a considerable proportion of morbidity, mortality, and disability of Ethiopian children.

The Ministry of Health of Ethiopia established the EPI in 1980 with the assistance of WHO, United Nations Children's Fund (UNICEF), and the United Nations Development Programme (UNDP) (6). The target populations designated by the Ethiopian EPI are children under the age of one (although children 12 to 23 months old are not excluded), and women of child bearing age (15-45).

The immunization schedule adopted by EPI entails five contacts of the infant and his/her mother with the facility providing these services. This schedule is generally recommended by WHO/EPI and is shown below (7):

For infant immunisation

contact	age of child	vaccines
1	at birth	BCG and OPV
2	6 weeks	DPT and OPV
3	10 weeks	DPT and OPV
4	14 weeks	DPT and OPV
5	9 months	measles

For women of child bearing age

contact	dose	interval
1	TT1	–
2	TT2	4 weeks
3	TT3	6 months
4	TT4	1 year
5	TT5	1 year

The programme aimed to make immunisation services available to 100% of the population and to fully immunize 75% of the total eligible population of the country by 1990.

Progress in actual immunisation has been slow. In 1980, 3.4% of the children under two years of age, (the target population at that time), completed the third round of DPT. The accelerated health development programme, introduced in 1986, led to an increase in immunization coverage from 7% in 1986 to 26% in 1989. The social mobilization activities carried out by MOH in 1990 resulted in further increase of EPI coverage to 59% for DPT3.

However, the situation in the country has deteriorated since then and coverage rates have plummeted. The civil war was the

major constraint faced by EPI programme in 1990 and 1991. About 26% of the existing health institutions were forced to stop their routine activities including reports to MOH. Some improvement in this situation has occurred in the recent past but, this is not reflected in coverage rates for the country (8).

It can be seen from recent routine reports (9) that the immunisation coverage in Ethiopia is generally low:

BCG----------22 %

DPT3----------13 %

OPV3----------13 %

measles--------12 %

TT2-------------9 %

(Source: EPI. Update, November 1993).

Causes of low coverage in all countries are thought to include, among others, geographic inaccessibility, poor integration of EPI activities into other programmes, political disturbances and weak supervision at all levels. However, it has been postulated in Ethiopia, as in many other developing countries, that the two most important causes for the unacceptably low coverage are high dropout rates and a high rate of missed immunization opportunities (10).

A dropout is defined as a woman or a child who failed to return for subsequent doses for which she or he is eligible. Dropout rates are among the most important problems countries are facing throughout the world in increasing coverage rates.

People start immunization and fail to complete it for different reasons. WHO states that most vaccination programmes

show dropout rates (between first and third doses of DPT/OPV) of 20 to 40%, the main reasons being lack of knowledge and difficulty of access to health facilities (11).

In Thailand, dropout rates between DPT1 and DPT3 and between OPV1 and OPV3 were 69% and 42%, respectively, in 1982 but both rates decreased to 13% in 1987 (12). It was 27% between TT1 and TT2 for the same country for the same year and decreased to 20% in 1987. In Saudi Arabia, the dropout rate between BCG and DPT3 ranged from 1.9% to 9% in 1990 (13). The national overall dropout rate for childhood immunization for Surinam was 25%; but it ranged between 1% and 66% in the country's different Regions (14). In one study in Philippines, there was found a high dropout rate between DPT1 and DPT3 and between OPV1 and OPV3, 52% and 54%, respectively, among children aged 12 to 24 months (15). India, showed an initial dropout rate of 42% for DPT falling to 29% after improvements in the health programme (16).

Little information is available on dropout rates in Ethiopia. Tsegaye has found a dropout rate of 25% for childhood immunization in Ketena Two of Addis Ababa in 1990, but the setting is different from the present study (17). Similarly, Tolessa found that 180 (21.2%) children out of 850 children surveyed in health institutions in Arssi Region in 1991 were defaulters (18). Both of these studies, however, seem lower than the national figure for defaulter rate which is between 40% and 44% (19).

'A missed opportunity for immunization occurs when eligible child or woman comes to a health facility and does not receive any

or all of the vaccine doses for which he or she is eligible. The frequent occurrences of missed opportunity for immunization is regarded as one of the major outstanding problems in the delivery of immunization services (20). Several clinic based studies have shown that missed opportunities occur in convincingly high percentages of consultations(21-23). Missed opportunities occur in two settings: (1) during visits for immunization and other preventive services and (2) during visits for curative services.In both settings, eliminating missed opportunity has the potential to raise overall immunization coverage in a population.

It was found in Mozambique and in Guinea Conakry that missed opportunities and inappropriately timed immunizations substantially reduced immunization coverage achieved in these countries (24). In Mozambique 8% and in Guinea Conakry 19% of the eligible children missed the opportunity of being immunized.

Missed opportunity studies in Ethiopia are very limited and hence, information on the subject is minimal. In one study in Ethiopia (25), the rate of missed opportunities was found to be 41%. This shows how big the problem is.

Based on information such as that presented above, UNICEF has concluded that for all vaccines, and in almost all countries, the two outstanding opportunities for increasing immunization coverage in the next few years are to reduce dropout rates and missed opportunity for immunization. Both could be exploited at almost no extra cost and both depend on making better use of existing resources rather than major new expenditures. For all immunization

programmes, bringing the child into contact with the clinic is more than half the battle. Screening all children who present to clinics, for whatever purpose, and either vaccinating them or referring them for vaccination, is therefore a way of quickly increasing vaccination coverage using existing staff and facilities.

Secondly, if all children who receive a first dose of vaccine were to complete the full course, the 80% target would already be reached in most countries.

These suggestions seem plausible, but to date, there has been no systematic study of reasons for low EPI coverage rate in the country as a whole. This study aims therefore, to determine the coverage rate in the three woredas of Wenchi, Amaya, and Woliso (former Wenchi Awraja) of Region Four (Oromiya), south-western Ethiopia, and to investigate the reasons for poor performance of the program through a systematic and comprehensive approach and analysis of EPI program activities. In specific, the role of missed opportunities and drop-out in reducing the EPI coverage will be investigated.

The general objective of this study, then, is to verify that EPI coverage is low, and if so, to investigate the underlying causes in three woredas of south-western Ethiopia. More specifically, the study will provide a comprehensive description of the EPI programme in three woredas in south-western Ethiopia; will determine rates of drop-out and missed opportunities, and will determine the underlying causes of these and other factors responsible for low vaccination coverage.

METHODS

The study was carried out from November 1993 to February 1994.

The study area comprises three woredas namely: Wenchi, Amaya, and Woliso (former Wenchi Awraja) of West Shewa (Ambo) Zone, Region Four (or Oromiya), south-western Ethiopia.

The catchment and target populations of the woredas are presented in annex 1.

The study included an EPI cluster survey following the WHO EPI cluster survey methodology (26) and missed immunization opportunity exit survey also following WHO EPI format (27). Focus group discussions with caretakers, discussions with health workers, and observations of vaccination activities, were used to clarify the findings of the surveys.

Sampling methodology

First of all, permission was sought and was obtained from concerned authorities.

All kebeles within a distance of 10 to 12 kilometres radius or within two hours walk on foot from respective health institution (geographic accessibility to health institution in Ethiopia) were selected. After this, target kebeles were randomly selected using the WHO EPI technique. Then from lists of households in each selected kebele, one household was selected at random to be the starting household (figure 1). After starting households were obtained, subsequent households were those houses with doors nearest to the preceding ones. This process was continued until 10

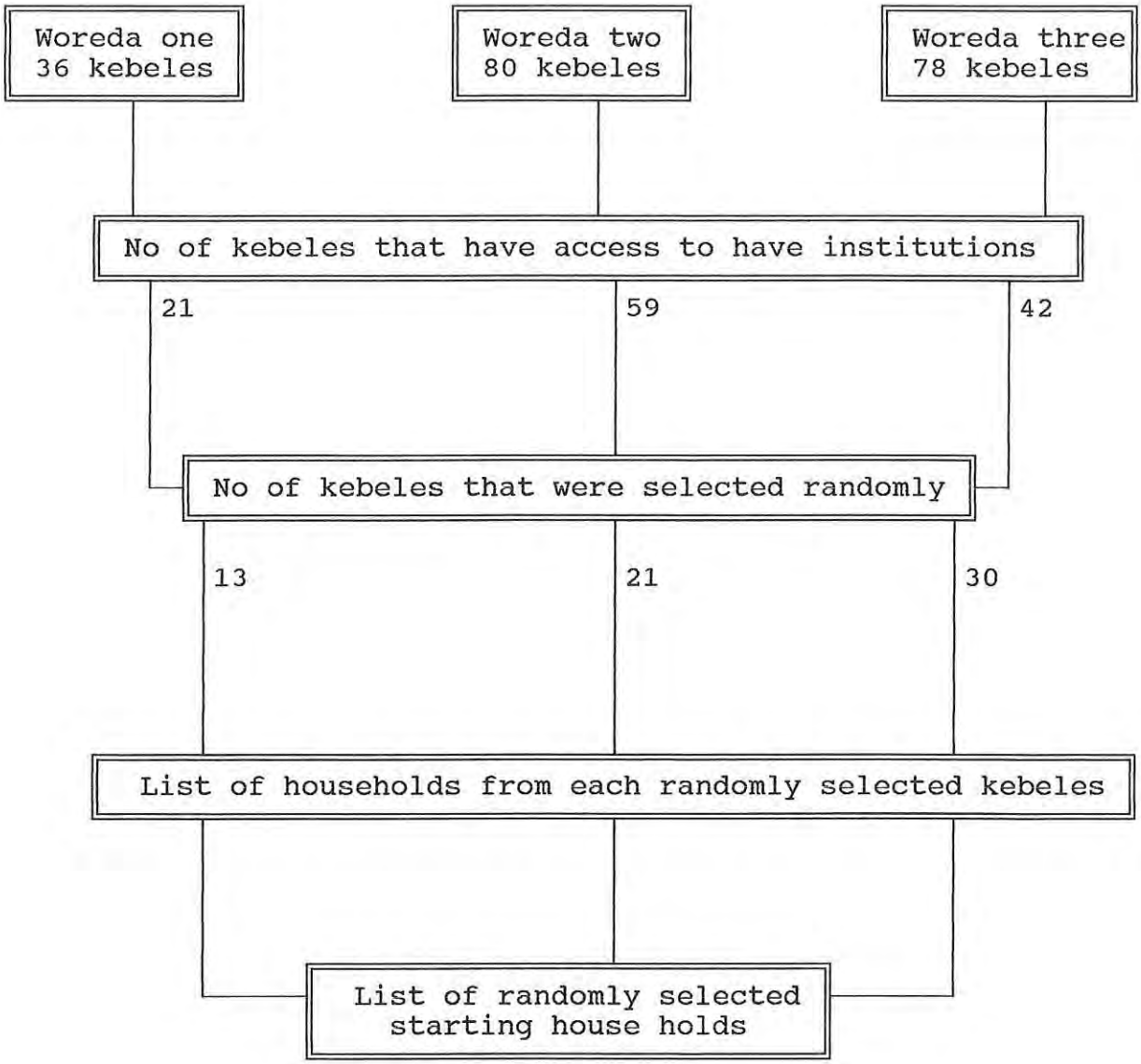

Figure 1. Selection Procedure for the Coverage Survey.

houses with 10 children of 12 to 23 months old (for childhood vaccination coverage) and 10 houses with 10 mothers of children 0 to 11 months old (for maternal TT coverage) were obtained.

Therefore, all children between 12 and 23 months (for childhood vaccination coverage) and mothers of all children aged 0 to 11 months (for maternal TT immunisation) were included in the survey.[1]

Methods of data collection

Coverage (the proportion of individuals in the target population who are immunized) for each antigen was determined according to WHO guidelines. Immunization status was recorded from those children who had immunization cards. Those who had lost their cards were assumed to be unvaccinated.

Interviews of mothers/caretakers (only those who had cards) to determine factors related to vaccination, were conducted using a structured questionnaire (Annex 2) based on the WHO manual. The questionnaire included socio-demographic variables, reasons for failure to start immunization, and for defaulting. Immunization status was determined from immunization cards.

The missed opportunity exit survey (Annex 3) based on the WHO manual was conducted in six of the seven health institutions (one health centre and five health stations). Women in the age group 15-45, and caretakers of children less than 2 years of age, were asked about their immunization status and the immunization status

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[1] Note: The selection of children aged 12 to 23 months and mothers of children aged 0 to 11 months will give a picture of EPI activities in the preceding year.

of the children, respectively. If either was eligible for vaccination but did not receive vaccination during the visit to the health facility, the reasons for the missed opportunity were determined.

Interviews and discussions were held in Oromiffa and in Amharic as necessary.

To clarify the results of the surveys, focus group discussions were held at health institutions with three groups of women who had presented to the health facilities either for themselves, or for their children, or both. The groups consisted of 10, 8 and 12 women from Darian, Chitu, and Gindo areas, respectively (Annex 4).

Discussions with health workers at different levels were conducted using a manual prepared for this purpose beforehand (Annex 5). Two health workers from Woliso Health Centre and 9 health workers from the health stations participated in this discussion.

For corroboration of information obtained from interviews and discussions, direct observation of immunization activities was performed by the principal investigator using a checklist (Annex 6).

The cluster survey was carried out by 24 interviewers with at least 12th grade education. Training was conducted for a minimum of 2 days. All interviewers spoke Oromiffa and Amharic and were able to read and write English (the questionnaires were prepared in Oromiffa, and in English).

Before the coverage survey was conducted, pre-testing of the questionnaires was carried out on 38 households and minor

corrections made.

Quality of the cluster survey was controlled by unscheduled supervisory visits made each day by the principal investigator and research assistants.

RESULTS

Results of the variables assessed in the study are described below.

I. The EPI cluster survey.

The total number of households visited during the survey was 4966. The number of households visited per cluster ranges from 35 to 156 (An average of 77.6 households were identified to allow the enrolment of 10 children aged from 12 to 23 months (for child immunization) and 10 children aged 0 to 11 months (for maternal TT immunization)).

Childhood Immunization Coverage

643 children aged between 12 and 23 months were included in the study. Socio demographic characteristics of the respondents are presented in table 1. The majority were Orthodox Christians, 504 (78.4%), illiterate, and were married, 594 (92.4%).

Table 1. Socio demographic characteristics of the caretakers of children, coverage survey, West Shewa, Ethiopia, 1994.

Variable (N=643)	# (%)
Religion	
Orthodox Christian	514 (78.4)
Occupation	
Farming (Fathers)	549 (85.4)
House wives	587 (91.3)
Educational Status	
Illiterate	
Mothers	472 (73.4%)
Fathers	340 (52.9)
Marital Status	
Married	594 (92.4)

Economic status was estimated by possession or non possession of a functioning radio. 184 (28.5%) of parents of the studied children had a radio.

Most caretakers 342 (53.2%) have two children under the age of five. 232 (36%) of the respondents have one under five child. Only 10.8 % of the respondents have three or more children.

The majority of children 565 (87.9%) were born at home; others were born in health institutions.

Coverage rates were determined to be 42.1% with BCG, 24.4% with DPT3, 24.3% with OPV3 and 28.8% with measles. It is shown in table 2 that defaulting is 31.7% for childhood immunization overall and that coverage rates for each subsequent dose of each antigen decreases. Also, it is seen in this table that coverage of measles is higher than coverage of OPV3 and DPT3.

Table 2. Coverage and defaulting rates of children with different antigens.

Antigen	Coverage		Defaulter	
	No.	%	No.	%
BCG	271	42.1	-	-
DPT1	270	42.0	1	0.4
DPT2	215	33.4	55	20.4
DPT3	157	24.4	58	27.0
OPV1	269	41.8	2	0.7
OPV2	210	32.7	53	21.9
OPV3	156	24.3	54	25.7
measles	185	35.4	-	-
overall	-	-	86	31.7

Reasons given by respondents as to why their children did not start or failed to complete immunization are indicated in table 3. The study has revealed that the 3 most important reasons for not starting or failure to continue are lack of awareness of the need for immunization (22.2%), distance from the immunization site (13.6%) and absence of vaccinator at scheduled immunization sessions (10.4%).

Table 3:Reasons given by respondents for immunization failure

REASON	No.	%
I. LACK OF INFORMATION		
. Unaware of need for immunization.....	75	22.2
. Unaware of need to return to 2nd or 3rd dose.....7		2.1
. Place and or time of immunization unknown.....11		3.2
. Fear of side reactions.....22		6.5
. Wrong ideas about contra-indications.....8		2.4
Total	123	36.4
II. LACK OF MOTIVATION		
. Mother postponed until another time.....16		4.7
. No faith in immunization.....10		3.0
. Rumours.....5		1.5
Total	31	9.2
II. OBSTACLES		
. Place of immunization too far.....46		13.6
. Time of immunization inconvenient.....20		5.9
. Vaccinator absent.....35		10.4
. Mother too busy.....19		5.6
. Family problem including illness of mother.....32		9.5
. Child ill-not brought.....12		2.8
. Child ill-brought but not given immunization.....2		0.6
Total	164	48.5
IV. OTHERS.....20		5.9
Grand total	338	100

Initiation of Immunization

Table 4 shows initiation of immunization children by socio-demographic characteristics. Statistically significant difference was observed in relation to religion, occupation and education of mothers but not in relation to marital status.

Table 4 Immunization initiation of children by socio-demographic characteristics of caretakers.

Variable	Started (N=271) No.	%	Not started (N=252) No.	%	P-value
Religion:					
Orthodox ch.	227	55.4	183	44.6	
Islam	30	30.3	67	69.7	
Others	14	87.5	2	12.5	P<0.0001
Occupation (mothers) :					
House wives	238	49.8	240	50.2	
Trade	15	78.9	4	21.1	
Gov. empl.	11	100.0	0	0.0	
Farming	3	27.3	8	63.7	
Others	4	100.0	0	0.0	P<0.002
Education (mothers):					
Illiterate	164	42.7	222	57.3	
Elementary(1-661		76.3	19	23.7	
Secondary and above	46	80.7	11	19.3	P<0.0001
Marital Status (mothers):					
Married	250	51.7	234	49.3	
Others	21	53.8	18	46.2	NS

Fathers' occupation and educational status and possession of radio were also significantly associated with initiation of immunization ($P<0.001$).

The study indicates that there is no statistically significant difference between parents by the number of under five children for initiation of immunization of children ($P=0.43$).

It was found that there is a statistically significant difference in initiation of immunization between mothers who gave birth at health institutions and those who gave birth at home ($P<0.0001$).

Defaulting

Table 5 shows defaulting from immunization of children by main socio demographic characteristics. Religion of parents, occupational status of mothers, educational status of mothers and marital status showed no statistically significant difference.

Table 5: Defaulting of children by socio-demographic characteristics.

Variable	Defaulted No. (N=86)	%	Not defaulted No. (N=185)	%	P-value
Religion:					
Orth. Chr.	74	33.0	150	67.0	
Islam	10	33.3	20	66.7	
Others	2	11.8	15	88.2	NS
Occupational status(mother):					
House wives	76	31.8	163	68.2	
Trade	6	40.0	9	60.0	
Gov. emp.	1	10.0	9	90.0	
Farming	1	33.3	2	66.7	
Others	2	50.0	2	50.0	NS
Educational status(mother):					
Illiterate	57	35.0	106	65.0	
Elementary(1-6)	18	29.5	43	70.5	
Secondary and above:	11	23.4	36	76.6	NS
Marital status (mothers):					
Married	79	31.6	171	66.4	
Others	7	33.3	14	66.7	NS

There is, however, a statistically significant difference between the defaulting rate of children of parents who possess radios (26.7%), and that of those who do not (34.9%), (P<0.0001).

Defaulting was observed in 36.7% of children whose parents have one under five child, in 31.4% of children whose parents have two children, and in 19.2% of those whose parents have more than two children. There is no statistically significant difference between these groups for defaulting (P<0.139).

Children who were born at home defaulted from EPI more (33%) than those who were born in health institutions (26.8%), (P<.0001).

Maternal TT Coverage

640 mothers of children aged 0 to 11 months were included in the study.

The pattern of socio-demographic characteristics was virtually identical to that found for caretakers considered for childhood immunization. As seen in Table 6, a statistically significant difference in initiation of immunization was observed between mothers of different religious groups and educational status, but not for occupational, and marital status.

280 women (43.6%) received only one dose of TT, while 207 (32.3%) received two or more doses, giving a defaulter rate of 26%. Only 26.6% of children were protected (ie. if the child was conceived 15 days after the date of the dose).

Table 6. Starting of immunization of mothers by socio demographic characteristics.

Variable (N=554)	Started NO.	%	Not started No.	%	P-value
Religion:					
Orth. chr.	230	52.6	207	47.4	
Islam	33	33.3	66	66.6	
Others	17	94.4	1	5.6	P<0.0001
Occupation (mothers):					
House wives	250	49.7	253	50.3	
Trade	6	54.6	5	45.4	
Gov. emp.	7	58.3	5	41.7	
Farming	11	57.9	8	42.1	
Others	6	66.7	3	33.3	NS
Education:					
Illiterate	171	43.2	225	56.8	
Elementary (1-6)	67	68.4	31	31.6	
Secondary and above	42	70.4	18	30.0	P<0.0001
Marital status:					
Married	261	50.7	254	49.3	
Others	19	48.7	20	51.3	NS

57.60% of women who have radio and 48.2% of those who do not have radio, started immunization. The difference between the two groups of mothers is not statistically significant (P=0.056).

86% of mothers who delivered in health institutions (52 in total) and 46.8% of mothers who gave birth at home (502 in total) started immunization. There is highly significant difference between these two groups for starting of immunization (P<0.0001).

II. The Missed Opportunity Exit Survey:

Of the 123 women who were interviewed, 55 (44.7%) had never had a vaccination card. None had ever received a TT vaccination, and therefore all were eligible. However, none were vaccinated during their visit to the health facility.

Of the 68 who claimed to have a card, only 14 had brought the card with them. Three of these women were eligible to receive TT immunization on the day of interview, but none of these 3 received it.

The vaccination status of the 54 who had not brought their card is unknown.

Therefore, the vaccination status of 69 of the 123 women was known. Of the 69, 58 were eligible to receive TT. None of them received it. The immunization status of the remaining 54 is not known, but it is assumed that a significant proportion of these were eligible. The missed opportunity rate is therefore at least 47%, and probably much higher.

Caretakers of 63 children were interviewed. Of the 63, 14 (22.2%) had never been given a card. Of the remaining 49, 13 brought the card. Of these 13, only 1 was eligible for vaccination, but he did not receive it. Therefore at least 15 of the 63 were eligible but failed to be vaccinated. The missed opportunity rate was therefore 23.8% and probably much higher.

Of the 73 women and children who missed the opportunity for vaccination, 25 refused to be interviewed about the reasons for missed opportunities. Of the 48 who responded, 13 (27.1%) stated that they had no information about immunization. Twelve (25%) stated that they were not offered vaccination. Five women and 1 child were ill at the time of visit, and they refused because of this, and 5 refused because of fear of side effects of the injection. Various others account for the remaining 12 cases of missed opportunity.

III. Focus Group Discussions

It was evident from focus group discussions that most women were aware of the benefits of immunization. However, they stated that often they failed to take advantage of the services offered because of the lack of time in their busy days and because the health institutions are far from their homes. Women from Gindo area especially complained about the distance to the immunization sites.

A major focus of the discussion related to the issue of coercion. It was felt by the participants in this discussion that the former government forced the population to participate in EPI activities. Since the fall of the previous regime, kebeles (small community associations) have disintegrated, and many people now refuse to participate in a program that they associate with the former repressive power structure.

There was considerable discussion about the lack of sufficient health facilities in the area. However, when it was pointed out that even those people near health institutions do not go to immunization sites, it was stated that most of the health institutions do not have enough medicines and they no longer use these facilities because they are so rarely able to obtain necessary drugs.

IV. Discussions with Health Workers

Discussions were also held with a total of 11 health workers who are working in the six health institutions. The following are

main points and findings of the discussion.

In general, though there are many problems, the morale and commitment of health workers is high. Vaccine supply is adequate and logistic support from the health institutions is also available.

Contraindications to immunization and immunization schedules are generally well known by the health workers.

Most health workers with whom discussions were held reported that they are not satisfied with the current EPI activities in the light of experiences and results achieved three years ago.

Lack of collaboration of other government sectors especially the Ministry of the Interior which has direct responsibility and relationship with people is a problem.

Lack of community interest in immunization is apparent. This has been attributed mainly to the bitter experiences of the community of the past government in that the previous government forced them to participate in various activities including EPI.

Inaccessibility of the major parts of the woredas (even those areas considered accessible) especially during rainy season is an important barrier to improved coverage.

Shortage of manpower in almost all health institutions is an ongoing problem .

Some health institutions have opened too many outreach immunization sites given the personnel available. This has resulted in an inability to provide quality service both at the outreach sites and at the facility itself.

In addition, very distant outreach sites have been opened by some health stations. Most of these health stations cannot provide transport for the field workers.

Absence or delay of per diem to health workers was a common complaint.

High defaulter rate and high missed opportunities and the difficulties in reducing them was also raised as a problem. The health workers are aware of the problem. They have attributed the problem to lack of knowledge of the community and lack of effective mechanism to trace the defaulters.

The health workers stressed the need for the construction of new health stations to make facilities more accessible to the bulk of the population. They also suggested that EPI services should be coordinated with private clinics so that coverage could be increased.

V. Observation of EPI Activities

Direct observation of immunization activities following the checklist attached as Annex 7 was carried out at each facility in the study area at least once. There are health workers trained in EPI in all the health institutions.

The immunization schedule as outlined in the national policy of immunization is closely followed by the health institutions.

No breakdowns in the sterilization process were observed.

Vaccines were always plentiful.

All refrigerators in the health stations are powered by

kerosene, the supplies of which were invariably adequate.

While the cold chain was adequately maintained in general, (functional refrigerators with temperature charts), the refrigerator in one health station had been non-functional for about eight hours before the observer's arrival. All vaccines were discarded. The refrigerator, powered by kerosene, was not functioning because of poor maintenance. It was further learned that this health institution had the same problems for the last two years.

While a large number of patients attend the Woliso health centre, the daily attendance at the health stations was much less. When asked, patients say that there are no drugs and as long as there are no drugs they do not go to health institutions.

Absences of assigned personnel were frequently observed in the health stations.

While at the Woliso health centre, there is active screening of patients to determine who is eligible for vaccination, with subsequent vaccination of those eligible; in none of the health stations is this process operational. Although they claim to offer an integrated service, on no occasion were patients who presented for curative care screened or vaccinated. Further, eligible people were discouraged from bringing their immunization cards to the health institutions when they come for curative care.

DISCUSSION

The coverage rate for childhood immunization is 24.4% for DPT3 and 24.3% for OPV3. While low by international standards, this is somewhat higher than the figures obtained by UNICEF for Ethiopia in 1993. While it is to be hoped that this reflects a general improvement in overall EPI activities, there are other possibilities that might account for this discrepancy. First among these is that UNICEF's figures are based on routine Ministry of Health reports which may be underestimating coverage. Other recent coverage surveys conducted in the country (17,18) have found rates nearly similar to those found in this study. Secondly vaccination activities may be better managed in this area of the country. This bears further investigation.

Coverage with measles vaccine (28.8%) is somewhat higher than DPT3/OPV3. An unusual finding (measles vaccine coverage usually being the lowest), this may be due to the fact that immunization in rural areas starts later in the eligible child's life. It was not uncommon to see eligible children receiving measles vaccine at 9 months of age, with DPT1/OPV1 or DPT/OPV2.

As discussed above, it was found that the religion, occupation and educational status of the parents, and place of birth of the child, all appear to affect whether or not immunization of the child is initiated. That a child born in the health facility is more likely to be vaccinated is not surprising since the parents are already using health services. Similarly defaulting rates are lower in this group.

Educational status of the parents appears also to affect the likelihood of initiation of immunization, and is again not surprising. Interventions that increase parental education are likely to improve health service use and vaccination coverage in the area.

Economic status of the respondents was estimated by whether the parents have a functioning radio or not. Those who have a radio are considered to be wealthier than those who do not. It was found that 28.6% of the respondents have radio, and that this group begins immunization of its children and women more often than those without radio. The radio is also an important source of health information. Whether economic status, access to information, improved educational opportunities related to access to financial resources, some other confounding factor or some combination of the above is responsible cannot be determined by the data we have collected.

Other socio-demographic factors, while related, are unlikely to be amenable to intervention.

The major reasons for immunization failure found in the coverage survey relate to obstacles to immunization (time and place of immunization inconvenient, mother has no time, etc.) which accounts for almost 50% of the failure, and lack of information which accounts for almost 40%. Almost the same reasons were identified by Shiferaw in Kafa in 1988 (28). Lack of motivation on the part of the caretakers appears not to be a major constraint to

EPI in this area. This bodes well for the improvement of coverage figures. Therefore improving management so that resources are expended where and when most useful to the population, and a greater effort to provide appropriate information through health education should go a long way to improve coverage.

Immunization coverage with maternal TT2 is relatively high at 32.3%. However, the percentage of children who were born protected constitute 26.6% and the defaulter rate between TT1 and TT2 is 26.1%. Overall defaulting rate was 31.7% for childhood vaccination and 26.1% for TT. Defaulter rates greater than 10% for any given antigen are unacceptable. It indicates that there is a serious problem. Operational research should be conducted in finding out possible causes and solutions to this problem.

The missed opportunity exit survey revealed that an alarming number of eligible women and children missed the opportunity of being immunized. Noteworthy is also the number of eligible women and children, among those who claimed to have immunization cards, that did not bring their cards to the facility. Indeed, it was observed that health workers actively discouraged patients from bringing their cards. However, if we are to rely on vaccination cards as the source of information on vaccination status, then patients must bring them to every visit to a health institution, and health workers must encourage them to do so.

Discussions with health workers, and observations of EPI

activities further suggest that there are many problems inherent at all levels of the program (lack of community participation, lack of knowledge of the importance of vaccination, problems of distance and lack of transport, problems of drug supply which have an impact on attendance, among others). These problems must be tackled by a comprehensive approach involving all individuals concerned - the community, health workers and administrators.

CONCLUSIONS AND RECOMMENDATIONS

Women and children comprise almost three-fourths of the populations of the so called "developing world". They are the most vulnerable of all the population sectors. Immunizable childhood diseases take a considerable toll of life in these countries, including Ethiopia. WHO/UNICEF, UNDP, many other international, governmental and non governmental organisations,and concerned individuals are cooperating to reduce the morbidity, disability and mortality caused by these diseases and to bring about a better life in these countries.

The efforts of the 1980s have raised EPI coverage levels in many developing countries to those of the developed world. Ethiopia had reached a coverage of about 60% for childhood immunization (DPT3) at the end of 1980s and at the beginning of 1990s. However, due to civil unrest and other problems, EPI activities stopped and the coverage rates dropped to well below 20%. It now seems that it will be a challenge to again reach these earlier levels.

The coverage with BCG in the area is 42.1%. If all these children could complete the vaccination, the coverage would be much better. If in addition missed opportunities are reduced, the coverage would be more than doubled.

Therefore, based on the study results, the following are recommended:

- An effective mechanism to trace defaulters and to reduce

missed immunization opportunities through effective screening and subsequent immunization should be introduced.

- Vaccination cards are an integral part of a process to ensure high coverage levels. They must be used appropriately. They should be presented at each visit to a health institution.
- Community knowledge, interest and participation should be stimulated through appropriate health education programs.
- Operational research should be undertaken to further investigate these problems (for instance "obstacles to immunization" identified above), and propose and test solutions to them.

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Annex 1: Catchment and target kebeles and population of the three woredas.

	Wenchi	Amaya	Woliso
Total no. of kebeles---------	36	80	78
Kebeles that are accessible--	21	59	42
Kebeles that were surveyed---	13	21	30
Total no. of people ---------	88056	91195	173000
Population with access-------	40801	66733	95670
Population surveyed----------	28864	30900	76678
Total # of children aged 12-23 months and 0-11 months-------	2642	2736	5190
# children 12-23 months included----------	132	211	300
# caretakers of children 0-11 months included----------	130	210	300

Annex 2

FORMI GAFFII KITTIBATA

1. GUYYAA ____/____/____

2. MUCCAN YOM DHALATEE (GUYYAA) ___/___/___

3. UMURI JI'A: [ ] 0-11 [ ] 12-23

4. BAKKEE (IDDOO) _____

5. GAFATAA_____

6. TUTAA # _____ 7. DA'IMMA # _____

8. GARGARSSAA KAN KENUUF: [ ] HADHAA [ ] ABBA
[ ] KANBIRAA(IBSSII)_____

9. AMAANTII WARRAA [ ] ORTOODOOKSII [ ] ISLAAMAA
[ ] KANBIRAA (IBSSII)_____

10. DALAGAA (HOJJAA): HADHA: ABBA:

	HADHA:	ABBA:
	[ ] QOOTTUU	[ ] QOOTTUU
	[ ] DALDAALAA (NAGADAA)	[ ] DALDAALAA (NAGADAA)
	[ ] HOJATTUU MOTUUMMAA	[ ] HOJATTUU MOTUUMMAA
	[ ] HADHA MANNAA	
KANBIRAA	[ ] _____	[ ] _____

11. SADAARKKAA BAARNOOTA (KUTAA MEQA FIXXEE): HADHA ___ ABBA___

12. WARAQQA DUBISUU DANDESSA HADHA [ ] EYYEN [ ] LAKKI
ABBA [ ] EYYEN [ ] LAKKI

13. MANAA KESSAN SORAANI: [ ] CITTAA [ ] SIBILAA (QORQQORROO)

GIRGIDDANI: [ ] DHOKKEE [ ] SIMINTOO

LAFNI ISA: [ ] DHOKKEE [ ] SIMINTOO

14. RADIONI QABDA [ ] EYYEN [ ] LAKKI

15. FUUDHAA/HERUUMMAA (HADHAF)

[ ] HERUUMTEE [ ] HIKTEE
[ ] WAJJIN HINJIRAAN [ ] HADHAWARRAA DU'TE
[ ] ABBAAWARRAAA DU'EE [ ] KAN HINHERUUMNEE

16. DAIMMAN MEQAA FI GARGARSSAA GOTU _____

17. BAKKA (IDDOO) DAIMTI ITTI DHALATEE

[ ] MANAA OFITTII [ ] MANAA EGUMSSAA FAYYAA

Annex 2 (ctd)

12-23 MONTHS

CARD	YES NEVER	LOST
BCG	DATE/+/0	
	SCAR: Y/N	
	SOURCE	
DPT1	DATE/+/0	
	SOURCE	
DPT2	DATE/+/0	
	SOURCE	
DPT3	DATE/+/0	
	SOURCE	
OPV0	DATE/+/0	
	SOURCE	
OPV1	DATE/+/0	
	SOURCE	
OPV2	DATE/+/0	
	SOURCE	
OPV3	DATE/+/0	
	SOURCE	
MEAS	DATE/+/0	
	SOURCE	
STATUS	0 PARTIAL	FULLY
FULLY <1 YR? Y/N		

0-11 MONTHS

CARD?	YES NEVER	LOST
TT1	DATE/+/0	
	SOURCE	
TT2	DATE/+/0	
	SOURCE	
TT3	DATE/+/0	
	SOURCE	
TT4	DATE/+/O	
	SOURCE	
TT5	DATE/+/0	
	SOURCE	
ANC?	Y/N	
OTHER?	Y/N	
BIRTH	HOME	
	HC/HOSP	
	OTHER	
CHILD PROT'D	Y/N	

DID MOTHER HAVE CHILDHOOD DPT IMMUNIZATION? [ ] Y
[ ] N
[ ] DK

IF YES, # DOSES _____

KEY: DATE/+/0: **DATE** = COPY DATE OF IMMUNIZATION FROM CARD
+ = MOTHER REPORTS IMMUNIZATION WAS GIVEN
0 = IMMUNIZATION NOT GIVEN

SOURCE:

HOS = HOSPITAL
HC = HEALTH CENTRE
HS = HEALTH STATION
OUT = OUTREACH
PRIV = PRIVATE

STATUS: IMMUNIZATION STATUS

OTHER: OTHER VISITS TO HEALTH FACILITY DURING LAST PREGNANCY

CHILD PROT'D: IS CHILD PROTECTED AGAINST NEONATAL TETANUS?

FULLY <1 YR: WAS THE CHILD FULLY VACCINATED AT 1 YR OF AGE?
ANC: DID THE MOTHER ATTEND ANTENATAL CARE?

KITTIBATTIN WAN KUFFEF KAN IBSUU [_____]

Annex 2 (ctd)

MIKINYATTA KITTIBAATIN WAN KUFFEEF

HATI DA'IMMA KUUNII MAALIF FIXXEE HINKATABAMNEE?

MIKINYATTA (REASONS) KANAA GADII JIRAAN KESSA KAN NITAA'A JETTE WARAQQA FULAA LAMATTARATTI GAR GADITTI GUTTI (TOKO DUWA FILEDHU)

ODDUU DHABUU (LACK OF INFORMATION)

1. KITTIBAATINII AKKAA BARBACHISU HINBEKNEE
2. AKKAA HARKKA LAMAA YOKIIN HARKAA LAMAA OLI DDEDDEEBI'ANII KATABAMAAN HINBEKNEE
3. BAKKA (IDDOO)/YOKIIN YEROO ITTI KATTABAMAAN HINBEKNEE
4. KITTIBATTIN RAKKO BIRRRA FIDAA
5. WAYEE DA'IMMAAN KITTIBA TII FUDHACHU IRRAINJIRREE YADAA DOGOGGORA QABUU

KAAKAASUU (DAMAKSSUU) DHABUU (LACK OF MOTIVATION)

6. (HADHATUU) GAFAA BIRAATI DABARFATEE
7. KITTIBATATTII AMAANTEE HINQABUU
8. HAMII (RUMOUR)

RAKKOO (GUFUU) (OBSTACLES)

9. BAKKI (IDDOON) ITTI KATTABATAN BA'YEE FAGOO DHA
10. YEROO KITTIBATAA NAMATTII HINTOOLUU
11. JERRI NAMAA KATTABAAN NIHAFUU
12. QOORICHII ITTIN KATTABAMAN HINJIRUU
13. (HADHATTI) DALAGAA (HOJJA) TU ITTI BAYYAATTAA
14. RAKKO MANAA KESSAA, KESSATTUU DHUKKUBII HADHAA
15. HADHA DA'IMMAA KANAA NIDHUKUBA - DHUFEE, HATAA'UMALEE HINKATTABAMNEE
16. BAKKAA (IDDOO) KITTIBAATI TI BAYEE NAMA EGSISSUU
17. KANBIRAA (IBSSII) _____

Annex 3

Identify Missed Opportunities
Woman's Questionnaire

Health facility _____ Today's date _____ Interview Number _____

1. What is your age?

age: _____ years

If the woman is between 15 - 44 years, go to question 2.
If the woman is NOT between 15 - 44 years, end the interview and thank her.

2. Do you have your own immunization card? _____ YES _____ NO *If YES, go to question 4A* *If NO, go to question 3*

3. Are your immunizations recorded on your child's card? _____ YES _____ NO *If YES, go to question 4A* *If NO, go to question 4B*

4A. May I see the card please? *(Copy from card dates immunizations received in space below.)*

4B. How many times have you received a tetanus immunization? When did you receive each dose?
(Tick each dose woman reports received and record approximate date below.)

Vaccine	*If card available, record:*			*If card not available, record each dose and approximate date*	*Recommended minimum interval*	*Doses missed today*
	Day	*Month*	*Year*			
TT 1						
TT 2					4 weeks	
TT 3					6 months	
TT 4					12 months	
TT 5					12 months	

5. Decide: Did this woman receive the dose of TT for which she was eligible today? _____ YES _____ NO
If YES, go to question 8, and mark NO missed opportunity. If NO, go to question 6.

6. Did the health worker offer you TT immunization today? _____ YES _____ NO

If YES, go to question 7. If NO, go to question 8, and mark YES missed opportunity.

Record any comment the woman makes about why immunization was not offered.

COMMENT: _____

7. Did you decline TT immunization when it was offered? _____ YES _____ NO

If YES, go to question 8, and mark NO missed opportunity. If NO, go to question 8, and mark YES missed opportunity.

8. Was there a missed opportunity? _____ YES _____ NO

If YES, ask the woman to go back to the health worker to receive the immunization.

ANSWER ANY QUESTIONS THE WOMAN MAY HAVE ABOUT IMMUNIZATION. THANK HER FOR HER COOPERATION.

Annex 3 (ctd)

Identify Missed Opportunities
Child's Questionnaire

Health facility _____ Today's date _____ Interview Number _____

1. What is your child's age or date of birth?

age: date of birth:

If the child is less than 2 years old, go to question 2.
If the child is more than 2 years old, go to the women's questionnaire.

_____ _____ __ __ __
months weeks day month year

2. Does the child have an immunization card? _____ YES _____ NO *If YES, go to question 3* *If NO, go to question 4B*

3. Have you brought the card with you today? _____ YES _____ NO *If YES, go to question 4A* *If NO, go to question 4B*

4A. May I see the card please? *(Copy from card dates immunizations received in space below.)*

4B. Which immunizations has your child received? *(Tick each dose mother says child received, and record apporoximate date below.)*

Vaccine	*If card available, record:*			*If card not available, record each reported dose and approximate date*	*Doses missed today*
	Day	*Month*	*Year*		
BCG					
OPV Zero					
OPV 1					
OPV 2					
OPV 3					
DPT 1					
DPT 2					
DPT 3					
Measles					

5. Decide: Did the child receive all the immunizations for which he or she was eligible today? _____YES_____NO

If YES, go to question 7, and mark NO missed opportunity. If NO, go to question 6.

6. Your child was eligible to receive an immunization today. Do you know any reason why your child did not receive the immunization?

Listen to the mother's reply. If her answer is listed in the first column, mark it. If she reports any other reason, write it down in the second column.

Column 1	*Column 2*
_____ Child has clinical AIDS _____ Child had severe reaction to previous dose of DPT _____ Child is being admitted to hospital _____ Mother declined immunization which was offered because _____	OTHER REASONS: _____ _____ _____ _____
If any answers are marked in this column, go to question 7. Mark NO missed opportunity.	*If any answers are marked in this column, go to question 7. Mark YES. There was a missed opportunity.*

7. Was there a missed opportunity? ☐ YES _____ NO

If YES, ask the mother to go back to the health worker to receive the immunization

If NO, go to women's questionnaire, if any women have accompanied this child

ANSWER ANY QUESTIONS THE RESPONDENTS MAY HAVE ABOUT IMMUNIZATION. THANK THEM FOR THEIR COOPERATION.

Annex 4

POINTS FOR FOCUS GROUP DISCUSSION WITH MOTHERS OR NEAREST CARETAKERS.

1. Reasons why mothers or caretakers go or do not go to health institutions for vaccination.

2. Where do mothers or care givers get information about vaccination?

3. Do you believe that vaccination of children is a good idea? Why or why not?

4. For those who believe it to be a good idea, what problems in having their child vaccinated, for example, transport, time, security, and so on. Any solutions to the identified problems.

5. Do you have any other ideas or questions related to EPI activities that you would like to bring up?

Annex 5.

SOME POINTS FOR DISCUSSION WITH HEALTH WORKERS AT DIFFERENT LEVELS.

Date ____/____/____ Health Institution_____

Name of Health worker _____

Category of health worker _____

1. Are you satisfied with the current EPI activities?

   If satisfied, why? and, if not satisfied, why not?_____

_____

_____

_____

_____

2. What are the weaknesses and strengths of EPI activities in this area?

_____

_____

_____

_____

3. What are the obstacles to the current EPI activities ?

_____

_____

_____

_____

4. Under what circumstances would you not vaccinate a child that came for vaccination? (ie. are there any contraIx?)

_____

_____

Annex 5 (ctd)

5. What schedule of Vaccination do you use?

BCG_____

DPT/OPV_____

Measles_____

TT_____

_____

_____

6. Do you have any problems with supply of vaccines or supplies, or with the cold chain? **(IF NOT MENTIONED EARLIER)**

_____

_____

_____

_____

7. Do you have any other ideas/comments related to EPI activities in this area which you would like to mention?

_____

_____

_____

_____

_____

Annex 6

RECORDING OF IMPORTANT OBSERVATIONS IN HEALTH INSTITUTIONS.

Date ____/____/_____ Time session starts:___:___ finishes:___:___

Time observation starts:___:___ finishes:___:___

1. Name of health institution_____

2. Location_____

3. Distance from Woliso town (in Kms.) _____

4. Type of session observed (for health centre):

___ paediatric clinic (OPD)

___ fixed immunization session

___ ANC clinic

___ MCH clinic

___ outreach immunization session;

place_____

___ other (specify)_____

5. Number of patients attending:

children _____

women _____

others (specify):_____ _____

Total _____

6. Number of health workers providing vaccination services:_____

7. Number of health workers absent today _____

8. Reasons for absence_____

_____

_____

9. During the session, cold chain equipment is used appropriately so that vaccine is kept between 0 and 8 degree centigrade.

   1. Yes 2. No

10. Kerosene is available

    1. Yes 2. No

11. All vaccines are available to health workers?

    1. Yes 2. No

    If no, what is missing?_____

    Comments/Observation_____

    _____

    _____

    _____

    _____

    _____

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 materials used for this thesis have been duly acknowledged.

Name ---------- WORKU BEKELE

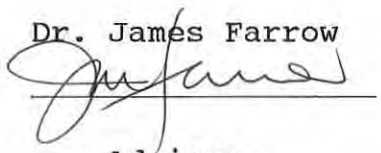
Signature ---------- 

Place ---------- ADDIS ABABA

Date of submission ---------- MAY, 1994

This thesis has been submitted for examination with our approval as University Advisors.

Dr. James Farrow



Advisor