DEFAULTING ON CHILD VACCINATION AND ASSOCIATED FACTORS AMONG CHILDREN AGED 12-23 MONTHS IN GAMBELLA TOWN, SOUTH WEST ETHIOPIA (COMMUNITY BASED)

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Abstract

Background: EDHS conducted in Ethiopia on 2016 revealed; only 41.1% of children 12-23 months of age fully completed their vaccination. Although coverage of individual vaccine improved in Ethiopia, proportion of completely vaccinated children with all recommended vaccines rarely achieved.

Objective: The aim of this study was to assess defaulting on child vaccination and associated factors among children aged 12-23months in Gambella town, 2019

Method: Community based cross sectional study was conducted among 733 mothers/caretakers of children age 12-23 month from March 18-April18/2019 in five kebeles found in Gambella town. The collected data was entered to Epidata version3.1 and analysed by using SPSS version 20. Descriptive statistics analyses were employed. Multi nominal logistic regression was used to assess the association between independent variables and vaccination status (Fully vaccinated, defaulted at three dose and defaulted at measles). P-value < 0.05 was used as cut-off point for statistical significance of factors associated with defaulting on vaccination among children aged 12-23months.

Result: Child defaulted at measles 114(15.5%), and at three dose 90(12.3%), and 529(72.2%) fully immunized. Four variables were significantly associated with defaulted at three dose and at measles. At three dose; mothers no ANC visit (AOR= 3.9; CI: 1.90, 8.04), mothers no PNC visit (AOR= 5.1; CI: 2.87, 9.32), mothers with misconception on vaccination (AOR=2.4; CI: 1.36, 4.41) and mothers with no satisfaction on health care service (AOR=15.2; CI: 7.66, 30.33) were significant. At measles; mothers no ANC visit (AOR= 2.4; CI: 1.24, 4.63), mothers no PNC visit (AOR= 7.2; CI: 4.15, 12.88), mothers with misconception on vaccination (AOR=3.2; CI: 1.88, 5.63) and mothers with no satisfaction on health care service (AOR=10.8; CI: 5.94, 19.73) were significant.

Conclusion: As compared to different studies, defaulting from vaccination in the study area was high. No ANC and PNC visit, misconception on vaccination and satisfaction on healthcare services were factors significantly associated with defaulting at three dose and measles. The town health office should consider the utilization of ANC and PNC visit, and improving misconception and satisfaction of mothers/caretakers on related to vaccination services.

Key words: Defaulting, child vaccination, 12-23 months' children, Gambella town

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Abbreviation and acronym

ANC	Ante Natal Care
AOR	Adjusted Odds Ratio
BCG	Baccili Calmete Guerin
CI	Confidence Interval
DPT	Diptheria-Pertusis-Tetanus
DPT-Hep-Hib	Diptheria-Pertusis-Tetanus Hepatitis B- Hemofluenza Type B
EDHS	Ethiopia Demographic Health Survey
EPI	Expanded Program On Immunization
FIC	Fully Immunized Children
FMOH	Federal Ministry Of Health
GRHB	Gambela Regional Health Bureau
GVAP	Global Vaccine Action Plan
HEW	Health Extension Worker
MCV	Measles Containing Vaccine
PCV	Pneumonia Conjugated Vaccine
PNC	Post-Natal Care
PPS	Population Proportional to the Size
RED	Reach Every District
RV	Rota Virus Vaccine
SDG	Sustainable Developmental Goals
UNICEF	United Nation International Children Fund
UN IGME	United Nation Inter-agency Group for Child Mortality Estimation
VPD	Vaccine Preventable Diseases
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION

1.1. Background

Immunization is one of the most efficient and successful health interventions for the reduction of child morbidity and mortality(1). The term ″defaulter″ refers to children who start vaccination and do not complete vaccination in the routine activity (2). The World Health Organization (WHO) established the Expanded Program on Immunization (EPI) in 1974 to ensure universal access to routinely recommended childhood immunizations. Ethiopia as one of the member states adopted EPI in 1980 with the aim of reducing morbidity and mortality of children from vaccine preventable diseases. (3).

Globally, an estimated 2.5 million under-five children die every year due to vaccine preventable diseases. In 2013, coverage of third-dose diphtheria, tetanus, and pertussis vaccine (DTP3) among children aged <12 months was 84% globally, ranging from 75% in the African region to 96% in the Western Pacific and European regions.(4)

As result of improved vaccine coverage globally greater than 86% combined with other interventions annually, under five mortality dropped from 12.6 million in 1990 to 5.6 million death in 2016. Estimated 2.5 million deaths are averted by vaccination. Despite these great achievements, still 1.5 million deaths from VPD. In Ethiopia,190,000 children still dying each year (5).

Although coverage of individual vaccine improved in Ethiopia, proportion of completely vaccinated children with all recommended vaccines rarely achieved (6).Children who were not vaccinated/incomplete/ to all recommended vaccine are greater risk for contracting VPD and transmitting diseases to children too young to be vaccinated, person with vaccine contraindication to vaccine and person with vaccine failure that is one of the reasons why VPD still exist(7).

1.2. Statement of the problems

Globally an estimated 19.5 million infants were not reached with routine vaccination services such as DTP3 containing vaccine. Among 19.5 million infants, 12.8 million (66%) did not receive the first DTP dose, and 6.6 million (34%) started, but did not complete the DTP series(8).

A report from WHO revealed that around 60% of children who were not reached with routine immunization services are from 10 countries where majority are from sub-Saharan African countries (9). From Africa eight countries had DTP3 or one dose of measles vaccine (MCV1) coverage below 50%; Angola, Central African Republic, Chad, Equatorial Guinea, Guinea, Niger, Somali, and South Sudan. Children in these countries, already subject to multiple depravations, remain at risk of outbreaks of vaccine preventable diseases and threats to their lives (10).

Despite the effectiveness of vaccines in the prevention of vaccine preventable infectious diseases (VPDs) in child diseases, compliance of parents with immunization schedule continues to be challenge in many places (11). An estimated 1.5 million children die annually from VPD, which is approximately 17%. As a result, in different parts of the world, the recent outbreaks of Polio, measles and pertussis (whooping cough). Moreover, tuberculosis and diphtheria remain endemic(12).

According to EDHS 2016, only four in ten children age 12-23 months (39%) received all basic vaccination at some time, and 22% received these vaccinations before their first birthday (8). Research done in Mizan and Arba Minch showed that incomplete vaccination was 49.4% and 20.3% respectively which is showing us there utilization problems(12,13).

EDHS conducted in Ethiopia on 2016 revealed; only41.1% of children 12-23 months of age fully completed their vaccination. The total unadjusted dropout rate (card verification and history) for DPT-HepB-Hib1-3 was 27.32% nationally. In Gambella according to EDHS 2016 reported by background characteristics immunization coverage FIC was 41.1%. With drop out of 11.2% from Penta 1 to 3 and 15% from Penta 1to measles showed there is good accessibility of the service but still there are utilization problems in the region.

Research and experience show that six of the almost 11 million children who die each year could be saved by cost-effective measures such as vaccines, antibiotics, micronutrient supplementation, insecticide-treated bed nets and improved family care and breast feeding practices (13).

Epidemiological investigations of recent outbreaks of vaccine preventable diseases indicated that incomplete immunization was the major reason for many of the outbreaks of infectious diseases in the past two decades (14).

Studies that have been done to explore factors associated with incomplete vaccination; some of the factors were long distance, illiteracy of mothers, home delivery, lack of knowledge of mothers relating to vaccine, interaction with health service providers, no Ante-Natal care(ANC) follow up, no Post-Natal care(PNC), lack of health worker visit, postponing vaccination schedule(15–17).

Currently in Ethiopia routine vaccines are administered BCG and OPV at birth, OPV, Pentavalent Vaccine (DTP, Hib conjugate and hepatitis B viruses), and PCV at 6, 10 and 14 weeks. Rota Viruses Vaccine (RV) at 6 and 10 weeks, and MCV at nine months. Additional vaccines will also be included into the routine immunization in near future. Children are completely vaccinated when all type of vaccine and its subsequent doses are given (18).

After health extension program was launched exact factors for immunization defaulting was not assessed in Gambella town, so the study assessed factors of defaulting on vaccination among children aged 12-23 months in Gambella town of South West Ethiopia.

1.3. Significance of the study

Defaulting from childhood immunization is widely recognized as a priority strategy for reducing child mortality, and rates of immunization antigens are being used as the target indicator to measure progress toward the SDGs (Sustainable Development Goals) of improving child health. It is therefore, found imperative that a pertinent study must be conducted to elucidate magnitude of defaulting and some of the factors that affect immunization practices.

So, findings of this study will help GTHO during planning defaulting on child vaccination activities, input for the concerned partners working on child immunization and serve as additional evidence for further study

CHAPTER TWO: LITERATURE REVIEW

2.1. Magnitude of Defaulting from vaccination

Defaulting measured children who start vaccination and do not finish routine vaccination program according to FMOH (Federal Ministry of Health) of Ethiopia.

Around 8.4 million received at least 1 DTP dose, but dropped out before completing the 3-dose series. One out of five infants worldwide does not receive three life-saving doses of the diphtheria, tetanus and pertussis vaccine (4).

The findings in Nairobi indicate that 67 % of the children were fully immunized by 12 months of age. Missing measles and third doses of polio and pentavalent vaccine were the main reason for not being fully immunized. Delays were highest for third doses of polio and pentavalent and measles (19).

The study conducted in Yirgalem town showed 20% of children aged 12-23 months didn't complete their vaccination according to schedule for routine immunization and in Jigjiga three–fourth (74.6%) of the children surveyed were ever vaccinated, whereas only 36.6% were fully vaccinated (15,20).

2.2. Factors associated with defaulting on child vaccination

A review of literature suggested that defaulting on child vaccination occurs in many types of settings and that predisposing characteristics of the child and the mother/care takers, enabling factors associated with maternal characteristics and provider related factors and need factors related to health services influences childhood vaccination.

2.2.1. *Predisposing factors*

Predisposing factors affect most of health issues related with the family. The factors such as maternal age, birth order, marital status, educational status, and occupation.

The study done in Malaysia was found out there were significant associations between defaulters of vaccination with mother's age (OR 7.4, 95%CI: 1.1–48.2).The study found that maternal age less than 30 years (AOR=2.26, 95% CI:1.27–4.03) associated with completion of childhood vaccination (21). In contrast to this study, a cross sectional research done in Jigjiga,

children whose maternal age greater than 30 years (AOR=3.79 95% CI(1.76,8.16) were 3.79 times more likely to complete vaccination (22).

In Burkina Faso the study showed that children of mothers with some education were less likely to fail timely vaccination as compared to children of mothers without any reading ability (OR = 1.24; 95% CI 1.00–1.54) (23).

Cross-sectional study done in Ambo woreda showed children of mothers who attended primary school were 2.12(OR=2.12; 95% CI: 1.4, 3.2) times more likely to be fully vaccinated as well as those of mothers who attended high school and above were 5.74(OR=5.74; 95% CI: 3.3, 9.9) times more likely to be fully vaccinated than those of illiterate (24).

Birth interval, birth order and House hold size were identified for completion of vaccination by a cross sectional research done in Kenya. The study revealed that medium birth interval (AOR= 2.46; 95%CI: 1.37–5.30) and long birth interval (AOR: 1.85; 95%CI (1.1–3.09) compared with short term birth interval associated with complete vaccination. This study also identified that first birth (AOR=2.15; 95%CCI:1.20–3.84) and household size less than five (AOR: 1.40; 95%CI: 1.04–1.87) were associated with fully vaccination (25). Another study done in Arbegona Ethiopia showed that children being second to fourth in the family (AOR = 3.64; 95 % CI : 1.63, 8.14) and being fifth and above in the family (AOR = 5.27; 95 % CI : 2.20, 12.64) had a higher likelihood to default than being born first (26).

Family preference over sex of child usually affects the likelihood of fully vaccination. As cross sectional study done in Debre Markos showed that male birth(AOR=3.24; 95% CI: 1.16–9.04) was more likely to fully vaccinated (10).

2.2.2. Enabling factors

Enabling factors affect most of health issues related to characteristics of mothers/caretakers on vaccination. The factors such as knowledge on vaccination, misconception on vaccine contraindication, satisfaction on child vaccination related to health providers, house to house visit of health extension workers, and family income.

Numerous study showed that child mothers/caretakers knowledge on vaccination and misconception on vaccine contraindication influence uptake/completion of recommended

childhood vaccination. A study done in residing on the slums of resident Kathmandu valley, Nepal showed that Primary caretakers with poor knowledge about the schedule of vaccination were more likely to incomplete the recommended vaccination of children (OR:3.90; 95 % CI: 1.60–9.51) (27). This finding is consistent with a study done in Laelay Adiabo, Tigray that revealed that having poor knowledge was associated with incomplete vaccination (AOR=3.3; 95% CI: 1.87–7.43) (28).

Study done in Arbegona revealed that lack of knowledge about immunization benefits (AOR= 5.51; 95 % CI: 1.52, 19.94) and a mother's misconception on vaccine contraindications (AOR 1.92; 95 % CI: 1.01, 3.70) were associated with defaulting (26). Similarly the study conducted in south Ethiopia mothers who had unsatisfied towards health institution support were associated with defaulting (OR=2.3, 95% CI: 1.67, 7.6) (29).

Visiting house hold by health extension workers believed to be interactive counselling approach for improving fully vaccination of children. A study done in Laelay Adiabo, Tigray revealed that household not visited at least once per month by health extension worker 2.68 times more likely to be associated with incomplete vaccination (AOR = 2.68; 95% CI: 1.30–5.51) (28). Another cross section study done in Jigjiga, identified household visits by health workers (AOR = 1.92; 95% CI = 1.17, 3.16) was associated with fully vaccination (22).

Average monthly income of household is another variable that have an association with completion of vaccination. A cross-sectional study conducted in Central Ethiopia showed households who have an average monthly income of greater than 1000 Ethiopian birr and between 500-1000 birr were 3.2(OR=3.2; 95% CI: 1.9, 5.3) and 2.5(OR=2.5; 95% CI: 1.5, 3.9) times more likely to fully vaccinate when compared with those who had less than average monthly income of 500 birr respectively (24).

2.2.3. Need factors

Different literature suggested that vaccination of children can be affected by different health service deliveries such as place of delivery, antenatal care, and post-natal care.

Analysis of Demographic Health Survey of Nigeria showed that children whose mothers attended ANC (AOR = 0.49; 95% CI: 0.39–0.60) and delivered at health facility (AOR = 0.62; 95% CI: 0.51–0.74) reduced the chances of not being completely vaccinated by 51% and 38%

respectively(29). The study done in Hawasa Zuria children whose mother attended antenatal care were 1.8 times more likely to complete their vaccination schedule compared to their counterparts (OR=1.84; 95% CI: 1.01-3.36). Children born at home were 4.1 times (AOR=4.10; 95% CI: 1.71-9.83) more likely to incomplete their vaccination (30).

Cross sectional study done in Mecha, Ethiopia showed that Children delivered at facility (AOR =1.593 , 95% CI :1.037,2.445) were 1.6 times more likely to complete their vaccination than counterparts (31). In Wonago district, south Ethiopia a study showed significant association between Postnatal Care (PNC) utilization after the delivery of the index child and completion of child vaccination (AOR =5.81; CI: 3.61, 11.7) (32).

2.2. Conceptual frame work of the study

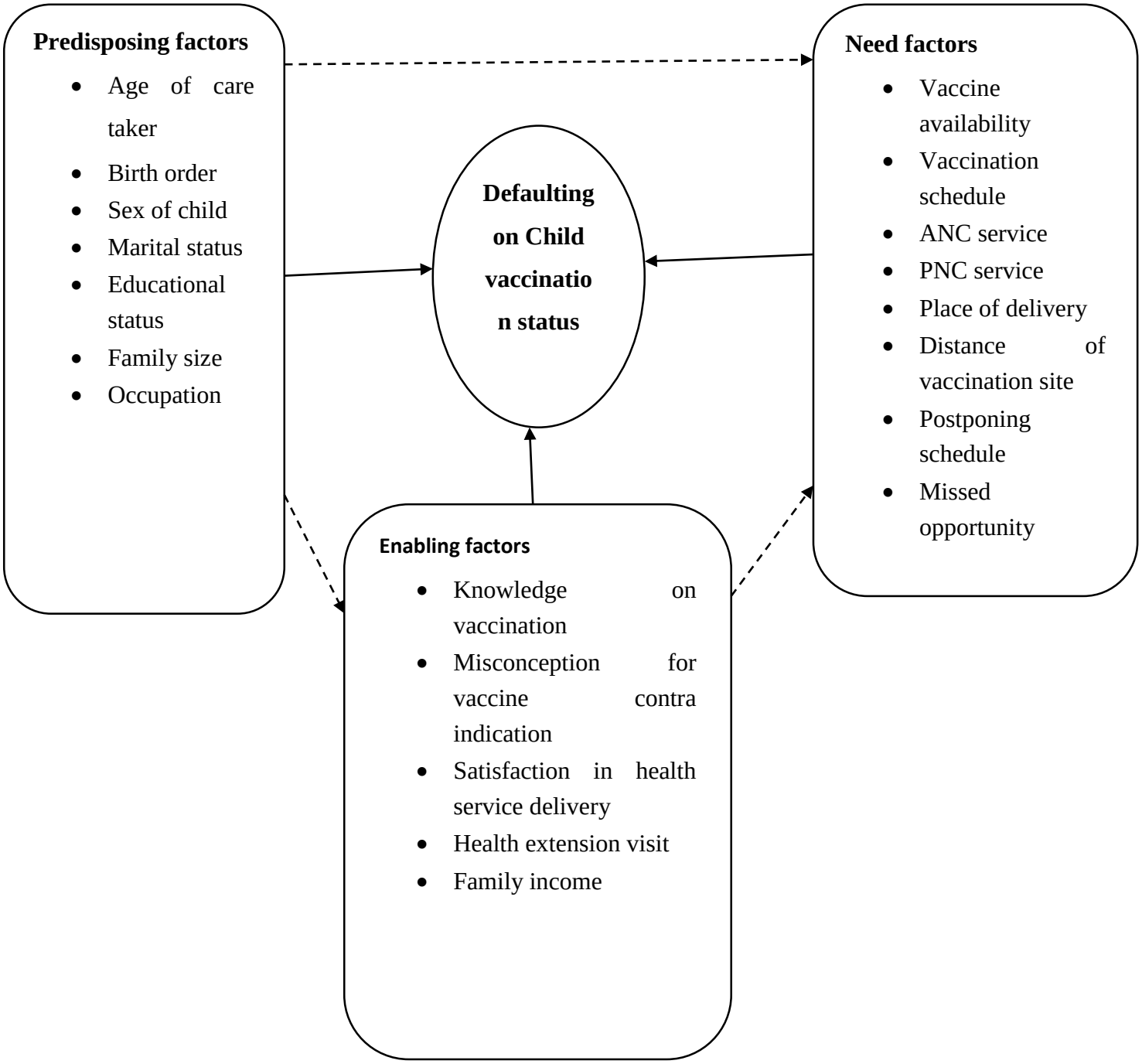

Figure 1: Conceptual framework showing factors of defaulting to vaccination among children aged 12-23months in Gambella town adopted from different literatures: Andersen's model of health care utilization

CHAPTER THREE: OBJECTIVES

3.1. General objective

To assess defaulting from child vaccination and associated factors among children aged 12-23 months in Gambella Town South West Ethiopia, March 18-April 18, 2019.

3.2. Specific objectives

1. To determine magnitude of defaulting from child vaccination among children aged 12-23 months
2. To identify factors associated with defaulting on child vaccination among children aged 12-23 months

CHAPTER FOUR: METHOD AND MATERIALS

4.1. Study area and period

The study was conducted in Gambella town, Gambella regional state located 766km far from Addis Ababa in South West direction of Ethiopia. According to 2007 Ethiopia national census, the projected population size of the town is 59,462; 51% are males. There are 10,103 women of reproductive age group, 6,768 under five children and total number of children eligible for immunization of 2018 was 1606. The town has 5 urban Kebeles, one Regional hospital, one health center and five health posts. Vaccination service is being provided free of charge in all health posts, the health center, and hospital. The study period was from March 18- April18/ 2019.

4.2. Study design

Community-based cross-sectional study design was used

4.3. Population

4.3.1. Source population

All children aged 12–23 months resides in Gambella town were the source population for the study.

4.3.2. Study population

Children aged 12-23 months reside in Gambella town during study period.

4.3.3. Sampling unit

Children aged 12-23 months with Mothers/ caretaker

4.3.3. Study unit

Mothers/caretakers with children aged 12-23 months reside in Gambella town.

4.4. Inclusion and Exclusion Criteria

4.4.1. Inclusion criteria

Children aged 12-23 months who lived in the study area during the study period, and who get at least one doze of any of the vaccines. Children aged 12-23 months who resides in Gambella town at least for 6 months and have mother/ caretakers, those children received at least one dose of routine vaccination.

4.4.2. Exclusion Criteria

Mothers/caretakers who are severely ill and unable to respond during data collection.

4.5. Sample size and Sampling technique/sampling procedure

4.5.1. Sample size determination

The sample size was determined separately for both objectives. For the first objective, single population proportion formula was used; by taking 20% magnitude of defaulting(15), 3% margin of error, 95% confidence level. By considering 10% non-response rate, the sample size was 751. For the second objective, double population proportion formula was determined using Epi-Info version 7.2.2 software. Among all calculated samples, the largest was 751. Finally, the largest sample size was taken for this study. (Table 1)

Table 1. Sample size determination for associated factors in Gambella town, Gambella region, 2019

S/n	Exposure variables	Reference	CI	Power	% of Outcome in unexposed group	OR	Sample size	Total sample size(considering 10% non-response rate)
1	No health workers advice	(31)	95%	80%	27.9	2.82	126	139
2	Benefit of vaccination child for child health	(15)	95%	80%	16.9	2.3	284	312
3	No ANC services	(15)	95%	80%	8.2	5.1	108	119
4	Mother Education Status	(13)	95%	80%	16.2	2.7	606	667

4.5.2. Sampling procedure

First, enumeration was done from March 1-15, 2019 to identify all eligible children in Gambella town. A total of 1606 children aged 12-23 months were identified by survey. Determined samples (751) were proportionally distributed to each kebeles based on number of eligible children in the five kebeles. Simple random sampling (SRS) technique was used to select the households from the list by computer generated then select the study units that full fill inclusion criteria. If eligible participants were not found at home during data collection, interviewers revisited the households for two consecutive times and when the interviewers failed to find the eligible participant after two visits, the next household was included for the study. After the survey, a sampling frame was prepared for each kebele (Figure 3).

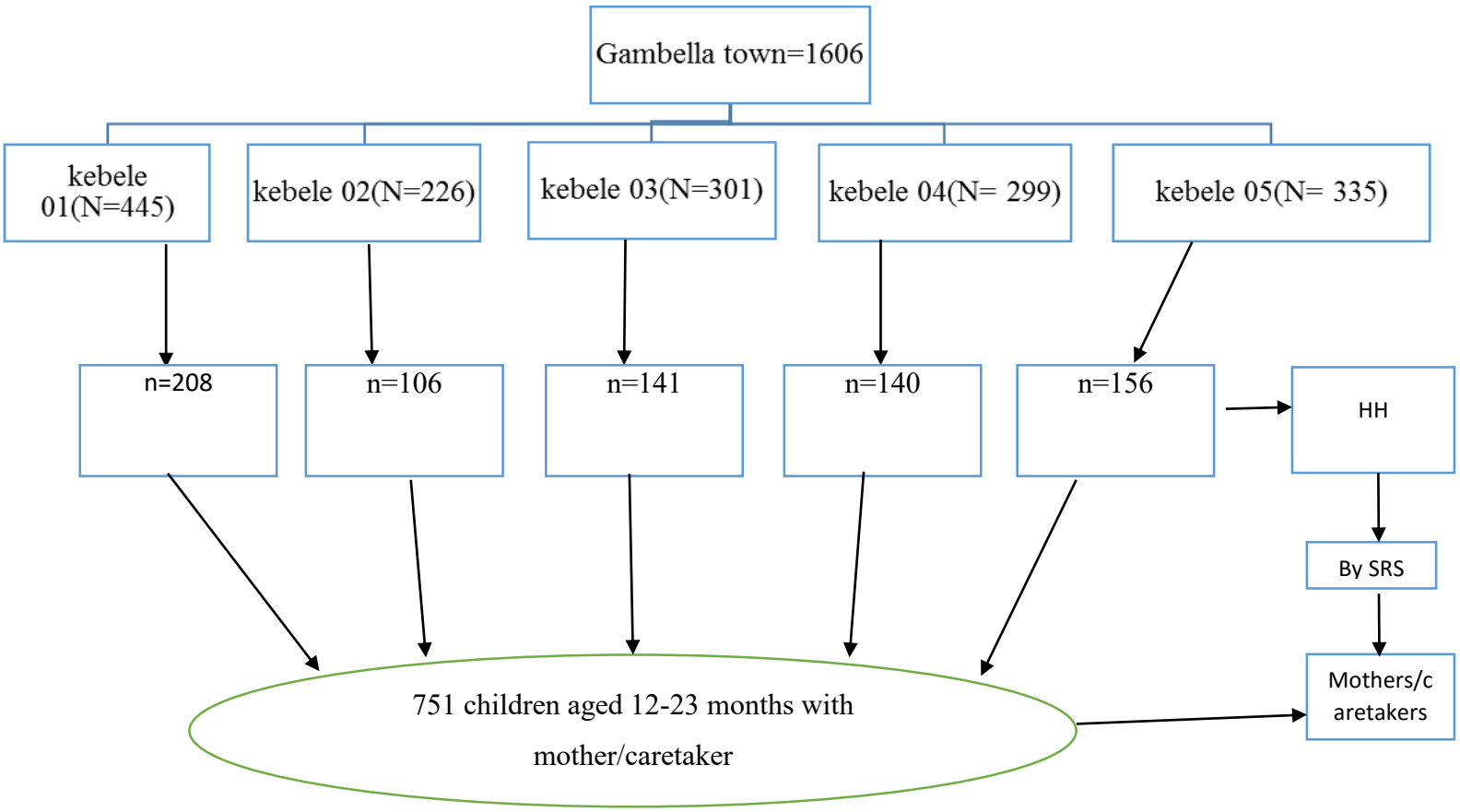

Figure 2: Schematic presentation of sampling procedure for selecting study participants children aged 12-23months in Gambela town, Ethiopia, 2019

4.6. Data collection procedures

4.6.1. Data collection tool

Structured questionnaires adapted from WHO 2015 cluster survey manual, Ethiopia EPI survey, EDHS 2016, different literatures were used(5,15,33). The questionnaires included: -Predisposing factors of mother's/care taker and child related, enabling factors related to mother/care takers and provider related, and need factors related to health services delivery.

4.6.2. Data collection technique and procedure

Face to face interview technique was used to collect data from the study units. First, the mother or care giver was asked whether the child does have vaccination card. If she replied "yes", she

was requested to bring the vaccination card and data collectors observed all the types of vaccines (BCG, OPV, Rota, PCV, pentavalent, measles vaccine) that the child received according to the schedule checking the date, month, and year. If the card indicated this information, the child was labelled as fully immunized otherwise defaulted at one dose, three dose or measles dose. If the mother or care giver replied "there is no card"; it may be lost, unable to access at the time of data collection or some other reason, other probing questions and techniques were considered to confirm that the child is fully immunized or defaulted. For instance, for BCG vaccine, the mothers or care takers were asked it their children were given BCG vaccine against tuberculosis that is an injection in the right shoulder and observation of BCG scar at the right arm. For polio vaccine, the mother or care giver was asked "was the child given polio vaccine that is dropped in mouth?" If she replied "yes", "how many times was it given?" For Rota vaccine, the mother or care giver was asked as "was the child given other type of vaccine that is dropped in mouth?" If she replied "yes" "how many times oral vaccine other than polio was given?" For pentavalent vaccines, the mother or care giver was asked as "was the child given pentavalent vaccine, an injection given on right thigh or buttocks?" If she replied "yes", how many times the child was given? Similarly, for PCV vaccines the mother or care giver was asked as "was the child given PCV vaccine, an injection given on left thigh or buttocks?" If she replied "yes", how many times the child was given? In addition, for measles the mother or care giver was asked as "was the child given measles vaccine in the thigh or buttocks at age of 9 months?" Such questions were considered to confirm that the child has taken complete immunization as to the recommended age and to know defaulting time of vaccination. If not possible both traced by checking facility epi registration books that the child has been vaccinated before. Four Nurses (diploma holder) data collector and 2 BSc holder supervisors were recruited. One-day training was given for data collectors and supervisors.

4.7. Study Variables

4.7.1. Dependent variable:

Vaccination status of children aged 12-23 months (defaulted at three doses of vaccination, defaulted at measles dose and fully immunized)

4.7.2. Independent variables:

- **Predisposing factors: -**

  Age of care taker, sex of child, religion, educational status, marital status, Family size, Occupational status.

- **Enabling factors of mothers/care takers: -**

  - Knowledge of mothers on vaccination
  - Misconception for vaccine contraindication
  - Satisfaction on health service delivery
  - Health extension visit
  - Family income

- **Need factors**

  - Vaccine availability
  - Vaccination schedule
  - ANC service
  - Delivery
  - PNC service
  - Distance of vaccination site
  - Postponing schedule
  - Missed opportunity

4.8. Operational definition

Fully vaccinated: A child between 12–23 months old who received zero dose of BCG and OPV two doses of Rotas, three doses of Penta, three doses of OPV, three doses of PCV and a measles vaccine.

Defaulted at three dose of vaccination: Children defaulted after taking zero, one and two doses of all vaccinations.

Defaulted at measles vaccination: Children defaulted on measles after taking three doses of vaccinations.

Knowledge on vaccination: Mother/caretaker was asked four questions which were related to vaccination included age at which the child begins vaccination, how many times a child should visit vaccination site to be fully vaccinated, at what age the child should complete immunization and how do you know whether a child complete or not. The right answer was given a value of 1 and for those incorrect answers a value of 0 was given. The score was dichotomized in to poor knowledge and good knowledge.

Misconception for vaccine contraindication: -Mother/caretaker was asked six question using Likert scale. It was measured on a scale from 6 to 30 through a composite score of six variables. Each variable was measured on 5points starting 1. Strongly disagree to 5. Strongly agree. The score was dichotomized into having misconception and not having misconception.

Client satisfaction towards service provider: mother/caretaker was asked ten satisfaction related questions using Likert scale (strongly disagree to strongly agree) which has five option. Client satisfaction was measured on a scale from 10 to 50 through a composite score of ten variables. Each variable was measured on 5points starting 1. Strongly disagree to 5. Strongly agree. The score was dichotomized into satisfied and unsatisfied.

4.9. Data analysis procedure

The data was checked for completeness manually, data cleaning and entry was done using EpiData version 3.1. The entered data was exported to SPSS version 20 for analysis. The entered data was cleaned, and recoded before analysis. Categorical variables were described by frequencies and proportion, while continuous variables were summarized using measure of central tendency and dispersion.

First bivariate analysis was done to nominate variables for multivariable analysis; using p value < 0.25 as a cutoff point, variables with less than were entered in to multivariable analysis.

Multinomial logistic regression technique has number of major advantages as a summary to the discussion above: (1) Multinomial logistic regression analysis requires that the dependent variable be non-metric (nominal). (2) Multinomial logistic regression analysis requires that the independent variables be metric or dichotomous. (3) Multinomial logistic regression does not

make any assumptions of normality, linearity, and homogeneity of variance for the independent variables. (4) The minimum number of cases per independent variable is 10, using a guideline provided by Hosmer and Lemeshow (5) there was multicollinearity (6) and no outliers.

A multinomial logistic regression was performed to model the relationship between the predictors and vaccination status of children (defaulted at three dose, defaulted at measles and fully immunized). The traditional .05 criterion of statistical significance was employed for all tests. Addition of the predictors to a model that contained only the intercept significantly improved the fit between model and data, $\chi 2(46, N = 733) = 369.316$, Nagelkerke $R2 = .5$, $p < .001$. Goodness-of-fit was a chi-square (763.7) and Diviance (p-value=1.00) indicated the model fitted for multinomial logistic regression.

Then, nominated variables were entered in to multinomial logistic regression to identify significantly associated variables with the outcome analysis and p value <0.05 and 95% CI were used to ascertain significant association.

4.10. Data Quality Management

The questionnaires were translated from English to Amharic to make data collection process simple and back translated to English language to check its consistency. The data collectors and supervisors were recruited based on experience by peer interview. Two-day training was given for data collectors and supervisors about objectives of the study, data collection tool, data collection procedure and ethical consideration. By checking immunization card that indicated vaccination status of the child if no cards recall mothers/ caretakers by data collectors; if the mother didn't remember data collector visited health facility register. The questionnaires were pre-tested on 5% of the calculated sample size in nearby district one kebele of Etang town. Then data collection tools were refined based on the results from the pretest. Every collected data was reviewed and checked for completeness and consistency by supervisors every day. The supervisors followed the entire data collection process. The whole data collection process was monitored by the principal investigator.

4.11. Ethical consideration

Ethical clearance was obtained from Jimma University Research Ethics Review Committee. A formal letter from Jimma University was submitted to GRHB and Gambella town health office. All mothers/care takers who fulfil the inclusion criteria were presented with the objectives and rationale for the study and were informed of their right to stop the interview at any time if they wish, without giving any reason. The interviewer discussed/explained the issue of confidentiality and obtain verbal consent before the actual interview was launched. For this purpose, a two -page participant's information sheet and consent form was attached as cover page to each Questionnaire. In addition, the name of the participant was not being written in the questionnaire. By doing so, the issue of confidentiality was addressed.

4.12. Dissemination plan

The finding of this study will be disseminated through: Presentation and submission of the findings to Jimma University, Institute of Health Department of Epidemiology, furthermore, submission of the written document to GRHB, Gambella town health office, and all attempts will be made to publish the result of the study in scientific journal.

CHAPTER FIVE: Results

5.1. Socio-demographic characteristics of study participants

A total of 733 mothers/caretakers with child aged 12–23 months old were interviewed, gives a response rate of 97.6%. The age of the mothers ranged from 18 to 46 years with mean 26 years (SD±8.2) and 51.6% of the children were female (Table 1).

Table 2: Socio demographic characteristics of children and mothers, Gambella town Gambella region 2019

Variables	Categories	Frequency	Percent%
Age of mothers/care takers	<20 years	67	9.2%
	20-35 years	514	70.1%
	above 35 years	152	20.7%
Sex of child	Female	378	51.60%
	Male	355	48.40%
Birth order child	first	175	23.90%
	Second and third	144	19.60%
	above third	414	56.50%
Religion of mothers/caretakers	protestant	365	49.80%
	orthodox	251	34.30%
	Muslim	94	12.80%
	Catholic	23	3.10%
Education level of mothers/care takers	secondary	279	38.10%
	primary	242	33.00%
	higher	147	20%
	No education	65	8.90%
Occupation of mothers/ care takers	house wife	257	35%
	merchant	232	31.70%
	government employ	164	22.40%
	others	80	10.9%
monthly income (family income)	500-1500 birr	384	52.40%
	<500 birr	229	31.20%
	>1500 birr	120	16.40%

5.2. Vaccination status of study participants

Based on vaccination card and mothers recall method, 72.2% of children were fully immunized, 15.5% defaulted at measles dose and 12.3% defaulted at three dose (Figure 4).

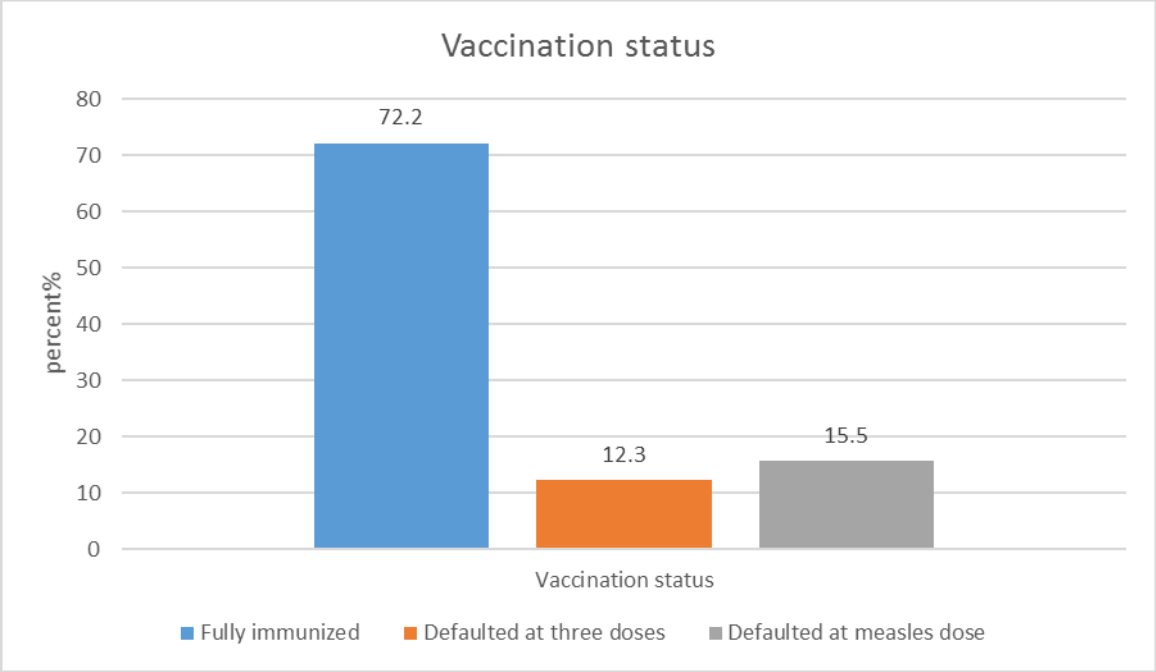

Figure 3: Vaccination status of children aged 12-23 months in Gambella town, Gambella Region, 2019.

5.3. Proportion of sociodemographic factors at defaulting three dose and measles

From primary education level of mothers/caretakers 36(56%) were defaulted at three dose and 48(20) were defaulted at measles. Occupation of mothers/caretakers who were house wife 39(15) defaulted at three dose and 168(65.6%) defaulted at measles.

Table 3 Distribution of sociodemographic factors by vaccination status in Gambella town, 2019.

Variables	Categories	Vaccination status of child		
		defaulted at three dose N(%)	defaulted at measles N(%)	fully immunized N(%)
Age of care taker	<20 years	12 (17.9)	11(16.4)	44(65.7)
	20-35 years	65(12.6)	71(13.8)	378(73.6)
	above 35 years	13(8.5)	32(21)	107(70.5)
Sex of child under study	male	44(12.4)	45(12.5)	266(75.1)
	female	46(12.1)	69(18.2)	263(69.7)
Birth order	Second and third	23(16)	18(12.5)	103(71.5)
	above third	49(11.8)	63(15.2)	302(73)
	first	18(10.3)	33(19)	124(70.7)
Marital status	married	84(12)	109(15.6)	503(72.4)
	single	6(16.2)	5(13.5)	26(70.2)
Education level of care taker	No education	13(20)	16(25)	36(55)
	primary	36(56)	48(20)	158(24)
	secondary	35(12.5)	39(14)	205(73.5)
	higher	6(4)	11(7.4)	130(88.6)
occupation of mother	housewife	39(15)	50(19.4)	168(65.6)
	merchant	36(15.5)	31(13.4)	165(71.1)
	others	7(8.7)	18(22.5)	5568.5)
	government worker	8(4.8)	15(9.2)	141(85)
Monthly income	<500 birr	40(17.4)	64(27.8)	126(53.8)
	500-1500 birr	33(10)	33(10)	268(80)
	>1500 birr	17(10)	17(10)	135(80)

5.4. Proportion of health service utilization at defaulting three dose and measles

Mothers/caretakers who have misconception 51(17.3%) were defaulted at three dose and 67(22.7) were defaulted at measles. Mothers/caretakers who unsatisfied on health care services 72(23.8%) were defaulted at three dose and 83(27.4%) were defaulted at measles.

Table 4. Distribution of mothers/caretakers service utilization and others view related to child vaccination in Gambella town, 2019.

Variables	Categories	Vaccination status of child		
		defaulted at three dose N(%)	defaulted at measles N(%)	fully immunized N(%)
vaccination site	>5 kilometres	22(8.5)	35(13.5)	199(78)
	<5 kilometres	68(14.2)	79(16.6)	330(69.2)
Attend ANC services	no	35(22.4)	38(24.3)	83(53.3)
	yes	55(9.5)	76(13.1)	446(77.4)
Postnatal care service	no	65(21)	88(28)	156(51)
	yes	25(6)	26(6.1)	373(887.9)
Knowledge of mothers/caretakers on vaccination	Poor knowledge	9(5.1)	17(9.7)	149(85.2)
	Good knowledge	81(14.5)	97(17.5)	380(68)
Misconception of mothers/caretakers	have misconception	51(17.3)	67(22.7)	177(60)
	have no misconception	39(9)	47(10.7)	352(80.3)
Satisfaction of mothers/caretakers	Unsatisfied	72(23.8)	83(27.4)	148(48.8)
	Satisfied	18(4)	31(7)	381(89)

5.4. Bivariate analysis

From the bivariate analysis, thirteen numbers of variables were nominated for multivariable analysis (Table 3).

Table 5: Variables association in binary logistic regression with defaulting from vaccination children aged 12-23 months in Gambella town in Gambella region, 2019

Variables Categories		Defaulted at three dose			Defaulted at measles dose		
		OR	95% CI	*P*	OR	95% CI	*P*
Age	<20 years	2.2	.95, 5.30	**.06**	.83	.38, 1.80	.6
	20-35 years	1.4	.75, 2.6	.282	.628	.39, 1	**.05**
	>35 years	1			1		
Sex	Male	.94	.6, 1.4	.807	.645	.427, .974	**.037**
	Female	1			1		
Birth order of child	second and third	1.5	.78, 3.0	**.208**	.657	.34, 1.2	**.191**
	above third	1.1	.62, 1.95	.706	.784	.49, 1.2	.310
	first	1			1		
Educational level of caretakers	no education	7.8	2.7, 22	**<.001**	5.2	2.2, 12	**<.001**
	primary	4.9	2, 12	**<.001**	3.5	1.7, 7.1	**<.001**
	secondary	3.6	1.51, 9	**.004**	2.2	1.1, 4.5	**.024**
	higher	1			1		
Marital status	Married	.72	.28, 1.81	.48	1.1	.42, 3.0	.81
	Others	1			1		
Occupation of caretakers	House wife	4.092	1.85, 9.04	**<.001**	2.79	1.50, 5.19	**<.001**
	Merchant	3.845	1.73, 8.54	**.001**	1.76	.91, 3.40	**.08**
	Others	2.243	.77, 6.48	**.136**	3.07	1.4, 6.5	**.003**
	Govern't worker	1			1		
Vaccination site	>5 kilometers	.537	.322 .89	**.017**	.735	.47, 1.1	.165
	<5 kilometer's	1			1		
Monthly	<500 birr	2.5	1.3, 4.6	**.003**	4	2.2, 7.2	**<.001**

income	500-1500 birr	.97	.52, 1.8	.944	.9	.52, 1.8	.94
	>1500 birr	1			1		
ANC services	No	3.4	2.1, 5.5	**<.001**	2.6	1.7, 4.2	**<.001**
	Yes	1			1		
PNC services	No	6.2	3.7, 10.2	**<.001**	8	5, 13	**<.001**
	Yes	1			1		
Knowledge of mothers	Poor knowledge	.28	.13, .57	**.001**	.44	.25, .77	**0.004**
	Good knowledge	1			1		
Misconception of mothers	Have misconception	2.6	1.6, 4.0	**<.001**	2.8	1.8, 4.2	**<.001**
	Have no misconception	1			1		
Satisfaction of mothers	Unsatisfied	10.2	5.9, 17.8	**<.001**	6.8	4.3, 10.8	**<.001**
	Satisfied	1			1		

The reference category is: fully immunized.

5.5. Factors associated with defaulting on vaccination

The multinomial logistic regression analysis showed four variables with significant association; child mothers with no ANC and PNC visit, misconception on vaccine contraindication, and satisfaction on healthcare services (Table 3).

Table 6: Significant variables in multinomial logistic regression with defaulting from vaccination children aged 12-23 months in Gambella town in Gambella region, 2019

		Defaulted at three dose			Defaulted at measles dose		
Variables	Categories	OR	95% CI	*P*	OR	95% CI	*P*
ANC services	No	3.9	1.90, 8.04	**<.001**	2.40	1.24, 4.63	**0.009**
	Yes	1			1		
PNC services	No	5.1	2.87, 9.32	**<0.01**	7.249	4.15, 12.88	**<0.01**
	Yes	1			1		

Misconception of mothers	Have misconception	2.4	1.36, 4.41	**0.003**	3.2	1.88, 5.63	**<.001**
	Have no misconception	1			1		
Satisfaction of mothers	Unsatisfied	15.2	7.66, 30.33	**<0.01**	10.8	5.94, 19.73	**<0.01**
	Satisfied	1			1		

a. The reference category is: fully immunized.

CHAPTER SIX. Discussion

The current study tried to assess defaulting from vaccination and associated factors among children aged between 12 and 23 months living in Gambella town. Fully vaccinated children were 72.2%, children defaulted at three dose of vaccination were 12.3% and defaulted at measles dose of vaccination were 15.5%. In general defaulting rate of vaccination was higher than report from different studies done in Ethiopia (13,34). The possible explanation for the high defaulting rate in the study area could be, residents have low awareness and health seeking behaviour including vaccination of their children.

Comparing to fully immunized, the odds of defaulting at three dose and measles among mothers with not adequate ANC visit were 3.9 and 2.4 times higher than mothers who received ANC service respectively This finding is in line with study done in East Gojjam result indicates that children who were born from mothers who had no antenatal care visit during pregnancy were 2.761 times to default from full vaccination compared to infants who were born from mothers who had antenatal care visit (AOR=2.76; CI=1.52-5.01) (16). One of the component of ANC service is on Vaccination and mothers with the service have better practice on fully vaccinating children.

The odds of defaulting at three dose and measles to fully immunize among mothers who had no PNC visit were 5.1 and 7.2 times higher than mothers who receipt PNC service respectively. Similar study conducted Southern parts of Ethiopia indicated that children who were born from mothers that had PNC follow up were 60% (AOR=0.4; CI=0.3, 0.7) less likely to default to complete immunization compared to children who were born from mothers who did not have PNC follow up (35). The same is true for PNC service that, one of the component for the service is vaccination, which may affect mothers practice on fully vaccinating their Children.

Comparing to fully vaccinated, mothers who have misconception on vaccine contraindication were 2.4 and 3.2 time with higher odds than their counterparts. Study conducted Southern Ethiopia in Arbegona district showed that the risk of not completing child immunization also increases in child mothers with have misconceptions on vaccine contraindications (AOR=1.92; 95% CI=1.01, 3.70) (26). The reason for defaulting among mothers with misconception might be

their understanding of the benefit of vaccination: which might then affect their commitment and concern on vaccination their children.

The other factors that showed significant association was mothers satisfaction on health care services. The odds of defaulting at three dose and measles to fully vaccination among unsatisfied mothers were 15.2 and 10.8 time than satisfied mothers respectively. In Wonago district South Ethiopia satisfaction of mothers/immediate caretakers of the child toward health institutions support had significant association with to have defaulter children as compared the counterparts (OR=2.71; CI=1.39-5.26) (32). If mothers are not satisfied with health care service, the likelihood of visiting health facilities and fully vaccinating their child will be decreased.

Several characteristics were associated with defaulting from vaccination in the study, but only four of them were statistically significant at the final multinomial logistic regression (Table 4).

There was no significant relation between childhood vaccination status and mothers' education level, knowledge on vaccination and mother's age, in the present study in comparison to other studies who found mothers' education, knowledge on vaccination and mother's age were significant factor of completeness of vaccination as the highly educated mothers will be more aware of the full course vaccination. These roles of maternal knowledge and knowledge on vaccination as an important factors of completion of vaccination has been shown by several researchers. The possible explanation for this disagreement could be due to difference in study design, and sample size.

Limitation

Up to the knowledge of the researcher, with respect to the outcome variable and analysis there were no similar papers found with the current study and due to this, the comparison might not show important or significant level of defaulting status and factors associated with defaulting. There may have recall biases.

Chapter seven: Conclusion

Conclusion; as compared to the national goal of the country, defaulting of vaccination in the study area was high. No ANC and PNC visit, misconception on vaccination and satisfaction on healthcare services were factors significantly associated with defaulting at three dose and measles.

Chapter Eight: Recommendation

Recommendation; to town health bureau/ stakeholders:

- The town health office needs to consider ANC and PNC service utilization in the area.
- The town health office should consider on improving mothers satisfaction of health care service and misconceptions on vaccination among child mothers/caretakers.
- Health workers provide awareness for mothers on vaccine contraindication.
- Continuous vaccination campaign by town health office also important on children's.
- Health personnel should work on pregnant mother to utilize health care services like ANC, and PNC.

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Annex I - Structured questionnaire for mothers/caregivers

Participant Information Sheet and Informed Consent Form:

Jimma University

Institute of Health

Faculty of Public Health

Department of Epidemiology

1. Date of data collection _____ / _____ / _____
2. Participant ID number: _____
3. Name of kebele: _____

Good morning/ afternoon, My Name is _____. I am working as a data collector for the study being conducted in this kebele on factors associated with defaulting time childhood vaccination among children aged 12-23 months in Gambella town, Gambella region, Southwest Ethiopia by Abay Belay, who is studying for his Master's degree at Jimma University, Institute of Health, and Department of Epidemiology. I kindly request you to lend me your attention to explain you about the study and being selected as a study participant.

The study title: Defaulting on child vaccination and associated factors among children aged 12-23 months in Gambella town, Gambella Region, Southwest Ethiopia: cross-sectional study

Purpose of the study: the main objective of this study is to assess timing and defaulting on child vaccination and associated factors in Gambella town. Complete vaccination of children rarely achieved. Thus, the information obtained from this study is expected to fill gaps seen in the study setting on factors of defaulting on vaccination. Moreover, the aim of this study is to write a thesis

as a partial requirement for the fulfilment of a Master's of public health degree in field epidemiology for the principal investigator.

Procedure and duration: I am interviewing you using questionnaire to investigate factors associated with defaulting time on vaccination. Therefore, provide me with pertinent data that is helpful the study. All of your responses and procedures done are completely confidential. You are kindly requested to answer every question, but you may stop at any time you want to. However, your honest answers to these questions will help us to identify factors associated with defaulting time on vaccination and an input for intervention for improving vaccination coverage. The total time needed for answering the questions will be about 40minutes.

Risks and benefits: The risk of participating in this study is almost none, but only taking 40 minutes from your time. There would not be direct payment for participating in this study. The information you provide used as an input for improving vaccination coverage thereby reducing the morbidity and mortality related to VPD

Confidentiality: The information you provide us will be confidential. There is no information that is identifying in particular. The findings of the study are general for the study community and will not reflect anything particularly of individual persons. The questionnaire is coded to exclude showing names. No reference is made in oral or written reports that could link participants to the research.

Rights to participate, refuse and withdraw: Participation for this study is fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have also the right to withdraw from the study at any time and this is not labelling you for any loss of benefits which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Contact address: If there are any questions or enquires any time about the study, please contact in this address: Abay Belay (Principal Investigator)

Email: abaybelay2@gmail.com or

Mob. 0919901129

Verbal consent, do you agree to participate in the study? (Encircle) 1. Yes 2. No

Signature of data collector_____

If respondent disagree, stop here.

SN	Identification	
1	Questioner code	Code…….
2	Area of residence resident	Kebele name……. Got name……
3	Personnel	Data collectors……. Supervisor…….
4	Date of visiting	DD/MM/YYYY……./……/…….
5	Time at beginning	Minute: second …. : ……

Part I Predisposing factors of mothers/caretakers and child related questionaries'

Code…….

SN	Question	Response	Code
101	Who is the primary care taker of the child	1. Mother 2. Father 3. Other than…….	
102	What is the age of care taker?	1. <20 years 2. 20-35 years 3. >35 years	
103	Sex of the child under study	1. Male 2. Female	
104	Birth order of the child under study	1. First 2. Second and Third 3. >Third	
105	Educational status care taker	1. No education 2. Primary school 3. Secondary 4. Higher	

107	What is the religion of the mother/ care taker?	1. Orthodox 2. Muslim 3. Protestant 4. Catholic	
108	What is ethnicity of mother/ care takers?	1. Agnua 2. Nuer 3. Oromo 4. Southern 5. Tigre 6. Amhara 7. Others	
109	Marital status of mothers'/ care takers.	Married Widowed Divorced Single	
111	Occupation of mothers/care takers	Government employee House wife Merchant Other	

Part II Enabling factors on knowledge of mothers'/care taker questionaries'

SN	Questions	Respondents	Code
201	The child begins vaccination just after birth	1. Yes 2. no	
202	A child should be visited five times the vaccine site to be fully vaccinated	1. Yes 2. no	

203	The child should Complete Vaccination After one year	1. Yes 2. no		
204	To know whether or not child completed the Vaccination schedule I follow health professional's/HEW's instructions, or I refer to child's age	1. Yes 2. no		
206	Do heard or seen about vaccination and vaccine preventable disease?	Yes No		If No skip to Q.209
207	If yes to above question, from where do you heard about the vaccination and vaccine preventable disease? (more than one answer possible)	1. Radio 2. Television 3. Health personnel/HEW 4. from friends/peers 5. from school other, specify_____		
208	Have you visited by health workers at home in the last year	1. Yes 2. No		
209	How long it take to reach vaccination site?	1. ≤5 kilometrs 2. >5 kilometrs		
2010	Monthly income	_____birr		
Part III Enabling factors of Mothers/Caretakers on Misconceptions about vaccine contraindication				
SN	**Questionnaires**	**Response**		**Code**
301	Sick child should not be vaccinated?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree		
302	Underweight children indication for no vaccination?	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree		

<table>
<tr><td>303</td><td>Child with fever should not be vaccinated?</td><td>1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree</td><td></td></tr>
<tr><td>304</td><td>Multiple vaccination on the same visit are safe?</td><td>1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree</td><td></td></tr>
<tr><td>305</td><td>Mild illness like upper respiratory infection and diarrhoea in children can be reasons to suspend vaccination?</td><td>1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree</td><td></td></tr>
<tr><td>306</td><td>Vaccination should be given during Breastfeeding?</td><td>1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree</td><td></td></tr>
<tr><td colspan="4">Part IV Child vaccination status</td></tr>
<tr><td>401</td><td>Did you received immunization card?</td><td>1. Yes
2. No</td><td></td></tr>
<tr><td>402</td><td>Do you have a card where vaccinations are written down?</td><td>1=Yes

2=No</td><td>If no go to Q 404</td></tr>
<tr><td>403</td><td>Copy the vaccination data from the card if mothers/caretakers have a card(or from health facility register if the mother doesn’t remember)</td><td>
<table>
<tr><td>Vaccine taken</td><td>Date(dd/mm/yyyy)</td></tr>
<tr><td>BCG</td><td></td></tr>
<tr><td>OPV0</td><td></td></tr>
<tr><td>OPV1</td><td></td></tr>
<tr><td>OPV2</td><td></td></tr>
<tr><td>OPV3</td><td></td></tr>
<tr><td>Pentavalent1</td><td></td></tr>
<tr><td>Pentavalent2</td><td></td></tr>
<tr><td>Pentavalent3</td><td></td></tr>
<tr><td>PCV 1</td><td></td></tr>
</table>
</td><td></td></tr>
</table>

		PCV 2		
		PCV3		
		Rotas 1		
		Rotas 2		
		Measles		

Please tell me if the child had any of the following vaccinations			
404	Does your child received the injection his/her right arm(cheek the BCG scare)	1=Yes 2=No	
405	Was the first oral polio vaccine given in the first two weeks after birth or later?	1=Yes 2=No	
406	how many times was your child received the vaccine injection on the right thigh?	One times Two times Three times	
407	how many times was your child received the vaccine injection on the left thigh?	One times Two times Three times	
408	What is the age of your child in months during injection of vaccine received?	_____	
409	how many times was your child received oral drop vaccine?		
410	Was other given as a drop the same day given?		
411	Does your child received which will be given at the age of 9 months or older on his/her left arm?	1=Yes_____2= No_____	
412	What are the reasons for defaulting? If child is a defaulter) (Multiple response possible)	1= Vaccination site is far-away 2= Vaccination time is inconvenient 3= Absenteeism of vaccinators 4=Lack of awareness on the importance of vaccination 5= Not knowing vaccination time and site 6= Not knowing whether to come back for second and third vaccination	

		7= fear of side effects 9=Others	

Part V Need factors on health service and immunization related questionaries'

SN	Question	Respond	Code
501	Does vaccine available always in the service area?	1. Yes 2. No	
502	Were you told about side effects or problems your child might have with vaccines?	Yes No	
503	Were you told what to do if your child experienced side effects?	1. Yes 2. No	
504	Where did you deliver the? child? (Q 407- 411Asked if the primary care taker is the mother)	Home Health center Health post Hospital Private clinic	
505	Did you attend ANC?	1. Yes 2. No	If no go to 507
506	If yes the above question how many times?	_____	
507	Did you attend post-natal care after delivery of the child?	1. Yes 2. No	
508	Was there any occasion in which you returned home Without getting vaccination during your appointment?	1. Yes 2. No	If no skip to 511
509	If yes, what was the reason for not getting vaccination?	Vaccine not available Vaccine not opened because of few clients child had a sick health worker not available I don´t remember the reason	

510	Have you ever postponed appointment Schedule of your child?	1. Yes 2. No	If no skip 513
511	What was the reason? (More than one answer possible)	Not informed on need of subsequent vaccination Fear of side effect Mother's too busy Inconvenient vaccination time Forgetting the day of vaccination Child sickness mother sickness	
512	How long it take to reach vaccination site?	…….minute	
513	Have you ever refused vaccination for this child?	Yes No	
514	If yes, why did you ever refuse for vaccination?	Too many shoots at visit Experience of side effect Wait too long, so left Did not like health worker Other Do not know	
VI. Need factors on satisfaction related health services questionnaires			
601	Health workers treat with respect	1. Strongly disagree 2. Disagree 3. Neutral 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. Neutral 4. Agree 5. Strongly agree	
604	Health workers are in hurry	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree	
605	Health workers advised and provide information on your	1. Strongly disagree 2. Disagree 3. Neutral	

	child growth and development	4. Agree 5. Strongly agree	
606	Health workers are trained and technically skilled	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree	
607	Health workers provide information on side effect and contraindications	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree	
608	Health workers provide information on appointment of the next session	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree	
609	Health workers reuse needles and syringe that discourage you	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree	
610	Health workers have counselling skill that encourage clients to complete vaccination	1. Strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree	

THAT IS THE END OF OUR INTERVIEW. THANK YOU VERY MUCH FOR TAKING THE TIME TO ANSWER THESE QUESTIONS.

Annex II Amharic version questionnaires

በጅማ ዩኒቨርስቲ

የህብረተሰብ ጤና ፋኩልቲ

የኤፒዲሚዮሎጂ ትምህርት ክፍል

የጥናቱ ማብራሪያ የፍቃደኝነት መጠየቂያ እና መተማመኛ ቅጽ

መረጃዉ የተሰበሰበበት ቀን _____ / _____ / _____

የተሳታፊ መለያ ቁጥር: _____

የቀበሌው ስም: _____

እንደምን አደርክ/ሽ ዋልክ(ሽ)ስሜ _____ ነው። እኔ በጋምቤላ ከተማ በሚገኙ እድሜያቸው ከ12-23 ወር ለሆናቸው ህፃናት ክትባትን በማስመልከት መውሰድ የሚገባቸውን ክትባት ያላጠናቀቁበትን ምክንያት በተመለከተ በጅማ ዩኒቨርሲቲ የማስተር ዲግሪ ተማሪ ለሚያደርገው ጥናት መረጃ ሰብሳቢ ነኝ ሲሆን እባክዎ ስለ ጥናቱ አጭር ማብራሪያ እንድሰጥዎ ቢተባበሩኝ

የጥናቱ ርህስ በጋምቤላ ክልል፣በጋምቤላ ከተማ በሚገኙ እድሜያቸው ከ 12-23 ወር ለሆናቸው ህፃናትን በማስመልከት መውሰድ የሚገባቸውን ክትባት ያልወሰዱበትን ምክንያት ስለ ማወቅ ነው

የጥናቱ ዓላማ: - በአገራችን ሁሉንም የክትባት ዓይነት ወስደው የሚጨርሱ ህፃናት ከተፈለገው በታች በመሆኑ፣የዚህ ጥናት ዋነኛ ዓላማ በላሬ ወረዳ እድሜያቸው ከ12-23 ወር ለሆናቸው ህፃናት ክትባትን በማስመልከት መውሰድ የሚገባቸውን ክትባት ያላጠናቀቁበትን ምክንያት ምን እንደሆኑ ለማጥናት ነው።

የመረጃ አሰባሰብ ሂደትና የሚወስደዉ ጊዜ፡-እድሜያቸው ከ12-23 ወር ለሆናቸው ህፃናት ክትባትን በማስመልከት መውሰድ የሚገባቸውን ክትባት ያላጠናቀቁበትን ምክንያቶችን መለየት ቃለመጠይቅ እያደረግሁ ነው። ስለዚህ ለጥናቱ ጠቃሚ መረጃን በመስጠት እንዲተባበሩኝ እጠይቅዎታለሁ። ሁሉም የሚሰጧቸው መልሶች ሙሉበሙሉ ሚስጥራዊናቸው የተጠበቀ ነዉ። ሁሉንም ጥያቄዎች እንዲመልሱ በአክብሮት እጠይቅዎታለሁ ነገርግን በፈለጉት ጊዜ ማቆም ይችላሉ። ይሁን እንጂ ለነዚህ ጥያቄዎች የሚሰጡት ትክክለኛ መልስ ለእነዚህ ጥያቄዎቹን ለመመለ የሚፈጀዉ ጠቅላላ ጊዜ 40 ደቂቃ ይሆናል።

ስጋቶችና ጥቅሞች: - በዚህ ጥናት መሳተፍ ምንም ዓይነት አደጋ አያስከትልም ነገርግን ከእርስዎ ጊዜ 40 ደቂቃ ብቻ ነው የሚወስደው። በዚህ ጥናት ለመሳተፍ ቀጥተኛ ክፍያ አይኖርም፡: የእረሰዎ መልስ ለክትባት ፕሮግራም መሳካት ጉሉህ ሚና አለው።

የመረጃዉ ሚስጢራዊነት: - ለእኛ የሰጡን መረጃ በሚስጥር የሚያዝ ይሆናል። በተለይ ተለይቶ የሚታወቅ ምንም መረጃ የለም። የጥናቱ ግኝቶች በጥናቱ ዉስጥ ለሚሳተፉ ጠቅላላ እንጂ የግለሰብን ልዩነት የሚያንጸባርቅ አይደሉም። መጠይቁ የግለሰብ ስሞችን አያካትትም።

የተሳታፊ መብቶች: - በዚህ ጥናት መሳተፍ ሙሉ በሙሉ በፈቃደኝነት ላይ የተመሰረተ ነው። በዚህ ጥናት ውስጥ ለመሳተፍ ወይም ላለመሳተፍ የመወሰን መብት አለዎት። ለመሳተፍ ከወሰኑ በማንኛውም ጊዜ የማቋረጥ መብት አለዎት። መመለስ የማይፈልጉትን ማንኛውም ጥያቄ መልስ መስጠት የለብዎትም።

የማነጋገሪያ አድራሻ: - ለለጥናቱ ምንም ዓይነት ጥያቄ ካለዎት በዚህ አድራሻ መጠየቅ ይችላሉ፡

አባይ በላይ

እሜይል: abaybelay2@gmail.com or

ሞባይል. 0919901129

በጥናቱ ለመሳተፍ ይስማማላሉ? [1] አዎን እስማማለሁ [2] አልስማማም

የመረጃ ሰብሳቢዋ/ዉ ፊርማ _____

መልስ ሰጪው ካልተስማሙ አመስግነዉ እዚህ ላይ ያቁሙ

ተ.ቁ	መለያ መረጃ	
1	የመጠይቅ መለያ ቁጥር	ኮድ……..
2	የአካባቢ መለያ	ቀበሌ ጎት
3	መረጃ ሰብሳቢዎች	መረጃ ሰብሳቢ አስተባበሪ
4	መረጃ የተሰበሰበበት ቀን	…../……./……. ቀን/ወር/ዓ.ም.
5	ቃለ መጠይቁ የተጀመረበት ሰዓት	ደቂቃ/ሰከንድ…. ፡ ……

ክፍል 1: - የአስቻይ ሁኔታ ጥያቄዎች

ኮድ……

ተ.ቁ	ጥያቄዎች	መልስ	ምርመራ
101	የህጻኑ/ኗ አሳዳጊ/ተንከባካቢ	1. እናት 2. አባት 3. ሌላ ካለ ይጠቀስ----------	
102	የአሳዳጊ/ተንከባካቢ እድሜ	---------- ዓመት	
103	የህጻኑ/ኗ ጾታ	1. ወንድ 2. ሴት	
104	ህጻኑ/ኗ ስንተኛ ልጅ ነዉ?	1. የመጀመሪያ 2. ሁለተኛና ሶስተኛ 3. ከሶሰተኛ በላይ	የመጀመርያ ልጅ ከሆነ ወደ ጥያቄ 107
105	የእናት/አሳዳጊ የትምህርት ደረጃ(አሁን)	ማንበብና መጻፍ የማይችል አንደኛ ደረጃ ሁለተኛ ደረጃ ከፈተኛ ደረጃ	
106	በህፃኑ/ኗ እና በህፃኑ/ኗ የመጨረሻ ታላቅ ልጅ መካከል ምን ያህል የእድሜ ልዩነት አለ?	----------ወር	

107	ኃይማኖትዎ ምንድን ነው?	1. ኦርቶዶክስ 2. ካቶሊክ 3. ፕሮቴስታንት 4. ሙስሊም 5. ሌላ (ይገለጽ)	
108	የእናት/አሳዳጊ ብሔር	ኑዌር አኙዋ ኦሮሞ አማራ ትግሬ ደቡብ ሌላ	
109	የጋብቻ ሁኔታ?	ያገባ/ች ያላገባ/ች የፈታ/ች የተለያየ/ች (ሕጋዊ ፍች ያልፈጸሙ) የሞተበት/ባት	
110	የቤተሰብ ብዛት በቁጥር	…….	
111	የህጻኑ/ኗ አሳዳጊ/ተንከባካቢ ስራ	ነጋዴ የመንግሰት ሰራተኛ የቀን ሰራተኛ የቤት እመቤት ሌላ ካለ ይገለጽ----------	
112	ባለፉት ሁለት ዓመታት ከዚህ የቤተሰብ አባል በሙሉ መኖር የጀመረ ወይም የሚሠራው በየትኛው ክፍል ለሆነ አካል ነው? ከአንድ በላይወር	1. አዎ 2. የለም 99. አላውቅም	መልሱ የለም ከሆነ ወደ ጥያቄ 201
113	ከአንድ ወር በላይ ማንሄዶ ነበር?	1. ሁሉም ቤተሰብ 2. አንድ ትለቀ ሰው ብቻ 3. ሁለተና ከዛ በላይ 4. ህጻናት ብቻ 5. 99. አላውቅም	

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201	ህፃን ከተወለደ ክትባት ይጀምራል?	1. አዎ 2. የለም	
202	ህፃናት ተከትበው ለመጨረስ በአራት ዙር ይጨርሳል?	1. አዎ 2. የለም	
203	አንድ ህፃን ክትባት የሚያጠናቅቀዉ በአንድ ዓመቱ ነዉ።	1. አዎ 2. የለም	
204	ልጅዎት ክትባቱ ተከትቦ መጨረሱን የሚያውቁት በባለሙያ ምክር ነው ወይስ በህጻኑ እደሜ	1. አዎ 2. የለም	
205	ሰለ ክትባትና በክትባት ልንከላከላቸው ስለ ምንችላቸው በሽታዎች ስምተው ወይም አይተው ያውቃሉ?	1) አዎ 2) አላውቅም.....(ወደ ጥያቄ 207 ይሂዱ)	
206	ለጥያቄ 205 መልሶ አዎ ከሆነ ከየት ነው የሰሙት?(ከአንድ በላይ መለስ ይቻላል)	1) ከህብረተሰቡ 2) ከጤና ባለሞያ 3) ከጤና ኤክስቴንሽን ባለሞያዎች 4) ሬዲዮ 5) ቲቪ 6) ጋዜጣ 7) ከቀበሌ አስተዳደር 8) ከመንግስት ሃላፊ 9. ሌላ _____ 99) መልስ የለም 88) አለውቅም	
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208	የከተባተ ቦታ ምን ያክል ይርቃል?	----------ደቂቃ	
209	አማካኝ የቤተሰቡ የወር ገቢ ስንት ነው(በኢት. ብር)	_____ኢት. ብር	

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301	የታመመ ህፃን መከተብ የለበትም።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
302	ከክብደት በታች የሆነ ህፃን ክትባት መዉሰድ የለበትም።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
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ክፍል አራት፡ የህፃኑ የክትባት ሁኔታ

ተ.ቁ	ጥያቄ	መልስ	ኮዴ
401	የክትባት ካርድ ወስደዋል		

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<tr><td>404</td><td>በቀኝ እጅ ትከሻ ሊይ በመርፌ የተሰጠ ብዙን</td><td>1=አዎ____
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88=መሌስ የለም _____
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406	በአፍ ጠብታ ክትባት ስንት ጊዜ ነው የተስጠው	አንድ ጊዜ ሁለት ጊዜ ሶስት ጊዜ	
407	በ ግራ እግር በመረፌ የተሰጠ አለ?	1=አዎ____ 2=አሌተሰጠም_____ 88=መሌስ የለም _____ 99 አላውቅም.	
408	በ ግራ እግር በመረፌ ስንት ጊዜ ነው የተስጠው?	አንድ ጊዜ ሁለት ጊዜ ሶስት ጊዜ	
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410	በ ቀኝ እግር በመረፌ ክትባት ስንት ጊዜ ነው የተስጠው?	1. አንድ ጊዜ 2. ሁለት ጊዜ 3. ሶስት ጊዜ	
411	ግራ እጅ ትከሻ ሊይ በመርፌ የተሰጠ አለ?	1=አዎ____ 2=አሌተሰጠም_____ 88=መሌስ የለም _____ 99 አላውቅም.	
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501	ክትባት አገልግሎት በሚዎስዱበት ቦታ ሁሌ አለ?	አዎ የለም 99 አላስታዉስም	
502	ስለ ክትባት የጎንዮሽ ችግር ተነግሮዎት ያውቃል?	አዎ የለም 99 አላስታዉስም	
503	የክትባት የጎንዮሽ ችግር ቢከሰት ምን ማድረግ እንዳለበዎት ተነግሮዎት ያውቃል?	አዎ የለም 99 አላስታዉስም	
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505	የቅድመ-ወሊድ ክትትል አድርገዋል?	አዎ የለም	2->ወደ ጥያቄ ቁጥር 507 ይሂዱ
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509	ለጥያቄ ቁጥር 312 አዎ ከሆነ ምክንያቱ ምንድን ነበር?	ክትብት አለመኖር ህፃናት ስላነሱ ክትብት አለመከፈት ህፃኑ በመታመሙ 99. እርግጠኛ አይደለሁም	
510	የልጅዎን የክትባት ቀጠሮ አሳልፈዉ ያዉቃሉ?	አዎ የለም	ወደ ጥያቄ ቁጥር 316 ይሒዱ
511	መልሱ አዎ ከሆነ የክትባት ቀኑን ወደ ሌላ ቀን የቀጠሩበት ምክንያት ምን ነበር?	ህፃኑ ክትባት እንደሚያስፈልገዉ አላዉቅም ከክትባት ጋር ተያያዥነት ያለዉን የህፃናት የጎንዮሽ ጉዳት በመፍራት የስራ ጫና መኖር የክትባት ቀኑ አለመመቸት የክትባት ቀኑን መርሳት ህፃኑ/እናት በቀጠሮዉ ቀን መታመም	
512	ቅርብዎ ወደ ሚገኘዉ ክትባት ጣቢያ ለመድረስ ስንት ሰዓት (ደቂቃ) ይፈጃል?	_____ደቂቃ	
513	ልጅዎን አላስከትብም ብለው ተቃውመው ያውቃሉ?	አዎ የለም አላስታውስም	መልሱ የለም ከሆነ ወደ ጥያቄ ከሆነ ወደ 601
514	ለምንድን ነው አላሰከትብም ብለው የተቃወሙት?	ክትባቱ ስለበዛበት ባለፈው የጎንዎሽጉዳት ምክንያት ክትባቱን ለማግኘት ረጅም ሰዓት ላለመጠበቅ ባሙያውን/ዋን/ስለአልወደድኩ ሌላ ካለ ይገለጽ _____ አላውቅም	

ክፍል ስድስት፡ የተጠቃሚዎች እርካታ

601	የጤና ባለሙያዎች በአክብሮት ያስተናግዳሉ።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
602	የጤና ባለሙያዎች ችግሮዎትን እንደራሱ ችግር አድርጎ ይመለከታል።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
603	የጤና ባለሙያዎች የሚሰጡት አገልግሎት የተቀላጠፈ ነዉ።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
604	የጤና ባለሙያዎች ስራ ይበዛባቸዋል።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
605	የጤና ባለሙያዎች የምክር እና ስለህፃናት እድገት መረጃ ይሰጣሉ።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
606	የጤና ባለሙያዎች የሰለጠኑ እና ችሎታ ያላቸዉ ናቸዉ።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
607	የጤና ባለሙያዎች ስለክትባት የጎንዮሽ ጉዳት መረጃ ይሰጣሉ።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
608	የጤና ባለሙያዎች የህፃናት ክትባት የቀጠሮ ቀን መረጃ ይሰጣሉ፡	በጣም አልስማማም አልስማማም	

		መካከለኛ እስማማለሁ በጣም እስማማለሁ	
609	የጤና ባለሙያዎች ሌላ የተጠቀሙበትን የመዉጊያ መርፌ በድጋሜ ይጠቀማሉ።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	
610	የጤና ባለሙያዎች የምክር አገልግሎት ለመስጠት ክህሎት አላቸዉ።	በጣም አልስማማም አልስማማም መካከለኛ እስማማለሁ በጣም እስማማለሁ	

የመጠይቁ መጨረሻ። ጥያቄዎቹን ለመመለስ ጊዜአቸሁን ስለሰጣችሁኝ በጣም አመሰግናለሁ።