



ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH

**MAGNITUDE OF MISSED OPPORTUNITIES ON INFANTS UNDER ONE
YEAR ROUTINE IMMUNIZATION SERVICES AND ASSOCIATED
FACTORS IN WOLIKTE HEALTHCENTER, GURAGE ZONE,
SOUTHERN REGIONAL STATE, ETHIOPIA.**

BY MELESE ASSEFA (BSC)

**A THESIS SUBMITTED TO COLLEGE OF HEALTH AND MEDICAL
SCIENCE, SCHOOL OF GRADUATE STUDIES, ADDISABABA
UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIRMENT FOR
THE DEGREE OF MASTERS OF PUBLIC HEALTH.**

**JULY 2015
ADDIS ABABA ETHIOPIA**

APROVAL SHEET

**ADDISABABA UNIVERSITY COLLEGE OF HEALTH AND MEDICAL
SCINECE, SCHOool OF GRADUE STUDY**

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Declaration

I the under signed, declared the thesis is my original work and has not presented in any other university and all sources of materials used for this thesis have been duly acknowledged.

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Acknowledgment

I would like to express my true and deepest appreciation to my honorable advisor professor Mesganaw Fantahun for his constructive support and quick response for the development of this proposal starting from topic selection.

By taking the opportunity I would also acknowledge my friends Mr Michael Mesfin, Mr Tasew Denbi, Alemu Abebe for their unmentionable contribution throughout the time of my MPH graduate program courses.

I would also like to thank Addis Ababa University and school of public health for giving me this chance to conduct this research.

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ACRONYMS

BCG: Bacille Calmette Guerin

WHO: World health organization

PENTA: pentavalent vaccine

OPV: Oral polio vaccine

CI: Confidence interval

OR: Odd ratio

COR: Crude odd ratio

HEW: Health extension worker

Abstract

Background: Under five years deaths can be prevented through optimal use of currently existing vaccines. In 2012 nearly one in five infants missed the basic vaccines they need to stay healthy globally, and majority of the children missed in sub Saharan Africa including Ethiopia. Missed opportunities are an obstacle to raise immunization coverage among children and leading high infant morbidity and mortality.

Objective: The objective of this study was to determine magnitude and the related factors for missed opportunity of routine immunization of infants under one year age in Wolikite health center Gurage zone, southern regional state, Ethiopia, May 2015

Methodology: The study was health facility based cross sectional design. Exit interview was administered for mothers who had under one infants and who came for any services for their infant at Wolikite health center, Gurage zone from March 27- April 22, 2015 using standard world health organization missed opportunity tool in the context of Ethiopia routine immunization schedule. The sample size was calculated by using single proportion formula with 95% confidence interval and a total of 346 mothers were interviewed.

Result: The magnitude of missed opportunity for the study was 49.1% and the major vaccines with high missed opportunity were oral polio vaccine o (37.9), (Bacille Calmette Guerin 35), and measles (31.1) the major reason for immunization for missed vaccines was due to absence of adequate number of children to conduct immunization sessions which was around 81.2% among children who had missed opportunities. Age of children, stock out experience of care takers, knowledge of contact time and purpose of visit to health facility were independently associated factors for children missed opportunity of immunization.

Conclusion: The overall magnitude of missed opportunity for the routine immunization is high influencing the success of immunization services. The major vaccines which highly contributed for the prevalence of immunization missed opportunity were measles, and Bacille Calmette Guerin and oral polio vaccine.

1. Introduction

1.1. Background

Maternal and child health are among the Ethiopia government priority health programs and efforts are being implemented to reduce maternal and child mortality (1).

During the year 2006–2010 the infant mortality rate in Ethiopia was 59 deaths per 1,000 live births. The estimate of child mortality is 31 deaths per 1,000 children surviving to 12 months of age, while the overall under-5 mortality rate for the same period is 88 deaths per 1,000 live births. Sixty-seven percent of all deaths to children under-five in Ethiopia take place before a child's first birthday and 2011 EDHS shows a rapid decrease in infant and under-five mortality during the five years prior to the survey compared to the period 5-9 years prior. The levels are also considerably lower than those reported in the 2005 EDHS. Infant mortality has decreased by 23 percent, from 77 to 59 deaths per 1,000 births, while under-five mortality has decreased by 28 percent, from 123 to 88 per 1,000 births (2).

Immunization, one of the most cost-effective public health interventions, has been protecting children everywhere against common yet potentially life-threatening diseases over the past two centuries(3).

The World Health Organization (WHO) initiated the Expanded Program on Immunization (EPI) in May 1974 with the objective to vaccinate children throughout the world (8). Ten years later, in 1984, the WHO established a standardized vaccination schedule for the original EPI vaccines: Bacillus Calmette-Guérin (BCG), diphtheria-tetanus-pertussis (DTP), oral polio, and measles. Increased knowledge of the immunologic factors of disease led to new vaccines being developed and added to the EPI's list of recommended vaccines: Hepatitis B (HepB), yellow fever in countries endemic for the disease, and Haemophilus influenza meningitis (Hib) conjugate vaccine in countries with high burden of disease. (4)

The Expanded Program on Immunization started in Ethiopia in 1980 with the aim of reducing mortality and morbidity of children and mothers from vaccine preventable diseases. During the inception of EPI the objective was to increase immunization coverage by 10 % annually and reach

100% in 10 years but this target has not been realized even after two decades. The target group when the program started were children under two years of age until it changed to under one year in 1986 to be in line with the global immunization target (5,6).

In Ethiopia immunization services are being rendered in most of the health facilities and outreach services for the community residing beyond 5- 15 KM from the static health facilities and mobile immunization services is given in some of geographically inaccessible areas of few parts of the country. Implementation of the Reaching Every District and Sustainable Outreach Services approaches to immunization have supported improvements in coverage since 2003. Currently, nearly all public health facilities, as well as select private hospitals in the Addis Ababa urban area, provide immunization services. Services are provided free of charge at public and NGO facilities. (5,6, 7)

In the Ethiopia routine EPI program the traditional six antigens are being given in both the public and private services. Starting from 2007, penta-valent formulations, DPT-HepB-Hib and since 2011, 10 valent pneumococcal conjugate vaccine (PCV) were introduced into the routine immunization program thus increasing the number of total antigens given to infants to nine (DPT-HepB-Hib, PCV, BCG, Polio and measles)and on November 2013 the country introduced the tenth vaccine, which is rota virus vaccine, increasing the available antigens in to ten. Preparatory activities are also undergoing to introduce School Tetanus diphtheria (Td) vaccine by end of 2014 and Inactivated Polio Virus (IPV) vaccine by end of 2015. (5, 6)

Missed opportunities for immunization is said to have occurred when a partially or non-immunized child misses the benefit of getting immunization during a visit to a health facility for an illness or checkup when there is no absolute contraindication for that particular immunization as per national policy (Sato1988)(10).

1.2. Statement of the problem

Worldwide, the mortality rate for children under five dropped by 47 per cent—from 90 deaths per 1,000 live births in 1990 to 48 in 2012(13). Despite this accomplishment, more rapid progress is needed to meet the 2015 target of a two-thirds reduction in under-five mortality. In 2012, an estimated 6.6 million children—18,000 a day— died from mostly preventable diseases. These children tend to be among the poorest and most marginalized in society. Increasingly, child deaths are concentrated in the poorest regions—sub-Saharan Africa and Southern Asia accounted for 5.3 million (81 per cent) of the 6.6 million deaths in children under five worldwide.(11).

Almost one third of deaths among children under 5 are preventable by vaccine which is more than 2.5 million child deaths a year and currently available vaccines could prevent an additional two million deaths a year among children under five years old(14,17.) WHO estimates 29% of deaths among children 1–59 months of age are vaccine-preventable. (12)

More deaths can be prevented through optimal use of currently existing vaccines, Poor coverage in a region contributes to a high burden of disease and is reflected in the number of child deaths, Despite the successes of immunization programs worldwide, global estimates of vaccine preventable disease mortality and DTP3 coverage underscore that available vaccines are not being used to their fullest potential. Challenges include sustaining current vaccination coverage levels, extending vaccination to unreached populations and persons beyond infancy, and introducing new vaccines and technologies (13).

In 2012, nearly one in five infant's 22.6 million children – missed out on the basic vaccines they need to stay healthy globally. Low immunization levels compromise gains in all other areas of health for mothers and children. The poorest, most vulnerable children who need immunization the most continue to be the least likely to get it. And, if immunization is not prioritized, the most marginalized children will not get vaccines, which could mean the difference between life and death. In 2013, estimated global coverage with three doses of diphtheria-tetanus-pertussis containing vaccine increased to 84% compared to 74% in 2000. An estimated 112 million infants were vaccinated. However, an estimated 21.8 million infants worldwide are still not being reached by routine immunization services. Close to 70% of these children live in ten countries: Democratic

Republic of the Congo, Ethiopia, India, Indonesia, Kenya, Mexico, Nigeria, Pakistan, Viet Nam and South Africa. (14, 15)

Vaccine prevents children from VPD and immunization is key to achieving the Millennium Development Goals (MDGs), especially the goal to reduce deaths among children under five years old which is MDG 4 (14). In Ethiopia Immunization coverage has steadily increased over the years, with DPT3 coverage at 86% and measles vaccine coverage at 81% in 2010, The increment in coverage is similarly observed through surveys, but there are wide disparities between administrative and survey coverage figures ,despite improvement in coverage and because of the size of the population Ethiopia still have a large number of unimmunized children, this has resulted in outbreak of vaccine preventable diseases such as measles and pertussis.(1)

Missed opportunities are an obstacle to raising immunization coverage among children leading to resurgence of diseases such as tuberculosis, measles and poliomyelitis with high rates of infant mortality and frequent hospital admissions and increased demand on the available health facilities.(10)

Children with missed opportunities for vaccination are more likely to have an incomplete vaccination status than children without missed opportunities (19).This study will be one input for planning purpose on routine immunization activities and could be important to strengthen static program and would support to minimize missed opportunities.

1.3. Research Questions

- How much is the magnitude of missed opportunity for infants under one age immunization in Wolikte health center?
- What are the factors that lead to missed opportunities for infants under one age routine immunization in Wolikte health center?

1.4. Significance of the study

Despite visible gains that have been recorded in the EPI program, the 2012 national Immunization coverage survey showed a lower than reported coverage with wide regional variation and problems of drop outs. Therefore a decline in performance was noted in both the administrative trend and the coverage survey (5) and one of the reason may be missed opportunities.

Ethiopia has prepared a two years routine Immunization improvement plan (RIIP) with targets to reach DPT 3 coverage of 90% and 95% in 2014 and 2015 (routine immunization improvement plan)and this plan should be achieved as targeted and recently the contribution and the magnitude of missed opportunity is not known.

Reducing DTP-HepB-Hi1b- DTP-HepB-Hib3 dropout rate to 3% nationally and less than 10% in all districts and ensuring the accessibility of immunization service, reduce number of unimmunized children by 50% every years and achieving measles pre-elimination goal by measles coverage of 90% by 2015 (6), to achieve this high coverage target the significance of missed opportunities may have its own contribution.

In Ethiopia the study done on missed opportunity before 17 years in jimma hospital has showed that the magnitude of missed opportunity was 28.8%(3), after that time the missed opportunity data is not available and the contribution of missed opportunities for the coverage is not known assessing the current magnitude of missed opportunities and reason missed opportunities will be one of the input for the planning and implementation activities of immunization. Health systems who are working on infant immunization would be beneficiary for their actions to minimize infant immunization missed opportunities.

2. Literature review

Across sectional study which was done 1997 in Jimma hospital found out that the prevalence of missed opportunity was 28.8%. Child being sick on day of immunization(27.8%),mothers busy (20.8), unawareness of immunization (20.8),far vaccination sites(15.8%) ,fear of side effect ,mothers illness and rumor were identified as reasons for failure of immunization. The study also identified the negative attitude towards immunization, older age of the child and illiteracy of the mother as risk factor for missed opportunity. (16)

Another study which was done in Somali regional state at Jigjiga district on immunization coverage and determinant mentioned the reason of low immunization coverage as unaware of the need of immunization and the need of returning to the 2nd and 3rd doses of antigen, unaware of measles vaccine, fear of adverse events, mothers being too busy, sickness of mother and children, including accessibility of vaccination sites. (17)

A recent study in Arbaminch reported that factors contributing to immunization status were place of delivery, mother's education status and living area about 67% of children that were delivered at home were found to be fully immunized as compared with 87.0% of children who had been delivered in health institution. The other identified factor was mothers' educational status. Children from educated mothers had better chance to be fully immunized than children from not educated mother (18)

A study which was done in Nigeria on Factors associated with missed opportunities has identified number of factors associated with missed opportunities for vaccination and its associated risk factors. This study showed the magnitude of missed opportunities was (33.4%) children, and the mean number of missed opportunities for vaccination per child was 1.68 ± 0.42 . (27.4%) of the children had 2 or 3 times missed opportunities for vaccination (19).

The Nigeria study reported that 69.2% of the children could have completed their vaccination program if they had not missed the opportunity for measles vaccination and children with missed opportunities for vaccination were more likely to have an incomplete vaccination status than children without missed opportunities. As that Nigerian study showed the maternal reasons for

missed opportunities were sickness (24.5%), social engagement (30.4%), traveling (14.6%), long distance walking (11.5%), and complications from previous Injections (19%). (19)

A study in Juba teaching hospital, south Sudan in 2013 on the prevalence of missed opportunity for immunization showed that overall prevalence of missed opportunity for immunization in children was 56.5 %. The study found that prevalence of missed opportunity for immunization increased as the age for administration of the vaccine increased. Missed opportunity for immunization was higher for third doses of OPV (24.4%), DTP (22.1%) and measles vaccine (31.2%) and BCG (7.6%). In that study 94.4% children had received one or more vaccine while 25/448 (5.6%) children had never been immunized. The study reported that many children missed immunization because of misconceptions about contra-indications by the caretakers and associated with child's and caretaker's socio-demographic characteristic like children who had missed immunization were older than 12 months. Children whose mothers attended antenatal care were less likely to have missed immunization compared to those mothers who did not attend antenatal care; Children born at home were more likely to have missed immunization compared to those who were born in hospital. Lack of formal education was associated with an increased missed opportunity. Various reasons were given by the caretakers for incomplete immunization for their children. These included; lack of information (59.4 %), they were either unaware of need for Immunization or unaware that needed to return for 2nd and 3rd dose, vaccinator absent (17.4 %), negligence from mothers (mothers forgot, busy with social activities) (11.2 %) (20).

A similar study which was done in Mozambique on the assessment of missed opportunities for vaccination and associated risk factors showed the missed opportunities for vaccination were found in 25.7% children. The mean number of missed opportunities for vaccination per child was 1.73. Among the children with missed opportunities for vaccination 15.1% had more than one missed opportunity for vaccination while 20.9% of the children could have completed their vaccination program if they had not missed the opportunity for measles vaccination. Children with missed opportunities for vaccination were more likely to have an incomplete vaccination status than children without missed opportunities. In that Mozambique study only (13.9%) of the mothers could recall the reason for the missed opportunities of which (37.5%) had a sick child, (8.3%) were not aware of the need for immunization and (54.1%) referred a lack of vaccines availability in the health facility (21).

A study which was done on the prevalence of missed opportunities in Nnamdi Azikiwe Nigeria found that 70.0% had good knowledge, 20.5% average knowledge, and (9.5%) poor knowledge about immunization. Their main sources of information about immunization were antenatal clinic (57.3%), media (27.0%) and school (12.9%). The mothers' perception about immunization services was generally good (93.2%) and 16.9% of infants had missed opportunities for immunization. Lack of vaccine(s), visit on a wrong day and vaccine not opened because of few clients were the major reasons for missed opportunities, accounting for 44.2%, 34.6% and 15.4% respectively. The commonest vaccines missed were OPV1, and DPT1 (40.38%), followed by BCG and OPV0 (38.46%), and OPV2, and DPT2 (11.54%). Mother's age, education and knowledge of immunization showed no significant association with missed opportunities for immunization. (10)

Conceptual framework

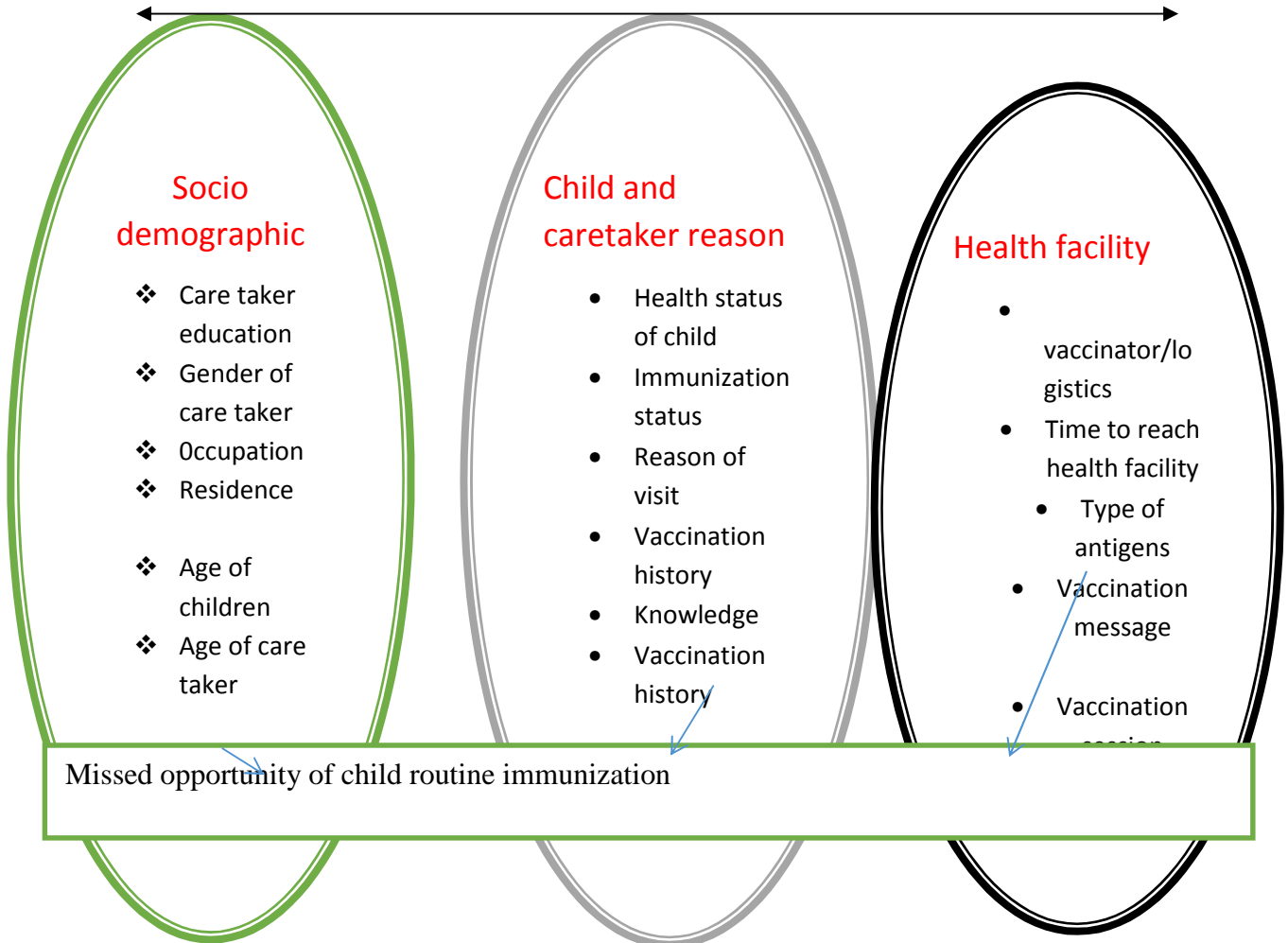


Diagram 1. Conceptual framework (developed from literature review by researcher)

3. Objectives

3.1. General objective

- ❖ To determine the magnitude of missed opportunities on infants under one year routine immunization services and associated factors and the related factors for missed opportunity of routine immunization in wolikite health center, Gurage zone, southern nation, nationalities and people regional state, Ethiopia 2015.

3.2. Specific objectives

- ❖ . To determine the magnitude of missed opportunities on infants under one year routine immunization services in wolikite health center, Gurage zone, southern nation, nationalities and people regional state, Ethiopia 2015.
- ❖ To identify the factors of missed opportunities for routine immunization of infants in wolikite health center, Gurage zone, southern nation, nationalities and people regional state, Ethiopia 2015.

4. Methodology

4.1. Research Design

Health facility based cross-sectional study was implemented and the World Health Organization missed opportunity protocol tools used within the context of Ethiopia routine immunization schedule

4.2. Description of the study Area

Wolikte health center is located in capital of Garage Zone Wolikte, in the Southern Nations, Nationalities and Peoples Regional State (SNNPR) in Ethiopia 156 km south west of Addis Ababa. Wolikte health center is the only health facility in the capital of Gurage zone that has routine immunization program in their service delivery and it has under five outpatient department. The health center has on average 40 children clients served in OPD per day.

4.3. Source population

Infants who are eligible to routine immunization services in the study year.

4.4. Study population

The study population was children at the age of < 12 months visiting Wolikte health centers Gurage zone, southern nation, nationalities and people regional state.during the study period.

4.4.1. Inclusion criteria

All children aged < 12 months who have visited Wolikte health centers and Children whose parents/care giver gave consent.

4.4.2. Exclusion criteria

Severely ill infants

Parents or caregiver do not give consents.

4.4.3. Sample size determination

The sample size was determined using single population proportion formula:

$$n = \frac{(Z / 2)^2 * P (1-P)}{d^2}$$

Where, P = prevalence of missed opportunity for immunization (28.8%) in jimma hospital which was done in 1997 and the magnitude of the missed opportunity was 28.8.

$$d = \text{margin of error} = 0.05$$

$$Z / 2 \text{ confidence level required and } Z / 2 \text{ at } 95\% \text{ CI} = 1.96$$

n = minimum sample size

$$n = \frac{(1.96)^2 (0.288) (0.712)}{(0.05)^2}$$

$$n = 315$$

By allowing non response rate of 10% the sample size was a total 346.

4.4.4. Data collection technique

Data collection training was given to data collectors who are health professionals before data collection on study design, antigens, routine immunization schedule, interview methods and techniques, inclusion and exclusion criteria and data collection instrument of the study. The data was collected by exit interview of mothers after they get any services of their children with modified WHO missed opportunity vaccination protocol questioners based on Ethiopia immunization schedule from the Wolikte health center. The data was collected from March 27 – April 22, 2015 with a close support and supervision of the primary investigator.

4.4.5. Sampling technique

Wolikte health center was chose purposively due to high catchment population and high client flow relative to other health centers in the zone and the study population was identified as all mothers who came during data collection for any services for their under one children were selected as sample.

4.5. Study variables

4.5.1. Dependent variable

The dependent variable was missed opportunities of immunization.

4.5.2. Independent Variable

- Socio-economic and demographic variables; Age of child, child sex, maternal/paternal education, occupation, age and religion, family decision maker.
- Child characteristics; health status, immunization status, mothers information about immunization, knowledge on immunization , purpose of visit
- Long waiting time, absence of vaccinator/ vaccine/logistics, place of residence, time to reach health facility, type of antigens.

4.6. Data processing Analysis

Each questionnaire was given a unique code by the Principal Investigator. The principal investigator entered the data using SPSS 20. Then, the entered data was cleaned for errors prior to data analysis, any errors identified was corrected after revision of the original data using the code numbers given to the questionnaires. Recoding, Frequencies and percentages was computed for description of the study population in relation to socio-demographic and other relevant variables and presented by tables. Bivariate and multivariate analysis was done to determine factors associated with missed opportunity.

4.7. Definition of terms

Missed opportunity :a under one year child who come to health facility for any services with recommended time range of immunization and who do not get /missed any of the vaccines. Missed opportunity of immunization was measured according to the national immunization schedule which has a total of 5 contact time at birth, 6th weeks, 10th, 14th and 9 months of child age.

Fully vaccinated: The child who has taken all vaccines with the recommended schedule.

Immunization schedule: nationally accepted/recommended age of a child that antigen to be given to the child.

Factors of missed opportunity: any causes /reasons/determinants that contribute to a child not to vaccinate after he /she came to health center for any services.

Knowledge of contact time; if care takers know how many contacts left for their children to be fully immunized.

Stock out of vaccine: if care takers come and returned without vaccinating their children due to lack of vaccines

5. RESULT

5.1. Socio-Demographic and related Characteristics of study population

A total of 346 children whose age less than 12 month who had visited the health facility during the study period were included the study. One hundred thirteen (32.7% of the children age were less than 2 months and 102(29.5%) were between 9 month to 12 months,

Among the total studied children 194 (56.1%) were male and 152 (43.9%) were female .Of these 327(94.5%) were delivered at health facility. The purpose of children visit to the health facility were for children treatment for sickness 129(37.3%), 174 (50.3%) for vaccination and the remaining 43(12.3%) were for other purposes.

Table 1: - Socio demographic and related characteristics of infants less than 12 months in Wolikte health center, South Ethiopia, May, 2015. (n=346)

		Frequency	Percent
Age of children	1-2	113	32.7
	2-3	82	23.7
	4-8	49	14.2
	9-12	102	29.5
Sex of the child	Male	194	56.1
	Female	152	43.9
Place of delivery	Home	19	5.5
	health facility	327	94.5
Reason of visit	child sick	129	37.3
	Vaccination	174	50.3
	Others	43	12.4

5.2. Socio-Demographic Characteristics of care takers.

A total of 346 care taker who had visited the health facility with their children were exit interviewed. Among them 117(33.8%) were aged 20-24, 109 (31.5%) were aged between 35-39 15(4.3%) were 15-19 and the other 9(2.6%) were to be between 40-44. Concerning the sex 338(97.7%) of care takers were females and the remaining 8 (2.3%) were males.

Regarding, educational status of care takers, 129 (37.3%) had no formal education, 112(15.3%) were grade 9-12 and the others 52(15%) above grade 12.

Of the care takers 227 (65.6%) were house wives 77(22.3%) were employees or laborers, 16(4.6%) self-employed and the others 26 (7.5%) had other types of occupation.

Concerning to residence area of caretakers about 281(81.2%) came from the health center catchment site/kebeles and the remaining 65(18.8%) care takers came from outside of the catchment of the Wolikte health center.

Table 2:-Socio demographic characteristics of care takers in wolikite health center, South Ethiopia, May,2015. (n=346)

		frequency	Percent
Age group of care taker	15-19	15	4.3
	20-24	117	33.8
	25-29	109	31.5
	30-34	76	22.0
	35-39	20	5.8
	40-44	9	2.6
Sex of care taker	Male	8	2.3
	Female	338	97.7
ANC follow up of the mother	Yes	346	100.0
Educational status	none, does not know how to read and write	129	37.3
	grade 1-8	112	32.4
	grade 9-12	53	15.3
	above12	52	15.0
Occupation	house wife	227	65.6
	employee/laborer	77	22.3
	self employed	16	4.6
	Daily workers	26	7.5
Place of residence	the same area with the health center	281	81.2
	from other woreda	65	18.8

5.3. Information on immunization

Most of care takers 70.2% (243) had not heard any vaccination message in the past one month prior to the interview. Only 103(29.8%) of the care takers had heard/seen any vaccination message. Among the care takers who had heard seen immunization 35(82.5%) from were heard /seen vaccination message from radio /TV and 18(2.75%) from health extension workers.

Care takers commonly sought information on vaccination,320(94.2% from health facility, 89(25%) from health extension workers and the remaining from television radio and others .Of the caretakers 302(87.3%) believed that they had accesses of vaccination information but 44(2.7%) thought that they had lack of information access.

Table 3: - Information of care takers on immunization in Wolikte health center, South Ethiopia, May, 2015. (n=346)

		Frequency	Percent
vaccination message in last month	Yes	103	29.8
	No	243	70.2
source of message for vaccination in last month	radio/TV	85	24.6
	health extension worker	18	5.2
Care takers sought information /message	health facility	320	92.4
	HEW	89	25.0
	Television	52	15.0
	Radio	43	12.4
	Others	34	9.8
information access of caretakers	Care takers who had lack of information	44	12.7
	caretakers who had no lack of information	302	87.3

5.4. Previous vaccination and related characteristics on immunization.

Ninety six percent of care takers reported previous vaccination history but others 15(4.3%) had no of previous experience of vaccination of their children. Eighteen point eight percent of caretakers had experience of stock out of vaccine & returned back to home with out of vaccinating their children but majority of them 281(81.2%) had no experience of stocks out of vaccines during their vaccination services.

Regarding the vaccination request caretakers asked to get vaccination service from health center, 64(18.5%) were refused by providers and the major reasons of refusal were the day was

not vaccination day 42(65.6%) , vaccination room was closed 8(12.5%) and 11% were due to absence of logistics

From the studied children only 102(29.4%) had vaccination card but majority of the children had no vaccination card.

Table 4: Previous vaccination history of children and related variables in wolikite health center, South Ethiopia, May, 2015. (n=346)

		Frequency	Percent
Previous vaccination history	Yes	331	95.7
	No	15	4.3
Stock out of vaccine during immunization session	Yes	65	18.8
	No	281	81.2
Vaccination requested and refused by provider	Yes	64	18.5
	No	282	81.5
Reason of refusal	doctor/nurse said the child sick	3	.9
	no vaccine/syringes/other supplies	11	3.2
	was not vaccination day	42	12.1
	vaccination area was closed	8	2.3
Child who has vaccination card	yes and I have it with me	18	5.2
	yes but I do not have with me	84	24.3
	No	244	70.5
	Total	346	100.0

5.5. Knowledge and perception of care takers on immunization.

Caretakers who knew the number of schedule of vaccination remain for their children to be fully vaccinated was low that is only 92(26.6%) caretakers knew how many schedules remain to finish all scheduled antigens of immunization services. The current routine immunization program that is 10 vaccine preventable disease knowledge of caretakers was assessed and the result showed that around 165 (47.7%) of the caretakers knew 1-2 vaccine preventable disease, 25 (7.2%) knew 6-9 vaccine preventable disease but 95 (27.5 %) did not know any vaccine preventable disease among the ten vaccine preventable diseases.

From caretakers 237 (68.5%) answered the purpose vaccination as to prevent disease, 67(19.4%) said the purpose vaccination to children grow up healthy and 133 (9,5%) of caretakers believed that vaccination can cure diseases and the others 9(2.6%) of were not sure what vaccine are for .

Concerning the belief of care takers regarding the development of disease if they would not vaccinate their children 312(90.2%) care takers thought children would acquire disease without vaccination , 17(4.9%) did not think children would be diseased without vaccination and 17 did not know.

Table 5: - Knowledge and perception of caretakers on immunization in Wolikite health center, South Ethiopia, May, 2015. (n=346)

		Frequency	Percent
Knowledge of number of schedule left/contact time	Yes	92	26.6
	No	254	73.4
	Total	346	100.0
Caretakers knew vaccine preventable disease	knows 1-2 disease	165	47.7
	knows 3-5 disease	61	17.6
	knows 6-9 diseases	25	7.2
	Don't know	95	27.5
Purpose of vaccination	To prevent disease	237	68.5
	Children to grow up healthy	67	19.4
	To cure disease	33	9.5
	Not sure what they are for	9	2.6
Care takers thought disease development if child not vaccinated	Yes	312	90.2
	No	17	4.9
	Don't know	17	4.9

5.6. Missed opportunity of immunization.

From the total 346 children 170 (49.1 %) had missed opportunity and 176 (50.9) had not missed opportunity. The reason of missed opportunity were probed of which 138(81.2%) out of the missed opportunity were due to absence of adequate number of children to conduct the immunization session and other reasons were aware of return of vaccination place and time of vaccination.

.The missed opportunity of BCG 131 (37.9%), measles 32(31.1%) opportunity and OPV0 121(35%). These mentioned antigens had higher than the other vaccines (table 6 and 7).

Table 7:-Missed opportunity and reason of missed opportunity caretakers on immunization in Wolikte health center, South Ethiopia, May,2015.

		Frequency	Percent
Vaccinated during the visit	Yes	138	39.9
	No	208	60.1
Missed opportunity	Yes	170	49.1
	No	176	50.9
Reason of immunization failure /missed opportunity in general for missed vaccine	Unaware of need for immunization	10	5.9
	Unaware of need to return for 2nd and 3rd dose.	3	1.8
	. Place and/or time of immunization unknown	5	2.9
	absence of more children to conduct the session	138	81.2
	Others	14	8.2

Table 7 – Missed opportunity of antigens from card and history in Wolikte health center, South Ethiopia, May, 2015. (n=346)

		Frequency	Percent
BCG	NOT MISSED	215	62.1
	MISSED	131	37.9
OPV0	NOT MISSED	225	65.0
	MISSED	121	35.0
OPV 1	NOT MISSED	320	97.2
	MISSED	9	2.8
OPV3	NOT MISSED	198	96.1
	MISSED	8	3.9
PENTA1	NOT MISSED	319	97.2
	MISSED	9	2.8
PENTA2	NOT MISSED	259	97.0
	MISSED	8	3.0
PENTA3	NOT MISSED	198	96.1
	MISSED	8	3.9
PCV1	NOT MISSED	312	94.5
	MISSED	17	4.9
PCV3	NOT MISSED	198	96.1
	MISSED	8	3.9
ROTA1	NOT MISSED	320	97.2
	MISSED	9	2.8
ROTA2	NOT MISSED	258	74.6
	MISSED	9	2.6
Measles	NOT MISSED	71	68.9
	MISSED	32	31.1

5.7. Factors associated with missed opportunity of immunization.

The factors assessed includes children and care taker socio demographic characteristics previous vaccination history, vaccination information & knowledge and perception of care takers .Missed opportunity of immunization was measured according to the national immunization schedule which has a total of 5 contact time at birth ,6th weeks ,10th ,14th and 9 months of child age.

5.7.1 Socio demographic and related characteristics of children

After the missed opportunity dependent variable categorized in to missed opportunity and not missed opportunity bivariate analysis was done. According to the bivariate analysis of socio demographic characteristics of children age below 1-2 months 8.42 (95%CI 0.455, 15.56) times had more likely to missed opportunity, those age between 4 up to 8 months 3.356 (95%CI 1.649, 6.332) times more likely was missed than those aged between 9 months up to 12 months.

The sex of children was significant factor for missed opportunity. Males were 2.18(95%CI 1.37, 3.25) times more likely to have missed opportunity than females.

Table 8. Socio demographic characteristics bivariate logistic regression result among children less than 12 months in wolikite health center, Gurage zone, southern nation, Ethiopia May 2015(N=346)

Variables	Missed opportunity		CRUDE OR	PVALUE	
	Yes	No			
Age of children in month	age 1-2	87	26	8.423(4.55,15.56)	0
	age 2.1-3	26	56	1.169(.62,2.202)	0.63
	age 4-8	28	21	3.356(1.649,6.832)	0.001
	age 9-12	29	73		
Sex of child	Male	111	83	2.108(1.367,3.250)	0.001
	Female	59	93		1
Place of delivery	Home	10	9	1.16(.459,2.98)	0.754
	health facility	160	167		1
Purpose visit	child sick	87	26	.774(.385,1.557)	0.472
	Vaccination	26	56	1.789(.913,3.508)	0.09
	Other	28	21		1

5.7.2 Socio demographic characteristics of caretakers

In the case of educational status of caretakers those grade one up to eight 2.133(1.089, 4.179) time had missed opportunity than the other who were above grade 12.

Occupation of the care takers was also have an association with missed opportunity of children that was those who house wife 2.625(1.122, 6.14) were times more likely to be missed opportunity than those who had other jobs. Place of residence also assessed and has an association of missed opportunity of vaccination those who came from catchment other catchment were 1.858 (1.07, 3.228) times more likely to have missed opportunity.

Table 9. Socio demographic characteristics of caretaker 'of children bivariate logistic regression result among children less than 12 months in wolikite health center, Gurage zone, southern nation, Ethiopia May 2015(N=346)

	Variables	Missed opportunity		CRUDE OR	PVALUE
		yes	No		
Age of caretaker	age 15-19	3	12	2(.175,22.799)	0.577
	age20-24	50	67	5.97(.723,49)	0.097
	age25-29	48	61	6.295(.76,52)	0.088
	age 30-34	54	22	19.6(2.317,166)	0.006
	age 35-39	14	6	18.6(1.894,184)	0.012
	40-45	1	8	1	
Educational status	None	60	69	1.391(.721,2.684)	0.325
	grade 1-8	64	48	2.133(1,089,4.179)	0.027
	grade9-12	26	27	1.541(.709,3.34)	0.275
	above 12	20	32	1	
Occupation	Housewife	132	95	2.625(1.122,6.14)	0.026
	Employee	29	48	1.141(.45,2.893)	0.781
	self employed	10	16	0(.00,00)	0.998
	Daily worker	9	17	1	
Place of residence	in other woreda	40	25	1.858(1.07,3.228)	0.028
	in the same area	130	151	1	

5.7.3 Previous vaccination and related factors for missed opportunity on immunization.

Previous Vaccinations history & related factors were also assessed whether those factors were related with missed opportunity. According to the bivariate analysis previous vaccinations & related factors were significantly associated.

In case of previous stock out experiences ,those who had stock out experiences those who has stock out of vaccines 49 (2.62,31 9.376) were more likely had missed opportunity than those who had no experience of stock out.

Table 10. Previous vaccination history bivariate logistic regression result among children less than 12 months in wolikite health center, Gurage zone, southern nation, Ethiopia May 2015(N=346)

Variables	Missed opportunity		COR	P	
	Yes	No			
Stock out experience	Yes	51	14	4.959(2.623,9..376)	0
	No	119	162	1	
Vaccination refusal	Yes	34	30	1.217(.706,2.096)	0.48
	No	136	146	1	
	vaccinator said child sick	2	1	2.086(.187,23.278),	0.55
	no logistics was not vaccination day	0	11	0	1
Vaccination refusal by provider	was not vaccination day	22	20	1.148	0.68
	vaccination area closed	8	0		1
have vaccination card	Other	138	144	0.958	0.72
	Had no card	143	101	1.77(.675,4.641)	0.25
	Had card left home	19	65	.365(.126,1.056)	0.06
	Yes and with me	8	10		

5.7.4 Vaccination information factors for missed opportunity of immunization

In relation to vaccination information bivariate analysis was done to identify the significant relationships of variables with missed opportunity. Among the factors those who hadn't heard/seen any information message on vaccination were 1.919 (1.198, 3.075) times more likely to have missed opportunity than those who had heard/seen vaccination messages in the last months prior to the survey.

Table 11. Vaccination information for missed opportunity bivariate logistic regression result among children less than 12 months in wolikite health center, Gurage zone, southern nation, Ethiopia May 2015(N=346)

Variable	Missed opportunity		COR	P value	
	Yes	No			
Vaccination message in last month	No	131	112	1.919(1.198,3.075)	0.007
	Yes	39	64	1	
Information access	lack of information	149	153	1.067(.566,2.009)	0.842
	have no lack of information	21	23	1	

5.7.5. Knowledge & perception on immunization.

The bivariate analysis shows a significant association between knowledge and perception of caretakers with missed opportunity of children immunization services. As indicated on table 12 caretakers who did not know their children immunization schedule to be fully vaccinated were 2.378 (1.446, 3.915) times more likely to have missed opportunity than those who knew immunization schedule of their children.

Caretaker's knowledge on 10 vaccine preventable disease also significantly associated with missed opportunity of children. Those care takers who did not know any vaccine preventable diseases among ten vaccine preventable disease with current available vaccines were 4.184 ((95% CI1.63, 10.73) times more likely to have missed opportunity than those who knew 6 – 9 diseases.

In case of the perception of caretakers disease development without vaccines did not know were less like (0.06 (0.009, 0.52) the than those who perceived development of disease without vaccines.

Table12. Knowledge and perception of care takers bivariate logistic regression result among children less than 12 months in wolikite health center, Gurage zone, southern nation, Ethiopia May 2015(N=346)

Variables		Missed opportunity		CRUDEOR	PVALUE
		Yes	No		
Knew contact time/schedule of left to complete vaccination	No	139	115	2.378(1.446,3.913)	0.001
	Yes	31	61		
	Don't know	63	32	4.184(1.631,10.73	0.003
Number of VPD disease known by Caretakers	Knews 1-3 disease	79	86	1.952(.798,4.773)	0.143
	knows 3-5disease	20	41	1.037(2.806)	0.944
	knows 6-9 disease	8	17	1	
Care takers thought disease development if child not vaccinated	Don't know	1	16	.066(.009,.502)	0.009
	No	17	0		
	Yes	152	160	1	

5.7.7. Multivariable analysis for factors associated with missed opportunities

Concerning the factors associated with missed opportunity those variables showed significant factors in bivariate analysis was selected and entered to analysis through multivariate analysis to adjust confounders. Among significant factors during bivariate analysis, Socio demographic characteristics i.e. age of the children was independently associated with missed opportunity of children these whose aged b/n 2-3 months were 7.14 (1.6, 18.3) times more likely had missed opportunity than older children.

Stock out experience of care takers. Knowledge of contact time/schedule of immunization and purpose of visit to health facility were independently associated. Those care takers who came for the purpose of child sick treatment 25.3 (4,158) independent associated factors for children missed opportunity of immunization

Table 13. Multivariable analysis for factors associated with missed opportunities wolikite, 2015

	missed	not	AOR	P
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		opportunity	missed		
age group of the children	1 to 2	87	26	7.146(1.619,31.54)	0.01
	2-3	26	56	0.169(.044,.655)	0.009
	4 to 8	28	21	.047(0.01,0.264)	0
	9to12	29	73		
	15-19	3	12	3.621(.121,108.2)	0.458
age group of care taker	20-24	50	67	.837(.038,18.3)	0.91
	25-29	48	61	.318(.014,7.119)	0.47
	30-34	54	22	.072(.003,1.592)	0.096
	35-39	14	6	.518(.020,13.388)	0.692
	40-44	1	8	1	
Educational status	none, does not know how to read and write	60	69	10.555(.264,422)	0.211
	grade 1-8	64	48	3.395(.126,91.6)	0.467
	grade 9-12	26	27	56.706(1.705,1885)	0.024
	above12	20	32		
Occupation	house wife	132	95	.643(.060,6.846)	0.715
	employee/laborer	29	48	3.069(.057,165)	0.581
	self employed	0	16	0	0.998
	Other			1	
Residence new	from other place	40	25	.497(.125,1.977)	0.321
	from the same place	130	151	1	
Stock out of vaccine during immunization session	Yes	51	14	.035(.005,.249)	0.001
	No	119	162		
Vaccination Message	No	131	112	.379(.108,1.329)	0.13
Knowledge contact time	Yes	39	64	1	
	No	139	115	.366(.155,.863)	0.022
	Yes	31	61		
knowledge of vaccine preventable disease	DK	63	32	3.58-11	0
	Knows 1-3 disease	79	86	7.72-10	0
	knows 3-5disease	20	41	3.83-11	
	knows 6-9 disease	8	17		
Perception	DK	1	16	260.507	0.002
	NO	17	0	4.73-19	0.995
	YES	152	160		
Purpose of visit	child sick	87	26	25.328(4.046,158)	0.001
	Vaccination	26	56	1.390(.283,6.837)	0.685
	Others	28	21		

6. Discussion

This study was done in Wolikte health center clients who had children below the age of 1 year to assess the prevalence of missed opportunity and associated factors. A total of 346 care takers who came to health facility were sampled.

The prevalence of missed opportunity for routine immunization for this study was 49.1% as stated in table 7. This study is much higher than the cross sectional study in Jimma hospital, Ethiopia which was 28.8% (14) and study in Nigeria which was 33.4 %..The study which was done in Mozambique has also lower magnitude (25.7%) than this study. In addition, the prevalence of the study conducted in NNAMDI Azikiwe was 16.9% (7) which is much lower than this study. However, a study which was conducted in juba teaching hospital has the higher prevalence of missed opportunity of immunization (56.5 % (18) than this study. This might be in previous years the attention of coverage was an agenda and immunization missed opportunity had time and currently it has lack of attentions.

The major missed vaccines for this study were OPV0(35.9%),BCG (37.9%) and measles (31.1%) which were nearly the same as the study on prevalence of missed opportunity Nnamdi azikiwe , Nigeria i.e. the BCG and OPV0 (38.46%) (8). Missed opportunity for BCG in Juba teaching hospital was very lower (7.6%) than this study (37.9%). This 37.9% of BCG missed opportunity in this study might be due to multi dose vial of BCG. The findings obtained from care takers/mothers indicated the reason of immunization missed opportunities as 81.2% of care takers/mothers during BCG and measles vaccines returned without vaccination due to absence of more children to conduct the immunization which is higher than study in Nigeria, NNAMDI azikiwe which reported that 34.6% of clients missed due to vaccine not opened because of the presence of few clients in immunization service. In our cases, BCG vial has 20 dose per vial and measles has 10dose vial during the data collection from the health center.

According to bivariate and multi variable (variate) analysis factor for determinants of magnitude of missed opportunity, the socio demographic characteristics of children's age was risk factors for missed opportunity. The study showed younger children were more likely to have missed opportunity for vaccination that is opposite of the study in juba teaching hospital (18) and study at

jimma hospital. Vaccination information in the last months prior to the study had contributed a lot for missed opportunity of immunization i.e. 77% of missed opportunities had no any vaccination information which is more than the study in Juba teaching hospital study where 59.4% of the missed opportunity had lack of information's .This study might be due to absence of social mobilization in study area.

The other risk factor that resulted in missed opportunity for routine immunization service in this study was stock out vaccines during the immunization sessions. Around 34% from missed opportunities had an experience missed opportunity that was lower than a study done in Mozambique that is around 54% of missed opportunities were due to lack of vaccines in the health facilities. This might be due to the presence of vaccine requisition system from lower level to higher level has been started previous to one year in study area as well as nationally.

The knowledge and perceptions of care takers significantly affected the prevalence of missed opportunities for immunization and those who had no knowledge about contacts time or how many schedules remain to be the child fully immunized was the factors of missed opportunities. The findings is similar to the study in Somali regional state, Jijga which showed low awareness of mothers own the second and third doses for antigens (2). The study in Juba teaching hospital had also stated unaware of return to 3rd dose was risk factor for missed opportunity (18).

The other contributing factor for missed opportunity of routine immunization was child sickness during the visit of health center like the study in Nigeria that was 24.5% nearly the same as 25.1 % of this study. But similarly study in juba teaching hospital on missed opportunity child sickness was a risk factor that is 7.5% which is higher than our study.

In general missed opportunity of OPV0, BCG and measles were higher than other antigens this might be due to multi doses of BCG and measles vaccine vials that may lead vaccinators not to open for less number of children to avoid vaccine wastage.

7. Strengths and limitations of the study

7.1. Strength

- ❖ The study was done based on exit interview of mothers /caretakers after they had utilized the health center services. So it can give more actual information at facility level on immunization
- ❖ As to the knowledge of the primary researcher study on missed opportunity in the country was not done recently and data regarding to missed opportunity of immunization is not available, so this data can be an input for partners who are working on immunization

7.2. Limitation of the study

- ❖ The study might have limitation like recall basis of their children immunization status.
- ❖ Absence of vaccination card for mothers and caretakers.
- ❖ Health professional related factors like knowledge and practice was not studied.
- ❖ Absences of standard for the measurements of missed opportunity of immunization.
- ❖ Multi antigens administration with the same route , BCG and measles administer through upper arm, Penta and PCV in thigh, Rota and OPV orally may increase the recall bias of mothers to identify which vaccine were missed opportunity.

8. CONCLUSION

- ❖ The overall prevalence of missed opportunity for the routine immunization service was 49.1% which is high.
- ❖ BCG and measles vaccines were the higher vaccines which was 37.9 % 31.1 % respectively and the measure reason for immunization failure of these antigens were absence of “adequate number” of children to conduct the immunizations that was 81.2 %
- ❖ Age of the children , stock out of vaccines during the immunizations sessions knowledge of care takers on contact time for the children to be fully vaccinated and child sickness were the risk factors for missed opportunity of immunization
- ❖ Even if program communication was one components of the service message on immunization was low
- ❖ The knowledge of mothers on vaccine preventable disease was low which 75% of caretakers is knew less than 2 disease among 10 vaccine preventable diseases.

9. Recommendation

- ❖ The dose of BCG which is currently the country procuring and available at health facility is 20 dose per vial and 10 dose per vial for BCG and measles respectively should be reduced to lower doses per vial to reduce missed opportunity for these antigens and to conduct immunization without waiting adequate children and without worrying about vaccine wastage.
- ❖ Better to do another missed opportunity studies with a follow up research of children's to understand their status of immunization after they became above 1 years who would after their eligible time to understand whether the missed children completed their schedules.
- ❖ Vaccination cards should be given at first contact of their schedule to all children.
- ❖ Health professional at health facility should ask the immunization status of any child who is under one year and link with immunization service.
- ❖ There should be information and education system to mothers/caretakers on immunization services of their children.

Appendix III. Interview guide for caretakers recall

- ❖ BCG vaccination against TB that is an injection on the right arm that is usually causes scar
- ❖ OPV, that is, immunization drops applied in the mouth to prevent polio.
- ❖ ROTA vaccine which given oral like polio but the child should be seated in a semi reclining position to take the vaccine orally.
- ❖ Penta and PCV vaccines triple vaccine, that is, an injection usually given in the thigh often at right and left respectively.
- ❖ Measles vaccination that is an injection on the deltoid muscle that is usually given at 9 months

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Annex I Informed consents

Addis Ababa university school of public health master of public health program; questionnaire to study the magnitude missed opportunities and factors related to miss opportunities of infant immunization in wolikite health center for partial fulfillment of master's in public health.

My name is_____. I am working as data collector in a research conducted by Addis Ababa university school of public health to assess the magnitude of missed opportunities and related factors for infant immunization.

The study will be helpful to identify reasons of children missed opportunities for routine immunization and will suggest solution to minimize missed opportunities and children will get a better opportunity of their immunization services. There is no risk because of your participation in this study but some of the questions may be upsetting to you, or you may be marginalized as a result of participating in this study. On the other hand, the benefit of your participation is that you will contribute useful information to public health managers so they provide programs related to missed opportunities. Thus, your ideas are very essential for us to better understand the problem of missed opportunities and your participation is voluntary including the right not to answer those questions that make you feel uncomfortable. In this study your name will not be on the survey so no one will know your answers. Everything you say will be kept private and confidential. If you fill discomfort with the questionnaire, please fill free to drop it any time you want. This questionnaire will take about 30 minutes.

At this time, do you want to ask me anything about the survey?

May I begin the interview now? (Circle)

1 = Yes 2 = No (End the interview)

Annex II questionnaire.

Addis Ababa university school of public health master of public health program; questionnaire to study the magnitude missed opportunities and factors related to miss opportunities of infant immunization in Wolikite health center.

Day / Month / Year of interview (EC):------

Questions	
1. 1. Date of birth of the child	Day-----monthyear
2. Sex	1. Male 2. Female
3. Place of delivery	1, home 2 health facility
4. Why did you bring the child to this health care facility? (Do not read the choices)	1. Child is sick 2. Vaccination 3. Healthy child visit, or growth/development check-up 4.other (specify)
5. Age (years)	_____
6. Sex_____	1. Male 2. Female
7. Did the mother of the child attend ANC?	
8. What is your relationship with the child?	1. Mother/father 2.Brother/sister 3. Other Specify: _____

9. Marital status	1. Single 2. Married 3. Separated/divorced 4. Widowed
10. Educational status	1. None, but knows how to read and write 2. None, does not know how to read and write 3. Grade 1-8 4. Grade 9-12 5. above 12
11. Occupation	1. Housewife 2. Employee or laborer 3. Self-employed 4. Others (specify) _____
12. Place of residence	1. The same area from the health center 2. from other woreda/kebele
13. If Q 12 is 2, is this health center in the municipality where you live	1. Yes Skip to question 13 2. No 3. DK Skip to question 13
14. Why do you come to this facility?	1. No health services in the municipality of residence 2. There are health services in the municipality where I live, but their treatment of patients is not good

	<p>3. The facility is on the way to my workplace</p> <p>4. Because this facility offers various health services</p> <p>5. Have always brought the child here</p> <p>7. Other (Specify) _____</p>
15. What means of transportation do you usually use to come to this facility?	<p>1. Walk 2. By any transport</p> <p>_____</p>
16. How long does it take you to get here? :	<p>Hour's _____ Minutes _____</p>
17. Have you heard or seen messages on vaccination in the last month?	<p>1. Yes 2. No — Skip to question 24</p>
18. Where?	<p>1. Radio or Television 2. Health facility 3. Religious institution 4. Health extension worker 5. Other Specify: _____</p>
19. How did you use the information? _:	<p>1. Knowing where to vaccinate the child</p> <p>2. Having more information</p> <p>3. Decided to vaccinate the child</p> <p>4. No use 5. Other Specify _____:</p>
20. Where do you usually look for information on what vaccines your child needs?(MR).	<p>1. Does not seek information Skip to question 22</p> <p>2 health extension worker 3 Radio 4. Television 8 Vaccination card 5. Other parents /family member's 6 Religious institution</p> <p>9. Health facilities 11. Other Specify: _____</p>

<p>21. For what did you use the information? –</p>	<p>1. Knowing where to vaccinate the child 2. Having more information than provided by the health services 3. Decided to vaccinate the child 4. No use 5. Other Specify: _____</p>
<p>22. Do you have access of information on vaccination or on the need for vaccination?</p>	<p>1. Yes 2. No 3. DK/NR</p>
<p>23. Have you ever vaccinated your child?</p>	<p>1. Yes 2. No</p>
<p>24. Have you ever been informed on stock out any vaccine during immunization session?</p>	<p>1 yes 2.no</p>
<p>25. Have you ever requested vaccination service for this child and been refused?</p>	<p>1,yes 2,no skip27</p>
<p>26. If so, why didn't they vaccinate the child?</p>	<p>1. The doctor or nurse said it couldn't be done because the child was sick 2. There were no vaccines, or there were no syringes or some other supply needed for vaccination 3. It was not a vaccination day 4. The vaccination area was closed 5. The person in charge of vaccination was not there</p>

	<p>6. There would have been a long wait</p> <p>7. The staff treated us badly 8. We didn't have the vaccination card with us</p> <p>9. The hours for vaccination are limited 10. Other Specify: _____</p>												
<p>27. In your home, who makes the decision to vaccinate the children? (MR)</p>	<p>1. Father 2. Mother 3. Other relative's 4. Consensus of father and mother</p> <p>5. Other Specify: _____</p>												
<p>28. Does your child have a vaccination card?</p>	<p>1. Yes, and I have it with me</p> <p>2. Yes, but I do not have it with me Skip to question 31 3. No</p>												
<p>29. Do the caretaker knows how many contact remain for the child to be fully vaccinated?</p>	<p>1 yes</p> <p>2 no</p>												
<p>30. Vaccines</p> <table border="1" data-bbox="191 1423 810 1900"> <thead> <tr> <th data-bbox="191 1423 404 1486">Vaccination</th> <th data-bbox="406 1423 643 1486">Vaccinated</th> <th data-bbox="644 1423 810 1486">Date of vaccination</th> </tr> </thead> <tbody> <tr> <td data-bbox="191 1488 404 1583">30.1 BCG</td> <td data-bbox="406 1488 643 1583">1,yes 2,no</td> <td data-bbox="644 1488 810 1583"></td> </tr> <tr> <td data-bbox="191 1585 404 1680">30.2 OPV0</td> <td data-bbox="406 1585 643 1680">1,yes 2,no</td> <td data-bbox="644 1585 810 1680"></td> </tr> <tr> <td data-bbox="191 1682 404 1900">30.3 OPV1</td> <td data-bbox="406 1682 643 1900">1 yes</td> <td data-bbox="644 1682 810 1900"></td> </tr> </tbody> </table>	Vaccination	Vaccinated	Date of vaccination	30.1 BCG	1,yes 2,no		30.2 OPV0	1,yes 2,no		30.3 OPV1	1 yes		
Vaccination	Vaccinated	Date of vaccination											
30.1 BCG	1,yes 2,no												
30.2 OPV0	1,yes 2,no												
30.3 OPV1	1 yes												

	2 no 3,not eligible		
30.4OPV 2	1 yes 2 no 3,not eligible		
30.5 OPV 3	1 yes 2 no 3,not eligible		
30.6 Penta 1	1 yes 2 no 3,not eligible		
30.7 Penta 2	1 yes 2 no 3,not eligible		
30.8 Penta 3	1 yes 2 no 3,not eligible		
30.9 Pcv 1	1 yes 2 no 3,not eligible		
30.10 Pcv 2	1 yes 2 no 3,not eli1 yes 2 no 3,not eligible gible		
30.11 Pcv 3	1 yes 2 no		

	3,not eligible		
30.12 Rota 1	1 yes 2 no 3,not eligible		
30.13 Rota 2	1 yes 2 no 3,not eligible		
30.14 measles	1 yes 2 no 3,not eligible		
31. Is there any antigen missed at eligible age?	1 yes 2 no		
32. Reasons for not carrying or having vaccination cards	1. Left it at home 2. Lost it 3. Have not been given 4. Because vaccination was not the reason for the visit 5. Other		
33. During the visit to the facility, did the personnel ask you for the child's vaccination card?	1. Yes 2. No 3. No, but they asked me about the child's vaccines		
34. Was your child vaccinated during this visit to the facility?	1. Yes Skip to 2. No _____		
35. Why didn't they vaccinate the child?	1. The doctor/nurse said that the child is already		

<p>Reasons related to the health workers</p>	<p>vaccinated, or has had the complete series, or is not due for a vaccination at this time.</p> <p>2. The health workers did not ask me.</p> <p>3. The doctor or nurse said that it could not be done because the child is sick</p>
<p>36. . Why didn't they vaccinate the child? Reasons related to the caregiver</p>	<p>1. The last time the child was vaccinated he/she got sick or had a reaction.</p> <p>2. My religion doesn't permit it.</p> <p>3. Negative experiences of a family member or acquaintances.</p> <p>4. I don't trust the health service's vaccines.</p> <p>5. I don't trust the personnel of the health facilities.</p> <p>6. I forgot. 7. Vaccines can cause some disease or discomfort.</p> <p>8. I don't have time.</p> <p>9. Vaccines are not necessary, or I don't believe in vaccines.</p> <p>10. The child has completed the series.</p> <p>11. Vaccination was not the purpose of this visit.</p> <p>12. Other - Specify:</p>
<p>37. Why didn't they vaccinate the child? . Reasons related to the health service's logistics and organ</p>	<p>1. There were no vaccines.</p> <p>2. There were no syringes, or other vaccination supplies were missing.</p> <p>3. It is not a vaccination day.</p> <p>4. The vaccination area was closed.</p> <p>5. The person in charge of vaccinations was not there.</p> <p>6. There would have been a long wait.</p>

	<p>7. The staff treated us badly.</p> <p>8. The hours for vaccination are limited.</p> <p>9. Other - Specify:</p>
38. . How long did you wait today for your child to be vaccinated?
39. . Reasons for missed opportunity/ immunization failure in general.	<p>1. Unaware of need for immunization.</p> <p>2. Unaware of need to return for 2nd and 3rd dose.</p> <p>3. Place and/or time of immunization unknown.</p> <p>4. Wrong ideas about contra-indication.</p> <p>5. absence of more children to conduct the session</p> <p>6. Other, specify.....</p> <p>.....</p>
40. Could you tell me the purpose of vaccines?	<p>1. To prevent diseases.</p> <p>2. So children will grow up healthy.</p> <p>3. To cure diseases.</p> <p>4. They don't do any good.</p> <p>5. Not sure what they're for.</p>
41. What diseases do vaccines prevent?	<p>1. Tuberculosis</p> <p>2. Hepatitis</p> <p>3. Poliomyelitis or polio</p> <p>4. Diphtheria</p> <p>5. Whooping cough or pertussis</p>

	<p>6. Tetanus</p> <p>7. Pneumonia</p> <p>8. Diarrhea</p> <p>9. Influenza</p> <p>10. Measles</p> <p>11. Other Specify: _____</p> <p>12. DK</p>
<p>42. Do you think your child could get these diseases if you don't vaccinate him/her?</p>	<p>1. Yes</p> <p>2. No</p> <p>3. DK</p>
<p>43. . What suggestions do you have to improve vaccination services?</p>	<p>1. There should be more vaccination personnel.</p> <p>2. There should be less of a wait.</p> <p>3. Hours and days when vaccinations are available should not be limited.</p> <p>4. Vaccination cards should not be distributed.</p> <p>5. The treatment of the public, and of the children being vaccinated, should be friendlier.</p> <p>6. The health center should always have vaccines.</p> <p>7. They should provide information on the vaccines that are being given, on the diseases that they prevent, and on the reactions that they produce.</p> <p>8. Other Specify: _____</p> <p>9. None</p>

	10. DK
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To be filled by the interviewer

Code of the questionnaire-----

Name of the interviewer-----

Date of the interview-----

To be filled by the supervisor

Name of the supervisor-----

Questionnaire Complete-----

Incomplete-----

በአዲስአበባዩኒቨርሲቲየህብረሰብጤናማስተርስፕሮግራምበወልቂጤጤናጣቢያያለውንህፃናትወደጤናተቋሙከመጡበኃላየማይከተቡህጻናትበዛትናእንዳይከተቡየሚያደርጉአጋጣሚዎች/ ምክንያቶችንለማጥናትየተዘጋጀመጠይቅ።

መጠይቁየተሞላበትቀን-----

ህፃኑንበተመለከተ	
1. እድሜ.....
2. ፆታ	1) ወንድ 2) ሴት
3. ህጻኑየተወለደበትቦታ	1) ቤት 2) ጤናተቋም
4. ህጻኑንወደጤናተቋምለምንድንነውያመጡት (ምርጫዎችአይነበቡም)	1 ህጻኑ/ኖስለታመመ/ች 2 ለክትባት 3 ለህጻኑየእድገትከትክትል 4 ለሌላ(ይገለጽ) -----
የህፃኑ/ኖ ወላጅ /አሳዳጊሁኔታ	
5. እድሜ-	(በአመት)-----
6. ፆታ	1) ወንድ 2) ሴት
7. እናትበእርግዝናወቅትቅድመወሊድክትትልአድርገውነበር	1) አዎ 2) የለም
8. ከህጻኑጋርያለዎትዝምድና	1 1.ወላጅ 2 እህት/ወንድም 3 ሌላ(ይገለፅ)
9. የጋብቻሁኔታ	1.ያላገባ 2 ያገባ 3 የፈታ 4 የሞተበት
10. የትምህርትደረጃ	1. መደበኛያልሆነማንበብና

	<p>መጻፍ</p> <p>2. ምንምማንበብናመጻፍየማይችል</p> <p>3. 1-8 ክፍል</p> <p>4. 9-12 ክፍል</p> <p>5. ከ12ኛ በላይ</p>
11. የስራ-ሁኔታ	<p>1. የቤት-እመቤት</p> <p>2. ተቀጣሪ</p> <p>3. የራሱንስራ-የሚሰራ</p> <p>4. ሌላ(ይገላፅ) ----- -----</p>
12. የመኖሪያአካባቢ	<p>1. በጤናጣቢያውአካባቢ</p> <p>2. ከሌላቀበሌ /ወረዳ</p>
13. በጥያቄ 12 መልሱ 2 ከ ሆነይህጤናጣቢያበእናንተከተማ/ቀበሌ አስተዳደርስርነው	<p>1 አዎወደጥያቄ 15</p> <p>2 አይደለም</p> <p>3 አላውቅምወደ 15</p>
14. ወደእዚህጤናተቋምየመጡትለምንድን ነው	<p>1. በእኛአስተዳደርጤናተቋምስለሌለ</p> <p>2. በእኛአስተዳደርያለው ጤናተቋምየህክምናአስጣጥጥሩስላልሆነ</p> <p>3. ይህጤናተቋምበስራቦታ ዩስለሆነነው</p> <p>4. ይህጤናተቋምበዙህንገል ግሎትስለሚሰጥ</p> <p>5. የለመድኩትጤናተቋም ስለሆነ/ሁሌስለምመጣ</p>

	6. ሌላይገለፅ
15. በምንአይነት የትራንስፖርት መንገድ ነው ወደ ጤና ተቋም የመጡት	1. በእግር 2. በማንኛውም አይነት መጓጓዣ መንገድ
16. ምን ያህል ሰዓት ይፈጅበዎታል	1. ሰዓት.....
በክትባት ላይ ስላለው መረጃ	
17. ባለፈው ወር ውስጥ ስለ ክትባት የሰሙት/ ያዩት መልክት አለ	1. አዎ 2. የለም ወደጥያቄ 24 ዕለፍ
18. የትኑው ያዩት / የሰሙት	1. በሬዲዮ / በቴሌቪዥን 2. በጤና ተቋም ውስጥ 3. በሀይማኖት ተቋም 4. ከጤና ኤክስፔንሽን 5. ሌላ (ይገለፅ).....
19. መረጃውን እንዴት ተጠቀሙበት	1) ህፃናት ንጥል ስለተቀረጸው ስለሆነ ለሌሎች ለማወቅ 2) የበለጠ መረጃ እንዳገኝ ለሌሎች 3) ህፃናት ንጥል ስለተቀረጸው ስለሆነ ለሌሎች ለማወቅ
20. ህፃናት ምን አይነት ክትባት እንደሚያስፈልገው / ጋት ብዙ ጊዜ መረጃ የሚከታተሉት ከየትኑ ውስጥ (ብዙ መልስ)	1) ምንም መረጃ አልከታተልም ወደጥያቄ 26 እለፍ 2) ከጤና ኤክስፔንሽን ሰራተኛ 3) ሬዲዮ

	<p>4) ቴሌቪዥን</p> <p>5) ክሌላዊ ቤተሰብ አካል</p> <p>6) ከሀይማኖት ተቋም</p> <p>7) ከጤና ተቋም</p> <p>ሌላ ይገለጹ</p>	
21. መረጃውን ለምን ተጠቅመዎብዎትዎ?		<p>1. ህጻኑን የትማስከተብኝን ዳላብኝ አወቅኩ</p> <p>2. በጤና ባለሙያዎች ከሚሰጠው የበለጠ መረጃ እንዳገኝ እረዳኝ</p> <p>3. ህጻናት ማስከተብኝን ዳላብኝ ወሰን ከብዎት</p> <p>4. ምን፣ ምን አልተጠቀምኩብዎትም</p> <p>5. ሌላ (ይገለጹ)</p>
22. ስለ ክትባት ስለ ክትባት ጥቅም የመረጃ እጥረት አለብኝ ብለው ያስባሉ		<p>1. አወ</p> <p>2. አላስብም</p> <p>3. አላውቅም/መልስ የለም</p>
23. ህፃኑን አስከትብዎት ያውቃሉ		<p>1. አዎ</p> <p>2. አስከትቤ አላውቅም</p>
24. የተወሰነ የክትባት እጥረት ስላለ መከተብ የነበረበትን ክትባት ስላል ወሰደሌላ ቀን ይመለሱ ተብለው ያውቃሉ		<p>1. አዎ</p> <p>2. የለም</p>
25. ለህጻኑ/ሩ የክትባት አገልግሎት ተጠይቀው እምቢ ተብለው ያውቃሉ		<p>1. አዎ</p> <p>2. አይወደ 49 እለፍ</p>
26. ከሆነ ለምን ነበር ያልተከተቡብዎት ምክንያት		<p>1. ሀኪም</p>

	<p>/ኑርሱስለታመመመክተብአይቻልምበማለቱ</p> <ol style="list-style-type: none"> 2. ክትባት ፣ መርፌ ና ሌሎች ግባቶች የሉም በመባሉ 3. የክትባት ቀን አየደለም በመባሉ 4. የክትባት ጣቢያው ስለተዘጋ 5. ለክትባት የተወከለው ሰው ባለመኖሩ 6. ብዙ መጠበቅ ስለነበር 7. ባለሙያዎች በአግባቡ ስለማያስተናግዱ 8. የክትባት ካርድ ስላልያዝኩ 9. የክትባት መስጫ ሰኣት ውስን ስለሆነ 						
<p>27. ከቤተሰቡ መካከል ስለህፃናት ክትባት የሚወሰነው ማነው</p>	<ol style="list-style-type: none"> 1. አባት 2. እናት 3. ሌላ ዘመድ 4. በእናትና በአባት ስም ምንት 5. ሌላ ይገለፅ <p>የክትባት ካርድ ና አስፈላጊነት በተመለከተ</p>						
<p>28. ህጻኑ የክትባት ካርድ አለው/አላት</p>	<ol style="list-style-type: none"> 1. አዎ ይገኝባል 2. አወአሁን ግን አልያዝኩትም ወደ ጥያቄ 31 3. የለውም /የላትም 						
<p>29. የህጻኑ ስንት የጊዜ ቀጠሮ እንደ ቀረው ያውቃሉ</p>	<ol style="list-style-type: none"> 1. አወ 2. የለም 						
<p>የክትባት አይነት</p>	<table border="1"> <thead> <tr> <th data-bbox="514 1709 773 1808">ክትባት ንወስዶ ዋል</th> <th data-bbox="773 1709 971 1808">የወሰደነት ቀን</th> <th data-bbox="971 1709 1369 1808"></th> </tr> </thead> <tbody> <tr> <td data-bbox="514 1808 773 1873">30.1 BCG (at birth)</td> <td data-bbox="773 1808 971 1873">1 አወ</td> <td data-bbox="971 1808 1369 1873"></td> </tr> </tbody> </table>	ክትባት ንወስዶ ዋል	የወሰደነት ቀን		30.1 BCG (at birth)	1 አወ	
ክትባት ንወስዶ ዋል	የወሰደነት ቀን						
30.1 BCG (at birth)	1 አወ						

	2 የለም		
30.2 OPV0	1 አወ 2 የለም		
30.3 OPV1	1 አወ 2 የለም 3 አይመለከተውም		
30.4 OPV 2	1 አወ 2 የለም 3 አይመለከተውም		
30.5 OPV 3	1 አወ 2 የለም		
30.6 Penta 1	1 አወ 2 የለም 3 አይመለከተውም		
30.7 Penta 2	1 አወ 2 የለም 3 አይመለከተውም		
30.8 Penta 3	1 አወ 2 የለም 3 አይመለከተውም		
30.9 Pcv 1	1 አወ 2 የለም 3		

	አይመለከተውም		
30.10 Pcv 2	1 አወ 2 የለም 3 አይመለከተውም		
30.11 Pcv 3	1 አወ 2 የለም 3 አይመለከተውም		
30.12 Rota 1	1 አወ 2 የለም 3 አይመለከተውም		
30.13 Rota 2	1 አወ 2 የለም 3 አይመለከተውም		
30.14 measles	1 አወ 2 የለም 3 አይመለከተውም		
31. ከላይከተዘረዘሩት ክትባቶች መካተብ ኖሮ ነት ያልተከተበው የክትባት አይነት አለ		1. አዎ 2. የለም	
32. የክትባት ካርዱ ን ያልያዙት		1) ከቤት ተውኩት 2) ጠፋብኝ 3) አልተሰጠኝም ወደ 34 4) የመጣሁት ለክትባት አይደለም 5) ሌላ ይገለጻል	

33. ወደጤናተቋም በሚመጡበት ጊዜ የክትባ ትካርድ ይጠየቃሉ	<ol style="list-style-type: none"> 1. አዎ 2. አይ 3. አይነገር ግን ስለሕፃናት ክትባት ይጠይቁኛል
የክትባት መረጃ	
34. ህጻንዎን ዛሬ አስከተቡት	<ol style="list-style-type: none"> 1 አዎ ወደ 39 2 አይ
35. ለምንነበር ህጻኑ ያልተከተበው ከጤና ባለሙያው ጋር በተያያዘ ምክንያት	<ol style="list-style-type: none"> 1. ሀኪሙ / ነርሱ ህጻኑን ተከትቶ ስለሚሆን / ለችወይም ጨርሶ ለችወይም የክትባት ጊዜ አይደለም በማለቱ 2. ባለሙያዎች አልጠየቁኝም ነበር 3. ሀኪሙ / ነርሱ ህጻኑን ስለታመመ አሁን ምክንያት ተብሎ አይቻልም በማለቱ
36. ከወላጅ/ ከአሳዳጊ ጋር በተያያዘ	<ol style="list-style-type: none"> 1. ከዚህ በፊት በወሰደው ክትባት ህጻኑ ስለታመመ 2. ሀይማኖቱ ስለማየፈቅድ 3. ከዚህ በፊት ቤተሰቡ ውስጥ ባለ የክትባት መጥፎል ማድ 4. የጤና ተቋሙ ን የክትባት አገልግሎት ስለማላምን 5. የጤና ተቋሙ ን ባለሙያዎች ስለማላምን ባቸው 6. ረሳሁት 7. ክትባት አንዳንድ የጤና ግሮች ን ስለሚያስከትል 8. ጊዜ ስለሌለኝ 9. በክትባት ስለማላምን

	<p>10. ህፃኑ-ክትባቱን ስለጨረሰ</p> <p>11. የመጣሁት ስክትባት አልነበረም</p> <p>12. ሌላ ይገለፅ</p>	
<p>37. ከጤና ተቋም አገልግሎት ግብአትና አደረጃጀት ጋር በተያያዘ ምክንያት</p>	<ol style="list-style-type: none"> 1. ክትባት አልነበረም 2. የክትባት መርፌና ሌሎች አስፈላጊነት ሮች ስላልነበሩ 3. የክትባት ቀን ስላልሆነ 4. የክትባት መስጫው ዝግ ስላልሆነ 5. ከታቢው ስላልነበረ 6. ወረፋ መጠበቁ አሰልፎች ስላልነበሩ 7. ባለሙያዎች ባገባቡ ስለማያስተናግዱ 8. የክትባት ሰዓት ወቅት ስላልነበረ 9. ሌላ..... 	
<p>38. በዛሬው ጊዜ ምን ያህል ጊዜ ቆይቶ</p>	<p>.....</p>	
<p>39. ህፃኑ ሣይከተብ የቀረበት ምክንያት/ማውጣት</p>	<ol style="list-style-type: none"> 1. ስለክትባት ግንዛቤ አለመኖር 2. ለሁለተኛና ለሶስተኛ የመመለስ ግንዛቤ አለመኖር 3. የክትባት ቦታና ጊዜ ንአለማወቅ 4. ከክትባት በኋላ የሚከሰተው ንጥጥ ሽግግር ርባራራ 5. ብዙ ህጻናት ስላልመጡ 6. ሌላ 	
<p>የክትባት ምክንያት</p>		
<p>40. ስለክትባት ጥቅም ሊነግሩኝ ይችላሉ</p>	<ol style="list-style-type: none"> 1. በሽታ ን ለመከላከል 2. ህፃናት ጤናማ ሆነው እንዲያድጉ 3. ከበሽታ ለመፈወስ 	

	<ol style="list-style-type: none"> 4. ጥቅም የለውም 5. ምን እንደሆነ እርግጠኛ አይደለሁም 	
<p>41. ክትባት ከምንበሽታ ይከላከላል</p>	<ol style="list-style-type: none"> 1. ቲቢ 2. የጉበት በሽታ 3. የልጅነት ልምሻ 4. ተላላፊ የጉሮሮ በሽታ 5. ትክትክ 6. መንጋጋቆልፍ 7. የሳምባምች 8. ተቅማጥ 9. ከባድ ጉንፋን (እንፍሊ ዌኒዛ) 10. ኩፍኝ (አንክሊስ) 11. ሌላ..... 12. አላውቅም 	
<p>42. ህጻኑ ባይከተብ እንደሆነ ህበሽታዎች ሊያጠቁት ይችላል ነበር ብለው ያስባሉ</p>	<ol style="list-style-type: none"> 1. አዎ 2. አይ 3. አላውቅም 	
<p>43. የክትባት አገልግሎት እንዲሻሻል ምን አስተያየት አለዎት</p>	<ol style="list-style-type: none"> 1. ብዙ የክትባት ባለሙያዎች መኖር አለባቸው 2. በጤና ተቋሙ ውስጥ ብዙ መቆየት የለብንም 3. የክትባት ቀንና ሰዓት ውስን መሆን ያለበት 4. የክትባት ካርድ መሰራጨት የለበትም 5. የህዝቡ ናየሚከተቡ ሕፃናት አገልግሎት አሰጣጥ አቀራረብ ጥሩ መሆን አለበት 	

	<p>6. ጤናጣቢያው ሁልጊዜ የክትባት አገልግሎት ሲኖረው ይገባል</p> <p>7. ባለሙያዎች ስለሚሰጡ ክትባቶች ስለሚከላከሉት በሽታ እና ስለሚከላከሉት በሽታ እና ስለሚያስከትሉት የጎንዮሽ ችግር መረጃ ጸቢ ሰጡ</p> <p>8. ሌላ.....</p> <p>9. መልስ የለም</p> <p>10. አላውቅም</p>
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የመረጃ ሰብሰቢው የሚሞላበት ቆይታ ለምሳሌ

የመረጃ ሰብሰቢው ስም-----

የተቆጣጠሪ ስም-----

የክልሉ ቦርድ----- ቀን.....

የመጠይቁ ሁኔታ የተሟላ-----

ያልተሟላ-----