

**Quality of Expanded Program on Immunization in  
Public Health Facilities of Debre Birhan Wereda,  
North Shoa Zone, Amhara Region, Central Ethiopia**

By  
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**November, 2013  
Jimma, Ethiopia**

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## Abstract

**Background:** *poor quality of health care determines the successful implementation of health programs including immunization given a priority to improve health care services. Therefore it was relevant to do quality related studies on immunization service delivery in the study area.*

**Objective:** *The objective of the study was to assess the quality of Expanded Program on immunization service delivery in Debre Birhan Wereda, Amhara Region, Ethiopia.*

**Method:** *A facility based cross-sectional survey was conducted from June 20 to Aug 10, 2013. Three purposively selected facilities (one hospital and two health centers) were included in the study. A sample of 362 mothers/care takers having < 1 year child for immunization, three immunization service coordinators and 73 observation sessions were enrolled in the study. Interview questionnaires, guides and observation checklists were prepared. Data were entered, cleaned, coded and analyzed using SPSS for Windows Version 16.0. Mean, median, percentages, and frequencies were used to analyze the results. Logistic regression model was used and cut-off points for the factors associated with satisfaction score was set at a significance level of  $p \leq 0.05$  and CI = 0.95. Ethical clearance was obtained from the Ethical Review Committee of Jimma University and official letter was given to Zonal Health Department of study area and then permission letter to study facilities. Written and verbal consent was obtained from study participants before data collection and information collected from study participants was kept confidential.*

**Result:** *Three hundred thirty nine respondents were participated in the study and the response rate was 93.6%. In the study, structural/ input assessment of the facilities found to be inadequate though basic equipments and supplies including refrigerator, vaccine carriers, log books, immunization card and tally sheets were found in majority of study facilities. In the process of immunization service, most health workers' practices were poor and not in line with the immunization guide line standards of Ethiopia.*

*The overall Satisfaction of clients toward immunization service in this study was satisfactory (54.3 %). Both in bivariate and multivariate logistic regression analysis, marital status (being divorced) and type of health facility (being health center) were found to be significant factors toward clients' satisfaction.*

**Conclusion:** *the first two components of quality were found to be inadequate and poor respectively where as the outcome in terms of satisfaction was satisfactory in the study.*

**Recommendation:** *all facilities in the study areas should improve their service rooms and waiting areas, stock control of AD syringe and vaccines, cold chain management and communication with clients and communities.*

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## **Abbreviations**

AEFI	Adverse Event Following Immunization
AIDS	Acquired Immune Deficiency Syndrome
ANC	Ante Natal Care
ARHB	Amhara Regional Health Bureau
ARISE	Africa Routine Immunization System Essentials
BCG	Bacillus Calmette Guerin
BSc	Bachelor of Science
DPT	Diphtheria- Pertusis- Tetanus vaccine
EDHS	Ethiopia Demographic & Heath Survey
EPI	Expanded Program on Immunization
FGD	Focus Group Discussion
FMHACA	Food Medicine Health Administration Control Authority
FMOH	Federal Ministry of Health
GIVS	Global Immunization Vision & Strategy
HepB	Hepatitis B
HEW	Health Extension Workers
HF	Health Facilities
Hib	Haemophilus influenza type b
HSDP	Health Sector Development Program
HWs	Health Workers
MCH	Maternal and Child Health Care
MDG	Millennium Development Goals
MHA	Masters in Health Care and Hospital Administration
MPH	Masters in Public Health
PCV	Pneumococcal Vaccine
RED	Reach Every District
ARISE	Africa Routine Immunization System Essentials
UNICEF	United Nation Children’s Fund
USA	United States of America
VPDs	Vaccine Preventable Diseases
VVM	Vaccine Vial Monitor
WHO	World Health Organization



# Chapter One: Introduction

## 1.1. Background

Immunization is making an individual immune from infection through administration of vaccines. Expanded program on immunization (EPI) launched in 1974 as a global program for the control of Vaccine Preventable Diseases (VPD) (1). Scientists working hard to develop vaccines to protect people from these diseases as well (2). Vaccines have the power not only to save, but also to transform lives, giving children chance to grow up healthy, go to school, and improve their life prospect (3).

In previous times as most studies showed, attentions have been given to increase only EPI coverage, but now in response to challenges of rapidly changing world toward the service, organizations like World Health Organization (WHO) and United Nation Children's Fund (UNICEF) emphasis on strengthening its overall service quality which is central to effectiveness of service provided to reduce morbidity and mortality by two third compared to 2000 levels (1).

Quality of care affects the confidence people feel from the service they get (4). There is clear evidence that quality remains a serious concern with expected out comes not predictably achieved and with wide variations in standards of health care delivery systems. Of these, fragmentation of health delivery system and poor quality are considered key obstacles to the successful implementation of health programs (5).

The global strategy has been drawn up against a background of increasing demand for immunization, rapid progress in the development of new vaccines, continuing health-sector development, increasing vulnerability to pandemics and other health emergencies, expanding opportunities for partnerships and to make all national immunization plans to be formulated and implemented so as to ensure that human resources, funding and supplies are adequate. Over the past decade, considerable progress has been made in establishing systems for monitoring and surveillance of coverage rates, strategies prioritize underserved populations and areas using '*reaching every district approach*' (1).

The Government of Ethiopia also has given high priority to child survival interventions in achieving the MDG 4 which demands focused and coordinated action to strengthen health systems to effective interventions against the diseases which kill young children including VPDs (4).

## **1.2. Statement of the problem**

Poor quality health care is considered as key obstacle to the successful implementation of health programs (8). The ability of health system to deliver service such as immunization is often constrained by lack of financial and political commitment, severe shortage of human resource inadequate physical infrastructure and equipment, weak monitoring and information system, lack of management skill, weak social mobilization and previous experience of unmet demand(1). Another barrier to complete immunization service provision is difficulty in delivering vaccines through an infrastructure that is overloaded, fragile or non- existence health service, difficult geographical terrain, logistical support and lack of understanding of importance of vaccines among the poorest population(3).

Immunization service itself inevitably experience the constraints that affect the health system as a whole, but they can help significantly in overcoming system wide barriers through the strengthening of teams and their capacity to make optimal use of resources and opportunities available locally; i.e. through human resource management, strengthening logistic supply, information sharing, recording and reporting, safe cold chain practice to increase access and coverage, reaching more people to vaccinate and vaccine management system, plan to reduce drop-outs and safe injection practice together with the creation and periodic assessment of supervision standards, targets and plans to ensure the timeliness and quality of service. However poor management of these resource have led to funding deficit, resulting in inadequate resource at local levels for supervision, training of staffs, logistic support and inadequate promotion of immunization which is a key public strategy (1).

Over 10% of children under one year old in developing countries not receiving even one dose of first (DPT/pentavalent) vaccine compared with 2% in industrialized countries(3). Children in developing countries also lack access to new vaccines where health system is weaker and less able to cope with an over whelming sets of health problems (2). It is also important to plan to

reduce the number of immunization drop-outs (incomplete vaccination) through improved management, defaulter tracing and social mobilization and communication during immunization contact and avoid missed opportunity to vaccinate (1). However, infrequent training & supervision, low communication between health worker and community, ineffective monitoring and social mobilization, constraints in sustainability of supplies, high drop-outs, problems in defaulter tracing and waste disposal(safety) found to be a problem in different studies in the world (1,3, 6, 7).

Another challenge immunization program face today is the need to insure that vaccines are not damaged due to miss handling after their arrival so as to ensure safety and quality service. The transport and storage of vaccines under controlled temperature is important to ensure their safety and potency. At the same time, vaccines must reach all those they are intended for, including those living in remote and underserved areas otherwise poor vaccine stock management at all levels and high wastage contribute to the performance observed in immunization programs. The other critical problem that needs to be addressed is the need to ensure adequate supplies of vaccines and equipment nationwide up to point of use without disruption (1). Beside this, a cross-sectional survey study done in Somali Land, Africa, showed that there is notable vaccine shortage and cold chain breakdown, low coverage of EPI service which is due to unaware of mothers about the importance of immunization, information from health workers not given to mothers on next dates and doses (9).

Similarly in Ethiopia, though there was a good historical trends in coverage from 1981 through 2010, according to estimate by WHO and UNICEF (10), there is important weakness like insufficient outreach service, poor staff motivation, inadequate defaulter tracing, problem in communication with the communities and sustainability of supplies that impedes immunization program to achieve expected global goals (11).Almost similar result was found from a study conducted in Amhara Region that there is inadequate communication between mothers & health workers, high drop-out, inadequate monitoring and supervision, low performance in coverage, which is lower than the target though there was good client satisfaction toward immunization service (12). In the study area, according to annual report of the wereda, coverage rate is relatively low (64%) comparing to RED approach plan in 2010 which should be investigated to know the magnitude of the problem and its associated factors in the area (13).

## Chapter Two: Literature Review

In health care industry, quality is more than a concept. It is an administrative device used to monitor performance to determine whether it continuous to remain within acceptable bound (24). Quality of health care has three components as different quality related literatures reviewed; that are **structure** (the attributes of setting where care is delivered), **process** (whether or not good medical practices are followed and **outcome** (impact of care on health status).

### 2.1. Structure (input)

It is the attribute of setting where care is delivered including facility, equipment, supply, training, supervision during delivery of the service (14).

To improve immunization service, essential sets of program input like trained staffs, equipments, supplies and vaccines are required to enable the health team to reliably deliver good quality of immunization service (4). And vaccine supply chain including the cold chain is a key component of health infra structure (15). However as a review of the epidemiology of unimmunized child in developing countries by ‘IMMUNIZATION basics project’ which is found in United States of America (USA), showed that among the key factors associated with non- immunization of children in developing countries are lack of supply, equipments, uncomfortable waiting area and untidy vaccination areas (16).

Countries also need to ensure to have efficient vaccines & logistic management strategies. And vaccines’ quality has to be maintained at every stage in the cold chain management system (3). A cross- sectional survey review on records, interview and observation of immunization sessions done in Indonesia, showed that there is excellent infrastructure & well maintained room, however there was stock out of different vaccines at the district level in some areas, method to calculate wastage rate & vaccines consumption was not always well understood at field level. Thirty two percent of fridges were not in use, 24% of provinces don’t have both cold chain & vaccines which is the problem of drop- out & missed opportunities (17).

Absence of electric power supply in cold chain also was one of the reasons that deters communities from fully vaccinate (drop-out) their children as a qualitative (exploratory) study showed in Gedeo Zone, South Ethiopia (18 ).Thirteen percent of drop out was also found due to absence of vaccines as EPI coverage survey showed in Ethiopia (19). Africa Routine

Immunization System Essentials (ARISE) Ethiopia research using a multiple case study design in three regions of Ethiopia showed in Tigray region that all health posts in the study area have EPI plan, refrigerators that could run on either electricity or kerosene. However, most health posts lack electricity. The same study in Amhara region also showed that health posts were having annual EPI plan, but there was pentavalent stock out that indicates poor monitoring of vaccines and two health posts with cold chain equipments, but no order or not used appropriately (15). There is another study using a descriptive cross-sectional survey conducted in Oromo zone of Amhara Region, also showed that there is shortage of supplies of refrigerator in 11% of health institutions and of those institutions having refrigerator, 22% were found not functional (12).

Supervision and follow up of the program in regular manner, availability of health workers supported by training is essential to strengthen the quality of the service. A multiple case study design in three regions of Ethiopia by ARISE showed study facilities are supervised regularly at least once in a quarter in all the three regions but, no training for health workers in only Oromia region(15). Another study in Amhara region showed majority of health workers in immunization service are senior clinical nurses and others were junior nurses that 33.3 % of them take training (12) but no updates of health workers on immunization service was made as a cross- sectional survey review on records, interview and observation of immunization sessions done in Indonesia (17).

## **2.2. Service process**

It is one of the dimensions of quality of care including the service offered and its technical quality, counseling, interpersonal relation, access, safety and performance assessment (14).

A continuity of care seeking or service provision is also a function of access, quality & utilization (4). Immunization safety which includes vaccines' injection safety and waste disposal also a critical component of the trust placed by clients in immunization services process. Vaccine quality must be maintained at every stage of continuum between manufacturer & administration (3).It also important to plan to reduce the number of immunization drop-out through improved management, defaulter tracing, social mobilization & communication during immunization contact & avoid missed opportunity to vaccinate (1). There is another

community based cross-sectional study which was conducted in Ambo wereda of Oromia region on knowledge of mothers about vaccination and vaccine preventable diseases revealed 61.3 % of them heard about immunization from health workers and 17.9 % of respondents reported that they were unaware of the need to return (20).

Another cross-sectional survey study done in Mali showed that one of the reasons for high drop-out is lack of information in 63.3 % of respondents (21). ARISE Ethiopia research using a multiple case study design in different regions of Ethiopia showed that there is regular review meeting and supervision (Tigray, Amhara and Oromia), frequent interaction with mothers and community members to promote the use of vaccination (Amhara), appointment given to next program (15). A study in Africa region of five countries including Ethiopia, to evaluate their Reaching Every District (RED) approach to strengthen routine immunization, also showed that vaccine wastage rate were not routinely calculated (10). As a national coverage survey of Ethiopia showed, there was high dropout rate which was due to unaware of mothers to the need of immunization and need of return to the next dose (19). There is also a cross-sectional survey study in Amhara region which showed that there is inadequate communication, monitoring & low performance assessment problems & injection safety and high drop-out rate (23.1 % pentavalent-3, 38.1 % measles) respectively (12).

### **2.3. Service outcome**

Outcomes are the most important indicators of quality because improving patient health status is the primary goal of health care. It indicates the impact of care on health status in combination with the effect of input and process including client satisfaction and their perception toward the quality of the service. Effective health care is determined by consumers' satisfaction from the service they get. It is one of the desired outcomes of care expressed by the judgment of clients on the quality of care. A satisfied client is more likely to comply with medical treatment or the service they provided (14). It is an integral component of health service and one of the quality indicators of health care (1). It affected by long waiting time, staff over load by different activities and low number, infrastructure, provider reception, insufficient material and vaccines as a cross-sectional descriptive survey study showed in the assessment of EPI service in Ghana (7).

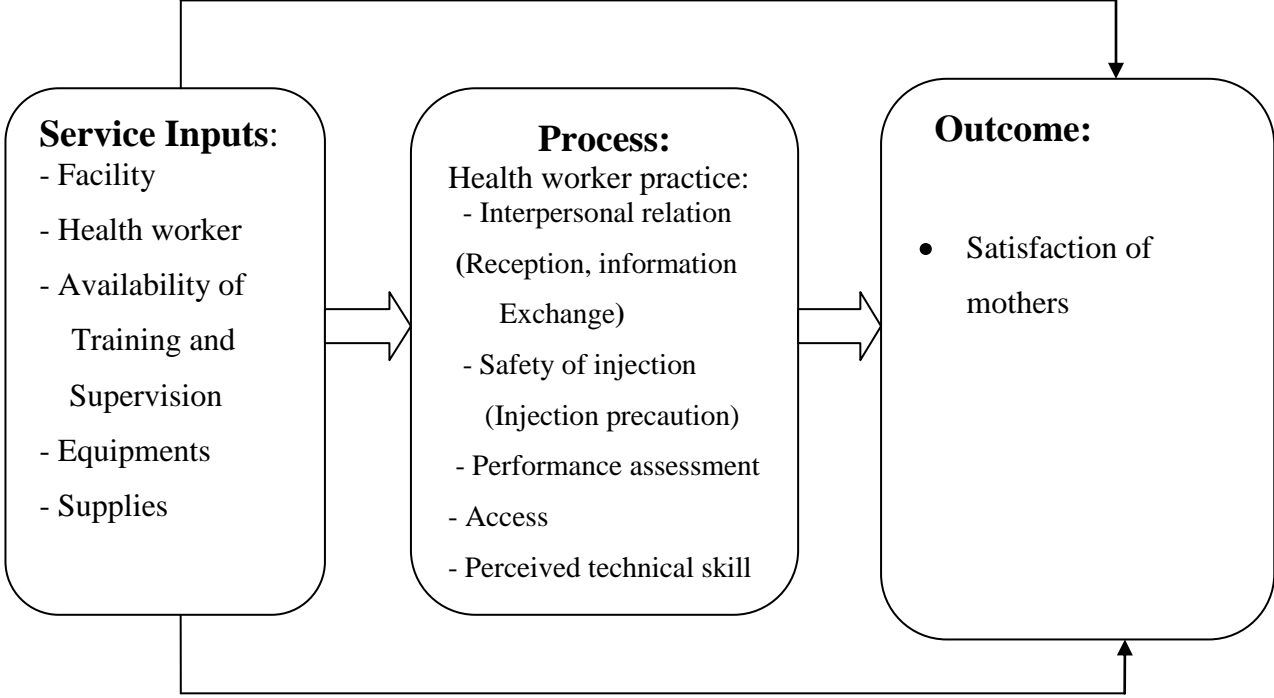
Another cross-sectional study in Mali showed one of the reasons for low satisfaction of health care takers toward immunization service is unwell-coming reception and overly long waiting time of the service (21). A cross sectional study in rural Pakistan showed that the reason for high level of satisfaction was availability of facilities for immunization of their children (22). Almost comparable result was found in Oromia zone of Amhara region, Ethiopia, showed a good satisfaction level of 93.7 % to ward immunization service particularly of health workers' reception and waiting time (12). A study of Focus Group Discussion (FGD) of mothers on EPI service in Eastern Zimbabwe, showed a low immunization coverage by one year of age which was found due to the poor quality of EPI service in the area due to inadequate communication with the community, inaccessibility of the service, shortage of vaccines in study facilities (23).

As a summary, improving quality of health care is a global issue especially in resource limited countries. Studying the quality of health service delivery systems at all level can be taken as one of the strategy to know what types of inputs are available and lacking for service delivery process which determine whether the services are in acceptable bound or not and outcome of health service that affect clients' compliance toward the service they get.

In addition, since there is no study which addressed all components of quality and associated factors of satisfaction which is taken as measure of service outcome comprehensively, this study will help to fill the gaps in the literatures by assessing the quality of immunization service delivery in the study area by providing base line data to both governmental and nongovernmental organizations who work on Expanded Program on Immunization (EPI).

**2.4. Conceptual framework:**

It includes inputs, process and out comes with specific variables that each component has influence one over the other (14, 24 and 25)



**Figure 1:** *The possible interrelationship of Quality dimensions of immunization service: input, process and outcome in Debre Birhan wereda, Amhara Region*



### **Chapter three: Significance of the study**

Strengthening health system should become a priority to improve quality as a key component to improve outcome and benefit for individual and community at all level and countries must find ways to improve the quality of care on offer so as to attain and maintain healthy populations.

In spite of its past success and promising future, immunization is unfinished agenda and needs effort and strategies to improve service quality. Though immunization coverage in Amhara region of the study area is in line with the expected level by RED approach, still there are cases of VPDs that is an indicator of poor quality of the service. Since there are no previous studies conducted in the study area, the study will contribute a lot to know the existing quality of immunization service and will provide basic information for policy makers, stake holders working in immunization on what essential materials are available and missing, what is lacking from health workers, identify factors affecting clients' satisfaction toward immunization service during their planning, monitoring and evaluating immunization programs. The study will also provide recommendation which help to strengthen the service in the area.

## **Chapter four: Objectives**

### **4.1 General objective**

The general objective of this study was to assess the quality of Expanded Program on Immunization service in public health facilities of Debre Birhan Wereda, North Shoa Zone, Amhara Region, Ethiopia from June 20 – August 10, 2013.

### **4.2 Specific objectives**

- To determine availability of inputs in immunization service
- To determine the process /health worker practice/ of immunization service delivery
- To assess satisfaction of mothers/care takers in immunization service provision
- To assess associated factors toward mothers'/care takers' satisfaction

## **Chapter Five: Methods and Materials**

### **5.1. Study area and period**

The study was conducted in public health facilities of Debre Birhan wereda, North Shoa Zone, Amhara Region from June 20 to Aug 10, 2013. The wereda has a total population of 79,310 with a target population for immunization of 2,300 (2.92 % conversion factor) mothers having less than one year children.

Debre Birhan is located 672 km away from Bahr Dar, capital city of the region in the southeast direction, and 132 km from Addis Ababa, capital city of the country in the northeast direction. The wereda has two hospitals (one public referral and one private general), four higher private clinics, three public health centers. There are also urban health extension workers in five kebeles providing basic health services, referral linkage to nearby facilities for the community coordinated by health centers. Among public facilities, only the hospital and two health centers provide the immunization service at both static and two outreach sites of their respective kebeles with coverage of 64% in the wereda (13).

### **5.2. Study Design**

Facility based cross-sectional quantitative survey was the design of the study.

### **5.3. Population**

#### **5.3.1. Source population**

Mothers/care takers having less than one year child comes to immunization service in the public facilities in the wereda

EPI coordinators assigned as focal person by health facilities in the wereda

All immunization sessions/contacts of mothers in the wereda during study period

#### **5.3.2. Study population**

The study population was mothers having less than one year child came for vaccination service of their child during the data collection period,

EPI coordinators assigned as focal person by the study facilities,

73 -immunization sessions during the study period in the selected facilities

### 5.3.3. Inclusion and exclusion criteria:

#### Exclusion criteria:

Mothers/care takers with less than one year child come for other health services in the same room

## 5.4. Sample size and Sampling procedure

### 5.4.1. Sample size determination

Sample size was determined by single population proportion formula using the following assumptions:

Confidence level \_\_\_\_\_ 95%

Significance level ( $\alpha$  \_\_\_\_\_ 0.05%

Degree of error \_\_\_\_\_ 5%

Since no study regarding quality of immunization in similar setting and title, proportion of satisfied mothers toward immunization service assumed to be (p) \_50 %

$$n = \frac{(Z_{\alpha/2})^2 \cdot P(1-P)}{d^2}$$

$$n = \frac{(1.96)^2 (.5) (.5)}{(0.05)^2}$$

$$n = 384$$

Since the target population was less than 10,000 (2,300 mothers having less than one year child, finite population correction formula was used to adjust sample size that was:-NF= ni / (1+ (ni/N)

N= target (source population)

Where NF=final sample size

ni =initial sample size without correction formula. Then the final sample size was

$$NF = 384 / (1 + 384/2,300)$$

$$NF = 329$$

Adding 10% for non-respondents=33; the total sample size was 362.

One public hospital and two public health centers which were providing immunization service in the wereda were selected using purposive sampling method

Total = 3 EPI coordinators who were assigned as focal person from study facilities

Seventy three observation sessions during service provision of health workers were conducted

Three inventories in three study facilities were done to assess their available inputs (cold chain status, availability of equipment and supplies).

#### **5.4.2. Sampling technique:**

From the list of public health facilities in the wereda, one hospital and two health centers were selected purposively (because they were the only institutions providing immunization service in the study area) as study facilities. Mothers /care takers were allocated based on client flow of study facilities as 183, 105 and 74; i.e. from 79,310 total population in the wereda, targets for immunization becomes 2,300 with the conversion factor of 2.92%. Wereda level service coverage in the past year of the study was 64%(1,471). This annual achievement of the wereda was divided by 12 months and gave us 122 per month. Since all facilities have no equal patient flow, clients were allocated based on their daily patient flow which was calculated from previous 6 month report average of each facilities (hospital – 6/day, DBHc – 4/day and THC 3-day). Finally 362 sample sizes were allocated as 183 for hospital, 105 for DBHc and 74 for THC.

Then mothers/care takers who brought infants those fulfill inclusion criteria were taken consecutively from each study facilities according to the allocated proportion of clients till intended sample size was reached.

Seventy three (20 % of 362 sample size) observations estimated by using the ‘rule of thumb’ principle i.e. if the number of units (sample size) are very large (500-1000) take a 10% from the sample, if it is medium size (100-500), take 20-30% of the sample and if it is very small (less than 50) take a 30-50% of our sample size sample). So this 73 observation session was divided to three facilities based on their share from the above sample size and were allocated as 37, 22 and 14 observations which were conducted while health workers provide immunization service.

The structural dimension of quality of care were assessed in all facilities by inventory and interviewing EPI coordinators of the institutions including the facility, human resource, cold chain status, equipment and supplies.

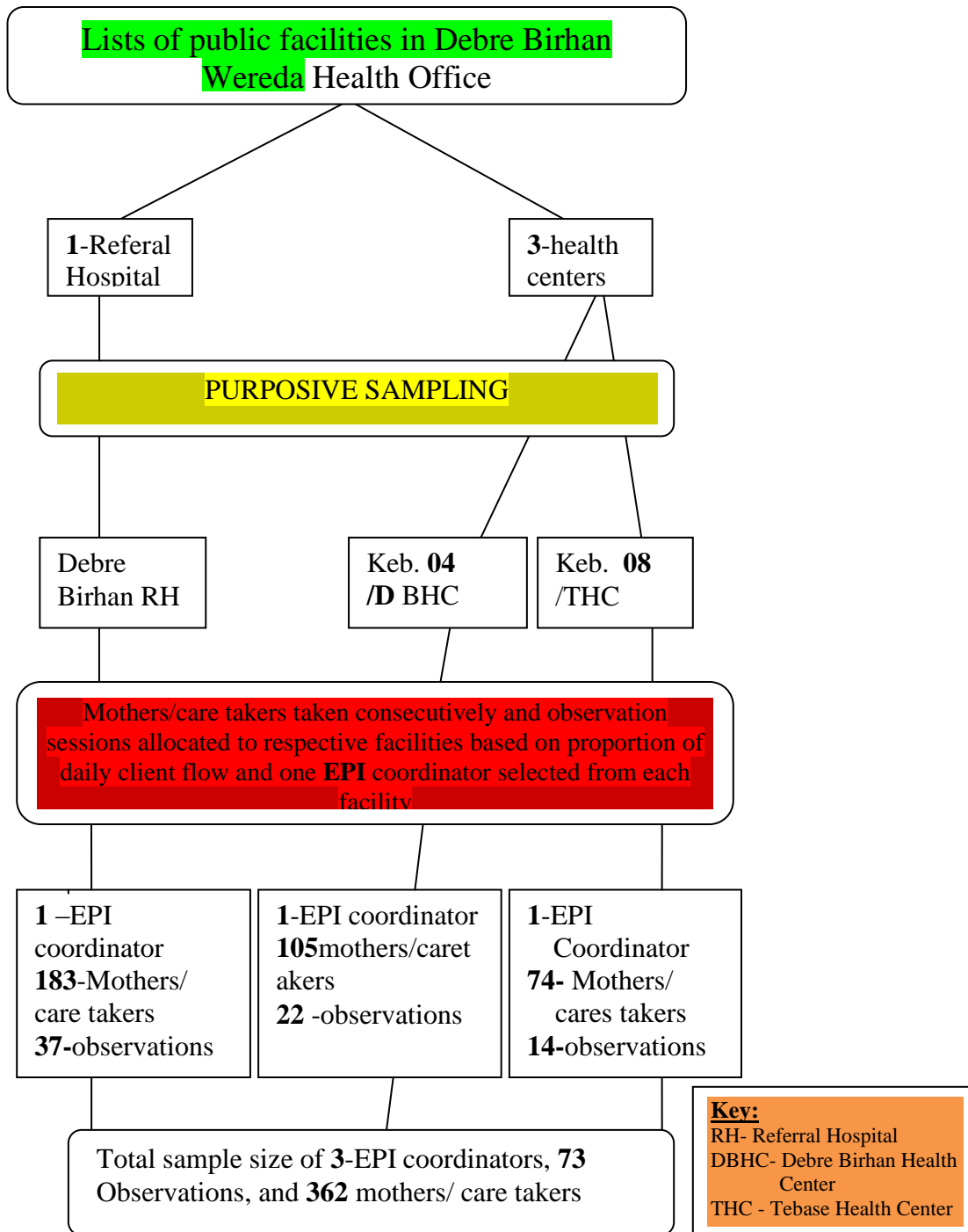


Figure 2: schematic presentation of the sampling procedure used in Debre Birhan Wereda, Amhara Region, 2013.

## **5.5. Data collection procedure**

### **5.5.1. Instrument**

Questionnaires (interview) and observation checklists were used for data collection. Structured interview questionnaires for mothers/care takers' satisfaction and program coordinators to assess different areas of the facility's quality dimensions of immunization service, checklists consist of different quantities of items and variables for observation of health worker's practice during service provision, inventory of supplies and equipment, facility and cold chain status of service were used. They were prepared from literatures and national EPI supervision check lists which are adapted from WHO EPI manual by Federal Ministry of Health (FMOH) used to supervise health facilities (28) with some modification to address the study objectives. Only the English version questionnaire for mothers/care takers exit interview was translated in to Amharic (local language) then back translated to English to check for the consistency of variables under study and make communication easy was made by teachers of language graduates in the study area before conducting data collection

### **5.5.2. Personnel**

Three 12 grade complete students - for data collection from mothers

Two senior BSc health professionals (One health officer - for supervision and One BSc nurse who had 3 year experience of EPI coordination at nearby wereda for observation and inventory of inputs were recruited and they had given a training of two days covering:

- Introduction about immunization
- Objective of the study
- Data collection and how to use instruments
- Study subjects including inclusion and exclusion criteria
- Their role and responsibility of data collectors and supervisor
- Ethical consideration including confidentiality, how interviewer introduce him/herself, how to ask and take verbal consent, how to conduct inventory, observation and data collection from mothers/ care takers were addressed in the training.



After completion of training, data collectors, supervisor and the investigator had made pretest on the instruments at 5% (18 exit interviews) of study subjects to check its completeness in Keyit Health Center which is found 13 km near the study area in another wereda. Inconsistencies in questionnaires and checklists during pretest were rearranged before main data collection. Work guide for data collectors and for supervisors was prepared.

### **5.5.3. Data collection methods**

Structured interviewer administered questionnaires for clients' satisfaction, health facility EPI coordinators to input assessment of the facilities, observation checklists for health workers' practice and inventory of availability of supplies, equipment, assess the facility and cold chain status were used as methods of data collection.

## **5.6. Variables of the study**

### **Dependent variable:**

- ✓ Client satisfaction

### **Study variables**

Structural (input) dimension variables:

- |  |  |
|--|--|
| ✓ Facility                                     | ✓ Supervision                                    |
| ✓ Availability of<br>Supplies and<br>Equipment | ✓ Training<br>✓ Availability of<br>health worker |

**Process dimension related variables:** indicates health worker practice in the immunization service process

- Provider - clients interaction (reception, information exchange/program communication)
- Safety of injection(vaccines administration, waste management)
- Performance assessment

## **Independent variables**

### **Socio demographic variables**

- ✓ Age
- ✓ Marital status
- ✓ Educational level
- ✓ Religion
- ✓ Ethnicity
- ✓ Occupation

### **5.7 Operational definition:**

**Quality of immunization:** in this study quality of immunization was measured by the three dimensions of quality in terms of availability of required inputs and health worker practice compliance to the immunization guide line and FMHACA standards and client satisfaction

**Structure/Input** – structural aspect of the service quality in this study includes facility which has vaccination room, regular electric supply and incinerator, health workers with training, supervision, required supplies and equipments in the cold chain system and related materials in cold chain management. Inputs were measured using 50 items of inventory check lists.

**Vaccination room-** vaccination room is adequate/convenient when it is separated, having a minimum internal area of (20m<sup>2</sup>) with minimum waiting area (20m<sup>2</sup>) having furniture (ease to seat and move by observation) and area measured by inventory personnel.

**Supplies and equipments:** – they are adequate when each item of supplies in the cold chain system with a minimum stock level of one month based on their targets and client flow assessed from the log book. Freezer and /or refrigerator and cold box at least one with any size or volume, log book having at least one per facility and vaccine carriers with the number of facilities' static and outreach sites which were found functional at the time of inventory (coded 1=yes, 2= no).

**Training** – it is taken as adequate when health workers working in immunization service in the facilities has taken immunization related training either (at least 5 days- low level training

which can be taken as refreshment, 1 – 2 wks mid level or  $\geq$  3 wks - high level) at least once in the last year of data collection at any time after they are graduated from their respective schools.

**Supervision** – supervision considering immunization service is adequate which is performed at the facilities at least once in a quarter either by wereda, zonal, regional or other organizations in the form of giving feedback, discuss on problems faced to facilities, reviewing reports or provision of supplies.

**Process** –process quality dimension of the immunization service in this study was taken as a series of activities in the vaccination service provision including access (perceived waiting time, service hour, waiting area comfortability and cleanliness), perceived technical skill, interpersonal relation/reception, information exchange/communication between mothers/care takers and provider, safety injection /injection precaution and was measured by 16 items of observation check lists grouped in to four sections:

- Health worker – client relation/reception/ with 2 items
- Communication /information exchange between mothers/care takers and provider with 6 items
- Injection safety/precautions - 8 items coded 1= yes (fulfill the question of the check list) and 2= no (not fulfill the question of the check list).

**Access** – in this study access taken as a predictor variable of satisfaction includes;

- The perceived waiting time to clients to get their service,
- Readiness of health workers in the vaccination service room to give the service during government working hours (8 hours a day) explained by mothers/care takers' perception.
- Waiting area which should be clean/ pleasant to see physically and comfortable to seat and protected from rain and sun explained by the perception of clients.
- Perceived technical skill – is the competency of health workers to give appropriate service explained by perception of mothers/care takers

**Safe injection/injection safety precaution** – it is safe injection/good injection practice when full dose given with no leakage, in appropriate route using one syringe with needle for one child

of each vaccine dose, diluting one vial using one syringe and then dispose it to safety box at arm reach without recap scoring 100 % of safety question (coded 1= yes and 2= no) measured by 8 items of observation checklist

**Program communication/information exchange**—information/orientation given to mothers/care takers during each vaccination session/contact about VPDs, advice on side effects and what to do, promotion service on the importance of immunization, when to return for next schedule/finished the schedule to each clients was taken as good communication or promotion service.

**Performance assessment** – measured by inventory of documents, indicates activities to monitor performances (defaulter tracing, stock balance of consumptions and reporting at least once a month) by the facility, community discussion and review meeting conducted on how to improve performance with the wereda at least once a quarter that was measured by inventory of documents in the facilities was taken as good performance assessment.

**Outcome** - in the study measured by satisfaction of clients which is taken as an indicator of quality of immunization service, patients' value judgments and reaction to the stimuli they perceive in the health care environment showing the degree to which mothers' perceived quality of immunization service or accept the service as appropriate to them. It was measured by 11 items having five liker scales (1= strongly dissatisfied, 2= dissatisfied, 3= no opinion/neutral, 4= satisfied and 5= strongly satisfied). Finally the level of overall satisfaction was measured by taking the mean score as cut of point to say the service is satisfactory and not satisfactory.

## **5.8. Data entry and analysis**

The data to assess the satisfaction and health worker practice was entered, cleaned, coded and analyzed using SPSS version 16.0. Frequencies, mean, median and percentages were used to present results. Multiple attributes for outcome variable (satisfaction part only) were checked for their association between dependant and independent variables using odds ratio. The significance was checked using p-value  $\leq 0.05$  and 95% confidence interval. Bivariate and multivariate analysis was used to show the findings and strength of association.

### **5.9. Data quality management**

The data quality was maintained through translation of questioners to local language and back translation to English before data collection. Training for data collectors and supervisor was given. Pre testing of the questionnaire on 5% of study subjects was done. Daily supervision and checking the completeness of the questionnaires after each interview was done on daily basis by supervisor and data collectors. After data collection, each questionnaire was checked on its completeness and cleanliness during data entry.

### **5.10. Ethical consideration**

Before field work ethical clearance for this study was obtained first from the Ethical clearance Review Committee of College of Public Health and Medical Science, Jimma University. Then official letter that was obtained from Ethical Review Board and Department of Health Services Management of Jimma University was given to North Shoa Zonal Health Department which is found in Amhara Regional Health Bureau (ARHB) and Debre Birhan Wereda Health Office. Then the letter of permission was obtained from Zonal Health Department, wereda health office and study facilities. Informed verbal consent was also obtained from each participant before the start of data collection. Observer was health worker and had a three years experience in EPI coordination in nearby wereda. She was wearing a gown to blend in to the service delivery and get permission from both provider and clients to be presented during immunization service and she took responsibility to provide feedback to make correction if medical errors arise. In addition participants were coded individually instead of writing their name in the questioner and were assured that their responses were not in any way be linked to them (confidentiality of records) and individual exit interview of mothers at vaccination room was employed.

### **5.11. Dissemination of the result**

After accomplishing the study and presentation, it will be submitted to the Department of Health Services Management, College of Public Health and Medical Science, Jimma University. After approval by the department, hard copy of the whole document will be submitted to North Shoa Zonal Health department, wereda health office. Subsequently, attempts will be made to present it with feedback to concerned bodies in the area, and in conferences

## Chapter Six: Result

A total of 339 mothers /caretakers from three public health facilities were enrolled in the interview yielding a response rate of 93.6%. Seventy three observation sessions and 3 inventories at three study facilities were held to assess the health worker practice and inputs in immunization service delivery respectively.

### 6.1. Socio demographic characteristics

The median age of mothers was 27. About 88.2% of mothers were married and 67% were grade 7 and above, 82.9% of the mothers were orthodox Christians (Table 1).

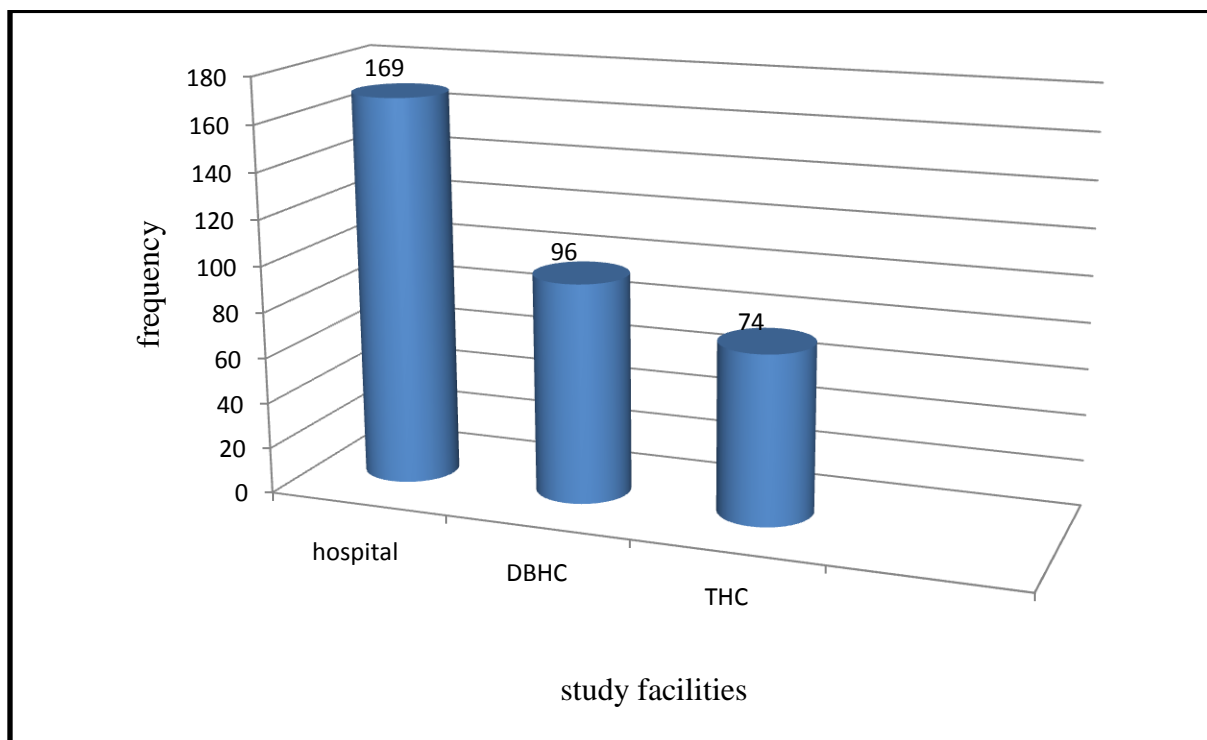
Table 1 : **Socio-demographic characteristics of mothers/caretakers at Debre Birhan Wereda, North Shoa Zone, Amhara Region, Ethiopia, Aug 2013 (n=339).**

<b>Socio – demographic Variables</b>	<b>Number (f)</b>	<b>Percent (%)</b>
<b>Age</b>		
15-24	96	28.3
25-34	183	54
35-44	54	15.9
>=45	6	1.8
<b>Marital status</b>		
Single	18	5.3
Married	299	88.2
Divorced	14	4.1
Widowed	8	2.4
<b>Educational status</b>		
Non educated	10	2.9
Only able to read and write	32	9.4
From grade 1-6	70	20.6
From grade 7-12	143	42.2
Above grade – 12	84	24.8

**Table 1.....: Socio-demographic characteristics of mothers/caretakers at Debre Birhan  
 Wereda, North Shoa Zone, Amhara Region, Ethiopia, 2013 (n=339)**

<b>Religion</b>		
Orthodox	281	82.9
Muslim	36	10.6
Protestant	22	6.5
Total	339	100 %
<b>Ethnicity</b>		
Amhara	285	84.1
Oromo	36	10.6
Tigre	13	3.8
Others	5	1.5
Total	339	100 %
<b>Occupation</b>		
Government employed	62	18.3
Private employed	49	14.6
Merchant	46	13.6
Student	18	5.3
Housewife	164	48.4
Total	339	100 %

**Fifty percent of respondents in the study area were from the hospital which is depicted in figure 3 below.**



\* DBHC- Debre Birhan Health Center

THC - Tebase Health Center

**Figure 3:** *Number of respondents by the study facilities in Debre Birhan Wereda.*

## **6.2. Inventory of inputs/ structure assessment**

Input in the study had included the facility, health personnel, availability of training and supervision, supplies and equipments during service delivery of immunization and it was assessed by 50 items of inventory check lists. Input assessment in the study revealed that all study facilities had isolated immunization room which is integrated with maternal and child health department. Only one study facility's vaccination service room was measuring 20m<sup>2</sup>. The rest of the rooms and all waiting areas in the study facilities were below the standard of FMHACA. There was electric supply and incinerator which was functional in all study facilities at the time of inventory.



Immunization service has been delivered by two nurses each in two facilities and one clinical nurse in the third study facility. All health workers were trained in low level training program taking 5 days, in addition one health worker from one study facility took mid level (1 – 2wks) EPI training in the last one year after they graduated from their respective training school. All facilities were supervised at least once in the last quarter by their supervisors performing discussion on problems identified, reviewing report and registration in all the three facilities, whereas/but updating health workers on new information related to immunization was done in only one health facility.

Two health Facilities had the basic cold chain equipments (freezer, refrigerator, cold box and vaccine carriers) which were functional, but no cold box was found in one facility. Vaccines were insufficient (in all study facilities), AD syringes (in two facilities) where as immunization card, tally sheet and safety boxes were found adequate according to facilities' monthly consumption during the time of data collection.

All study health facilities had annual plan found in respective immunization room. Two of the three health facilities had and displayed monitoring chart fulfilling all its components (name of health facility, the year, target population and what is monitored) and coverage had been found monitored on it.

### **6.3. Assessment of Health worker practice in immunization service provision**

It was measured by using observation and inventory check lists which addressed health worker practices by observation of immunization sessions/contacts of mothers and cold chain monitoring activities, performance assessment and reporting systems by inventory. Both observation and inventory data were collected by one BSc nurse who had experience in EPI service coordination.

Of all immunization sessions, almost half (50.7%) of observation sessions were conducted in the hospital (Table 2)

**Table 2** : Observation sessions conducted by study facilities in Debre Birhan Wereda, Amhara Region, Ethiopia, 2013 (n = 73).

<b>Study facility</b>	<b>Number of observations(<i>f</i>)</b>	<b>Percent ( % )</b>
Facility 1	37	50.7
Facility 2	22	30.1
Facility 3	14	19.2

Observation of health worker practice in the study revealed that providers greeted the client warmly and offer a seat for 56 (76.7 %). Fifty four (74%) of clients were treated friendly with respect in socially acceptable way.

All the service providers were giving injections using single syringe and needle for one child in 73(100 %) of vaccination sessions. In 39 (53.4%) sessions, health workers didn't explain about the use of immunization and vaccine preventable disease to mothers or caretakers (Table 3).

**Table 3** : Assessment of health worker practice on immunization service delivery in Debre Birhan wereda public health facilities, Amhara Region, Ethiopia, 2013 (n= 73).

Variables of measurement	Number of observations( <i>f</i> )	Percent (%)
Health worker great the client warmly and offer a seat		
Yes	56	76.7
No	17	23.3
Treat client friendly, kindly with respect		
Yes	54	74
No	19	26
Is child's immunization status assessed		
Yes	51	70
No	22	30
Contraindications explained and assessed		
Yes	35	48.9
No	38	51.1
Health worker explain about vaccine preventable diseases to the mother/caretaker		
Yes	34	46.6
No	39	53.4
Next schedule/immunization finished date explained		
Yes	55	73.3
No	18	26.7
Advice on side effect and what to do		
Yes	52	71.2
No	21	28.8

**Table 3 .....: Assessment of health worker practice on immunization service delivery in Debre Birhan wereda public health facilities, Amhara Region, Ethiopia, 2013 (n= 73).**

Variables of measurement	Number of observations ( <i>f</i> )	Percent (%)
Advice given about the importance of keeping immunization card		
Yes	36	49.3
No	37	50.7
Administer appropriate dose of vaccine		
Yes	66	90.4
No	07	9.6
Give vaccine through appropriate route		
Yes	52	71.2
No	21	28.8
Use only one syringe for one child		
Yes	73	100
No	0	0
Dispose used syringe and needles without recap after administration of vaccines		
Yes	66	90.4
No	07	9.6
Safety box/sharp container placed at/near vaccine administration sessions		
Yes	55	73.3
No	18	26.7

In the study area, immunization sessions were also observed for the practice of ‘open vial policy’ by health workers in the study facilities which is the time from reconstitution till 6 hours of sessions for vaccines prepared in powder form and these should be reconstituted using only one syringe with needle for each vial. A total of 15 vials of BCG and measles were observed opened during data collection of observation sessions in the study facilities. Of these, only 12(80%) vials were reconstituted using one syringe with needle. Out of 15 vials, time of reconstitution was recorded for 11 (73.3 %) vials observed in the two study facilities and 13(86.7%) of vials were reconstituted appropriately.

Regarding cold chain monitoring, study showed that refrigerators' temperature was not monitored and recorded properly during weekends. The study also showed there were no expired and discarded vaccines due to VVM but, there were mixing of vaccines and diluents during storage in the refrigerator compartment.

Two health institutions were tracing defaulters during time of report on monthly basis then report to kebele HEWs to get them immunized either by house to house contact or in the same facility, but one institution was not detecting defaulters at all. Current vaccine wastage rate have been calculated in only one health facility which was found above the expected level in most types of vaccines ranges from 32-36.5 % for BCG, 24-31 for measles, 10-12 % for polio, 5 % for pentavalent vaccine.

All study facilities did regular monthly report, performance assessment meeting with the wereda and within their facility. None of the study facilities were conducting community discussion related to immunization. The two health institutions stock their supplies and vaccines from the wereda, one institution from zonal health department on monthly basis of their stock level.

In the study, mothers/care takers were asked about previous BCG vaccination history of their children in the past and presence of scar was confirmed by observation on the site of injection to assess scar rate of BCG. Of 339 children, 63 were new for BCG vaccination, 276 were previously vaccinated for BCG but, only 201 were developed a scar yielding a BCG scar rate of 72.8 %.

#### 6.4. Mothers /caretakers' satisfaction

The overall satisfaction of mothers/care takers was computed by adding response of each satisfaction items. Then total mean score of the two categories of each item was calculated and then categorized in to satisfied which was coded as 2 and not satisfied with 1. Those scoring above the mean level of satisfaction were considered to be satisfied and equal or below the mean not satisfied. The result showed that the overall satisfaction of clients was 184 (54.3 %) toward immunization service. The highest (87.6 %) satisfaction of respondents/mothers/care takers were due to availability of health workers in their service area during service hour where as the least (45.5 %) of respondents' satisfaction was found on 'giving advice about the importance of immunization from health workers.

Out of 339 mothers/care takers, 278 whose child vaccinated previously were asked and majority of clients were satisfied in health condition of their child related to previous vaccination side effect (Table 4).

Figure 4 : Level of mothers/care takers' satisfaction in relation to side effects of vaccination in the previous sessions of their children, in Debre Birhan, Wereda, Amhara Region, 2013.(n = 278 )

<b>Level of satisfaction</b>	<b>Frequency (f)</b>	<b>Percent ( % )</b>
Strongly satisfied	37	13.3
Satisfied	143	51.4
Neutral	5	1.8
Dissatisfied	83	29.5
Strongly dissatisfied	10	3.6
Total	278	100 %

#### 6.4.1. Associated factors of mothers/ caretakers' satisfaction

In the computation of simple odds ratio, association was found between marital status and type of health institution as important predictors of client's satisfaction (table 5).

**Table 4 :** Association between client satisfaction toward immunization service and selected predictor variables at Debre Birhan wereda, health facility, Amhara regional state, Ethiopia, 2013 (n= 339).

Explanatory variables	Satisfaction		COR(95% CI)	AOR(95% CI)
	Satisfied(n = 184)	Not satisfied(n = 155)		
	No. (%)	No. (%)		
<b>Age in year</b>				
15-24	53(28.8)	43(27.7)	1	1
25-34	91(49.5)	92(59.4)	0.616(0.108,3.527)	0.848(0.482,1.490)
35-44	36(19.6)	18(11.6)	0.495(0.088,2.767)	1.707(0.776,3.756)
>=45	4(2.2)	2(1.3)	1.000(0.167,5.985)	1.703(0.271,10.685)
<b>Marital status</b>				
Single	12(6.5)	6(3.9)	1	1
Married	165(89.7)	134(86.5)	0.616(0.225,1.684)	0.478(0.141,1.614)
Divorced	4(2.2)	10(6.5)	0.200(0.044,0.913)**	0.170(0.30,0.961)**
widowed	3(1.6)	5(3.2)	0.300(0.053,1.700)	0.439(0.058,3.296)
<b>Educational status</b>				
Non educated	5(2.7)	5(3.2)	1	1
Able to read	20(10.9)	12(7.7)	1.667(0.398,6.974)	2.392(0.522,10.959)
1-6 grade	45(24.5)	25(16.1)	1.800(0.475,6.823)	2.738(0.662,11.331)
7-12 grade	77(41.8)	66(42.6)	1.167(0.324,4.206)	1.909(0.487,7.483)
> 12 grade	37(20.1)	47(30.3)	0.787(0.212,2.924)	1.132(0.251,5.104)

**Table 5** .....: Association between client satisfaction to ward immunization service and selected predictor variable at Debre Birhan wereda, health facility, Amhara regional state, Ethiopia, 2013(n = 339).

<b>Religion</b>				
orthodox	160(87)	121(78.1)	1	1
Muslim	16(8.7)	20(12.9)	0.605(0.301,1.271)	0.570(0.242,1.344)
Protestant	8(4.3)	14(9)	0.432(0.176,1.063)	0.606(0.212,1.732)
<b>Ethnicity</b>				
Amhara	160(87)	125(80.6)	1	1
Oromo	15(8.2)	21(13.5)	0.558(0.276,1.127)	0.522(0.230,1.182)
Tigre	6(3.3)	7(4.5)	0.670(0.220,2.043)	0.688(0.188,2.524)
Others	3(1.6)	2(1.3)	1.172(0.193,7.121)	1.598(0.209,12.227)
<b>Occupation</b>				
Governmental employee	32(17.4)	30(19.4)	1	1
Private sector employee	24(13)	25(16.1)	0.900(0.425,1.904)	0.487(0.186,1.273)
Merchant	21(11.4)	25(16.1)	0.787(0.367,1.692)	0.525(0.197,1.397)
House wife	99(53.8)	65(41.9)	1.428(0.793,2.571)	0.797(0.326,1.947)
Student	8(4.3)	10(6.5)	0.750(0.261,2.153)	0.390(0.095,1.601)
<b>Type of the facility</b>				
Health facility 1	87(43.3)	82(52.9)	1	
Health facility 2	48(26.1)	48(31)	0.943(0.572,1.556)	0.909(0.536,1.542)
Health facility 3	49(26.6)	25(16.1)	1.847(1.046,3.261)**	2.163(1.111,4.210)**

\*\* Statistical significant at p – value < 0.05

**COR** – Crude Odd Ratio

**AOR** – Adjusted Odd Ratio

**CI** – Confidence Interval



## Chapter seven: Discussion

### 7.1 Structure (input)

This study described the characteristics of quality dimensions of inputs, process and outcome of immunization service delivery in Debre Birhan wereda, North Shoa zone, Amhara Region. All the facilities in the study area had isolated immunization service room which is integrated with MCH department of study facilities. The rooms were not measuring the minimum requirement of FMHACA in two facilities and waiting areas in all the three facilities where their areas were found below 20m<sup>2</sup> which can compromise the service and result in dissatisfaction of clients due to congestions in waiting areas. This was almost comparable with the study finding done in developing countries by 'IMMUNIZATION basics project' found in united state of America which showed uncomfortable over crowded waiting areas were found to be the major factors for children to be unimmunized (16) but incomparable with a cross-sectional study conducted in Indonesia which showed that there is excellent infrastructure & well maintained and comfortable rooms which lead clients to good compliance to the immunization service (17).

Immunization service should be coordinated by midwife nurses taking at least once a year while they are delivering the service after they graduated from school but, the study revealed that the service had been given by clinical nurses which was almost comparable finding with the study in Amhara region showed majority of health workers providing vaccination service in the study facilities were senior clinical nurses. Regarding training, all health workers had taken at least low level training in the study area which is inconsistent with the finding in Amhara Region that only 33.3 % of health workers took low level immunization training and a study in Indonesia which revealed no update of knowledge of health workers in immunization service (12, 17).

Regular follow up and supervision of service delivery in immunization activities is important to strengthen implementation of the program. The study also showed facilities had annual plan, supervised at least once in the last quarter of data collection performing discussion on problems identified, reviewing report and registration in all the three facilities which is found in agreement to the guide line (28), comparable with a study done by ARISE in three regions of Ethiopia (Amhara, Oromia and Tigray) that study facilities had annual plan and supervised at least once in a quarter (15) and inconsistent with the finding of a study in Indonesia (17) but,

updating health workers on new information related to immunization at the time of supervision was done only in one health facility and two of the study facilities had got written feedback during supervision.

To keep vaccine potency, basic equipments like refrigerators, cold boxes and vaccine carriers should be available. The finding in the study area showed that refrigerator, cold boxes and vaccine carriers were found and in good condition and functional in majority of study facilities which is almost comparable finding with the study in Oromia zone of Amhara Region that showed all study facilities had functional cold boxes and vaccine carriers and majority (89%) of facilities had refrigerators (12).

Regarding supplies, facilities expected to have each items of supplies with a minimum stock level of one month but, the study revealed that vaccines and AD syringes were not found sufficient in two study facilities which is in agreement with the study finding in Ghana, study in developing countries by 'Immunization Basic Project', and immunization coverage survey of Ethiopia those showed shortage of supplies including vaccines and AD syringe were found and caused to client dissatisfaction and increase defaulters respectively (7, 16 & 19) and inconsistent with the guide line and a study finding in Indonesia which showed availability of AD syringes in all study facilities (17).

EPI monitoring chart which is the most important monitoring tool to follow performances should be displayed in vaccination room to remind service providers and follow the progress of their performance including wastage rate and drop out of all antigens regularly during their reporting period (28). In the study area, two facilities had been displayed the chart in the service rooms for all antigens that was found consistent with the finding in Amhara region that all study facilities had monitoring chart for all antigens (12) but, the chart in the study was not used properly that all facilities were not follow defaulters and wastage rates regularly which is incomparable with the study in Amhara Region that 55% of study facilities were monitoring drop out and 22.2 % of study facilities were calculating their wastage rate monthly which was displayed on the chart (12).

## **7.2. Health worker practice in immunization service provision**

In the study service delivery process was assessed in terms of interpersonal relation (reception), information exchange, safety of injection and performance assessment. Sixteen items of observation check lists were used.

Inter personal relation between clients and health worker is one of the determinant factors for care takers to comply toward health services. Welcoming skill which is the capacity to greet the client warmly, friendly with respect, offer a seat and carry out other preliminaries as the culture demands during contacts of clients is an essential component to develop client trust to stay in immunization program.

The result in the study area showed that health workers greet and offer a seat for majority (76.4 %) of clients and receive them friendly, kindly with respect in socially acceptable way in 74 % of clients. This indicates there was unwelcoming reception in 26% of clients which was comparable with the findings of the study in Mali that revealed unwell coming reception of clients during service provision lead to decreased compliance and lower satisfaction of clients toward immunization service which could cause high defaulter rate (21).

Health workers are expected to tell mothers/care takers about immunization messages including what disease vaccines prevent, remaining visits, expected side effects and how to treat at home during vaccination contacts/session is another important strategy in immunization service promotion during each contact of clients but, the study revealed that out of 73 observation sessions, health workers explained about the importance of immunization and vaccine preventable disease for 34 (46.6 %), advice about side effects occur and how to treat for 52 (71.2) and about next schedule for vaccination for 55(73.3%) of clients which was below the expected level of immunization guide line and could cause increase defaulters due to lack of awareness of mothers and it was in agreement with the finding in many studies in developing countries like Ethiopia , Somali Land and Mali showed lack of awareness of mothers about immunization found the main cause to increase defaulters (9, 11, 18, 19 & 21).

Practicing open vial policy is another critical component to reduce wastage and administering potent vaccines to the targets. Time of reconstitution for BCG and measles vaccines should be recorded to avoid miss use due to the reason that they lost their potency after 6 hours of

reconstitution. In the study out of 15 vials of BCG and measles, from study facilities, health workers record time of reconstitution for 11 (73.3 %) of vials all observed in the two study facilities which is in agreement with the finding in Oromia zone of Amhara Region that revealed 77.8 % of facilities were found practicing open vial policy according to the guide line (12).

Immunization injections are safe when correct vaccines are administered with sterile equipment and subsequently safely disposed of syringe and needles. Otherwise unsafe injections can result in infectious and non infectious complications. In the study all service providers practiced vaccine administration using single syringe and needle for one child during their immunization sessions which is in line with the 'one syringe for one child' principle of immunization guide line of Ethiopia (28).

Appropriate administration of vaccines including the amount of dose, injection site/route/ is another critical point to assure injection safety. The study showed 20 (28.8 %) route of vaccine administration and 7 (9.6 %) administered doses of observation sessions were improper or unsafe observed during BCG and measles vaccine administration showed bleeding, leakage of vaccines, rubbing the site of injection, problem in flicking of vials before dilution and inappropriate discoloration of the skin which could cause low protection due to low dose, abscess as a result of deep injection of BCG, and other serious side effects which might dissatisfy clients coming to the subsequent doses that is inconsistent with the finding of the study in Indonesia that revealed over all injections were administered in a safe manner in all study facilities (17).

Vaccines are biological substances could lost their potency if exposed to extreme cold or temperature. To keep vaccines in good condition, refrigerator monitoring is one of the key components in cold chain management to ensure vaccine storage under controlled temperature which keep their safety and potency.

Monitoring should be done at least two times a day including weekends, holly days and the temperature record should be within the range of 2-8 c<sup>0</sup> (28) but, the study showed refrigerators were monitored twice daily during regular working hours and found in normal range on the chart which was up-to date but, not monitored during weekends in majority of study facilities

that can cause exposure of vaccines to high temperature or freezing if not properly followed and consequently increase wastage rates and missed opportunities that was inconsistent with the finding by ARISE in Tigray and Oromia regions showed all health centers in respective regions had cold chain and each refrigerator was equipped with monitoring chart that was up-to date and showed twice temperature record all the time which was found in normal range(15).

Proper storage of vaccines according to their temperature sensitivity in the refrigerator compartment is important to keep them potent that heat sensitive vaccines be stored next to freezing compartment, freeze sensitive ones at the middle and diluents at the bottom of the refrigerator; however the study revealed that there was miss placement or mixing of vaccines with diluents during their storage in the refrigerator which is inconsistent with the finding with the study in Oromia zone, Amhara region which showed proper vaccine storage in all study facilities (12).

Consumption of supplies in the cold chain should be monitored on monthly basis of stock level to provide continuous supply and service which is one of the strategies to prevent wastages and drop out but, in the study vaccine wastage rate had been calculated only in one health facility which was found above the expected level in majority of vaccines. On the other hand, two facilities were not monitoring their wastage which found to be in line with the study done in Ethiopia and Indonesia which revealed no calculation of wastage rates and vaccine consumption in the study institutions (15, 17).

Facilities are expected to calculate defaulters on monthly basis and the rate expected to be within 10 % whereas the study facilities were calculating defaulter rate which showed above 10 % /high defaulter rate that is comparable with the study in Amhara Region and three regions of Ethiopia (23.1 % of pentavalent -3, 38.1 measles) (12) and relatively low comparing with the finding of EDHS, 2011 survey of Ethiopia showed dropout rate of 43 % and 46 % of the third pentavalent and polio vaccination respectively (11).

Performance under immunization service should be reported regularly (monthly) and performance evaluation should be conducted by facilities, with the wereda, or other higher level organizations at least on quarterly basis to improve service quality. In the study area, facilities did regular monthly report to the wereda; they conducted performance assessment meeting with

the wereda and within their facility which was in line with the immunization guide line and a study conducted by ARISE in three regions of Ethiopia (28, 15) and with the study done in Indonesia regarding regular reporting (17).

Community mobilization at facility level by involving communities and kebele health comities is one of communication strategy help to trace defaulters and reduce drop outs. However the study revealed that none of study facilities were conducting community discussion related to immunization service that could cause increase drop out which is in line with the finding of EDHS, 2011 and a study in Oromia zone of Amhara region showed there is inadequate or no communication with the community regarding immunization service (11, 12).

In the study, BCG scar rate which is one of the indicators of immunization service quality was assessed by taking the history of immunization status of children in the past and observation of injection site for availability of a scar. The study revealed that out of 276 children immunized for BCG in the past, only 201 developed a scar resulted in a BCG scar rate of 72.8 % which is almost comparable with immunization coverage survey of Ethiopia revealed BCG scar rate of 80% (19).

### **7.3. Satisfaction of mothers /care takers toward immunization service**

The overall satisfaction level in this study found to be 54.3 % which was satisfactory in the study area, but relatively low comparing with finding done in Amhara region Ethiopia (93.7%) and Pakistan (93.6) that could be due to low information exchange between health workers and clients as a study revealed and infrastructure/waiting areas as studies showed in Ghana and Mali (7, 21).

In the study, client level of satisfaction related to previous vaccination side effect that whether their children faced health problem after taking vaccine in the past was assessed and the result showed among 278 respondents, whose child previously vaccinated, majority (64.7%) were satisfied with the previous vaccination of their child which was found inconsistent to the finding in Oromia zone of Amhara region which revealed that only 6% of respondents were not satisfied and complained that their children faced health problem after taking vaccine in the past (12).

In the study logistic regression model was used to see the association between explanatory variables and the outcome of interest, satisfaction to ward immunization service. The cut-off points for the factors associated with satisfaction score was set at a significance level of  $p \leq 0.05$  and CI = 0.95 for both bivariate and multivariate logistic regression analysis which were performed to ascertain whether they significantly predicted mothers/care takers' satisfaction or not toward the immunization service.

During the bivariate logistic regression analysis, among the socio-demographic variables, only marital status (being divorced) and type of facility (being a health center/ lower level facility) were found to be significant at  $p\text{-value} \leq 0.05$  and CI = 0.95.

In the multivariate logistic regressions analysis marital status (being divorced) and type of health institution were also found to be significant determinants of client satisfaction. The odds of being divorced had 0.170 times ( $AOR = 0.170(0.300, 0.961)$ ) lower satisfaction as compared to married ones. The reason is unclear. Respondents from the third health facility (health centre) had 2.163 times ( $AOR = 2.163(1.111, 4.210)$ ) higher satisfaction score as compared to those from hospital which may be due to short waiting time due to low daily attendance of clients and the facility is newly established (13) that could made the service more accessible to the community which was found in line with the study in Uganda that revealed client satisfaction indirectly varied with level of health facility; being highest (73%) at health center level where facilities having fewer daily attendance and lowest (59%) in hospital level (30).

### **Strength of the study**

Data collection tools in the study were used contextually which were adapted from the standards of immunization guide line used in the country

The study used well known model of health care quality study had addressed three quality components; inputs, process and outcome

### **Limitation of the study**

Since health worker participated in data collection, social desirability bias might a possibility

Presence of data collector due to observation can influence situation to be measured called 'Hawthorne effect' due to the reason that health worker may bring a behavioral change of improved performance due to the presence of observer.

Social desirability bias/response bias from mothers/care takers due to the fact that facility based studies produce more positive response from clients might be there though individual exit interview were conducted

Clients who were not satisfied in the previous sessions/ contacts might not appear during the study period

Adverse event following immunization (AEFI) controlling and reporting, refrigerator monitoring tools like 'freeze watch' and vaccine cold chain monitor (VCCM), shake test were not addressed in the study

Indicators for monitoring and evaluation of EPI like report timeliness and completeness were not studied



## **Chapter eight: Conclusion and recommendations**

### **8.1. Conclusion**

The study evaluated the quality of Immunization services in health institutions of the study area and the following conclusions were stated as:

- The structural quality dimension of immunization service delivery was found adequate in supervision and training in all study facilities whereas the facility itself, equipment, supplies were found inadequate in majority of study facilities.
- Health workers' practice in the immunization service delivery including performance assessment involving the community, program communication with clients and safety of injection were poor and not in line with the standard.
- Perceived quality of immunization service provision was found to be satisfactory to clients in the study

### **8.2. Recommendation**

The following recommendations were forwarded to be improved in the immunization service delivery of the study area:

The management bodies of study facilities should improve physical environment especially the vaccination rooms and waiting areas at least to fulfil the minimum requirements which are considered as a basis to health care compliance and satisfaction of clients to stay in the program  
Cold chain management should be strengthened at all facilities mainly refrigerator monitoring at least twice a day to keep vaccines' potency

Cold chain monitoring tools should be put in practice that dropout and wastage rates of all supplies should be monitored regularly on monthly basis in all facilities to avail supplies timely so as to prevent defaulters

Information communication should be given to all clients and health service providers should give adequate information about the importance of immunization during each contact of immunization sessions which motivates clients to have good stay in health care programs

Community meeting should be conducted in each facility at least once in a quarter which is one of the strategies to trace defaulters and strengthen the service

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## Annexes

### Data collection tools/instruments and consent form

#### Annex 1: English version Questionnaire for EPI coordinators in the study facilities

##### *Verbal consent:*

My name is -----, I am the member of research team as data collector from the Department of Health Service Management, Jimma University. The purpose of this study is to conduct an assessment of the quality of EPI services at Debre Birhan wereda, Amhara region, Ethiopia, 2013. We would be very grateful if you spend few minutes with me to answer questions related to the service. We select you based on a sampling technique to be participant of the study. All the information collected in this study will be kept confidential and will not make available to anybody else except for researchers or directly involved in the study. The information from the study will help governmental and non-governmental organization to improve the service.

***Bear in mind that the purpose of this study is just to assess availability of equipments, supplies in immunization service and process of service provision and facilities that currently exist for the service and not to evaluate the performance of the individuals/staffs or the facility itself !!***

We hope you will participate in the survey.

Do I have your permission to continue? Yes. ----- No. -----

I appreciate your co-operation very much//

Code No of health institution-----

ID No. -----

Date of Interview-----

Signature of interviewer -----

Supervisor: -----

Signature -----



F09.	If yes for Q F08, what is the mechanism?(can have more than one answer)	1) trace/check on registration and house to house contact (mini campaign) 2) community discussion 3) report to kebeles HEWs to trace them 4) others(specify)----- -----	
F10.	From where the facility get vaccines and supplies?(can have more than one answer)	1. wereda health office 2. zonal health department 3. regional health bureau 4. Nongovernmental organizations 5. others-----	
F11.	Do you have a supervisory visit of immunization service by higher level organizations in the last quarter?(see documentation please)	1 -Yes 2- No-----	Q--13
F12.	If yes for Q F11, how many and what were the tasks of support/supervision (check and can have more than one answer)?	1) discussion on problem faced 2) reviewing reports 3) update health workers on new Information/ON JOB TRAINING/ 4) provision of supply 5) written feedback 6) others_____	
F13.	Does the facility has a community discussion to strengthen the service in the last quarter?(see minutes)	1 -Yes 2- No	
F14.	Is there performance assessment meeting performed by the facility in the last month?(see minute	1 -Yes 2- No	

	/document in the last 3 month)		
F15.	Is there performance assessment meeting performed by the facility with the wereda in the last quarter?(see minute/document in the last 3 quarter)	1 -Yes 2- No	
F16.	Is there regular (monthly) reporting system?(see copy of the last 3 months)	1 -Yes 2- No	
F17.	Has the facility functional incinerator for waste disposal (see it)?	1 -Yes 2- No-----	Q--- 19
F18.	If no for Q----- what is the final disposal point of used syringes and sharps? -----		

*This is the end. Thank you very much!*



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## **Part II: checklist for inventory**

### **Instructions to data collectors:**

This inventory should be completed by observing the facilities, supplies equipments and monitoring tools of cold chain/cold chain management with the person in charge of vaccination service on the day of the visit. In all cases you should verify that the items exist by actually observing/counting them. Remember that the objective is to identify the equipment, supplies and facilities that currently exist for the service and not to evaluate the performance of the staff or the facility.

**Thank You!**

Code No of health institution ----- Date of visit -----

S No	Questions	Possible answers and coding category	Skip to
<b>Facility :</b>			
V01.	Has the facility isolated room for immunization service?	1 -Yes 2- No -----	Q3
V02.	If yes for Q V01, is it adequate?(20m square)	1 -Yes      2- No	
V03.	Has the vaccination room waiting area?	1 -Yes 2- No -----	Q5
V04.	If yes for Q V03, is it adequate?(20m square)	1 -Yes                      2- No	
V05.	Is the waiting area clean/physically pleasant to see?	1 -Yes 2- No	
V06.	Is waiting area comfortable to seat for clients?(its easiness to move to them)	1 -Yes 2- No	
<b>Basic equipments and supplies:</b>			
V07.	Have the vaccination room freezer and or refrigerator? (any size)	1-Yes      2-No-----	Q9
V08.	If yes for Q V07, is it functional?	1-Yes      2-No	
V09.	Has the vaccination room Cold box? (any size)	1-Yes      2-No-----	Q11
V10.	If yes for Q V10, is it functional?	1-Yes      2-No	
V11.	Is there extra Vaccine carriers (including outreach, static sites, and sample transfer)?	1-Yes      2-No	
V12.	Are there sufficient Icepacks? (in the refrigerator and for available cold box and v/carriers)	1-Yes      2-No	
V13.	Is Log book used for balance of supplies?	1-Yes      2-No	
V14.	Are there adequate immunization card?(count	1-Yes      2-No	

	on monthly consumption average of a quarter)		
V15.	Are there adequate Tally sheets ?(count on monthly consumption average of a quarter)	1-Yes 2-No	
V16.	Are there adequate AD syringe?(count on monthly consumption average of a quarter)	1-Yes 2-No	
V17.	Are there adequate Safety boxes ?(count on monthly consumption average of a quarter, 100 syringe per cold box)	1-Yes 2-No	
V18.	Is there immunization guide line used by providers?	1-Yes 2-No	
V19.	Are there adequate Vaccines?(count on monthly consumption average of a quarter)	1-Yes 2-No	
V20.	Are vaccines stored in proper compartment?	1-Yes 2-No	
V21.	Is there refrigerator temperature recorded properly (twice daily in the last month) including weekends? Is temperature out of the range?	1-Yes 2-No	
V22.	Are there vaccines which are at discard point due to VVM?	1-Yes 2-No	
V23.	Is there vaccine that has exceeded expiry date in the refrigerator?	1-Yes 2-No	
V24	Are diluents stored in their proper place?	1-Yes 2-No	
V25.	Is monitoring chart used?	1-Yes 2-No-----	Q27
V26.	If yes for Q V25, does monitoring chart contain the following information:		
	Name of health facility?	1-Yes 2-No	
	Annual target population?	1-Yes 2-No	
	The year?	1-Yes 2-No	
	What is monitored?	1-Yes 2-No	

V27.	Is dropout rate monitored monthly on the chart?	1-Yes      2-No-----	Q29
V28.	If yes for Q V27, what is the current dropout rate of; Pentavalent-1 - pentavalent-3: -----% Pentavalent- 1 - Measles : -----%		
V29.	Is vaccine wastage rate monitored?	1-Yes      2-No-----	Q31
V30.	If yes for Q V29, what is the current dropout rate of vaccines? BCG----- %                      Pentavalent vaccines ----- % Measles ----- %                      polio vaccine -----%      PCV ----- %		
V31.	Is AD syringe wastage rate monitored?	1-Yes      2-No	
V32.	If yes for Q V31, what is the current wastage rate of AD syringes? -----%		

---

***Observation Guide for provider client interaction***

**Code number of the health institution** \_\_\_\_\_

*Greet provider and client; introduce yourself and the purpose of the study.*

*Obtain the agreement of both client and provider before proceeding to observe the interaction between them. No need of intervention to be involved. For each of the question listed below, circle that represents your observation of what happened during observation.*

*Good morning/good afternoon.....Dear provider and client!*

My name is ----- I am a member of research team on quality of immunization which is going to be conducted by Jimma University. For this quality of immunization service study, you are chosen to participate by sampling technique. The observation includes various techniques to observe your interaction. I don't put your name or registration number on this questionnaire. Your honest response will contribute to generate information, which can be used to improve the quality of immunization service.

Do you agree to participate in this study?

Yes ----- No -----

*Thank you very much indeed!!*

Name of observer Signature \_\_\_\_\_

**Part III: observation**

	<b><i>Health worker practice (Provider - client interaction, communication/information exchange)</i></b>	<b><i>Response category</i></b>	<b><i>Skip to</i></b>
	<b><i>Relation</i></b>		
101.	Does health provider greet the client warmly and offer a seat?	1-Yes 2-No	
102.	Does provider treat client friendly, kindly with respect in socially acceptable way?	1-Yes 2-No	
	<b><i>Information exchange</i></b>		
103.	Is the immunization status of the child assessed?	1-Yes 2-No	
104.	Are contraindications explained to the client and assessed?	1-Yes 2-No	
105.	Are types of vaccine preventable diseases and use of immunization explained?	1-Yes 2-No	
106.	Is vaccination schedule/next appointment explained to the mother/caretaker?	1-Yes 2-No	
107.	Is the mother/caretaker advised/informed on side effects/complications and what to do for?	1-Yes 2-No	
108.	Is the mother/caretaker advised/informed on importance of keeping immunization card?		
	<b><i>Administration of vaccines</i></b>		
109.	Is time of opening vials (Measles & BCG) recorded (do only during measles and BCG immunization days)?	1-Yes 2-No	
110.	Does provider reconstitute measles and BCG vaccines appropriately?(flick vial, shake smoothly, push diluents slowly)		
111.	Does the service provider administer appropriate dose?(look leakage and amount)	1-Yes 2-No	

112.	Does the service provider administer vaccines through appropriate route?(observe route, sign, bleeding, not rubbing)	1-Yes 2-No	
<b><i>Injection safety/precautions</i></b>			
113.	Does the service provider use one syringe & needle for one child?	1-Yes 2-No	
114.	Does provider using single mixing syringe for one vial (BCG and measles)?	1-Yes 2-No	
115.	Are needles disposed without recapped after use?	1-Yes 2-No	
116.	Is safety box placed and used at easy/arm reach corner?		

***Thank you all, this is the end.***

## *Verbal Consent form:*

Good morning/ good afternoon..... I would like to assess the immunization service in this institution and would be very much interested to find out your experience today. I would like to ask you a few questions about immunization service in this health institution and would be very great full if you could spend a few minutes answering questions related to the service. All information you give will be kept strictly confidential. Your participation is voluntary and you are not obliged to answer any questions you don't want to respond.

Do I have your permission to continue?

Yes -----

No -----

Name of health institution-----

Code No -----

Date of Interview-----

Signature of interviewer-----

Supervisor -----signature -----



***Part IV: Mothers /Care Takers Interview on service satisfaction***

<b>SOCIO DEMIOGRAPHIC CHARACTERSTICS OF MOTHERS</b>			
S01.	Age of the child (for the sake of exclusion of > 1 year) Age of mother/care taker in years -----	<b>Coding category</b>	<b>Skip to</b>
S02.	Marital status of the mother /care taker:	1) Never married      2)Married 3) Divorced            4)Widowed	
S03.	What is your education level?	1) Illiterate /non educated 2) Attended literacy education 3) From grade 1-6    4) Grade 7-12 5) 12+	
S04.	What is your religion	1) Orthodox Christian   2) Muslim 3) Protestant          4) other -----	
S05.	What is your ethnic Origin?	1) Amhara      2) Oromo 3) Tigre        4) Other-----	
S06.	What is your occupation?	1) Government employee 2)Private enterprise employee 3) Merchant 4) House wife          5) Student 6) Other-----	

S07.	How much you are satisfied in vaccination service of your child today?	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
<b>Access</b>			
S08.	Waiting time to get the service.	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
S09.	The facility's waiting area is clean / pleasant to see.	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
S10.	The facility's waiting area is comfortable/ease to seat having enough chairs for the number of clients in the waiting area	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
S11.	Vaccination Service room opening time for service while you come to the institution?	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
S12.	Health workers availability while you come to the facility for immunization service	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral	

		4. Satisfied 5. Strongly satisfied	
<b>Interpersonal relation and communication/information exchange</b>			
S13.	Health workers' way of reception and respect given for you/greeting, kindness, politeness?	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
S14.	Technical skill of the health worker	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
S15.	Information given by health worker about importance of immunization and type of disease prevented by vaccination?	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
S16.	Health worker advice/inform on side effect/complication and what to do?	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
S17.	Information given when next vaccination date or finish your child immunization	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	

S18.	Information/education given when to finish vaccination of your child/when fully vaccinated?	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
<b><i>Ask only those mothers who come two times or more</i></b>			
S19.	Considering health condition of your child due to side effect of vaccination before today?	1. Strongly dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Strongly satisfied	
S20.	Did your child vaccinated before at the right upper arm?	1-yes 2-No 3. Not remember	
S21.	If yes for Q S20, is he/she developed a scar (you can observe)?	1-yes 2-No	

*Thank you for your cooperation and participation in the study.*

*This is the end!!!*

Annex 2 Amharic and English version questionnaires for care takers

**በጤና ድርጅቶች ውስጥ ያለውን የክትባት አገልግሎት አሰጣጥ ለማወቅ የተዘጋጀ ቃለ መጠይቅ**

እንደምን አደሩ/ዋሉ...

ይህ ቃለ መጠይቅ የተዘጋጀው በጤና ድርጅቶች ውስጥ ያለውን የክትባት አገልግሎት አሰጣጥ ለማጥናት ነው።

እኔ ስሜ----- ይባላል፤ የመጣሁትም በዚህ የጤና ድርጅት ውስጥ ያለውን የክትባት አገልግሎት አሰጣጥ ለማጥናት ነው።

ስለዚህ ዛሬ በክትባት አገልግሎት ዙሪያ ያጋጠመዎትን በማቀርብልዎት መጠይቅ መሰረት ለመነጋገር ከእኔ ጋር ጥቂት ደቂቃዎች ቢሳልፉ ደስተኛ ነኝ፤ የሚሰጡኝ መረጃ በሙሉ በሚስጥር የሚጠበቅ ሲሆን ስሞዎን መግለጽ አያስፈልግም። የእርሰዎም ተሳትፎ በፍላጎቶዎ ላይ የተመሰረተ ነው። መመለስ የማይፈልጉትን ጥያቄ እንዲመልሱ አይገደዱም።

እንድቀጥል ፍቃደኛ ነዎት?

አዎ-----

አይደለሁም-----

መለያ ቁጥር፡ -----

ቀን-----

የቃለ መጠይቅ አድራጊው ፊርማ -----

**የማህበራዊ ሁኔታ አመላካች ጥያቄዎች**

የሀጻኑ እድሜ -----

S01.የእናት /የተንከባካቢዋ /እድሜ-----

S02.የጋብቻ ሁኔታ፡

- 1. ያላገቡ
- 2. ባለትዳር/ያገቡ
- 3. የተፋቱ
- 4. ባል/ሚስት የሞተባቸው

S03.የእናት /የተንከባካቢው የትምህረት ደረጃ

- 1. ያልተማሩ
- 2. መሰረተ ትምህርት
- 3. ከ1-6 ኛ ክፍል
- 4. ከ7-12ኛ ክፍል
- 5. ከ12ኛ በላይ

S04. ሀይማኖትዎ ምንድን ነው?

- 1. ኦርቶዶክስ ክርስቲያን
- 2. ሙስሊም
- 3. ፕሮቴስታንት
- 4. ሌላ (ይገለጹ)

S05. ብሄረሰብዎ ምንድን ነው?

- 1. አማራ
- 2. ኦሮሞ
- 3. ትግረ
- 4. ሌላ (ይገለጹ)

S06. ሥራዎ ምንድን ነው?

- 1. የመንግሥት ስራተኛ
- 2. የግል ድርጅት ተቀጣሪ
- 3. ነጋዴ
- 4. የቤት እመቤት
- 5. ተማሪ
- 6. ሌላ

### የእናቶችን /የተንከባካቢውን ርካታ በተመለከተ

S07.	ዛሬ ለልጅዎ የተሰጥዎት የክትባት አገልግሎትን በተመለከተ ምን ያክል ረክተዋል	<ul style="list-style-type: none"> <li>1.በጣም አልረካሁም</li> <li>2.አልረካሁም</li> <li>3.መግለጽ አልችልም</li> <li>4.ረክቻለሁ</li> <li>5.በጣም ረክቻለሁ</li> </ul>	
S08	አገልግሎቱ ለማግኘት/ለመጨረስ የወሰደቦትን ጊዜ በተመለከተ ያሎት እርካታ	<ul style="list-style-type: none"> <li>1.በጣም አልረካሁም</li> <li>2.አልረካሁም</li> <li>3.መግለጽ አልችልም</li> <li>4.ረክቻለሁ</li> <li>5.በጣም ረክቻለሁ</li> </ul>	
S09.	የክትባት ክፍል ማረፊያ ቦታ	1.በጣም አልረካሁም	

	ንጹህናውን በተመለከተ	2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
S10.	የክትባት አገልግሎት ክፍል ለደንበኞች ያለው ማረፊያ/ መቀመጫ ና አመችነቱን በተመለከተ	1.በጣም አልረካሁም 2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
S11.	ወደ ተቋሙ በመጡ ጊዜ ክፍሉ ለአገልግሎት በስራ ሰዓት ክፍት ሆኖ መገኘቱን በተመለከተ	1.በጣም አልረካሁም 2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
S12.	የክትባት አገልግሎት የሚሰጡ ባለሙያዎች በስራ ሳቱ በክፍሉ መገኘታቸውን በተመለከተ	1.በጣም አልረካሁም 2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
S13.	ባለሙያው/ዋ ባደረገልዎት/ችሎት አቀባበል(የሚሰጡት ክብር፡ ርህራሄና ያላቸውን ቅንነት) በተመለከተ ያለዎት ርካታ	1.በጣም አልረካሁም 2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
S14.	ባለሙያው/ዋ ያለው/ላትን የሙያ ብቃት/ክህሎትን በተመለከተ	1.በጣም አልረካሁም 2.አልረካሁም	

		3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
S15.	ባለሙያው/ዋ ስለ ክትባት አስፈላጊነትና ክትባት ስለሚከላከላቸው በሽታዎች በተሰጠዎት ትምህርት	1.በጣም አልረካሁም 2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
S16.	ባለሙያው/ዋ ስለ ክትባት የጎንዮሽ ጉዳትና ቢክሰት ምን ማድረግ እንዳለብዎት በተሰጠዎት ትምህርትና ገለጻ	1.በጣም አልረካሁም 2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
S17.	ለሚቀጥለው ክትባት መቼ መምጣት እንዳለብዎት ወይም ዛሬያጠናቀቀ ስለመሆኑ በተሰጠው ትምህርት	1.በጣም አልረካሁም 2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
S18.	ልጅ መቼ ክትባት መጨረስ እንዳለብዎት ወይም ያጠናቀቀ ስለመሆኑ በተሰጠው ትምህርት	1.በጣም አልረካሁም 2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ 5.በጣም ረክቻለሁ	
<b>ሁለት ጊዜና በላይ ለመጡ ብቻ የሚሞላ</b>			
S19.	ልጅዎ ክትባት ከወሰደ በኋላ በክትባቱ ምክንያት የነበረውን የጤና ሁኔታ/የመድሃኒቱን የጎንዮስ ወጣት በተመለከተ	1.በጣም አልረካሁም 2.አልረካሁም 3.መግለጽ አልችልም 4.ረክቻለሁ	



		5.በጣም ረክቻለሁ	
S20.	ካሁን በፊት ልጅዎ በቀኝ ላይኛው ክንድ ላይ ክትባት ወስዶ ነበርን?	1. አዎ 2. የለም----- 3. አላስታውስም-----	ወደ 21 ወደ 21
S21.	ለ20ኛ ጥያቄ መልስዎ አዎ ከሆነ በቦታው ላይ ጠባሳ አለውን?(ማየት ይቻላል)	1. አዎ 2. የለም	

**ለቃለ መጠይቁ ስለተባበሩን እናመሰግናለን!**

### **Annex 3: Declaration**

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

Declared by;

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