

FACTORS ASSOCIATED WITH INCOMPLETE CHILDHOOD
VACCINATION AMONG CHILDREN 12-23 MONTHS OF AGE IN
MACHAKEL WOREDA, EAST GOJJAM ZONE: A CASE CONTROL STUDY

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JIMMA, ETHIOPIA

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Abstract

Introduction: Immunization is an effective public health intervention to reduce morbidity and mortality among children. However, Immunization will become more effective if the child can receive the full course of recommended immunization doses. However, due to various reasons many fail to complete the course of immunization. Addressing them helps to circumvent undesired events due to incomplete childhood immunization.

Objective: To assess factors associated with incomplete childhood vaccinations among children 12-23 months of age in Machakel woreda, East Gojjam Zone, Northeast Amhara, 2014.

Method: community based unmatched case control study design with quantitative and qualitative methods was conducted in Machakel woreda, East Gojjam zone from March 20 – April 30, 2014. Census was done to identify cases and controls. For quantitative method, a sample of 154 cases and 154 controls selected using stratified multistage random sampling technique. Data were collected using a pretested structured questionnaire using interview data collection method. Data were entered into Epiinfo software and analyzed using SPSS version 16.

Result: A total of 150 cases and 152 controls were included in the study. The mean age (SD) of cases was 17.78(\pm 3.40) and that of controls was 16(\pm 2.7). About 36% of cases were females and 61% of controls were females. The factors negatively and significantly associated with incomplete vaccination were female sex of child [AOR=0.44, 95%CI (0.24, 0.83)], parity one [AOR=0.25, 95%CI (0.09, 0.71)], and parity two [AOR=0.29, 95%CI (0.14, 0.60)], while factors positively and significantly associated with incomplete immunization were absence of ANC (antenatal care) [AOR=2.49, 95%CI (1.27, 4.87)], absence of PNC(post natal care) [AOR=2.42, 95%CI (1.05, 5.60)], inadequate knowledge on vaccine schedule [AOR=2.58, 95%CI (1.38, 4.81)], and misconception about vaccine contraindication [AOR=3.94, 95%CI (2.07, 7.49)].

Conclusion: Based on the result family planning, strengthening of ANC, PNC, improved effort on giving information about vaccine schedule, creation of awareness about misconceptions and further study to clarify the differential immunization of females are recommended.

Keywords: incomplete vaccination, 12-23months children: associated factors: A case control study

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Acronyms and Abbreviations

ANC -	Antenatal care
AOR-	Adjusted odds ratio
BCG -	Bacillus camette guirine
CI -	Confidence interval
COR-	Crude odds ratio
DTP-	Dephteria,tetanus and pertusis
EPI-	Expanded programme for immunization
EDHS-	Ethiopia Demographic and Health survey
GAVI-	Global Alliance for Vaccines and Immunization
Hib-	Haemophilus influenzae type b
HEP-	Health extension program
MDG-	Millinium development goal
MoH-	Ministry of health
OPV-	Oral polio vaccine
OR-	Odds ratio
PNC-	Post natal care
RED-	Reaching every district
SD-	Standard deviation
SOS-	Out-reach service
SPSS-	Statistical package for social science
TT-	Tetanus toxoid
WHA-	World health assembly
WHO-	World health organization

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Chapter one: Introduction

1.1. Background

Child immunization is one of the most cost-effective public health interventions for reducing child morbidity and mortality. The goal of immunization programs is to reduce the incidence of vaccine-preventable diseases in children by means of high coverage with potent vaccines administered at the appropriate age. Assuring that children receive all necessary doses of all vaccines before their first birthday is essential. And immunization will become more effective if the child can receive the full course of recommended immunization doses(1).According to guidelines developed by the World Health Organization, children are considered as fully vaccinated when they have received a vaccination against tuberculosis (BCG), three doses of pentavalent vaccine DPT-HepB-Hib and polio vaccines, and a measles vaccination by the age of 12 months. Considering this incomplete vaccination can be defined children who missed at least one doses of the eight vaccines before 12 months (2, 3).

In developing countries, an estimated 12.2 million deaths occur in under five years of age group every year, and most of the deaths occur in these countries are from preventable infectious diseases; that are diarrheal diseases, acute respiratory infections, measles, and malaria. Considering these problems, efforts have been made for a long time to reduce childhood morbidity and mortality through childhood survival interventions(4).

A balanced child health and child survival interventions will include engagement in efforts to strengthen routine immunization programs, which is the preferred method for achieving sustainable coverage with childhood antigens in the long term(1).

In 1974, the World Health Assembly established the expanded programme on Immunization as one of the major public health interventions to prevent childhood morbidity and mortality. And the UN General Assembly established internationally accepted immunization goal on children in 2002 to ensure by 2010 the full immunization of children under one year of age at 90% nationally, with at least 80% coverage in every district or equivalent administrative unit(1).

1.2. Statement of the problem

Globally it is estimated that between two and three million child deaths are averted annually through vaccination against diphtheria, tetanus, pertussis and measles. However, vaccine-preventable diseases are still responsible for about 25% of deaths occurring annually among children under five years of age.(5) 22.6 million children under one year of age were partially protected. One out of five infants worldwide does not receive 3 life-saving doses of the diphtheria, tetanus and pertussis vaccine. More than seventy percent of these children live in ten countries: Democratic Republic of the Congo, Ethiopia, India, Indonesia, Iraq, Nigeria, Pakistan, Philippines, Uganda and South Africa(6).

Morbidity and mortality caused by vaccine preventable diseases are still very high in many developing countries across the world (7). Out of 23.2 million of children missed the vaccine globally, 15.3 million (65%) children exist in eight countries of Africa and south Asia and from these 1 million of them live in Ethiopia (8).

In 2010, more than six million children in sub-Saharan Africa did not receive the full series of vaccination by one year of age(9). In Nigeria about two third (62.8%) of the children were not fully immunized by one year of age. And 52% children aged from 12-23 months were not fully vaccinated in Gambia(10). However in Malawi and Kenya, with about one fifth (21.7%, 23% respectively) of children aged 12-23 months are not fully vaccinated(11, 12).

In 2011, only 24 percent of children age 12-23 months in Ethiopia was fully vaccinated. However there is a 19 percent increase from the level reported in the 2005 EDHS, the percentage of children who are fully vaccinated remains far below the goal of 66 percent coverage set in the HSDP IV. There is a wide variation among regions in full vaccination coverage, ranging from 79 percent in Addis Ababa, 26.3% in Amhara and 9 percent in Affar(2).

Children who have not been fully immunized are at far greater risk of becoming infected with serious vaccine-preventable diseases. A study conducted showed that children who had not received the measles vaccine were 35 times more likely to get the disease. The decision not to fully vaccinate a child is a decision to put the child and others at risk of contracting a disease that could be dangerous or deadly(13).

Numerous studies documented that socio-economic status of the household, mother's age, level of education particularly mothers' education, history of ANC attendance, child's age, sex of the child, birth place, birth order, place of residence, mother's knowledge about immunization, mother's TT status, house hold visit, missing opportunity, distance to health institutions(14), perception about benefit of immunization, misconception about vaccine contraindication and are factors associated with immunization(2, 10, 14-17). However, the relationship of these factors not always consistent between studies. In addition; acceptance of immunization, fear of adverse effects and other determinants were considered as predictors for incomplete immunization(18). Even though there is a consensus about the above problems to the contribution of low coverage of complete vaccination, the problem still persisted with much little improvement posing a challenge to the country health care delivery system(19).

Studies have been conducted earlier to identify reasons of incomplete immunization were most of them are a part of coverage evaluation surveys (cross-sectional) so there is a chance of recall bias.

Therefore, conducting this study can minimize this research gap and to draw attention to the largely unexplored factors that may be associated with incomplete childhood immunization. Therefore, the study assess factors associated with incomplete vaccinations among children 12-23 months of age in machakel Woreda and to generate data that could be used for better planning and strengthening of routine immunization services.

Chapter two: Literature review

2.1. Overview

This chapter reviews the literature on socio-demographic and economic factors, health service related characteristics and mothers/care takers characteristics related to completion of vaccination. Most previous studies were cross-sectional study design while few case control studies were conducted to assess possible determinant factors affecting childhood vaccination.

Factors related to immunization

Socio-demographic and economic factors

Socio-demographic and economic factors have a contribution for incomplete immunization. For example, maternal education has been recognized as an important factor, which determines immunization of children. A Study done in Nigeria on reasons for incomplete vaccination and factors for missed opportunities among rural Nigerian children shows that, educational level of the mother has a significant and positive relationship with childhood immunization coverage. A consistent result were observed in study conducted in Jamaica showed that having some college education or completing college education was associated with a reduced odds of defaulting compared to respondents who had completed secondary education (OR, 0.50; 95% CI, 0.11–2.31)(15). In addition, study conducted in Kombolcha district, Eastern Ethiopia on assessment of child Immunization coverage and associated factors shows that, being educated mothers or care takers were found to be significant factors identifying of completely immunizing their children(20). Ethiopia demographic and health survey conducted in 2011 showed that children whose mothers have secondary education are more likely to be fully Immunized than those born to mothers with no education (57 and 20 percent, respectively)(2). However, case control study conducted in South Ethiopia on predictors of defaulting from completion of child immunization and another article done in rural Mozambique on risk factors for incomplete vaccination and missed opportunity for immunization found that education of mother was not a significant predictor of children's immunization status (14, 21, 22).

Childhood immunization can also be affected by mother's age. A study conducted in rural Bangladesh on factors affecting acceptance of complete immunization coverage of children under five years shows that children of mothers aged 20-34 years were more likely to be fully immunized than children of younger (age <20 years) and older mothers (age ≥35 years). Similarly study done in Bangladesh on factors affecting childhood Immunization shows that mothers of age group 20–29 were more likely to get their children completely immunized (59.1 percent) and the partial attainment was found in a comparatively higher proportion among teenage mothers (17.1 percent). In contrast, study done in south west Ethiopia, Wonnago, found that there was no significant relationship between maternal age and immunization status of the children (14, 21, 23).

Mothers or immediate caretakers who had monthly family income of 44–88 USD were 81.1% less likely to have defaulting children than mothers or immediate caretakers who had monthly family income below < 22 USD, [OR = 0.430 (95% CI: 0.20, 0.94)](14). The difference between mothers with and without paid jobs with regard to full immunization coverage of their children was roughly 6%. The children of mothers whose husbands had good jobs were most likely to be fully immunized (76.0%)(17). A significant association was observed in middle class families to get their children fully immunized as compared to the lower class(23). Similarly, 51 percent of children in the highest wealth quintile are fully immunized, compared with 17 percent of children in the lowest wealth quintile.(24, 25).

The age of the child was also strongly related to his or her vaccination status. Study in Sudan on factors associated with vaccination coverage shows that children between 13 and 60 months of age were 3.2 times more likely to have had the correct vaccinations for their age than were their counterparts aged 12 months or younger (26). Study done in Kenya shows that, the odds of defaulting were higher with a family size of at least 6 members (OR, 1.89; 95% CI, 0.64–5.66)(12) Another study done in Colorado found that children having at least two older siblings were significantly associated with incomplete immunization (27). Population survey on demographic and health survey conducted in Ethiopia shows that First births are more likely to be fully immunized (30 percent) than births of order six and higher (20 percent)(2). Study conducted in Jamaica on factors associated with incomplete childhood immunization shows that,

the odds of defaulting were higher with a family size of at least 6 members (OR, 1.89; 95% CI, 0.64–5.66) (15)

Gender preference was found to have a highly significant affect on immunization. Female children were less likely to be immunized fully or partially as compared to their male counterparts (23). Partial vaccination is higher for females (34.5%) than for males (32.1%)(28). According to 2011 Ethiopia demographic and health survey, female children are slightly more likely to be fully vaccinated (26 percent) than male children (23 percent). With regard to place of residence, urban children are more than two times as likely as rural children to have all basic vaccinations (48 percent compared with 20 percent)(2).

Health service related factors

As to the health service related factors, an association between the use of modern health care services and immunization that has been conducted in a number of demographic surveys conducted in developing countries. Study done in south Ethiopia on predictors of defaulting from completion of child immunization indicated that, there was a significant association between utilization of postnatal care (PNC) service and completion of child immunization (p-value < 0.05). Mothers who did not use PNC service after delivery of the child were 6 times more likely to have defaulter children than mothers who did use PNC services, [OR = 5.8 (95% CI: 1.68,27.29)] (21). With regard to place of delivery, study done in a peri-urban area of Kenya on Immunization coverage and its determinants among children aged 12 - 23 months found that place of delivery is significant variable that contribute to the child full immunization status. A child who was delivered in a health facility was 2.26 times more likely to receive full immunization compared to one delivered at home or by a traditional birth attendant (29). Study conducted on assessment of child Immunization coverage and associated factors in Kombolcha district shows that, health institutional delivery was found to be significant factors identifying of completely immunizing their children(20). Study conducted on assessment of child Immunization coverage and associated factors in Kombolcha district indicated that, households having health extension visit are more likely to be fully vaccinated than household having no health extension household visit [OR=2.79(95%CI: 1.63, 4.80)] (14).

Maternal/care takers Related Factors

Regarding maternal/care takers related factors, in Ethiopia inadequate awareness of caregivers, missed opportunities, are major factors contributing to incomplete childhood immunization (30). Study conducted in south Ethiopia, Wonnago on predictors of defaulting from completion of child immunization reveals that mothers who had poor knowledge about the benefit of vaccines was factor for defaulting from immunization; [OR=6.4,(95% CI:0.43,9.53)](21). Study conducted in Jamaica indicated that mothers who knew the schedule for measles immunization, and knew the number of times to visit the immunization site had significantly increased chances of having fully immunized children (26). Similarly study conducted in South Ethiopia on predictors of immunization showed that knowledge of mothers or immediate caretakers about schedule of vaccines had significant association with completion of immunization, [OR = 3 (95% CI: 1.4,6.3)] (14).

Study conducted in Bangladesh showed, children of mothers who received sufficient antenatal care were significantly more likely to be fully immunized than children of those mothers who received insufficient antenatal care and those who had received no antenatal care. Similarly the study also showed that mothers who had received two or more doses of tetanus toxoid (TT) injections were more likely to fully immunize their children than their counterparts(28).

Study conducted in Kombolcha district of Oromia regional state on assessment of child immunization coverage and associated factors showed that wrong ideas about contraindication were significantly associated with partial immunization. Mothers having wrong ideas about contraindication were more likely to be partially immunized, [OR = 2.00 (95% CI: 1.23, 3.11)] (20).

2.2. Conceptual frame work

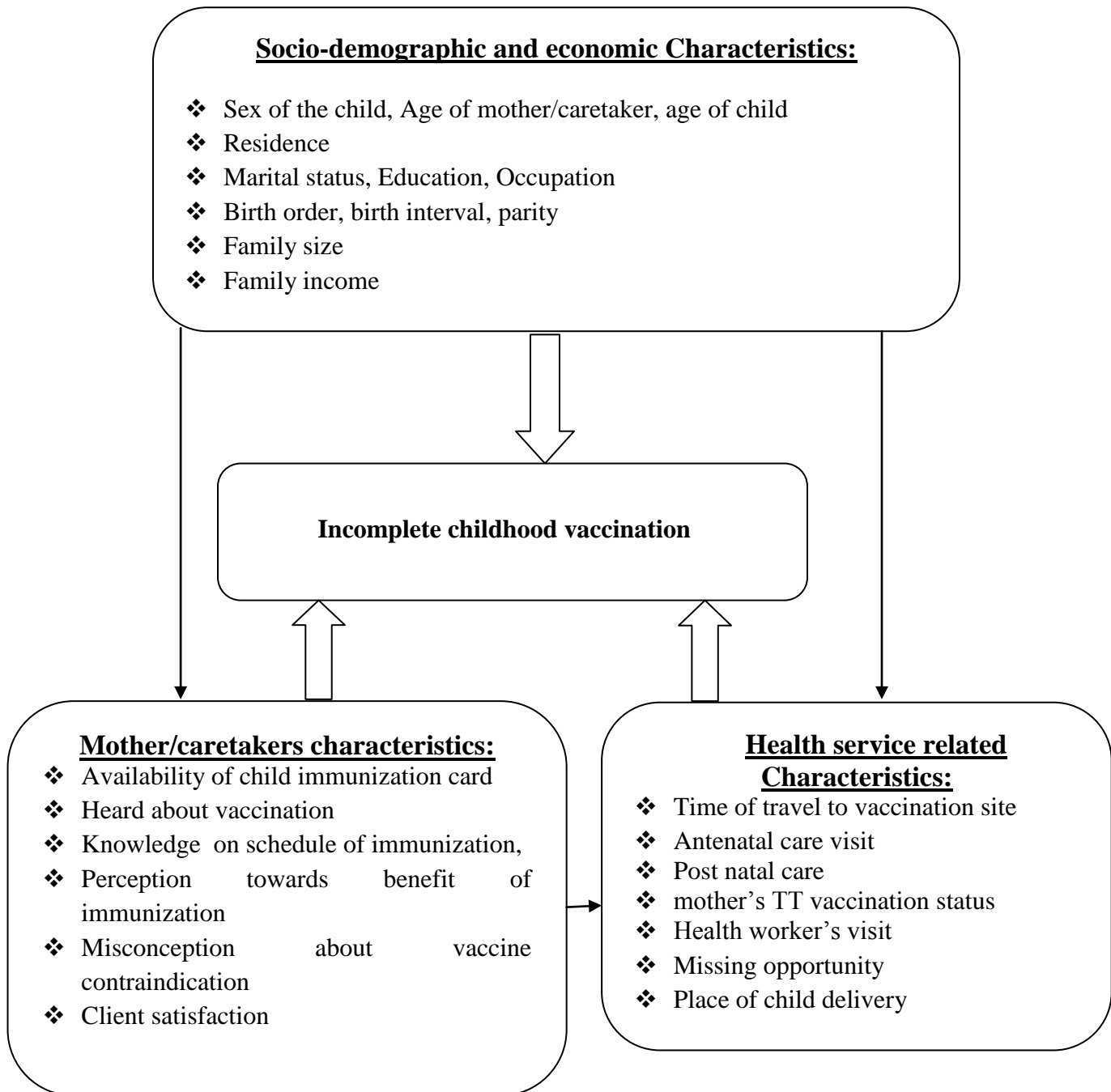


Figure 1: Conceptual framework of factors associated with incomplete childhood vaccination (adapted from different literature) (3, 14, 17, 31)

2.3. Significance of the study

Immunization is the most cost effective public health intervention in preventing vaccine preventable disease among children, and it is one of the parameter of development in most developing countries. Children are at the heart of the millennium development goals, for they are the most vulnerable in society and their needs are often the greatest. Initiatives to improve rates of full immunization need to respond to the barriers to immunization. However, factors affecting child immunization were not well studied in Ethiopia and as well as in my study area. While this analysis is useful for determining the gaps in full immunization coverage and the factors associated with incomplete immunization. So, it is hoped that the results will improve health promotion efforts around childhood vaccination uptake and serve as a tool for increasing utilization of existing Expanded Program on Immunization (EPI) efforts that will allow Ethiopia to achieve MDG 4. Besides these the research will set the platform for further studies for the purposes of improving EPI service utilization by identifying risk factors for incomplete immunization.

Therefore this study focuses on identifying determinant factors for the poor coverage of complete vaccination. On top of this, the study may contribute as an input for making evidence based decision and formulation of strategy to alleviate the problems and strengthening routine immunization at lower level in the future.

Chapter three: Objectives

3.1. General objective

- ❖ To assess factors associated with incomplete childhood vaccination among children 12-23 months of age in Machakel woreda, East Gojjam zone, Amhara region.

3.2. Specific objectives

- ❖ To assess socio-demographic and economic factors affecting incomplete childhood vaccination among children 12-23 months of age.
- ❖ To assess caretaker related factors affecting incomplete childhood vaccination.
- ❖ To assess health service related characteristics affecting incomplete childhood vaccination.

Chapter four: Methods and Participants

4.1. Study area and period

The study was conducted in 6 rural kebele called Yewlla, Amanuel Zuria, Delma, Yedefas, Kerer, Degasegn and the study was also conducted in the only urban kebele called Amanuel town of machakel woreda of East Gojjam zone, Amhara regional state. The woreda is 348 kms to the north of Addis Ababa, capital city of Ethiopia; and 264 kms to east of Bahirdar, capital city of Amhara regional state. Machakel woreda has a total of 133,188 populations and a total of 17,058 under five children. There are 26 kebeles; 1 urban and 25 rural kebeles. In the woreda there are one urban health center, 5 rural health centers, 25 health posts and 4 private clinics.

Data were collected from March 20 – April 30, 2014.

4.2. Study design

Community based unmatched case control study with quantitative and qualitative methods were conducted.

4.3. Population

4.3.1. Source population

Cases: were children aged 12-23 months who missed at least one doses of the nine vaccines before her/his 1st birthday in the study area.

Controls: were children aged 12-23 months of age received all the nine vaccines before her/his 1st birthday in the study area.

4.3.2. Study population

Children aged 12-23 months of age in selected 6 rural kebels and in one urban kebele. Vaccination status of the child was verified by using immunization card and mothers oral response during the survey.

Cases: were children in the age group of 12-23 months who did not complete the vaccination before her/his 1st birthday in the selected kebele.

Controls: were in the age group of 12-23 months and completed the vaccination before her/his 1st birthday in selected kebele.

4.4. Inclusion and exclusion criteria

Inclusion criteria

- ❖ For cases all children age 12-23 months who had miss at least one doses of the 9 vaccines in selected kebeles.
- ❖ For controls all children age 12-23 months who had been fully vaccinated a total of 9 doses recommended by WHO for under one year children in selected kebeles.

Exclusion criteria

- ❖ Mothers /caregivers of children who were critically ill and unable to answer the questions were excluded during the survey.

4.5. Sample size determination and sampling procedure

Sample size Determination

Quantitative

A two population proportion formula (stat calc EPI info 7) was used to estimate the sample size required of the study. The following assumptions were considered to calculate the sample size:

1. proportion of illiterate mothers or caretakers among control 52% and among cases 76%(20)
2. 80% power, $z\beta=.84$
3. 95% confidence interval, $z\alpha=1.96$
4. 10% non-response rate and a control: case ratio of 1:1.
5. Design effect=2

So, the sample size becomes 280 (140 cases and 140 controls) and after adding the 10% non-response rate, the desired total sample size for the study was 308(154 cases and 154 controls).

Qualitative –three key informants from health centers and health office that are from focal person on immunization were selected purposively and three health extension worker and a total of six caretakers of cases and caretaker controls were selected conveniently. A total of 12 in-depth interviews were conducted.

Sampling procedure

Machakel woreda is stratified in to urban and rural residents. There are 25 rural kebeles and one urban kebele. From the total 25 rural kebeles, 6 kebeles were selected randomly by lottery method and the only urban kebele was selected. To identify the households that had been eligible child (12 to 23 months) the survey was conducted for one urban Kebeles and 6 randomly selected rural Kebeles. The survey was conducted one week prior to data collection and cases and controls were identified during the survey. Child vaccination card and mothers oral response was used to verify vaccination status of the child. Study participants were children 12-23 months of age in 6 rural kebels and one urban kebele selected by stratified multistage random sampling. The final sample size that can be included was allocated based on proportional size from study population of children aged 12-23 months.

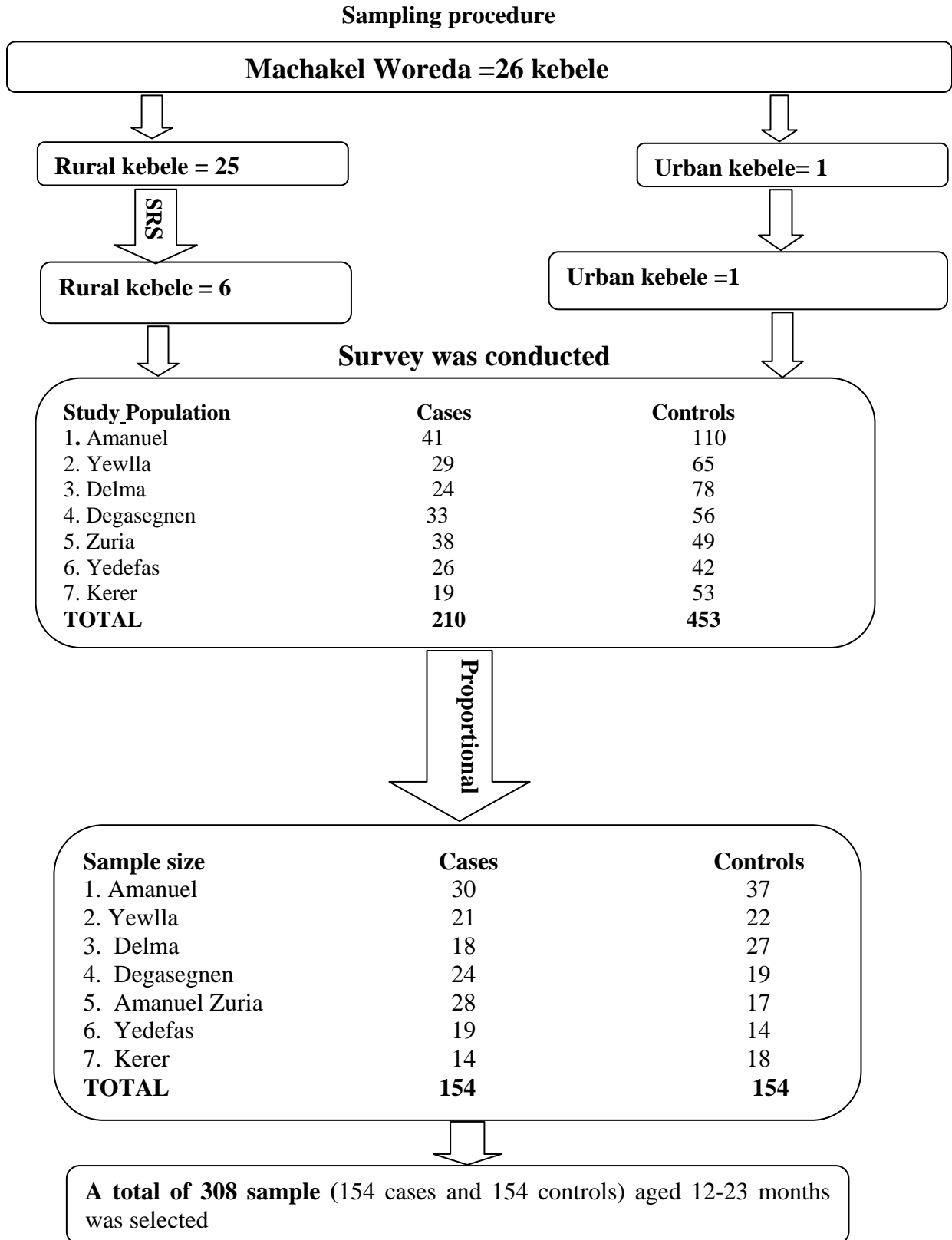


Figure 2: Schematic presentation of sampling procedure

4.6. Study variables and measurement

4.6.1. Study variables

Dependent variable

- ❖ Incomplete childhood vaccination

Independent variables

➔ Socio-demographic and economic Characteristics

- ❖ Age (mother and child)
- ❖ Sex of the child
- ❖ Place of residence
- ❖ Marital status
- ❖ Educational status
- ❖ Occupation
- ❖ Birth order, Birth interval, parity
- ❖ Family income
- ❖ House hold size

➔ Health service related Characteristics

- ❖ Time to travel to vaccination site
- ❖ ANC,PNC
- ❖ Mother TT vaccination status
- ❖ Health worker visit
- ❖ Missing opportunity
- ❖ Place of delivery of the child

➔ Mothers/caretaker characteristics

- ❖ Heard about vaccination
- ❖ Knowledge on schedule of immunization
- ❖ Misconception about vaccine contraindication
- ❖ Perception towards benefit of immunization
- ❖ Client satisfaction
- ❖ Availability of child immunization card

4.6.2. Data collection procedures

Data collection instrument

Quantitative data

Structured interview administer questionnaire was used to collect the data. Closed-ended items were adapted from various literature sources. The questionnaire was first developed in English and translated in to Amharic language for appropriateness and easiness in approaching the study participants and back to English. In addition to socio-demographic and economic characteristics of respondents, maternal factors and health service related factors were included in the questionnaire.

Qualitative data

In order to support information collected through structured questionnaire, in depth interview was conducted immediately after the quantitative data collection. Topics for discussion were prepared to collect qualitative information. Twelve in-depth interviews were conducted with three EPI focal people in selected health centers selected by purposively; three cases and three controls and three health extension workers selected conveniently. Tape recording and note taking was used during in-depth interview.

Data collection

For quantitative data, information was collected by the pretested, structured Amharic version questionnaire. Data were collected from March 20-April 30, 2014. Besides the principal investigator, five diploma nurses data collectors and two health extension supervisors (supervisors) which are outside the study area were participated throughout the data collection process. Mothers/caretakers having children aged 12-23 months identified from the survey and identifies as cases and controls were asked based on the questionnaire. Information on qualitative data were collected using tape recording through face to face interview guide.

Data entry and analysis

The data were entered, cleaned and edited using EPI-Info 7 and transferred to SPSS version 16 statistical package for further analysis. Data cleaning were performed to check for accuracy, consistencies and missing values and variables. Descriptive statistics of the collected data were done for variables in the study using statistical measurements. Frequency tables and percentages

were used. Bivariate analysis was conducted primarily to check which variables have association with the dependent variable individually. Variables which have association with the dependent variables at 0.25 P-value was candidate in to multivariable logistic regression. The technique was back ward stepwise regression. Variables with below 0.05 p-values were used to identify independent factors of incomplete vaccination. The goodness of the model was assessed whether the required assumptions for the application of multivariate logistic regression was fulfilled showing that the model adequately fits the data (Hosmer and Lemeshow test as the P - value = 0.71 and multi-collinearity was assessed.

4.7. Data quality management

To maintain the data quality questionnaires were prepared first in English then translated to Amharic and then back to English by another person in order to ensure consistency. Data collectors do not know whether the participants are cases or controls. Completed questionnaires were checked for their completeness and consistency at every step of data management. A pretest was done on 5% of the sample. The facilitators and Supervisor were trained for two days before and after pretest

4.8. Operational definitions

Complete vaccination: A child between 12-23 months old who received BCG, three doses of Pentavalent and PCV, three doses of OPV and a measles vaccine before her/his 1st birthday.

Incomplete vaccination: A child between 12-23 months old who missed at least one dose of the nine vaccines before her/his 1st birthday.

Vaccination status: incomplete childhood vaccination

Knowledge on schedule of immunization:

Mothers' were asked four questions which are related to schedule of immunization which include age at which the child begins immunization, at what age the measles vaccine administered, how many vaccinations are needed for a child to be fully immunized and at what age the child should complete immunization and right answer was given a value of 1 and for those incorrect answers a value of 0 was given. After computing the sum for each respondent it was dichotomize into: Good knowledge and Poor knowledge

Missed opportunity: If a child came to a health facility or outreach site, and did not receive the vaccination for which he or she was eligible

Average family income:

Average income was calculated in cash and in kind: income from in kind like the crop and other cash crops will be changed into monetary forms. Then income classifications were performed based on WHO and World Bank income classification(32)

Under poverty <732

Low income 732-1681

Middle and high income >1681

Perception towards benefit of vaccination:

Perception towards benefit of vaccination was defined as by asking perception related questions using likert scale from strongly agree to strongly disagree which has five option. After computing the mean score for each constructs, it was dichotomized into positive perception and negative perception.

Positive perception : \geq mean

Negative perception :< mean

Client satisfaction: satisfaction related questions were asked using likert scale. Mean score was used to construct satisfied and not satisfied.

Misconceptions about vaccine contraindication: misconception related questions were asked using likert scale and mean score was used to categorize positive and negative misconception about vaccine contraindication.

4.9. Ethical considerations

The study was carried out after getting approval from the ethical clearance committee of Jimma University, collage of public health and Medical sciences through department of epidemiology. Then, data were collected after getting written consent from Machakel woreda health office. Informed verbal consent was obtained from all study participants. Each respondent were informed about the objective of the study. Participants were also informed that they can withdraw from the study any time if they are not comfortable about the questionnaire.

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Chapter five: Result

5.1. Socio- demographic and economic characteristics

A total of 150 cases and 152 controls were included in this study, making the response rate of 98%.

The mean age (SD) of all children (cases and controls) was 16.92 ± 3.2 months. The minimum age was 12 months and the maximum was 23 months. The mean age (SD) of cases was 17.78 ± 3.4 and those of controls were 16 ± 2.7

Among cases, 96(64.0%) were males and 59(39.1%) of controls were males. Thirty (20.1%) of cases and 36(23.7%) of controls were residing in urban as shown in table 1.

Table 1: showing socio-demographic characteristics of cases and controls in Machakel woreda, East Gojjam zone, Amhara region, and 2014.

variables	Category	Cases	Controls
		N (%)	N (%)
Age of child (in month)	12-18	81(54.0)	99(65.1)
	19-23	69(46.0)	53(34.9)
Sex of child	Female	54(36.0)	92(60.9)
	Male	96(64)	59(39.1)
Place of residence	Urban	30(20.1)	36(23.7)
	Rural	119(79.9)	116(76.3)
Birth order	1	19(12.7)	36(23.7)
	2-3	95(63.3)	97(63.8)
	≥ 4	36(24.0)	19(12.5)

Most caretakers, for cases 151(99.3%) and for controls 140(93.3) were mothers. With regard to caretakers age 29(19.7%) of cases and 14(9.2%) of controls were above 35 years of age. Educational level of respondents showed that 105(70.0%) of caretaker of cases and 97(63.8%) of controls were illiterate. Caretakers child spacing showed that 102(68.5%) of caretaker of cases and 88(58.3%) of caretakers of controls were born their child less than two year of interval. The median preceding birth interval was 24.00 months. Number of live birth children born by mother

as showed in table 2, 111(74.5%) of caretaker of case and 71(47.0%) of care takers of controls were had more than 3 children. The mean (SD) live birth for care takers of controls and of cases were 2.5629±1.16376 and 3.2148±1.10627 respectively.

Family size of house hold indicated that 113(75.3%) cases and 74(48.7%) controls had more than five family sizes. The mean (SD) family size was 4.90±1.2.

Table 2 Caretaker related characteristics' in Machakel woreda East Gojjam zone, Amhara region, 2014.

Variables	Category	Cases N (%)	Controls N (%)
Care takers of child	Mother	140(93.3)	151(99.3)
	Other	10(6.7)	1(.7)
Care taker's age(year)	≤26	34(23.1)	38(25.0)
	27-34	84(57.2)	100(65.8)
	≥35	29(19.7)	14(9.2)
Care taker's marital status	Single	2(1.3)	0(0)
	Married	137(91.3)	151(99.3)
	Divorce		
	/separated	9(6.1)	1(.7)
Care taker's educational status	Widowed	2(1.3)	0(0)
	Illiterate	105(70.0)	97(63.8)
	Primary	20(13.3)	32(21.1)
	Secondary	10(6.7)	6(3.9)
Parity	Above secondary	15(10.0)	17(11.2)
	1	10(6.7)	27(17.9)
	2	28(18.8)	53(35.1)
	3 ⁺	111(74.5)	71(47.0)
Birth interval (in months)	≤24	102(68.5)	88(58.3)
	25-36	39(26.3)	58(38.4)
	≥37	8(5.4)	5(3.3)
Family size	≤4	37(24.7)	78(51.3)
	≥5	113(75.3)	74(48.7)
Average family income(Birr)	<732	49(32.2)	46(30.7)
	732-1681	87(57.2)	85(56.7)
	>1681	16(10.6)	19(12.6)

5.1.1. Bi-variate analysis on socio-demographic and economic characteristics associated with incomplete childhood vaccination

On bivariate analysis between socio-demographic characteristics and incomplete childhood vaccination as showed in table age of the child, sex of child, birth order, caretakers age, educational status, parity, birth interval, family size were candidates for multivariate logistic regression.

Table 3: Bi-variate analysis between child characteristics and incomplete childhood vaccination

variables	Category	Cases	Controls	COR(95%CI)
		N (%)	N (%)	
Age of child (in month)	12-18	81(54.0)	99(65.1)	0.63(0.39,0.91)*
	19-23	69(46.0)	53(34.9)	1
Sex of child	Female	54(36.0)	92(60.9)	0.36(0.23,0.58)*
	Male	96(64)	59(39.1)	1
Place of residence	Urban	30(20.1)	36(23.7)	0.81(0.47,1.41)
	Rural	119(79.9)	116(76.3)	1
Birth order	1	19(12.7)	36(23.7)	0.52(0.28,0.96)*
	2-3	95(63.3)	97(63.8)	0.28(0.13,0.61)*
	≥4	36(24.0)	19(12.5)	1

Note: * candidate variables for multivariate logistic regression at p-value ≤ 0.25

Table 4: Bi-variate analysis between caretakers' socio-demographic characteristics and incomplete childhood vaccination

Variables	Category	Cases N (%)	Controls N (%)	COR(95%CI)
Care taker's age(in year)	≤26	34(23.1)	38(25.0)	0.43(0.19,0.95)*
	27-34	84(57.2)	100(65.8)	0.41(0.20,0.82)*
	≥35	29(19.7)	14(9.2)	1
Care taker's educational status	Illiterate	105(70.0)	97(63.8)	1
	Primary	20(13.3)	32(21.1)	0.58(0.31,1.08)*
	Secondary & above	25(16.7)	23(15.1)	1.04(0.54,1.89)*
Parity	1	10(6.7)	27(17.9)	0.24(0.11,0.52)*
	2	28(18.8)	53(35.1)	0.34(0.2,0.58)*
	3 ⁺	111(74.5)	71(47.0)	1
Birth interval (in months)	≤24	102(68.5)	88(58.3)	0.72(0.23,2.29)*
	25-36	39(26.3)	58(38.4)	0.42(0.13,1.38)*
	≥37	8(5.4)	5(3.3)	1
Family size	≤4	37(24.7)	78(51.3)	0.31(0.19,0.51)*
	≥5	113(75.3)	74(48.7)	1
Average family income(Birr)	<732	49(32.2)	46(30.7)	1
	732-1681	87(57.2)	85(56.7)	0.91(0.58,1.58)
	>1681	16(10.6)	19(12.6)	0.63(0.29,1.38)

Note: * candidate variables for multivariate analysis at p-value ≤ 0.25

5.2. Access to and Perinatal Health service utilization of mothers of cases and controls

98(65.3%) of caretakers of cases and 36(23.7%) of caretaker of controls were not had history of antenatal care service during their pregnancy. While out of those mothers attending antenatal care visit most of 73(67.0%) caretakers of controls and 18(36.0%) of caretakers of cases attended ANC visit 3 and more times. The mean (SD) number of ANC visit for case was 2.0 ± 1.0 and for controls was (2.8 ± 0.9). Place of child delivery indicated that 81(54%) of mother's of cases and 119(78.8%) of mother's of controls were delivered their child at health institution. While, perinatal care service utilization of mothers showed that 135(90.0%) of caretaker of cases and 90(59.2%) of caretakers of controls were did not attend post natal care service after delivery. (Table 5)

Table 5: Access to and perinatal health service utilization in Machakel woreda East Gojjam zone, Amhara region, 2014.

Variables	Category	Cases N (%)	Controls N (%)
Attended ANC	Yes	52(34.7)	116(76.3)
	No	98(65.3)	36(23.7)
Total number of ANC visit	≤ 2	32(64.0)	36(33.0)
	≥ 3	18(36.0)	73(67.0)
Attended PNC	Yes	15(10.0)	62(40.8)
	No	135(90.0)	90(59.2)
Place of delivery	Home	69(46)	32(21.2)
	Health institution	81(54)	119(78.8)
Receive TT	Yes	47(31.3)	76(50.0)
	No	103(68.7)	76(50.0)
Visited by health worker	Yes	57(38.8)	106(69.7)
	No	90(61.2)	46(30.3)
Time taken to vaccination site (in minute)	< 15	33(22.4)	35(23.0)
	15-30	100(68.1)	97(63.8)
	31-60	14(9.5)	20(13.2)
Missed opportunity	Yes	90(61.6)	56(37.1)
	No	56(38.4)	95(62.9)

5.2.1. Bi-variate analysis on health related factors associated with incomplete childhood vaccination

On bi-variate analysis between health related factors and incomplete childhood vaccination as showed in table 6 below antenatal care visit (ANC), Place of delivery, Attended antenatal care visit (PNC), mothers tetanus toxoid vaccine, health worker home visit, missed opportunity were found candidate variables for multi-variate logistic regression.

Table 6: Bi-variate analysis between health related factors and incomplete childhood vaccination

Variables	Category	Cases N (%)	Controls N (%)	COR(95%CI)
Attended ANC	Yes	52(34.7)	116(76.3)	1
	No	98(65.3)	36(23.7)	6.07(3.67,10.04)*
Attended PNC	Yes	15(10.0)	62(40.8)	1
	No	135(90.0)	90(59.2)	6.2(3.3,11.57)*
Place of delivery	Health institution	81(54)	119(78.8)	1
	Home	69(46)	32(21.2)	3.53(2.13,5.84)*
Receive TT	Yes	47(31.3)	76(50.0)	1
	No	103(68.7)	76(50.0)	2.19(1.37,3.50)*
Visited by health worker	Yes	57(38.8)	106(69.7)	1
	No	90(61.2)	46(30.3)	3.64(2.25,5.88)*
Time taken to vaccination site in minute	<15	33(22.4)	35(23.0)	1.35(0.59,3.10)
	15-30	100(68.1)	97(63.8)	1.47(0.70,3.08)
	31-60	14(9.5)	20(13.2)	1
Missed opportunity	Yes	90(61.6)	56(37.1)	2.73(1.71,4.36)*
	No	56(38.4)	95(62.9)	1

Note: * candidate variables for multivariate analysis at p-value ≤ 0.25

5.3. Knowledge, attitude and practice of caretakers of cases and controls

The proportion of perception about vaccine benefit, caretakers practice on vaccination card retention and knowledge of caretakers on heard about vaccination was similar between cases and controls. The rest of knowledge, and attitude related factors as showed in table below were had clear difference between cases and controls. Respondents knowledge on schedule of vaccination indicates that 48(32.0%) of cases and 88(57.9%) of controls had better knowledge on schedule of vaccination. One of respondents from the case said *“vaccination of children is useful to prevent disease, and we can vaccinate and complete child vaccination till two years”*. Perception about vaccine contraindication showed that 39(26.0%) of cases and 107(70.4%) of controls had appropriate perception about vaccine contraindication. One of the respondents also stated that *“when my child sick during vaccination appointments I did not take my child to vaccination site and I will take my kid after the disease called ‘Wotete’ passed”*.

Table 7: knowledge, attitude and practice of caretaker in Machakel woreda, East Gojjam, Amhara region, 2014.

Variables	Category	Cases	Controls
		N (%)	N (%)
Heard about immunization	Yes	143(95.3)	148(98.7)
	No	7(4.7)	2(1.3)
Perception on benefit of vaccine	Positive	98(65.3)	98(64.5)
	Negative	52(34.7)	54(35.5)
Misconception on vaccine contraindication	Positive	111(74.0)	45(29.6)
	Negative	39(26.0)	107(70.4)
Vaccine card	Yes	96(64)	93(61.6)
	No	54(36)	58(38.4)
Knowledge on schedule of vaccine	Good	48(32.0)	88(57.9)
	Poor	102(68.0)	64(42.1)
Level of satisfaction	Satisfied	49(32.7)	92(60.5)
	Not satisfied	101(67.3)	60(39.5)

5.3.1. Bivariate analysis on psychological factors associated with incomplete childhood vaccination

Bivariate analysis on psychological factors and incomplete childhood vaccination as showed in table 8 below, misconception on vaccine contraindication, knowledge about vaccine schedule and level of client satisfaction were candidate variables for incomplete childhood vaccination

Table 8: Bi-variate logistic regression between psychological factors and incomplete childhood vaccination

Variables	Category	Cases N (%)	Controls N (%)	COR(95%CI)
Perception on benefit of vaccine	Positive	98(65.3)	98(64.5)	1
	Negative	52(34.7)	54(35.5)	0.96(0.60,1.55)
Misconception on vaccine contraindication	Positive	111(74.0)	45(29.6)	6.77(4.09,11.21)*
	Negative	39(26.0)	107(70.4)	1
Vaccine card	Yes	96(64)	93(61.6)	0.90(0.57,1.44)
	No	54(36)	58(38.4)	1
Knowledge on schedule of vaccine	Good	48(32.0)	88(57.9)	1
	Poor	102(68.0)	64(42.1)	3.50(3.42,9.29)*
Level of satisfaction	Satisfied	49(32.7)	92(60.5)	1
	Not satisfied	101(67.3)	60(39.5)	3.16(1.97,5.06)*

Note: * candidate variables for multivariate analysis at p-value ≤ 0.25

5.4. Multivariate logistic regression analysis result

Result of binary logistic regression showed that child sex, birth order, age of child, caretakers age, educational status, antenatal care service, post natal care service, child place of delivery, mother TT vaccine status, health worker home visit, missed opportunity, birth interval, family size, parity, knowledge on schedule of vaccination, misconception about vaccination, level of client satisfaction were candidate for multivariate logistic regression model.

The final multivariate logistic regression analysis showed that; child sex ,antenatal care during pregnancy, misconception about vaccine contraindication, mothers post natal care service, care takers knowledge on vaccine schedule, and parity were remained to be significantly and independently associated with incomplete vaccination.

Female children were 56% less likely be incomplete vaccination than male children [AOR=0.44, (95% CI: 0.24, 0.83)]. Children who were born from mothers who had no antenatal care visit during pregnancy were 2.49 times more likely [AOR=2.49, (95% CI: 1.27,4.87)] to default to complete vaccination compared to infants who were born from mothers who had antenatal care visit during pregnancy. Children who were born from mothers who had no postnatal care visit were 2.42 times more likely to be partially vaccinated when compared to children who were born from mothers who were had postnatal care visit. (AOR=2.42, 95%CI :(1.05, 5.60)).

Mothers who had one child were 75% less likely their child to be default from completion of vaccination [AOR=0.25, (95% CI: 0.09, 0.71)], and mothers who had 2 children were 71% less likely have incomplete vaccinated children [AOR=0.29, (95% CI: 0.14, 0.60)] compared to mothers having more than 3 children.

Mothers/caretakers who were had inappropriate perception on vaccine contraindication were 3.94 times more likely to be their child default to complete vaccination than mother who had negative misconception about vaccine contraindication (AOR: 3.94, 95%CI :(2.07,7.49)). Mothers who had poor knowledge on vaccine schedule were 2.58 times more likely had partially vaccinated children than mothers who were had good knowledge on vaccination schedule (AOR: 2.58, 95%CI:(1.38, 4.81)).

Table 9: Multi-variate logistic model showed predictors of incomplete childhood vaccination in Machakel woreda, East Gojjam Zone, Amhara region, 2014.

Variables		Cases N (%)	Controls N (%)	COR(95%CI)	AOR(95%CI)
Sex of child	Female	54(36.0)	92(60.9)	0.36(0.23,0.58)	0.44(0.24,0.83)**
	Male	96(64.0)	59(39.1)	1	1
Child age (month)	12-18	81(54.0)	99(65.1)	0.63(0.39,0.91)	0.73(0.38,1.42)
	19-23	69(46.0)	53(34.9)	1	1
Birth order	1	19(12.7)	36(23.7)	0.52(0.28,0.96)	0.55(0.14,2.13)
	2-3	95(63.3)	97(63.8)	0.28(0.13,0.61)	0.72(0.29,1.78)
	≥4	36(24.0)	19(12.5)	1	1
Care takers age (year)	<26	34(23.1)	38(25.0)	0.43(0.19,0.95)	0.57(0.23,1.37)
	27-34	84(57.2)	100(65.8)	0.41(0.20,0.82)	0.61(0.24,1.56)
	>35	29(19.7)	14(9.2)	1	1
Educational status	Illiterate	105(70.0)	97(63.8)	1	1
	Primary	20(13.3)	32(21.1)	0.58(0.31,1.08)	1.09(0.44,2.08)
	Secondary &	25(16.7)	23(15.1)	1.04(0.54,1.89)	2.63(0.39,5.52)
Parity	1	10(6.7)	27(17.9)	0.24(0.11,0.52)	0.25(0.09,0.71)**
	2	28(18.8)	53(35.1)	0.34(0.2,0.58)	0.29(0.14,0.60)**
	3+	111(74.5)	71(47.0)	1	1
Birth interval (months)	≤24	102(68.5)	88(58.3)	0.42(0.13)	0.98(0.23,4.21)
	25-36	39(26.3)	58(38.4)	0.72(0.23)	0.46(0.10,2.05)
	≥37	8(5.4)	5(3.3)	1	1
Family size	≤4	37(24.7)	78(51.3)	0.31(0.19,0.51)	0.67(0.10,4.57)
	≥5	113(75.3)	74(48.7)	1	1

Attended ANC	Yes	52(34.7)	116(76.3)	1	1
	No	98(65.3)	36(23.7)	6.07(3.67,10.04)	2.49(1.27,4.87)**
TT vaccination during pregnancy	Yes	47(31.3)	76(50.0)	1	1
	No	103(68.7)	76(50.0)	2.19(1.37,3.50)	0.85(0.39,1.89)
Child place of delivery	Home	69(46)	32(21.2)	3.53(2.13,5.84)	1.84(0.95,3.59)
	Health institution	81(54)	119(78.8)	1	1
Attended PNC	Yes	15(10.0)	62(40.8)	1	1
	No	135(90.0)	90(59.2)	6.2(3.3,11.57)	2.42(1.05,5.60)**
Health worker home visit	Yes	57(38.8)	106(69.7)	1	1
	No	90(61.2)	46(30.3)	3.64(2.25,5.88)	1.50(0.83,2.74)
Missed opportunity	Yes	90(61.6)	56(37.1)	2.73(1.71,4.36)	1.37(0.78,2.42)
	No	56(38.4)	95(62.9)	1	1
Knowledge on vaccine schedule	Good	48(32.0)	88(57.9)	1	1
	Poor	102(68.0)	64(42.1)	3.50(3.42,9.29)	2.58(1.38,4.81)**
Misconception about vaccine contraindication	Positive	111(74.0)	45(29.6)	6.77(4.09,11.21)	3.94(2.07,7.49)**
	Negative	39(26.0)	107(70.4)	1	1
Level of client satisfaction	Satisfied	49(32.7)	92(60.5)	1	1
	Not satisfied	101(67.3)	60(39.5)	3.16(1.97,5.06)*	1.14(0.62,2.08)

Note: ** predictors for incomplete childhood vaccination at p-value 0.05

Chapter six: Discussion

Immunization is one of the most powerful and cost-effective health interventions. It prevents debilitating illness and disability, and saves millions of lives every year. Vaccines have the power not only to save, but also to transform, lives giving children a chance to grow up healthy, go to school, and improve their life prospects(33). However Immunization will become more effective if the child can receive the full course of recommended vaccination doses(1).

This study showed that gender preference was found to have significant association with incomplete vaccination. Female children were less likely to be partially vaccinated as compared to their male counterparts [AOR=0.44, (95% CI: 0.24, 0.83)]. This result is consistent with 2011 EDHS(2). Can be due to sex discrepancies are presented taking into account subgroups of variables and additional gender-related variables)(34). This justification is also evidenced in this study that more boys were more likely not being fully vaccinated from least educated mothers However not in line with study conducted in rural Bangladeshi(17). This may be due to variation in study area.

This study showed that not antenatal care service during pregnancy is one of the variables significantly associated with incomplete vaccination status of the child. This result indicates that children who were born from mothers who had no antenatal care visit during pregnancy were more likely to default to complete vaccination compared to infants who were born from mothers who had history of antenatal care visit during pregnancy [AOR=2.49, (95% CI: 1.27, 4.87)]. This finding is in line with study done in Bangladesh and in Ethiopia at Ambo; which showed that, children of mothers who received sufficient antenatal care were significantly more likely to be fully immunized than children of those mothers who received insufficient antenatal care and those who had received no antenatal care(3, 28).

Post natal care service after delivery was also other health service related factor associated with incomplete childhood vaccination. Mothers who had no postnatal service after delivery were more likely had partially vaccinated children compared to mothers who were had history of post natal care service (PNC). [AOR=2.42, (95% CI: 1.05, 5.60)]. This result is consistent with study done in Wonnago, South west Ethiopia(14). This can be due to mothers who had visit of

antenatal care service and post natal care service gives chance to communicate with health workers to hear about the benefit of vaccination to their child better than those mothers who didn't follow such health care services. This justification was also highlighted in study conducted in Bangladesh which showed that higher proportion of full vaccination coverage was found for families receiving visits from health worker(14, 28).

Mother who had one child was 75% less likely to have defaulted children from vaccination compared to mothers who had more than three children [AOR=0.25, (95% CI: 0.09, 0.71)]. While caretakers having two children were 71% less likely to had defaulted children from complete childhood vaccination [AOR=0.29, (95% CI: 0.14, 0.60)]. This finding is consistence with study conducted in Bangladesh, Which indicated that children of mothers with lower parity were more likely to be fully immunized(28). This finding also in line with study conducted in Kenya(12). This can be due to having more children may cause resource constraints in the family, which has a negative effect on healthcare utilization(12, 17)

Misconception on vaccine contraindication was significant factor for incomplete childhood vaccination. Mothers who had misconception on vaccine contraindication were more likely to had defaulted children from vaccination than mother's that had appropriate perception on vaccine contraindication (AOR: 3.94, 95%CI :(2.07, 7.49)). This finding was in accordance with study conducted in Kombolcha district of Oromia regional state that stated wrong ideas about contraindication were significantly associated with partial vaccination(20). Besides this the finding is consistence with review of the grey literature and study conducted in Canada(31, 35). This can be due to low awareness and lack of access to mass media tools in rural areas could be one of the reasons for misconception(36).

Furthermore, Mothers who had poor knowledge on vaccine schedule were more likely to had partially vaccinated children from completion of vaccination than mothers who were had good knowledge on vaccination schedule (AOR: 2.58, 95%CI :(1.38, 4.81)). This finding is consistent with study conducted in Wonnago, south west Ethiopia (14). This can be due to parents in rural areas have a much lower education status and knowledge regarding immunization. Maternal education may also act as a reflect a woman's higher socio-economic status, thus enabling her to seek proper medical care for her child when necessary(17, 37).

Various studies had been conducted previously to assess factors associated with incomplete vaccination. However results were not consistent between studies. Some of factors that were significance with other various studies but not in this study were educational level, mothers' age, family income, place of delivery and birth order(15, 38). A case control study conducted in Jamaica showed that maternal education was significantly associated with partial vaccination. However in this study caretaker educational level was not significantly associated with incomplete vaccination. This difference can be due to variation in sample size and variation in illiterate proportion. In this study illiterate proportion among cases and controls were almost the same 105(70.0%) and 97 (63.8%) respectively.

A case control study conducted in wonnago, south Ethiopia indicated that monthly family income was significantly associated with childhood vaccination(14). While in this study, family income was not significantly associated with incomplete vaccination. This may be due to variation in income classification.

Study conducted in Bangladesh showed that mother age was significantly associated with partial vaccination while in this study caretakers age was not significant. This discrepancy was can be explained by difference in age distribution of care takers aged 20-34 years among cases and controls between two studies. In this study proportion of caretakers aged 27-34 year between cases and controls were nearly the same (57.2% of cases and 65.8% of controls) compared to 30.4% of partially vaccinated and 63.2% of fully vaccinated children in the age group of 20-34 years in study conducted Bangladesh (17).

Limitation of study

Absence of immunization card (37.2%) of the study participants respond orally.

Chapter seven: Conclusion

The result of this study showed that health service utilization and mother/child related characteristics were associated with incomplete childhood vaccination.

Mother /child related factors negatively and significantly associated with incomplete vaccination were female sex of child, parity one and parity two while mothers factors positively and significantly associated with incomplete vaccination were absence of ANC(antenatal care), absence of PNC(post natal care), inadequate knowledge on vaccine schedule, and misconception about vaccine contraindication.

Considering these, interventions improving mother's health service utilization, provision of information on vaccine contraindication and side effect, information on vaccine schedule should be an inevitable measure to curb poor immunization practice related to completion vaccination in the community.

Chapter eight: Recommendation

To District Health Office/Health personnel

Based on the finding the following recommendations were forwarded

- ♣ Maternal health care centers should be strengthening to provide antenatal care and post natal services
- ♣ Parents should encouraged to have small number of children by using contraception and have wide birth spacing
- ♣ Educating mothers/caretakers about
 - ✓ Vaccines and vaccine preventable diseases
 - ✓ Better understanding of routine immunization schedule are recommended
 - ✓ On vaccine side effects and contraindication.
- ♣ Continuous vaccination Campaign by Woreda health office also important improvement on children's vaccination status
- ♣ Efforts are required to keep vaccine appointments reminders
- ♣ Further study to clarify the differential immunization of females are recommended

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Annexes

Annex 1: Questionnaire

CODE NO _____

s. no	Question	Response categories	Skip to
Part I :Socio – demographic and economic characteristics of respondents			
101	Place of residence	1. Urban 2. Rural	
102	Who is the caretaker of a child?	1. Mother 2. Father 3. Grandparent 4. Older sibling 5. Other(specify)_____	
103	Mothers/caregivers age(in complete year)	_____	
104	Marital status?	1. Married 2. Separated spouse 3. Divorced 4. Widowed	
105	Educational status?	1. No education 2. read and write only 3. Primary school (1-8) 4. Secondary school (9-12) 5. Certificate 6. Diploma 7. Degree and above	
106	Occupation?	1. Farmer 2. Merchant 3. Government employee 4. Daily laborer 5. House wife 6. Other(specify) _____	
107	Husband education?	1. No education 2. Read and write only 3. Primary school (1-8) 4. Secondary school (9-12) 5. Certificate	

		6. Diploma 7. Degree and above	
108	Husband occupation?	1. Farmer 2. Merchant 3. Government employee 4. Daily laborer 5. Other (specify)_____	
109	Family size in the household in no.?	_____	
110	Total No of child ever born by mother?	_____	
111	Total No of children alive?	_____	
112	Sex of the child	1. Male 2. Female	
113	Age of the children in month	_____	
114	Birth order	_____	
115	What is the preceding birth interval? (in month)	_____	
116 Average family income respondents			
116.A	Monthly family income in cash	_____ ETB	
116.B	In kind :Annual cash farm product per quintal	_____ quintal	
	Teff		
	Wheat	_____ quintal	
	Maze	_____ quintal	
	Barley	_____ quintal	
	Others	_____ quintal	
Part. II Questions related to immunization			
201	Have you remembered that your child did not receive the vaccine in health facility or vaccination site for which he or she was eligible?	1. Yes 2. No →	If No, skip to Q203
202	If yes, what was the reason for not receive the vaccination during visit?(more than one answer possible)	1. lack of vaccines available 2. vaccine not opened because of few clients 3. health workers were not advised or informed	

		<p>about vaccination regimen during visit</p> <p>4. Child had a sick</p> <p>5. I don't remember the reason</p>	
203	How long it take you to reach the nearest vaccination site? (in minutes)	_____	
204	Have you visited by health workers at your home in the last one month?	<p>1. Yes</p> <p>2. No →</p>	If No skip to Q.206
205	How many times you have been visited by health workers at your home in the last one month?	_____	
206	Do you heard about vaccination and vaccine preventable disease before delivery?	<p>1. Yes</p> <p>2. No →</p>	If No skip to Q.208
207	If yes to above question, from where do you heard about the vaccination and vaccine preventable disease? (more than one answer possible)	<p>1. Radio</p> <p>2. Television</p> <p>3. Health personnel/HEW</p> <p>4. from friends/peers</p> <p>5. from school</p> <p>6. other, specify_____</p>	
208	Have you attended antenatal care during your pregnancy?	<p>1. Yes</p> <p>2. No →</p>	If No, skip to 210
209	If yes, how many times did you attend antenatal care during your pregnancy?	_____	
210	Have attend Post Natal Care service after delivery of your child?	<p>1. Yes</p> <p>2. No →</p>	If No, skip to 212
211	If yes, how many times did you attend Post Natal Care service after delivery of your child?	_____	
212	Have you received tetanus vaccination during your pregnancy?	<p>1. Yes</p> <p>2. No →</p>	If No skip to Q.214
213	If yes, for how many injections did you received?	_____	

214	Where did you deliver your baby?	<ol style="list-style-type: none"> 1. Home 2. Health center 3. Health post 4. Hospital 	
215	Have you ever postponed vaccine appointment Schedule of your child?	<ol style="list-style-type: none"> 1. Yes → 2. No 	If No, skip to Q.301
216	What was the reason?(More than one answer possible)	<ol style="list-style-type: none"> 1. Not informed on need of vaccination 2. Fear of side effect 3. Mother's too busy 4. Vaccinators were Absent 5. Inconvenient vaccination time 6. Forgetting the day of vaccination 7. Child/mother sickness 	
Part III. knowledge on Schedule of immunization			
301	At what age the child begins immunization?	<ol style="list-style-type: none"> 1. At delivery 2. Six week after delivery 3. At one year 4. After one year 5. Not sure/I do not know 	
302	How many times a child to visit the immunization site to be fully protected?	<ol style="list-style-type: none"> 1. One 2. Repeated 3. Five 4. Don't know 	
303	At what age is measles vaccine administered?	_____	
304	At what age the child should complete immunization?	<ol style="list-style-type: none"> 1. At one year 2. After one year 3. Before 6 weeks 4. At any time 5. I don' know 	
Part IV. Misconceptions about vaccine contraindication			
401	Sick child should not be vaccinated?	<ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly agree 	

402	Underweight children indication for no vaccination?	<ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree 	
403	Child with fever should not be vaccinated?	<ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree 	
404	Multiple immunizations on the same visit are unsafe?	<ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree 	
405	Mild illness like URIs and diarrhea in children can be reasons to suspend immunizations?	<ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree 	
406	Vaccination should not be given during Breastfeeding?	<ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree 	
Part V. Perception towards benefit of vaccination			
501	Child growing well so no need for vaccination?	<ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree 	
502	Immunizations provide lifelong protection?	<ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree 	
503	Immunizations are harmful for your child?	<ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 	

		5. Strongly agree	
504	Childhood vaccinations prevent life-threatening diseases?	1. Strongly disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly agree	
505	All children are susceptible to vaccine preventable diseases?	1. Strongly disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly agree	
506	Adherence to and completion of child immunization Schedules are important for child development?	1. Strongly disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly agree	
Part VI: client satisfaction			
601	Health workers treat with respect	1. Strongly disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly agree	
602	Health workers concern of your problem	1. Strongly disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly agree	
603	I am convenient on waiting time	1. Strongly disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly agree	
604	Health workers are in hurry	1. Strongly disagree 2. Disagree 3. Not sure 4. Agree 5. Strongly agree	
605	Health workers advised and provide information on your child growth and development	1. Strongly disagree 2. Disagree 3. Not sure	

		4. Agee 5. Strongly agree	
606	Health workers are trained and technically skilled	1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree	
607	Health workers provide information on side effect and contraindications	1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree	
608	Health workers provide information on appointment of the next session	1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree	
609	Health workers reuse needles and syringe	1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree	
610	Health workers have counseling skill that encourage clients to complete vaccination	1. Strongly disagree 2. Disagree 3. Not sure 4. Agee 5. Strongly agree	

611	Do you have your child's immunization card?		1. Yes 2. No →		If no skip to Q.612
		date	month	year	
	Date of birth				
	BCG (with scar)				
	Polio -0				
	Polio -1				
	Polio -2				
	Polio -3				
	PCV-1				
	PCV-2				
	PCV-3				
	Penta-1				
	Penta-2				
	Penta-3 measles				
612.	If No card, please ask the mother/caretaker oral response if the child has any of the following vaccine?				
	BCG vaccination against tuberculosis that is an injection in the right arm/shoulder?		1. Yes(if scar) 2. No		
	Polio vaccine that is dropped in mouth?		1. Yes 2. No		
	Was the first polio vaccine given in the first two weeks after birth or later?		1. Yes 2. No		
	If Yes, How many times the polio vaccine given?		_____		
	An injection given in left thigh?		1. Yes 2. No		
	If Yes, How many times vaccination is given in left thigh?		_____		
	An injection given in right thigh?		1. Yes 2. No		
	If Yes, How many times vaccination is given in right thigh?		_____		
	Measles vaccine in nine month?		1. Yes 2. No		
An injection in the left arm?		1. Yes 2. No			

Annex 2: guide line for In-depth interview

In-depth interview

Dear respondent

My name is----- . I am graduate post graduate student from Jimma University and am working research on factors associated with incomplete immunization among children 12-23 months of age in machakel woreda. Today, I would like to ask you few questions about Immunization and problems related to incomplete immunization. I would like to tape record our discussion with you-this will ensure that we correctly represent your views. What you say here today is confidential and will be used only for research purpose and help us to incorporate with our finding.

May I have your permission to do this? Yes

No, thank you!

In-depth interview for health workers (HEW and EPI focal persons at HC and h/office)

1. Describe about vaccination?
2. Immunization activity after health extension program?
3. Discuss immunization activity in relation to vaccine logistics, refrigerator availability in Health posts?
4. Do you think that all children complete their vaccination before first birth day?
 1. Yes
 2. No(what reason)
5. Mothers asked about schedule of vaccination, benefit of vaccination during health facility visit by all health workers?
6. What if caretaker/mother did not bring vaccination card during appointment?
7. What do you think the reason for mothers /care givers often did not bring their child to the next immunization schedule?
8. Discuss about defaulter tracing mechanism?
9. Discuss about vaccine handling at your facility?
10. About health facility service provision?
11. Say something about vaccine contraindication and side effect
12. What do you recommend for the problem related to immunization?

In-depth interview for mothers of cases and controls

1. About vaccine and vaccination?
2. Mention the benefit of vaccination?
3. About vaccination schedule?
 - Child begin vaccine
 - Measles vaccine administered
 - Child complete immunization
4. Vaccinate the child at appointment?
 1. Yes (when)
 2. No (why)
5. Child completes vaccination?
 1. Yes (on what month)
 2. No (why)
6. Benefit of being completing vaccination?
7. About service provision at health center/health post?
 - ✓ Are you satisfied?
8. Do you tell me about safety of vaccines and injections?
9. About side effect and contraindication
 - ✓ Fever and vaccination?
 - ✓ Multiple vaccination and child health?
 - ✓ Child sickness and vaccination?
 - ✓ Underweight child and vaccination?
10. How do you consider services provided by the health facility or vaccination site?
 - Are you satisfied by health workers?
11. Information about vaccination during health facility visit?
12. Remember that you visited vaccination site without child vaccination card?
 - ✓ Yes (how health worker treat you?)
13. What do you propose solution to problem related to immunization?

Annex 3: Information Sheet and Consent form

Information Sheet and Consent form for clients participating on assessment of factors associated with incomplete immunization among children 12-23 months in Machakel Woreda, east Gojjam zone, Amhara region:

Jimma University, college of public health and medical science, department of epidemiology:

Name of Investigator: melaku kindie (BSC.)

Name of the Advisers: 1. Dr.sahilu Assgid (MD,Associate professor)

2. Mr.Hailay Abrha (BSC, MPHE)

Information sheet is prepared for participants of the study of factors associated with incomplete immunization among children 12-23 months in Machakel Woreda, east Gojjam zone.

This information sheet is prepared by a research investigator whose main aim is to study determinants to default to complete immunization among children 12-23 months in Machakel Woreda. Unmatched case control study in Machakel woreda, East Gojjam

The investigator is a final year MPH student from Jimma University, college of public health and medical science, department of epidemiology:

Purpose: To study determinants to default to complete immunization in Machakel Woreda. Vaccination prevents most childhood disease .In developing country the main cause of death in children were prevents by vaccination. Deferent determinants are tackle completeness of immunization. In Ethiopia only 24 % of child complete vaccination and 39% are defaulters; according to this result, vaccine preventable diseases among children are our country problem. Also to identify those determinant factors reason for completeness of immunization is very important to create strategy and to monitor implementation of police at lower level.

Procedure: For this study, participants will be invited to take part in this project. If they were willing to participate in this project, they need to understand and sign the agreement form. Then, they will be asked to give their responses by the data collectors. They will be interviewed through interviewer administered structured questionnaire. All the responses given by the

participants and results obtained will be kept confidential, no one have access to their responses except the principal investigator.

Risk and Discomfort: There is no risk by participating in this research project. However, you may feel that participating in this research project has some discomfort especially on wasting your time but this is not too much when compared to the benefits it contribute for the interventions to control child hood disease in this area in the future.

Confidentiality: The information that will be collected from this research will be kept confidential. Information about the participants that will be collected from the study will be stored in a file.

Right to refuse or withdraw: The study participants have full right to refuse from participating in this research (they can choose not to respond some or all questions) if they do not wish to participate. They have also full right to withdraw from this research at any time they wish to, without losing any of their right.

Whom to Contact: This research project will be received and approved by the editorial review committee of Jimma University.

If you have any question contact any of the following individuals and you may ask at any time you want

1. Melaku kindie (principal Investigator)
Jimma University
Tel: 0913002871

Interviewer's Guide line

General requirements

The investigator will be conducted an interview on factors associated with incomplete immunization. The main objective of this interview is to identify the determinants of default to complete immunization among children 12-23 months in Machakel Woreda.

Interviewees: Mothers/care takers in Machakel Woreda who are currently children age 12-23 months.

Procedures

- Receive permission to conduct the interview and record information regarding the interviewee.
- Properly introduce yourself. Make sure to emphasize that the interviewee's response were kept confidential.
- Start, ask and get permission from interviewee with easy & general questions. Remember to encourage and praise the interviewee when appropriate. Record responses by clearly circling the number that corresponds to the response of the interview or by writing the response on the space provided for each question.
- Don't forget to fill code in the space provided in the first page of the questionnaire
- Normally the interview were taken 20-30 minutes

Protocol of the interview introduction

The introduction, at minimum, should cover the following issue

- Introduction of yourselves
- Objectives of this interview
- Confidentiality & expectation

End interview Ask the interviewee if he/she wants to ask you questions. Thank them for their time and cooperation.

የመረጃ መስጫና ስምምነት መጠየቂያ ቅጽ

በማቻክል ወረዳ ለሚገኙ እናቶች የህጻናትን ክትባት በማስመልከት ፣ ክትባት የማይጨርሱበትን ምክንያት እና ሌሎች ተያያዥ ጉዳዮችን ለማወቅ ለሚደረገው ጥናት የመረጃ መስጫ እና ለስምምነት መግለጫ የተዘጋጀ ቅጽ።

የዋና ተመራማሪው ስም: መላኩ ክንዴ

የድርጅቱ ስም: ጅማ ዩኒቨርሲቲ

መግቢያ: ይህ የመረጃና የስምምነት ውል ቅፅ የተዘጋጀው እርስዎ ተሳታፊ እንዲሆኑ በተጋበዙበት በምርምር ቡድኑ የሚካሄደውን ጥናት አላማ በተመለከተ መግለጫ ለመስጠት ነው። የምርምር ፕሮጀክቱ ዋና ዓላማ የህጻናት ክትባትን እና ተያያዥ ጉዳዮችን ማቻክል ወረዳ ውስጥ በሚገኙ ቀበሌዎች ላይ መዳሰስ ነው። ይህ መረጃ ደግሞ ለተለያዩ አካላት ትክክለኛ የሆነ መረጃ በመስጠት ለችግሩ መፍትሄ ለመፈለግ እና እቅድ ለማወጣት ያገለግላል። ጥናቱን በካሄዱ በጅማ ዩኒቨርሲቲ የህብረተሰብ ጤና አጠባበቅ ትምህርት ተመራቂ ተማሪ ና በሁለት ሰዓት የሚደረግ የጥናቱ አማካሪዎች ነው።

የጥናቱ አላማ

የዚህ ጥናት አላማ በማቻክል ስራ በሚኖሩ ስፍራዎች የህጻናት ክትባትን ና ሌሎች ተዛማጅ ጉዳዮች ላይ ያሉ ችግሮችን በመለየት ለመፍትሄ ሰጭ አካላት ያቀርባል። ይህ ጥናት የህጻናት ክትባትን ላይ ያሉ ችግሮችን በመለየትና ለሚመለከታቸው አካላት በማሳደግ በክትባት መጻፍ ምክንያት የሚመጡ በሽታዎችን ለመከላከልና የምእተ አመቱን ግቦች ለማሳካት አስተዋጾ ያደርጋል። የጥናቱ ውጤት በገጠር የሃገራችን ክፍሎች ያለውን ዝቅተኛ የህጻናትን የክትባት ሁኔታ ለማሻሻል የሚያግዙ መፍትሄ ስልቶችን ለመቀየስ ይረዳል።

የአሰራር ሂደት

የዚህ ጥናት አላማ ማቻክል ስራ በሚኖሩ ስፍራዎች የህጻናትን ክትባትንና ሌሎች ተያያዥ ጉዳዮች ላይ ያሉ ችግሮችን ለመለየትና ተያያዥ ጉዳዮች ለማወቅ በሚካሄደው ጥናት እርስዎን እንዲሳተፉ ጋበዘንዎታል። በዚህ ጥናት ውስጥ ለመሳተፍ ከተስማሙ ስምምነቱን መረዳትና ፈቀደኝነትዎን ማሳዎቅ ይገባዎታል። ከዚህ በኋላ መረጃ ሰብሳቢዉ መጠይቅ ላይ ያሉትን ጥያቄዎች ይጠይቀዎታል። ስምዎን መፍፍና መፈረም አያስፈልግዎትም። የሚሰጡት መረጃ ሚስጥራዊነቱ ይጠበቃል።

አደጋዎች ወይም አለመመቻቸት

በዚህ ጥናት በመሳተፍዎ የተወሰነ ያለመመቻት ስሜት ሊሰማዎት ይችላል በተለይ የስራ ጊዜዎትን ቢበዛ ከ 20-30 ደቂቃ ያህል ይሻማዎታል። ነገር ግን ጥናቱ ከሚሰጠው ጥቅም አኳያ እንደሚሳተፉ ተስፋ አደርጋለሁ።

ጠቀሜታ

በዚህ ጥናት ላይ በመሳተፍዎ ቀጥተኛ የሆነ ጥቅም ላያገኙ ይችላሉ ነገር ግን እርስዎ በተመለከተው አላማና ይዘት ርዕሶች የህፃናት ክትባትንና ተያያዥ ችግሮች የሚመጡ በሽታዎችን ለመከላከል ትልቅ ድርሻ ሊኖረው ይችላል። በዚህ ጥናት መሳተፍ የሚያደርሰው ጉዳት የለም።

የተሳትፎ ክፍያዎች:

በጥናቱ በመካፈልዎ የሚሰጥ ክፍያ የለም።

ሚስጥር ስለመጠበቅ፤

ለዚህ ጥናት የሚሰበሰብ መረጃ በሚስጥር ይጠበቃል። የሚሰበሰበው መጠይቅ የእርስዎ ለመሆኑ መለያ አይኖረውም። መረጃው በዋና ተመራማሪው ፋይል ተደርጎ የሚቀመጥ በመሆኑ ሌላ ሰው ሊያገኘው አይችልም።

በጥናቱ ያለመሳተፍ ወይም ራስን ከጥናቱ የማግለል መብት:

በጥናቱ ላለመሳተፍ ከፈለጉ በዚህ ጥናት ያለመሳተፍ ሙሉ መብት አለዎት። ከመጠይቁ ውስጥ ጥቂት ጥያቄዎችን ወይም በሙሉ ያለመመለስ ይችላሉ።

የሚገናኝዎቸው ሰዎች:

ስለዚህ ጥናት ማነጋገር ከፈለጉ ከሚከተሉት የፈለጉትን ማነጋገር ይችላሉ።

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- ኢሜል:melaku98@gmail.com

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□አድራሻዎቻቸው 12 23 ለሆናቸው ህፃናት ክትባትን በማስመልከት መውሰድ የሚገባቸውን
ክትባት ያቋረጡበትን ምክንያት በተመለከተ ለማጥናት የተዘጋጀ መጠይቅ።

የፈቃደኝነት ማረጋገጫ ቅፅ

□መረ□ ሰብሳቢ□ ስም

መረጃ የተሰበሰበበት ቀን.....

መ□ቢ□:- እክንደምን አደርክ (ሸ) ዋልክ (ሸ)? የኔ ስሜ

እኔ እኔ ማቻክል ወረዳ በሚገኙ አድራሻዎቻቸው 12- 23 ለሆናቸው ህፃናት ክትባትን በማስመልከት መውሰድ የሚገባቸውን ክትባት ያላጠናቀቁበትን ምክንያት በተመለከተ በጅም የኒቨርሲቲ የማስተርስ ዲግሪ ተማሪ ለሚያደርገው ጥናት መረጃ ሰብሳቢ ነኝ። የጥናቱም ዋና ዋና ማረጋገጫዎቻቸው 12- 23 ለሆናቸው ህፃናት ክትባትን በማስመልከት መውሰድ የሚገባቸውን ክትባት ያላጠናቀቁበትን ምክንያትና እኔ እኔ ምክንያቶች ምን እክንደሆኑ ለማጥናት ነ።

በመጠየቁም ወቅት መመለስ የማትፈልገ/□ውን ማንኛውንም አይነት ጥያቄ መተ□ □□ም በማንኛውም ሰዓት ማቋረጥ ትችላለህ(ያለሽ)። ሆኖም ግን የምተሰጠን መረ□ አድራሻዎቻቸው 12- 23 ለሆናቸው ህፃናት ክትባትን በማስመልከት ክትባት ያቋረጡበትን ምክንያቶች ምን □አንደሆኑ ለመገንዘብ ይረዳናል። ይህም ጠቀሜታ□ □አ ስለሆነ በቅድሚያ ለምታደርግልን (ጌልን) ትብብር ምስጋናችን ከልብ የመነጨ ነው።

ይህ መጠይቅ ከ 20-30 ደቂቃ ሊወስድ ይችላል። በዚህ ጥናት ላይ ለመሳተፍ ፈቃደኛ ነህ (ሸ)?

አዎ □

አልሳተፍም □

አመስግናለሁ።

ከድ ቁጥር-----

ክፍል 1:- ማህበራዊ እና ስነ- ህዝባዊ መረጃ			
ተ.ቁ	ጥያቄዎች	መልስ	ምርመራ
101	የህጻን/ኗ አሳዳጊ/ተንከባካቢ መኖሪያ	1. ከተማ 2. ገጠር	
102	የህጻን/ኗ አሳዳጊ/ተንከባካቢ	1. እናት 2. አባት 3. አያት 4. ታላቅ ልጅ 5. ሌላ ካለ ይጠቀስ-----	
103	የህጻን/ኗ አሳዳጊ/ተንከባካቢ እድሜ	----- ዓመት	
104	የጋብቻ ሁኔታ(በመጠየቁ ሰዓት)	1. ያገባ 2. ያላገባ 3. ተለያይቶ የሚኖር 4. አግብቶ የፈታ 5. የሞተባት	
105	የእናት/አሳዳጊ የትምህርት ደረጃ(አሁን)	1. ማንበብና መጻፍ የማይችል 2. ማንበብ ና መጻፍ ብቻ 3. መጀመሪያ ደረጃ (1-8 ኛ ክፍል) 4. ሁለተኛ ደረጃ(9-12) 5. ሰርተፊኬት 6. ዲፕሎማ 7. ዲግሪና ከዛ በላይ	
106	የህጻን/ኗ አሳዳጊ/ተንከባካቢ ስራ	1. ግብርና 2. ነጋዴ 3. የመንግስት ስራተኛ 4. የቀን ስራተኛ 5. የቤት እመቤት 6. ሌላ ካለ ይገለጽ-----	
107	የባል የትምህርት ደረጃ	1. ማንበብና መጻፍ የ ማይችል 2. ማንበብ ና መጻፍ 3. መጀመሪያ ደረጃ (1-8 ኛ ክፍል) 4. ሁለተኛ ደረጃ(9-12)	

		5. ሰርተፊኬት 6. ዲፕሎማ 7. ዲግሪና ከዛ በላይ	
108	የባል ስራ	1. ግብርና 2. ነጋዴ 3. የመንግስት ስራተኛ 4. የቀን ስራተኛ 5. ሌላ ካለ ይገለጽ-----	
119	የቤተሰብ ብዛት በቁጥር	-----	
110	ጠቅላላ በህይወት የተወለዱ ልጆች ብዛት?	-----	
111	ከወለዱቸው ልጆች መካከል አሁን በህይወት ያሉ ልጆች ብዛት?	-----	
112	የህጻን/ኗ ያታ	1. ሴት 2. ወንድ	
113	የህጻን/ኗ ዕድሜ በወር	-----ወር	
114	ህጻን/ኗ ስንተኛ ልጅ ነው?		
115	በህፃን/ኗ እና በህፃን/ኗ የመጨረሻ ታላቅ ልጅ መካከል ምን ያህል የእድሜ ልዩነት አለ?	-----ወር	
ማስታዎች: አመታዊ የምርት ገቢን ለ12 ካገፈሉ በሃላ ከወርሃዊ የገቢ መጠኑ ጋር ደምረው ለ2 ያካፍሉት			
116.ሀ	ወርሃዊ ገቢ በገንዘብ		-----ብር
116.ለ	አመታዊ የምርት ገቢ	ጤፍ	-----ኩንታል----- ብር
	በኩንታል	ስንዴ	-----ኩንታል-----ብር
	ስንት ነው	ገብስ	-----ኩንታል-----ብር
		በቆሎ	-----ኩንታል-----ብር
			-----ኩንታል-----ብር
ክፍል ሁለት: ከክትባት ጋር የተያያዙ ጥያቄዎች			
201	ወደ ክትባት ጣቢያ ወይም ጤና ድርጅተ ሂደው ልጅዎ ያልተከተበበትን ጊዜ ያስታውሳሉ?	1. አዎ 2. የለም →	ወደ ጥያቄ ቁጥር 203 ይሒዱ

202	ለጥያቄ ቁጥር 201 አዎ ከሆነ ምክንያቱ ምንድን ነበር?	<ol style="list-style-type: none"> 1. ክትብት አለመኖር 2. ህፃናት ስላነሱ ክትብት አለመከፈት 3. ጤና ባለሙያዉ ግንዛቤ አለመስጠት 4. ህፃኑ በመታመሙ 5. እርግጠኛ አይደለሁም 	
203	በቅርብዎ ወደ ሚገኘዉ ክትባት ጣቢያ ለመድረስ ስንት ሰዓት (ደቂቃ) ይፈጃል?	_____ ደቂቃ	
204	በዚህ አንድ ወር ውስጥ ጤና ባለሙያ ቤትዎን ጎብኝቶ ያዉቃል?	<ol style="list-style-type: none"> 1. አዎ 2. የለም → 	ወደ ጥያቄ ቁጥር 206 ይሒዱ
205	ለጥያቄ 204 መልስዎ አዎ ከሆነ ምን ያህል ጊዜ?	-----ጊዜ	
206	ህፃኑ ከመወለዱ በፊት ስለክትባት እና በክትባት ስለምንከላከላቸዉ በሽታዎች ሰምተዉ ያዉቃሉ?	<ol style="list-style-type: none"> 1. አዎ 2. የለም → 	ወደ ጥያቄ ቁጥር 208 ይሂዱ
207	ለጥያቄ ቁጥር 206 መልስዎ አዎ ከሆነ ከየት ስሙ?	<ol style="list-style-type: none"> 1. ሬድዮ 2. ቴሌቭዥን 3. ከጤና ባለሙያ 4. ከንደኛ 5. ከትምህር ቤት 6. ሌላ ካለ ይግለፁ 	
208	ልጅዎን ሲወልዱ የቅድመ-ወሊድ ክትትል አድርገዋል?	<ol style="list-style-type: none"> 1. አዎ 2. የለም → 	ወደ ጥያቄ ቁጥር 210 ይሂዱ
209	ለጥያቄ ቁጥር 208 አዎ ከሆነ ለምን ያህል ጊዜ?	-----	
210	ልጅዎን ከወለዱ በኋላ የድህረ ወሊድ ክትትል አድርገዋል?	<ol style="list-style-type: none"> 1. አዎ 2. የለም → 	ወደ ጥያቄ ቁጥር 212 ይሒዱ
211	ለምን ያህል ጊዜ?	-----	
212	በእርግዝናዎ ወቅት የመንጋጋ ቆልፍ ክትብት ወስደዋል?	<ol style="list-style-type: none"> 1. አዎ 2. የለም → 	ወደ ጥያቄ ቁጥር 214 ይሒዱ

213	ለምን ያህል ጊዜ?	-----	
214	ልጅዎን የት ወለዱ?	<ol style="list-style-type: none"> 1. ቤት 2. ጤና ጣቢያ 3. ጤና ኬላ 4. ሆስፒታል 	
215	የልጅዎን የክትባት ቀጠሮ አሳልፈው ያውቃሉ?	<ol style="list-style-type: none"> 1. አዎ 2. የለም → 	<p>ወደ ጥያቄ ቁጥር 301 ይሒዱ</p>
216	የክትባት ቀኑን ወደ ሌላ ቀን የቀጠሩበት ምክንያት ምን ነበር?	<ol style="list-style-type: none"> 1. ህፃኑ ክትባት እንደሚያስፈልገው አላወቅም 2. ከክትባት ጋር ተያያዥነት ያለውን የህፃናት የጎንጾሽ ጉዳት በመፍራት 3. የስራ ጫና መኖር 4. ህፃኑ ተጨማሪ ክትባት እንደሚያስፈልገው ግንዛቤው አለመኖር 5. ክትባት የሚሰጠው ባለሙያ አለመገኘት 6. የክትባት ቀኑ አለመመቸት 7. የክትባት ቀኑን መርሳት 8. ህፃኑ/እናት በቀጠሮው ቀን መታመም 	
ክፍል ሶስት: ስለ ክትባት መርሃ-ግብር ግንዛቤ የተመለከቱ ጥያቄዎች			
301	ህፃን ከተወለደ ክትባት የሚጀምረው መቼ ነው?	<ol style="list-style-type: none"> 1. ህጻን እንደተወለደ 2. ከስድስት ሳምንት በኋላ 3. በአንድ ዓመት 4. ከአንድ ዓመት በኋላ 5. እርግጠኛ አይደለሁም 	
302	የከፍኝ ክትባት የሚጀምረው መቼ ነው?		
303	ህፃናት ምን ያህል ዙር እንደሚከተቡ ቢነግሩኝ?	<ol style="list-style-type: none"> 1. አንዴ 2. አምስት ጊዜ 3. በተደጋጋሚ 4. እርግጠኛ አይደለሁም 	

304	አንድ ህፃን ክትባት የሚያጠናቅቀው በስንት እድሜው ነው።	<ol style="list-style-type: none"> 1. በአንድ ዓመት 2. ከአንድ ዓመት በኋላ 3. በስድስት ሳምንት 4. በማንኛውም ሰዓት 5. እርግጠኛ አይደለም 	
ክፍል አራት፡ ስለክትባት የጎንዮሽ ጉዳት ያለ አመለካከት			
401	የታመመ ህፃን መከተብ የለበትም።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
402	ከክብደት በታች የሆነ ህፃን ክትባት መውሰድ የለበትም።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
403	ትኩሳት ያለው ህፃን መከተብ የለበትም።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
404	ህጻናትን በተደጋጋሚ ማስከተብ ለህፃናት ጤንነት ተገቢ አይደለም።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
405	ህፃናት ተቅማት፣ መጠነኛ የመተንፈሻ አካል ህመም ካለባቸው መከተብ የለባቸውም።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለም 4. እስማማለሁ 5. በጣም እስማማለሁ 	

406	ጡት የሚጠባ ህፃን ክትባት አይወስድም።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
ክፍል አምስት፡ ስለክትባት አስፈላጊነት ያለ አመለካከት			
501	የህፃኑ እድገት ጥሩ በመሆኑ ክትባት አያስፈልገውም።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
502	ክትባት ህፃናትን በህይወት ዘመናቸው ከተለያዩ በሽታዎች ይታደጋል።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
503	ክትባት ለህፃናት እድገት ጎጂ ነው	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
504	ክትባት ህፃናትን ከተለያዩ በሽታዎች ይከላከላል።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
505	ሁሉም ህፃናት በክትባት በምንከላከላቸው በሽታዎች የተጋለጡ ናቸው።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	

506	ክትባት መጨረስ ለህፃናት እድገት አስፈላጊ ነው።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
ክፍል ስድስት፡ የተጠቃሚዎች እርካታ			
601	የጤና ባለሙያዎች በአክብሮት ያስተናግዳሉ።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
602	የጤና ባለሙያዎች ችግሮችን እንደራሱ ችግር አድርጎ ይመለከታል።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
603	የጤና ባለሙያዎች የሚሰጡት አገልግሎት የተቀላጠፈ ነው።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
604	የጤና ባለሙያዎች ስራ ይበዛባቸዋል።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
605	የጤና ባለሙያዎች የምክር እና ስለህፃናት እድገት መረጃ ይሰጣሉ።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	

606	የጤና ባለሙያዎች የሰለጠኑ እና ችሎታ ያላቸው ናቸው።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
607	የጤና ባለሙያዎች ስለክትባት የጎንዮሽ ጉዳት መረጃ ይሰጣሉ።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
608	የጤና ባለሙያዎች የህፃናት ክትባት የቀጠሮ ቀን መረጃ ይሰጣሉ።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
609	የጤና ባለሙያዎች ሌላ የተጠቀሙበትን የመወገድ መርፌ በድጋሜ ይጠቀማሉ።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	
610	የጤና ባለሙያዎች የምክር አገልግሎት ለመስጠት ክህሎት አላቸው።	<ol style="list-style-type: none"> 1. በጣም አልስማማም 2. አልስማማም 3. እርግጠኛ አይደለሁም 4. እስማማለሁ 5. በጣም እስማማለሁ 	

611	የክትባት መከታተያ ካርድ አለዎት?	1 አዎ 2 የለም →		ወደ ጥያቄ 612 ይሂዱ
		ቀን	ወር	አመት
	ህጻኑ የተወለደበት			
	ቢ.ሲ.ጂ			
	አፒ.ሺ. 0			
	አፒ.ሺ. 1			
	አፒ.ሺ. 2			
	አፒ.ሺ. 3			
	ፒ.ሲ.ሺ.1			
	ፒ.ሲ.ሺ.2			
	ፒ.ሲ.ሺ.3			
	ፔንታ1			
	ፔንታ2			
	ፔንታ3			
ኩፍኝ (ሚዝልስ)				
612.	ከሚከተሉት ክትባት ውስጥ ህጻናት የትኛውን ክትባት እንደወሰዱ በእናት/ተንከባኪ ቃለመጠይቅ የሚሞላ			
1	ልጅዎት በቀኝ ክንድ ላይ የሚሰጥ ቢ.ሲ.ጂ ክትባት ወስዳል (ምልክቱን ተመልከት)	1. አዎ (ምልክቱ ካለ) 2. የለም		
2	ህፃኑ እንደተወለደ ባሉት የመጀመሪያ ሁለት ሳምንታት ተከትሏል	1. አዎ 2. የለም		
3	ልጅዎ በአፍ የሚሰጥ የፖሊዮ ክትባት ወስዳል	1. አዎ 2. የለም →		ወደ ጥያቄ 5
4	ስንት ዙር የፖሊዮ ክትባት ተሰጠው	-----		
5	ልጅዎት በቀኝ ጭን ላይ የሚሰጥ ክትባት ተሰጥቶታል	1. አዎ 2. የለም →		ወደ ጥያቄ 7 ይሂዱ
6	ስንት ዙር ተከትሏል	-----		
7	ልጅዎት በግራ ጭን ላይ የሚሰጥ ክትባት ተሰጥቶታል	1. አዎ 2. የለም →		ወደ ጥያቄ 9 ይሂዱ
8	ስንት ዙር ተከትሏል	-----		
9	ህፃኑ በዘጠነኛው ወር የኩፍኝ ክትባት ወስዳል	1. አዎ 2. የለም		
10	ህፃኑ ግራ ክንዱ ላይ ክትባት ወስዳል	1. አዎ 2. የለም		