DROP OUT OF TETANUS TOXOID IMMUNIZATION AND ASSOCIATED FACTORS AMONG REPRODUCTIVE AGE GROUP OF WOMEN IN DEBREBIRHAN TWON, AMHARA REGION, NORTHERN ETHIOPIA.

BY

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JIMMA, ETHIOPIA

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INSTITUTE OF HEALTH
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Abstract

Background: Tetanus is an excruciating disease that kills one new-born every eleven or approximately 134 babies each day. Tetanus toxoid immunization is given to pregnant women and women of child bearing age to prevent maternal and neonatal tetanus. In Ethiopia Expanded program on immunization baseline report shows from 74% of mothers only 18% mothers completed their tetanus toxoid vaccination. Therefore identifying factors associated with tetanus toxoid immunization drop out is important to decrease the proportion of tetanus toxoid immunization drop out as an effort for the elimination of maternal and neonatal as well as effective utilization of resources.

Objective: To assess dropout of tetanus toxoid immunization and associated factors among reproductive age group of women in Debrebirhan Town, Amhara Region**,** Northern Ethiopia.

Methods &Materials: A Community based cross-sectional study design was conducted in Debrebirhan Town from March 1-30, 2017 on reproductive age group women. Systematic sampling technique was used to select 422 study subjects. The data collection method was face to face interview using interviewer administered structured pretested questionnaires. The data was entered using Epi-data version 3.1.5 then exported to SPSS version 20 for analysis. Descriptive statistics was done by using frequency, mean, standard deviation and cross tabulation then bivariate and multivariate analysis was done to identify the association between independent and dependent variables using binary logistic regression model.

Result: From total respondents (408) included in the study 72.3% of them drop out at least one dose of their tetanus toxoid immunization according to schedule. Regarding the dropped tetanus toxoid dose; the highest, 29.8% was tetanus toxoid five. The study revealed that reproductive age group women were less likely to drop out, if they knew the importance, the total dose for full vaccination and the schedule. Reproductive age group women knowledge on schedule (AOR=0.129, 95% CI: 0.039-0.426) and number of tetanus toxoid dose needed for full vaccination (AOR=0.255, 95% CI: 0.085-0.761) were statically significantly associated with tetanus toxoid vaccination drop out among reproductive age group women.

Conclusion: the prevalence of dropout of tetanus toxoid immunization was high in the study area compared to other studies. From socio demographic factors reproductive age group women's education level occupation and history of pregnancy had statically significant association with tetanus toxoid vaccination drop out.

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Acronyms

ANC	Ante Natal Care
CBAW	Child Bearing Age Women
DTP	Diphtheria, Tetanus & Pertussis
EDHS	Ethiopian Demographic and Health Survey
EPI	Expanded program on Immunization
EHNRI	Ethiopia Health and Nutrition Research Institute
HEW	Health Extension Worker
MCH	Maternal and Child Health
MNT	Maternal and Neonatal Tetanus
MOH	Ministry Of Health
NNT	Neo-Natal Tetanus
PI	Principal Investigator
SIA	Supplementary Immunization Activities
TBA	Traditional Birth Attendant
TT	Tetanus Toxoid
TTI	Tetanus Toxoid Immunization
UNICEF	United Nation International Children's Education Fund
WHO	World Health Organization

Chapter One: Introduction

1.1. Background

Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. These vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease development. Some of the most fatal diseases including tetanus occurring in humans are preventable by appropriate immunization(1).

Tetanus Toxoid is one of the vaccines used to prevent tetanus (lockjaw). It is an inactivated toxin created in 1924 and became commercially available in 1938. In the late 1940s, it was combined with diphtheria and pertussis vaccines to produce DTP for the first time, a triple vaccine used in many childhood immunization programmes(2)

Females are more exposed to the risk of tetanus, especially during unsafe home delivery or abortion by untrained birth attendance and suffer from puerperal tetanus thus, tetanus toxoid (TT) is administered to women of reproductive age (15-49 years) groups to protect them and their new born babies from tetanus. A woman needs a total of five TT doses for lifelong protection from tetanus and all the doses will be administered according to the World Health Organization (WHO)-recommended schedule. Since only one TT dose does not offer any protection, a woman needs at least two doses of TT vaccine (TT1 and TT2), to get some protection against tetanus at birth (3).

New born and the several thousand women who die of tetanus belong to the developing countries which are the poorest and most marginalized populations living in underserved and hard-to-reach areas(4).

Ethiopia has one of the highest neonatal tetanus morbidity and mortality rate due to low tetanus toxoid immunization coverage coupled with seventy two percent of deliveries taking place at home in unsanitary conditions, Special efforts are needed in areas considered at high risk for tetanus generally have low coverage rates, Poorly served rural populations and the urban poor, including migrants to reduce the number of dropouts(5).

1.2. Statement of problem

Tetanus ((lockjaw) is an excruciating disease that kills one new-born every eleven minutes, or approximately 134 babies each day. Typically contracted through unhygienic childbirth practices, the disease is swift, cruel and lethal; but it is also highly preventable by taking the vaccine properly. An affordable vaccine given to women of childbearing age group can stop tetanus. Since 1999, United Nation International Children's Fund (UNICEF) and its partners have immunized more than 118 million women in 50 countries and have eliminated the disease in 38 countries. But maternal and neonatal tetanus remains a public health threat in 21 countries including Ethiopia(6).

Once the disease is contracted, the fatality rate can be as high as 100% without hospital care and between 10% -60% with hospital care. The true extent of the tetanus death is not known as many new born and mothers die at home and neither the birth nor the death is reported(7).
The majority of mothers and new born dying of tetanus live in Africa and Southern and East Asia, generally in areas, scarred by poverty, poor medical infrastructure or humanitarian crises, as well, where women are poor, have little access to health care, and have little information about safe delivery practices(8).
Among deaths due to diseases preventable by vaccines currently recommended by WHO, tetanus accounts for 10% (213,000) and 13% (180,000) of mortality in all age group and neonates respectively (2).
The dropout varies in different countries like Bangladeshi to Bamenda significant part of the rural women of reproductive age in Bangladeshi never received TT5 and 55.6% was dropped out due to various factors like lack of awareness, poor education and economic conditions and also dropout is significantly higher among poor and illiterate women(9).

And also dropout of reproductive women from tetanus toxoid immunization was another problem in Bamenda studies showed that no woman of reproductive age group had achieved a complete series of five TT injections among the reasons for escapement from TT vaccine was do not know the time of TT vaccination, fear of side effect and lack of awareness(10).
Somaliland Immunization Coverage Survey showed that tetanus toxoid vaccination information obtained from 282 mothers 39%, 30% 19%, 11% and 7% had received TT1-TT5 doses respectively(11).

A study conducted in Kenya revealed that there was dropout rate of 29% between the first and the second dose of tetanus toxoid immunization (12). In Ethiopia Expanded Program on Immunization (EPI) baseline report shows nearly 74% of mothers had received two doses of TT but only 18% of mothers completed their TT vaccination schedule(5).

Although a lot has been done to eliminate maternal and neonatal tetanus in Ethiopia the disease still remains a major cause of deaths. The Federal Minister of Health (FMOH), in Ethiopia in collaboration with EPI partners, started implementing TT supplemental immunization since 1999, by selecting high risk zones, with the aim of eliminating maternal and neonatal tetanus. During 2007 and 2008, 18 zones completed 3 rounds of TT Supplementary Immunization Activities (SIAs) targeting 3.1 million women, as a result 3 million received TT1, 2.79 million received TT2 and 2.6 million received TT3 doses (13).

Dropout is used to measure program continuity and follow up. The dropout between the first and the fifth doses of TT, in particular is the best indicator as this vaccine is not typically given during campaigns. In routine EPI programs, dropout higher than 10% usually indicate quality problem with the program and need to be addressed (11). To achieve maximal protection or lifelong protection against tetanus, a women should receive all doses within recommended intervals ((3),(14)).

To best of the researcher knowledge there are no sufficient research reports on dropout of TT vaccines and associated factors among reproductive age groups of women in the study area. Therefore this study was assessed the dropout of TT vaccine and associated factors among the reproductive age groups of women in Debrebirhan town.

1.3. Significance of the Study

The finding of this study significant for:-

Firstly, for health professionals, District health office to identify gaps from both service providers and service user's side and give insight to give special attention and to identify reproductive age group women TT defaulters.

Secondly, study will help to inform program managers/ policy makers to consider the important contributing factors for drop out of TT vaccination while planning to improve TT vaccination program, contribute for effective utilization of resources and also serves as a baseline data to generate strategies that help reproductive women to complete the tetanus toxoid doses.

Thirdly, may help for MOH as a significant action aimed at decreasing prevalence of maternal and child morbidity and mortality rates by TT

Finally, for researchers, the finding is used as baseline in similar studies regarding to tetanus toxoid immunization drop out among women of child bearing age group and also the finding add input to existing knowledge.

Chapter Two: Literature Review

2. Introduction

Maternal health is the problem particularly in developing countries. A number of studies have focused on maternal health in different perspectives. Currently researcher concerned with Tetanus toxoid vaccination dropout among reproductive age group women, so the studies focused on TT vaccination dropout exclusively were covered in this section.

Tetanus immunization for the women is important because it provides immunity to the fetous in-utero and therefore protects new-borns from neonatal tetanus. The vaccine also protects immunized mothers from maternal tetanus(15).

2.1. Dropout of Tetanus Toxoid Immunization

A cross sectional study conducted on women of reproductive age showed that the overall dropout for TTI was 55.6% for TT1-TT5, which reflected that 55.6% women who received TT1 didn't get fully immunized for life-long protection against tetanus.

The dropout was 5.3% for TT1-TT2, 14.7% for TT2-TT3, 20.2% for TT3-TT4 and the highest i.e. 31.1% was for TT4 –TT5 (9).

Another studies conducted in Peshawar on the coverage and factors associated with tetanus toxoid vaccination among married women of reproductive age, showed that 55.6% completely vaccinated, 22.4% incompletely vaccination, and 22.0% never vaccinated(16).

Demographic Health Survey conducted in Bangladesh revealed that Drop-out from TT1 and TT2 were only 3-11%, but those from TT1 to TT5 were 70-82 %(17).

Another Study conducted in Federal Medical Centre, Umuahia, Abia State, South East Zone, Nigeria showed that dropout of TT1/TT2 ranged from 14% in 2011 to 28% in 2009. The dropout for 2012 was 22%. In Immunization register 2006-2009 those that completed (received TT1 toTT5) ranged from 10%-16% however those that started in 2010, 2011 and 2012 would not have received up to TT5 (18).

Additionally, a study conducted in Kenya there was dropout of 29% between the first and the second dose of tetanus toxoid immunization (12).

On the contrary National EPI Coverage Survey in Asmara showed TT1 to TT2 dropout was 1.4 % nationally and vary from the lowest in Southern Red Sea (2.7%) to 0.8 in Maekel (15).

A baseline survey in Ethiopia showed that a total of 1,586 mothers of children aged 0-11 months participated in the TT vaccination survey. Nearly 74% of mothers had received at

least two doses of TT prior to the survey. Likewise, more than two-thirds (70%) of infants were protected against neonatal tetanus at birth due to their mothers' TT vaccination. However, from 1,586 respondent only 18% of mothers completed their TT vaccination schedule (5). Study conducted in Nigeria Out of the 298 respondents that received at least a dose of TT, 10 (3.4%) had received 5 complete doses (2.0% of the total number of respondents), 15 (5%) had received 4 doses, 41 (13.8%) had received 3 doses, 85 (28.5%) had received 2 doses and 84 (28.2%) had received only TT1(19).

2.2. Factors Related to Drop Out of Tetanus Toxoid Immunization

2.2.1. Socio economic and demographic characteristics

Study conducted in Kenya revealed that age group between 20-29 years was significantly associated with TT immunization status of women (12).Additionally according to 2011 DHS of Ethiopia women age 20-34 were more likely to have received two or more tetanus injections than women under age 20 or 35-49(20).Another Cross sectional study revealed that married women were three times more likely to be engaged tetanus toxoid vaccine than single women(21).

Another study conducted in India on Maternal Health-Care in Case Of Tetanus Toxoid Vaccination Woman's education is an important determinant of health-seeking behaviour and positively influenced the likelihood of TT vaccination. All the categories of woman's education, i.e. Primary, secondary and higher enhance the likelihood to have TT vaccination as compared to those with no education and this study shown that probability of TT vaccination increases with higher quintiles and also birth-order of the child has shown significant result. It negatively affects the likelihood of TT vaccination. Women experiencing high number of births have less likelihood of TT vaccination (22).

2.2.2. Health Service and Knowledge Related Factors

Related to health service factors cross sectional study in Kenya shown that there was significant association between health education to the mothers and tetanus toxoid immunization status and concerning to source for TT vaccination information 33.6% participants heard from a health worker, 30.9% from school lessons 13.8% heard from the mass media 8.2% from the mass media and family members and the remain 6.2% heard from family members alone(12).

Study conducted in Nigeria correct knowledge of the complete dose of TT were significantly associated with receiving the complete dose of TT(19).
Another study conducted on knowledge and attitude of mothers on TT immunization status shown that knowledge was significantly associated with TT immunization status mothers and mothers with higher knowledge had potential of 1.77 times than those with lower knowledge to get the complete TT immunization(23).

Another cross sectional study in Peshawar Pakistan showed that women knowledge had positive impact on TT immunization status and that women having information about TT vaccination were 2.85 times more likely to receive TT vaccination as compared to their counterparts of having no information (16).
Study done in Indonesia revealed that knowledge on tetanus and TT vaccination indicates mothers who heard about TT vaccine were 1.54 more likely to have been immunized than those who did not, while mothers who knew the use of TT vaccine were 2.15 times more likely to have been immunized than those who did not(24). Additionally Study done in Karbala show that there were statistical significant association between level of knowledge and Level of education and Tetanus toxoid vaccination (25).

Another cross-sectional study finding in Cameroon showed that the proper knowledge about TT vaccination increases the likelihood TT vaccination acceptance (23).
A cross – sectional hospital based study conducted on one hundred reproductive age group of women at the Sub-Divisional Medical zed Health Centre, Nkwen, Bamenda, showed that lack of awareness (71.1%), not knowing the time of TT vaccination (80.0%) and fear of side effect (61.0%) were some of the reasons for the TT vaccine drop out (10).

Another cross sectional study conducted in Bangladesh among women of reproductive age group among the reasons for dropout included lack of awareness of need and importance of TT immunization (54.4%), unaware of need to return for 2nd and 3rd dose (48.5%), place and/or time of immunization unknown (28.7%), fear of side reactions (16.6%) and wrong ideas about contraindications (12.4%). Lack of motivation included no faith in immunization (15.4%), postponed until another time (6.5%) and rumours (3.7%). Different obstacles included place of immunization too far to go (16.7%), time of immunization inconvenient

(27.3%), not informed of outreach dates (12.8%), family problem (10.6%) and health staff perceived as unfriendly (9.6%)(9).

Other studies on the coverage and factors associated with tetanus toxoid vaccination among married women of reproductive age, reasons for not to be vaccinated were, lack of awareness (38.4%), being busy (18.1%), distance (18.1%), misconceptions (10.86%), and fear of reactions (4.3%) (16).

Additionally, a study conducted in Kenya majority (93%) said staff in the clinic were too busy, some (3%) cited cultural belief, some (2.5%) complained that lack of TT vaccine at the clinic, the rest (1.5%) vaccine side effect and not knowing the importance of the vaccine were the reason for drop out of TT (12).

Somaliland Immunization Coverage Survey showed Most women failed to get TT doses due to a lack of vaccines being available at health facilities as reported by approximately37% of women, while 23% were unaware of the need for immunization, 8% reported that the place of Immunization was too far, 5% misunderstood the contraindications to vaccination and the same percentage was too busy to seek services (11).

Over all different studies in different countries or across the world try to identify the proportions, 55.6%, 70-82% (9),(17) and associated factors ,socio demographic and like age of reproductive age group women, educational status ,marital status, history of pregnancy ,economic status ,and knowledge and health related factors, reasons regarding to tetanus toxoid immunization drop out.

2.3. Conceptual Framework of the Study

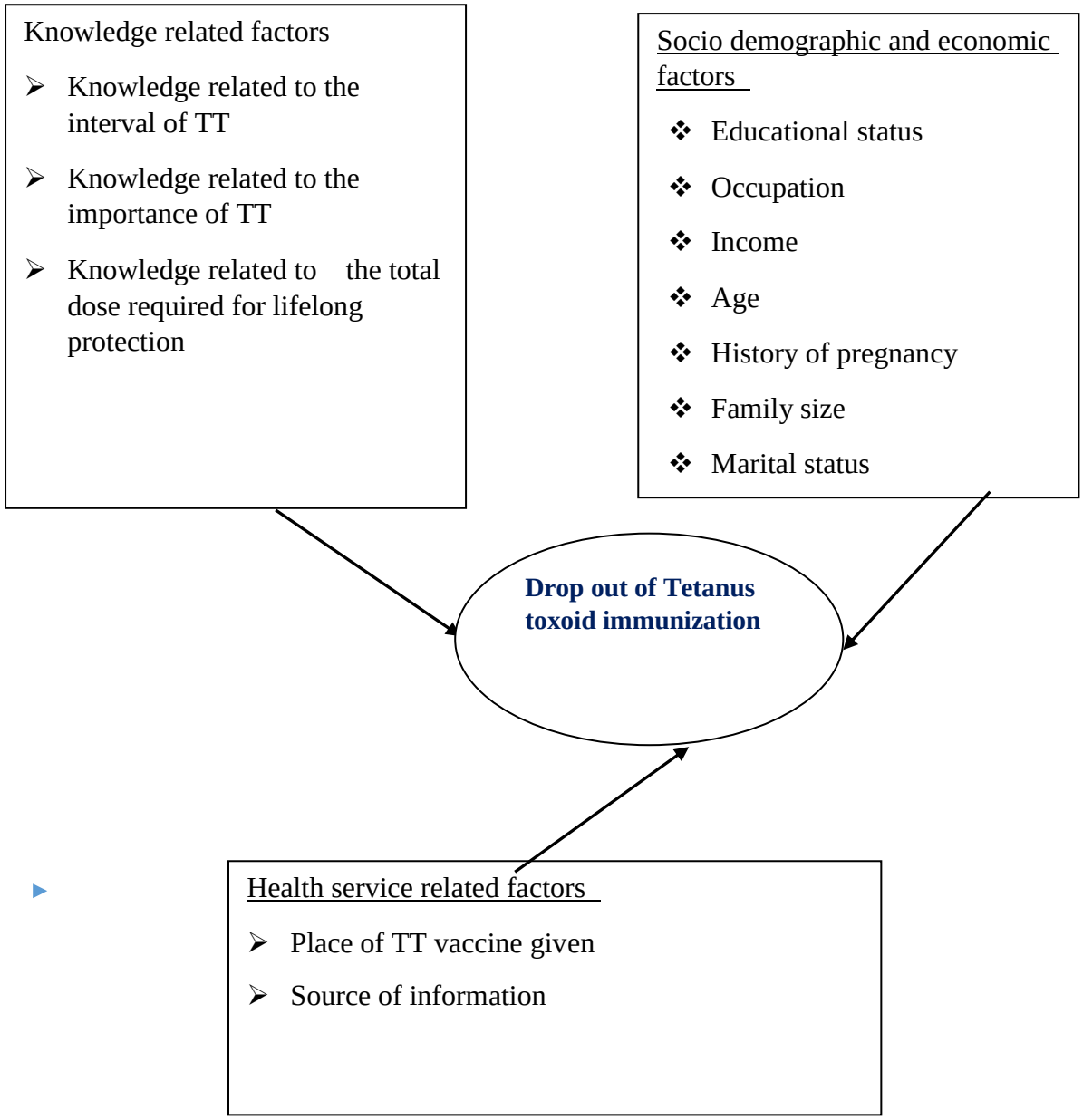

Figure 1: Conceptual framework on dropout of TTI and its associated factors in Debrebirhan Town Amhara Region, North Ethiopia, 2017. (Developed by the investigator after review of relevant literatures).

Chapter Three: Objectives of the Study

3.1. General Objective

To assess dropout of Tetanus Toxoid immunization and associated factors among reproductive age group of women in Debrebirhan Town, Amhara Region, North Ethiopia, from march 1-30, 2017.

3.2. Specific Objectives

3.2.1. To determine the prevalence of dropout of tetanus toxoid immunization among reproductive age group of women in Debrebirhan Town, Amhara Region, North Ethiopia, 2017.

3.2.2. To identify factors associated with dropout of tetanus toxoid immunization among reproductive age group of women in Debrebirhan Town, Amhara Region**,** North Ethiopia,2017

Chapter Four- Method and Materials

4.1. Study Area and Period

The study was conducted in Debrebirhan Town, Amhara Region**,** Northern Ethiopia, from March 1 -30, 2017 .The town is established in 1456 by Emperor Zera Yaeqob. It is situated in Amhara National Regional State and currently, the city is serving as the seat of Northern Shewa Zone Administration. The town is located at 130 kilometres Northeast of Addis Ababa on the way to Dessie-Mekele route. The town is found at 9°41' North latitude and 39°40' East longitude and characterized by cool temperate climate.

The annual average temperature of the city ranges between 4°C in the coldest month (August) to 26°C in the hottest month (April). Average annual rainfall ranges between 814 to 1080 mm. The town is divided in to nine Kebeles that has a total area of 14.71km^2 with an average elevation of 2840 meters above sea level. According to the information obtained from District Health Office, in 2015/16, the total population size of the district is putted as 92,887 out of which 54.78% (50,883) are women. From those women 21,903 are age between15-49. The number of households in the district is estimated to be 17,691. In the town there exist one referral hospital, one university, three health centre and four colleges under government and, one private hospital and 17 private clinics(26).

4.2. Study Design

A community based cross-sectional study design was employed.

4.3. Population

4.3.1. Source population

The source population was all Women of reproductive age groups (15-49years) that live in Debrebirhan town.

4.3.2. Study Population

Selected Women of reproductive age groups (15-49years) that live in Debrebirhan town that fulfill the inclusion criteria.

4.4. Inclusion and Exclusion Criteria

4.4.1. Inclusion criteria

- Women who receive at least TT1

4.4.2. Exclusion criteria

- Critically ill, could not talk, listen were excluded from the study
- Women who didn't start TT immunization(women who didn't had TT immunization History)

4.5. Sample Size Determination

Sample size was determined using a single population proportion formula as follow; $n = \left(Z\frac{\alpha}{2}\right)^2 \frac{p(1-p)}{d^2} = \frac{1.96*1.96*0.5*0.5}{0.0025} = 384$

And adding 10% non-response rate then the final sample size was 422.

Where:-

n= sample size

$Z_{\alpha/2}$ is standard score value for 95 % confidence level of two sides normal distribution (Z=1.96 for 95% Confidence level).

p= Prevalence of TT drop out (50%) (No study in Ethiopia)

d= Desired precision at 5 %

4.6. Sampling Procedure

The entire nine Kebeles of Debrebirhan town was taken. A total number of households in each Kebele was taken from the 2016 work plan of the District Health Office and from health extension workers. The sample size for each Kebele was determined proportionally to the number of households with in each Kebele. Systematic sampling technique was used to select study subjects in the Kebeles. The sampling interval of the households in each Kebele was determined by dividing the total number of households in the specific Kebele to the allocated sample size $(N/n)^{th}$ which was forty two. The first house was selected randomly in one place and every 42^{nd} house for all Kebeles was asked. In case of not eligible, the interviewer approaches from the next closest household and in case of more than one eligible women

wear encountered in the selected house hold, lottery method was used to determine which women was interviewed.

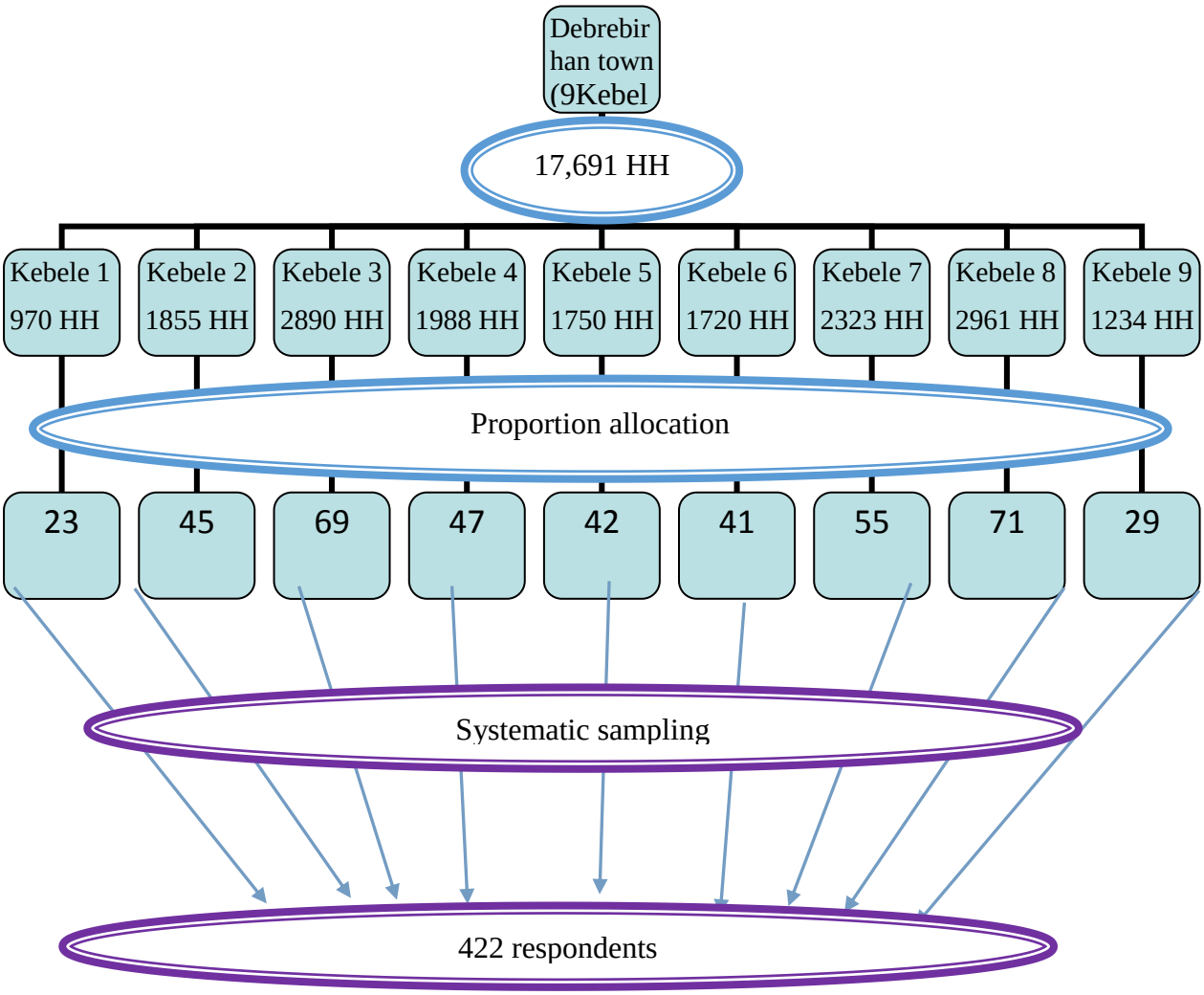

Figure 2: Schematic diagram of sampling procedure for the study on dropout of tetanus toxoid immunization and associated factors among reproductive age group women in Debrebirhan Town, Amhara Region, North Ethiopia, 2017.

4.6.1. Dependent variables

- Drop out of TT

4.6.2. Independent variables

- Socio demographic factors (Educational status of women, Income , women occupational status, age)
- Health service related factors
  - Place of TT vaccine given

- Source of information

Knowledge related factors

- ◆ Knowledge related to the interval of TT
- ◆ Knowledge related to the importance of TT
- ◆ Knowledge related to the total dose required for lifelong protection.

4.7. Operational Definitions

Reproductive age women (RAW): any women age 15 to 49 years old irrespective of fertility status.

Immunization: Protection of susceptible individuals from tetanus by administration of an inactivated toxin of tetanus.

Dropout: refer to the women who have initially received at least one dose of TT antigen and then failed to receive the subsequent doses of TT after the scheduled date to get fully immunized.

Fully immunized: women's are considered as fully immunized, vaccination is given with correct dose, with maintenance of appropriate intervals between each dose and the dose is complete (received a five doses of tetanus toxoid).

Vaccine: A preparation of an inactivated toxin of tetanus that can be injected to confer immunity to a tetanus disease.

HEW's: the most peripheral health workers, working at the community level to deliver basic preventive and promotive health care package including TT immunization.

Getting TT vaccination information from health profession: when reproductive age group women were told about TT vaccination by health extension package works, midwifery, nurses, health officers, doctors during their any health facility visit.

Vaccination by card plus oral history: Reported TT doses were both documented on TT immunization schedule card of reproductive age group women and also reported by reproductive age group women orally were considered.

Vaccination by oral history: Reported TT doses were only by reproductive age group women oral history but not documented on immunization schedule card.

Vaccination by card: Reported TT doses were documented on TT immunization schedule card of reproductive age group women.

4.8. Procedure for Data Collection

4.8.1. Data Collection Instrument

The data collection instrument was an interviewer-administered structured questionnaire to obtain information from child bearing age group women by trained interviewers. The instrument was constructed for this study consisted of Socio- demographic characteristics which contend nine items (Age, marital status, number of children, educational status of women , occupational status of women), Knowledge related factors three items(about the importance of TT Vaccine **,** about the number of TT dose required for fully protected in life, the time interval between each TT injections(doses), Health service related factors like Place of TT vaccine given and Source of information for TT immunization.

Reasons for TT vaccine dropout which contained thirteen items(family problem,being busy, perception that staff are unfriendly ,do not know the time of TT vaccination, no active follow up of defaulters **,**fear of side effect ,Postponed time of immunization until another time, no faith in immunization frequency of health visits were limited ,rumors, cultural ,belief ,misconceptions and forgetting (EDHS) 2011 (9) ,(19).

4.8.2. Data Collection personnel

Four female diploma teachers' data collectors and two B.Sc. Nurse Supervisors was recruited for the study. Training of data collectors and supervisors was conducted by the principal investigator on the purpose of the study, data collection tools or instruments, how to consent, how to select child bearing age group women from households, how to interview and the overall data collection procedures. There was a detailed review of items on the questionnaires and interviewer instructions as well as detail discussion on household selection procedures.

4.9. Data Quality Assurance

Standard questionnaire was adapted from previous literatures and modified based on study objective. The principal investigator was given training prior to data collection for both the data collectors and supervisor's .confidentiality of the study subjects were ensured and pre-test was done to check reliability prior to full scale research to check the instrument. The questionnaire was pre- tested in five percent of sample size(on twenty one reproductive age

group women) in Shewarobit town to assess clarity, sequence, consistency, understand ability and for total time it taken before the actual data collection. Then based on the findings, necessary modifications were done to the final instrument.

The collected data was reviewed and checked for completeness and missed and jumped questions by the supervisors and principal investigator. As much as possible appropriate time was arranged for the interview and it was started after the purpose of the study was explained. To maintain consistency, the interviewer-administered structured questionnaire was first translated from English to Amharic, the native language of the study area, and was retranslated back to English by professional translators (expertise).

4.10. Procedure for Data Processing and Analysis

The collected data obtained from the interviewer-administered structured questionnaire was coded, check and entered into Epi-data version 3.1 statistical software and then exported to Statistical Package for Social Sciences (SPSS) version 20 for analysis. First over all frequency was run to check presence or absence of missing value then descriptive statistics, including frequencies, percent and measures of central tendency was used to summarize the finding. Crude and adjusted Odds ratios was computed for each variable to determine the risk of drop out.

Bivariate analysis was performed to identify candidate variables or used to screen out potentially important variables before directly included in the multivariate analysis, variables with p. value less than 0.25 was entered to multivariate analysis to identify independent factors associated with drop out of TT immunization. Independent factors associated with drop out of TT immunization were declared with P. value less than 0.05 at 95% CI as cut of point. Finally the result was presented using tables, graphs and text as necessary.

4.11. Ethical Considerations

Before data collection approval of ethical clearance was secured from Jimma University Institutional review board (IRB) and a permission letter/ Official letters was written by Institute of Health, Jimma University to the respective officials and submitted to relevant and concerned bodies at Debrebirhan town district health office, letter of cooperation was given for all Kebeles. Permission to undertake the study was obtained from every relevant authority in the Kebeles. A verbal informed consent was obtained from all individuals who were going to be involved in the study. Informed verbal Consent of the participants was obtained after giving information and explaining the aim of the study to each participant. The participants were interviewed in their house hold individually to maintain privacy. They were not requiring giving their name. Information concerning the individual was not passing to a third party. They were also informed that participation was on voluntary basis and they can be withdraw. Besides to this, all the information collected from the study subjects was handled confidentially and data was used for the research purpose only.

4.12. Research Finding Dissemination Plan

Up on finalization of the analysis and interpretation of the result the findings will be presented and submitted to Jimma University School of nursing and midwifery, Institute of health sciences. The findings will also be communicated to the local health planners and other relevant stake holders at zonal and Wereda level in the area to enable them take recommendations in to consideration during their planning process. It can also be communicated to health planners and managers at regional level. Seminar and conference presentation, effort will be made for publication in peer reviewed national or international journal.

Chapter Five: Result

5.1. Socio-Demographic Characteristics

Out of 422 reproductive age group of women planned to be included in the study, 408 were participated, which gives a response rate of 96.6%.

From the total respondents the majority 183 (44.9%) were between the age of 25-35, followed by 121(29.7%) were >35 years, with the mean age of 30.8±7.36. The majority 291(71.3%) belong to the Amhara ethnic groups followed by 73(17.9%) were Oromo. Among the interviewed reproductive age group women 117(28.7%) were collage and above, followed by 105(25.7%) were high school (9-12) in educational statues.

By occupational status of the reproductive age group women the highest 112 (27.5%) were housewife and followed by 77(18.9%) were students.

With regard to religion 325 (79.7%) were Orthodox while 36 (8.8%) were Muslim.

Concerning marital status, 246(60.3%) of the reproductive age group women were married followed by 114(27.9%) single .Of the total study subjects two hundred fifty four reproductive age group women had history pregnancy the rest one hundred fifty four had no history pregnancy. Among the total study subjects the majority 207(50.7%) had family size above the mean (>3.6) and the rest 201(49.3) had below the mean (<3.6).

With regard to the income of respondents, 130 (31.9%) were with monthly income between 3371-5000 birr and 118 (28.9%) were with monthly income less than 2000 birr see (Table.1).

Table 1: Distribution of study subjects by Socio demographic characteristics in Debrebirhan Town, Amhara Region, North Ethiopia, March, 2017(n=408).

Age years	Frequency(No)	Percent (%)
<=24	104	25.5
25-35	183	44.9
>35	121	29.7
Ethnicity		
Amhara	291	71.3
Oromo	73	17.9
Tigray	22	5.4
Gurage	19	4.7
Others*	3	0.7
Education level of women		
Unable to read and write	94	23.0
Able to read and write	55	13.5
Elementary(1-8 grade)	37	9.1
High school(9-12)	105	25.7
Collage and above	117	28.7
Occupation		
Housewife	112	27.5
Student	77	18.9
Government employer	63	15.4
Privet employer	67	16.4
Merchant	64	15.7
Daily labourer	25	6.1
Religion		
Orthodox	325	79.7
Muslim	36	8.8
Protestant	28	6.9
Catholic	19	4.7
Marital status		
Married	246	60.3
Single	114	27.9
Divorced	27	6.6
Widowed	21	5.1
Monthly income		
<=2000	118	28.9
2001-3370	86	21.1
3371-5000	130	31.9
>5000	74	18.1

Other*silte

5.2. Knowledge and Health Service Related Information

All of (408) reproductive age group women were heard about TT Vaccination, The main source of information for Tetanus toxoid immunization taken was history and card 168(41.2%) and 139(34.1%) respectively.

Regarding the total dose of Tetanus Toxoid immunization taken, ninety seven (23.8%) reproductive age group women were on TT1 and 36 (8.8%) reproductive age group women took five dose of Tetanus Toxoid immunization.

TT immunization was considered to be important to protect new-born alone during pregnancy & delivery from Tetanus by 132(32.4%) reproductive age group women while 108(26.5%) reproductive age group women did not know the importance.

Regarding to the number of TT injections needed for full vaccination (lifelong protection) among the study subjects the majority one hundred twenty three respondents (30.1%) said two dose of TTI was needed for lifelong protection.

Table 2: Knowledge and health service related information of reproductive age group of women in Debrebirhan Town, Amhara Region, North Ethiopia, March ,2017(n=408).

Do you heard about TT vaccination	**Frequency (No)**	**Percent (%)**
Yes	408	100
Source of information for TT Immunization taken		
Card alone	139	34.1
History alone	168	41.2
Both history& Card	101	24.8
Immunization status(Dose)Total		
TT1	97	23.8
TT2	94	23.0
TT3	93	22.8
TT4	88	21.6
TT5	36	8.8
Importance of TT Vaccine		
To protect self alone from Tetanus	84	20.6
To protect new born alone during pregnancy &delivery	132	32.4
To protect both, self and child from tetanus	84	20.6
I don't know	108	26.5
Number of TT injections needed for full vaccination(lifelong protection)		
One	34	8.3
Two	123	30.1
Three	18	4.4
Four	49	12.0
Five	98	24.0
I don't know	86	21.1

Regarding to the source of information for tetanus toxoid immunization the majority 264(64.7%) of the reproductive age group women were heard from Health workers followed by from school which was 88(21.6%).

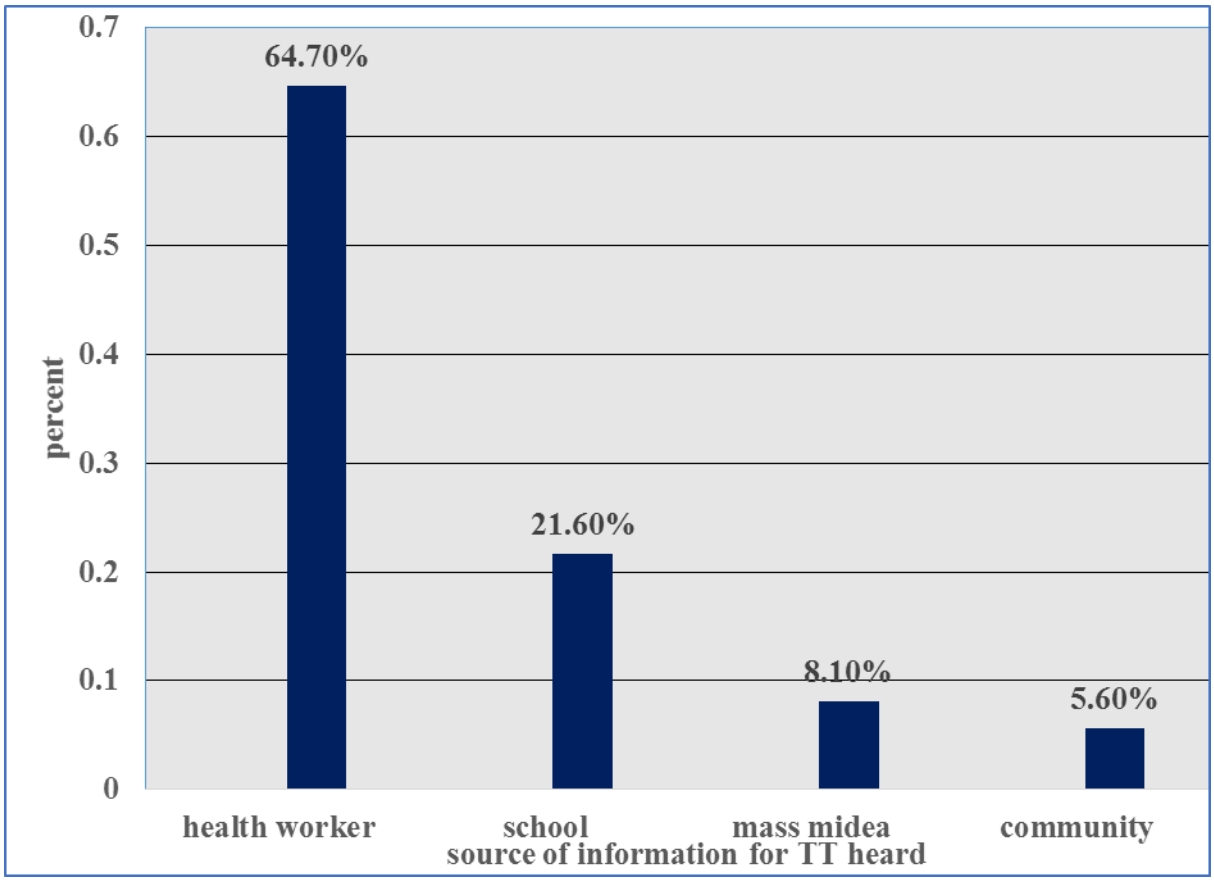

Figure 3: Source of information for TTI heard at the first time for reproductive age group women in Debrebirhan Town, Amhara Region, North Ethiopia, March,2017(n=408).

Regarding the place of Tetanus toxoid vaccination, 174 (42.6%), 95(23.3%) of the reproductive age group women were vaccinated at Health Centre followed by school.

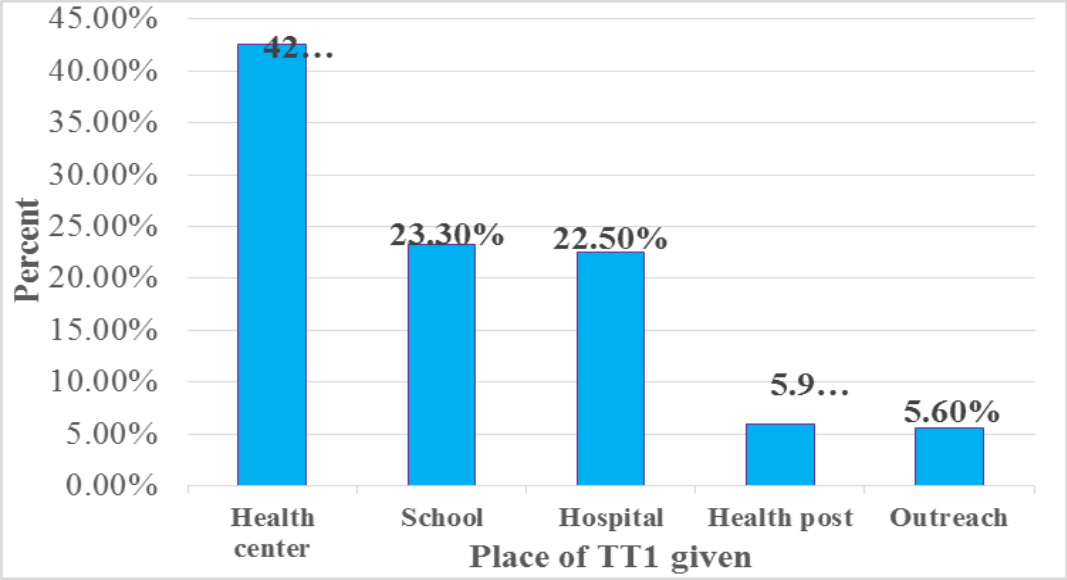

Figure 4:Place of TT 1 vaccine given for reproductive age group women in Debrebirhan Town, Amhara Region, North Ethiopia, March, 2017(n=408).

Concerning the time interval between each TT injections only 38(9.3%) reproductive age group women were know the time interval between each TT injections while the rest 370(90.7%) did not know.

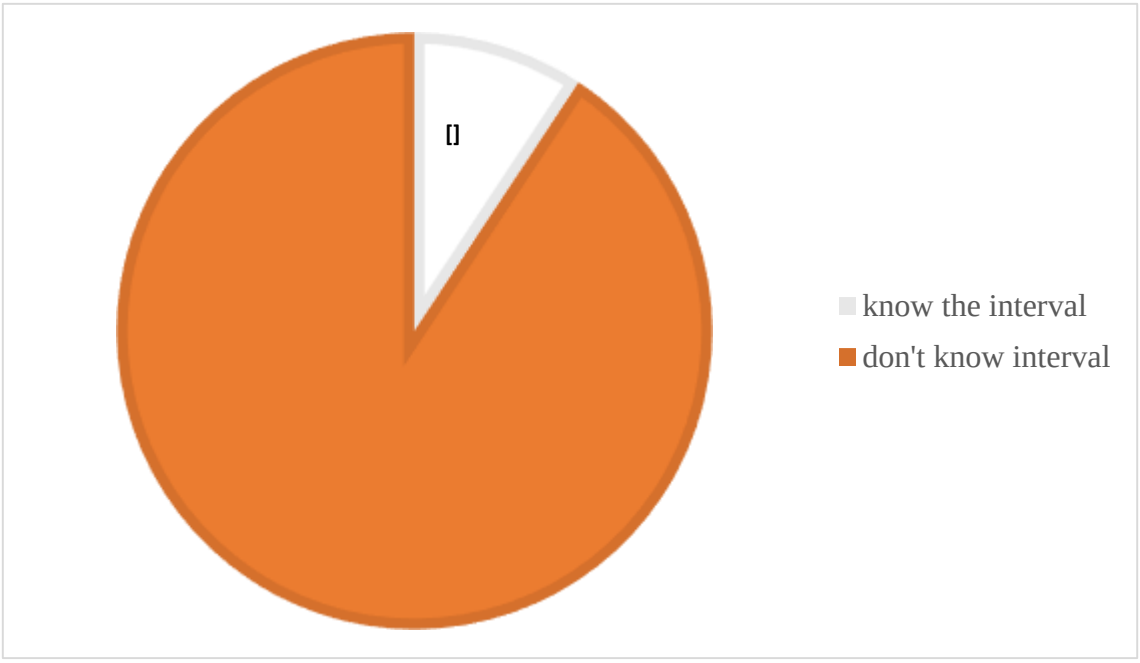

Figure 5:Knowledge of reproductive age group women regarding to the time interval between each TT dose in Debrebirhan Town, Amhara Region, North Ethiopia, March, 2017(n=408).

5.3. Prevalence of Dropout of women from TT vaccination

Regarding to the drop out of TT vaccination only 113 (27.7%) reproductive age group women were not drop out the TT vaccine.

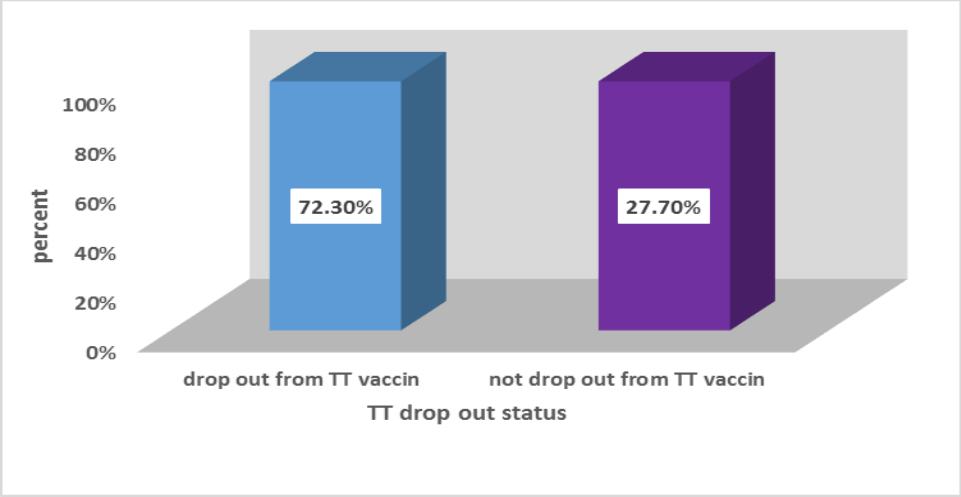

Figure 6: Prevalence of Dropout of TT vaccination among reproductive age group of women in Debrebirhan Town, Amhara Region, North Ethiopia, March,2017(n=408).

Concerning to the dropped TT dose majority 88(29.8%) reproductive age group women were drop TT5.

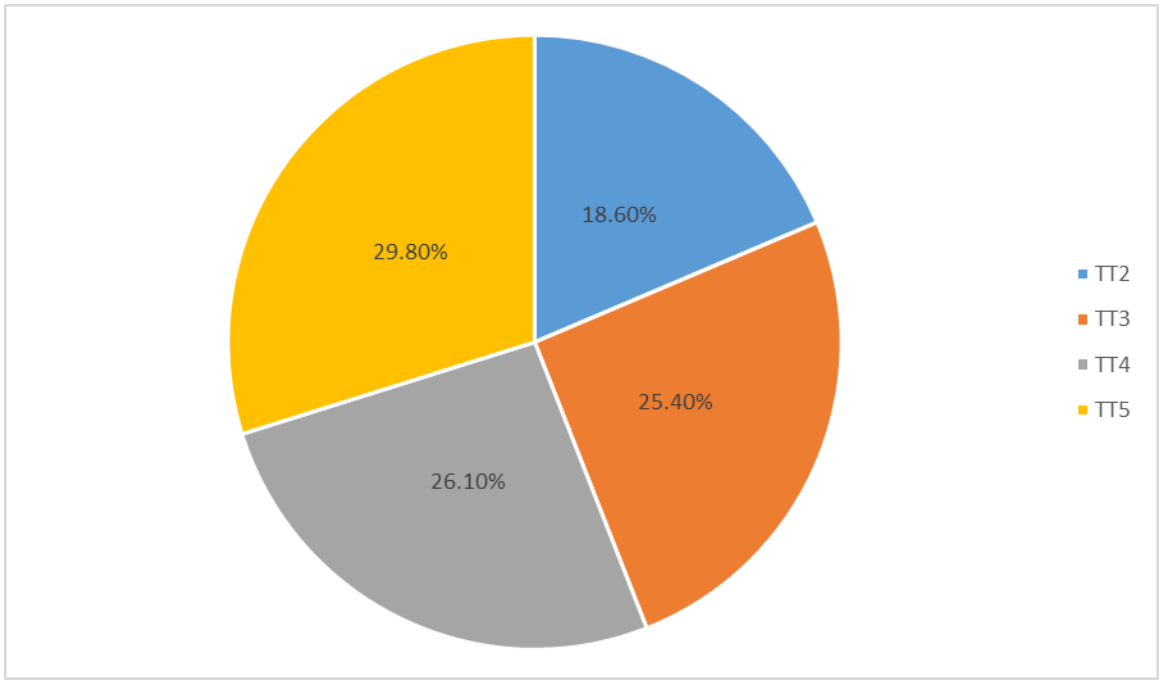

Figure 7: Distribution of dropped tetanus toxoid dose among reproductive age group women in Debrebirhan Town, Amhara Region, North Ethiopia, March,2017 (n=295).

5.4. Reasons for TT vaccine dropout

The reasons for dropout of TT vaccination were, don't know the time of TT immunization 214 (72.5%), Forgetting 187 (63.4%), and there is no active follow up of defaulters 116(39.3%), fear of side effect 92(31.2%) were the major reason given by respondents for dropout of TT vaccination.

Table 3:Reasons for TT vaccine dropout of reproductive age group women in Debrebirhan Town, Amhara Region, North Ethiopia, March,2017(n=295).

Reasons for dropout of TT vaccination	**Frequency(No)**	**Percent (%)**
Family problem	54	18.3
Being busy	70	23.7
Perception that staff are unfriendly	37	12.5
Don't know the time of each TT immunization schedule	214	72.5
There is no active follow up of defaulters	116	39.3
Fear of side effect	92	31.2
Postponed time of immunization until another time	22	7.5
No faith in immunization	17	5.8
Frequency of health visits are limited	20	6.8
Rumors	3	1.
Cultural belief	7	2.4
Misconceptions	28	9.5
Forgetting	187	63.4
Other**	2	.7

Other** health workers did not gave advice,

5.5. Factors associated with TT vaccine dropout

5.5.1. Bivariate analysis

For further analysis, the dependent variable dropout of TT vaccination states was dichotomized into" not drop out" and "dropout" immunization, Odds of having dropout of vaccination was compared among potential factors.

Associated factors affecting TT vaccine dropout including socio demographic characteristics, knowledge and health service information related to reproductive age group women was assessed.

In the bivariate analysis, independent variables having p-value less than or equal to 0.25 were considered as a candidate for multivariate analysis. According to these criteria the age, educational status, marital status, occupational status, ethnicity, religion, history of pregnancy, income, Source of information for TTI heard, Importance of TT Vaccine, Place of TT1 vaccine given, Number of TT injections needed for full vaccination and knowing the time interval between each TT injections were variables having p-value less than 0.25 and considered as a candidate for multivariate analysis (table 4).

Table 4: Bivariate analysis of tetanus toxoid vaccine dropout among women in reproductive age group in Debrebirhan Town, Amhara Region, North Ethiopia, March, 2017(n=408).

Variables	TT status		Crude OR	P-value	95 % CI
	DO (%)	Not DO (%)			
Information sources for TTI heard at the first time					
Community members	21(7.1%)	2(1.8%)		1	
Health workers	163(55.3%)	101(89.4%)	0.154	0.013	0.035-0.669
Mass media	31(10.5%)	2(1.8%)	1.476	0.708	0.193-11.316
School	80(27.1%)	8(7.1%)	0.952	0.953	0.188-4.824
Place of TTI					
Health Post	19(6.4%)	5(4.4%)		1	
Health Centre	127(43.1%)	47(41.6%)	0.711	0.521	0.251-2.013
Hospital	43(14.6%)	49(43.4%)	0.231	0.007	0.079-0.671
Home/Out reach	22(7.5%)	1(0.9%)	5.789	0.123	0.621-54.006
School	84(28.5%)	11(9.7%)	2.010	0.242	0.625-6.465
Importance of TTI					
To protect self alone	49(16.6%)	35(31.0%)	0.192	0.0001	0.093-0.395
To protect new born alone	101(34.2%)	31(27.4%)	0.446	0.025	0.220-0.903
To protect both,	50(16.9%)	34(30.1%)	0.201	0.0001	0.097-0.416
I don't know	95(32.2%)	13(11.5%)		1	
Knowing the time interval between each TT injections					
No	278(94.2%)	92(81.4%)		1	
Yes	17(5.8%)	21(18.6%)	0.268	0.0001	0.136-0.530
Number of TT injections needed for full vaccination					
One	27(9.2%)	7(6.2%)	1.326	0.566	0.507-3.470
Two	102(34.6%)	21(18.6%)	**1.670**	**0.136**	0.850-3.278
Three	15(5.1%)	3(2.7%)	**1.719**	**0.425**	0.454-6.504
Four	40(13.6%)	9(8.0%)	**1.528**	**0.340**	0.640-3.648
Five	47(15.9%)	51(45.1%)	**0.317**	**0.0001**	0.169-0.592
I don't know	64(21.7%)	22(19.5%)		**1**	
Age in years					
<=24	82(27.8%)	22(19.5%)		1	
25-35	110(37.3%)	73(64.6%)	0.404	0.001	0.232-0.705
>36	103(34.9%)	18(15.9%)	1.535	0.221	0.772-3.052
Education level of women					
Cannot read and write	80(27.1%)	14(12.4%)		1	
Only Read and write	47(15.9%)	8(7.1%)	1.028	0.954	0.401-2.633

Elementary (1-8 grade)	28(9.5%)	9(8.0%)	0.544	0.206	0.212-1.396
High school (9-12 grade)	74(25.1%)	31(27.4%)	0.418	0.015	0.206-0.846
Collage and above	66(22.4%)	51(45.1%)	0.226	0.0001	0.115-0.445
Marital status					
Single	92(31.2%)	22(19.5%)		1	
Married	164(55.6%)	82(72.6%)	0.478	0.007	0.280-0.817
Divorced	22(7.5%)	5(4.4%)	1.052	0.926	0.358-3.088
Widowed	17(5.8%)	4(3.5%)	1.016	0.979	0.311-3.322
Occupation					
House wife	98(33.2%)	14(12.4%)		1	
Student	62(21.0%)	15(13.3%)	0.590	0.194	0.267-1.307
Government employer	16(5.4%)	47(41.6%)	0.049	0.0001	0.022-0.108
Privet employer	53(18.0%)	14(12.4%)	0.541	0.138	0.240-1.219
Merchant	42(14.2%)	22(19.5%)	0.273	0.001	0.127-0.584
Daily labourer	14(8.1%)	11(0.9%)	3.429	0.245	0.429-27.369
Religion					
Orthodox	230(78.0%)	95(84.1%)		**1**	
Muslim	26(8.8%)	10(8.8%)	1.074	0.855	0.498-2.314
Protestant	23(7.8%)	5(4.4%)	1.90	0.207	0.702-5.145
Catholic	16(5.4%)	3(2.7%)	2.203	0.218	0.627-7.736
Ethnicity					
Amhara	218(73.9%)	73(64.6%)		1	
Oromo	48(16.3%)	25(22.1%)	0.643	0.116	0.370-1.116
Guraghe	11(3.7%)	8(7.1%)	0.460	0.109	0.178-1.189
Tigray	17(5.8%)	5(4.4%)	1.139	0.805	0.406-3.195
Others	1(0.3)	2(1.8%)	0.167	0.147	0.015-1.874
Family size (mean family size=3.6)					
Less than mean	148(50.2%)	53(46.9%)		1	
Greater than mean	147(49.8%)	60(53.1%)	0.877	0.555	0.568-1.355
Monthly income in Birr					
<=2000	102(34.6%)	16(14.2%)		1	
2001-3370	70(23.7%)	16(14.2%)	0.686	0.330	0.322-1.463
3371-5000	85(28.8%)	45(39.8%)	0.296	0.0001	0.156-0.561
>5000	38(12.9%)	36(31.9%)	0.166	0.0001	0.082-0.332
History of pregnancy					
No	129(43.7%)	25(22.1%)		1	
Yes	166(56.3%)	88(77.9%)	0.366	0.0001	0.222-0.603

N.B: p-value less than 0.25 candidates for multivariate analysis

5.5.2. Multivariate analysis

Adjustment of variables using logistics regression was made for predicting variables that were associated with TT immunization dropout of women in reproductive age group during crude analysis.

Variables that showed statically significant association for TT vaccination dropout among reproductive age group of women during multivariate analysis were educational status, marital status, occupation ,history of pregnancy, knowledge about importance of TT vaccine, knowledge about interval between each TT injection and knowledge about TT injection needed for fully immunization having p-value less than 0.05.

Accordingly; the odds of dropping TT vaccine among women able to read and write were 79.1 %less likely(AOR: 0.209, p-value: 0.040, 95% CI: 0.047-0.929), among those attending high school were 86.4% less likely (AOR: 0.136, p-value: 0.001, 95% CI: 0.041-0.446) and among those attending college and above were 91.2 % less likely (AOR: 0.088, p-value: 0.0001, 95% CI: 0.028-0.281) than those who can't read and write and Women who are divorced were 8 times more drop out TT vaccine than single (AOR: 7.954, p-value: 0.045, 95% CI: 1.044-60.614). Concerning to occupation of women; those who are government employee were 84.2% less likely drop out TT vaccine (AOR: 0.158, p-value: 0.003, 95% CI: 0.046-0.645) and those who are daily labour were 22 time more drop out TT vaccine (AOR: 22.095, p-value: 0.023, 95% CI: 1.523-320.5) than those who are house wife, and women having history of pregnancy were 82.6 % less likely drop out TT vaccine than those who are null gravid.

Accordingly; the odds of dropping TT vaccine among those who know the importance of TT vaccine protect self alone from tetanus were 87.1 % less likely (AOR: 0.129, p-value: 0.001, 95% CI: 0.039-0.421) and those who know the importance of TT vaccine protect both self and new born from tetanus were 92.8 % less likely (AOR: 0.072, p-value: 0.0001, 95% CI: 0.021-0.250) than those who didn't know the importance.

Moreover; women who know the time interval between each TT vaccine injection were 87.1 % less likely drop out TT vaccine than who didn't know (AOR: 0.129, p-value: 0.001, 95% CI: 0.039-0.426) and women who know five dose of TT vaccine needed to be fully vaccinated were 74.5 % less likely than those who didn't know (AOR: 0.255, p-value: 0.014 95% CI: 0.085-0.761) (table5).

Table 5:Factors associated with tetanus toxoid vaccine dropout among women in reproductive age group in Debrebirhan Town, Amhara Region, North Ethiopia,March,2017 (n=408).

Variables	TT status		AOR	P-value	95 % CI
	DO (%)	Not DO (%)			
Age in years					
<=24	82(27.8%)	22(19.5%)	1		
25-35	110(37.3%)	73(64.6%)	0.368	0.080	0.120-1.126
>36	103(34.9%)	18(15.9%)	0.932	0.912	0.265-3.276
Education level of women					
Cannot read and write	80(27.1%)	14(12.4%)	1		
Only Read and write	47(15.9%)	8(7.1%)	0.209	0.040**	0.047-0.929
Elementary (1-8 grade)	28(9.5%)	9(8.0%)	0.403	0.284	0.076-2.129
High school (9-12)	74(25.1%)	31(27.4%)	0.136	0.001**	0.041-0.446
Collage and above	66(22.4%)	51(45.1%)	0.088	0.0001**	0.028-0.281
Marital status					
Single	92(31.2%)	22(19.5%)	1		
Married	164(55.6%)	82(72.6%)	4.961	0.054	0.970-25.359
Divorced	22(7.5%)	5(4.4%)	7.954	0.045**	1.044-60.614
Widowed	17(5.8%)	4(3.5%)	3.684	0.190	0.525-25.868
Occupation					
House wife	98(33.2%)	14(12.4%)	1		
Student	62(21.0%)	15(13.3%)	0.582	0.461	0.138-2.455
Government employer	16(5.4%)	47(41.6%)	0.158	0.003**	0.046-0.545
Privet employer	53(18.0%)	14(12.4%)	0.947	0.932	0.274-3.273
Merchant	42(14.2%)	22(19.5%)	0.536	0.312	0.160-1.793
Daily labourer	24(8.1%)	1(0.9%)	22.095	0.023**	1.523-20.5
Religion					
Orthodox	230(78.0%)	95(84.1%)	**1**		
Muslim	26(8.8%)	10(8.8%)	2.153	0.276	0.542-8.550
Protestant	23(7.8%)	5(4.4%)	1.712	0.510	0.346-8.473
Catholic	16(5.4%)	3(2.7%)	4.708	0.119	0.670-33.098
Ethnicity					
Amhara	218(73.9%)	73(64.6%)	1		
Oromo	48(16.3%)	25(22.1%)	0.584	0.271	0.224-1.523
Guraghe	11(3.7%)	8(7.1%)	0.745	0.727	0.143-3.890
Tigray	17(5.8%)	5(4.4%)	1.587	0.595	0.289-8.717
Others	1(0.3)	2(1.8%)	0.065	0.734	0.001-4.46
Monthly income in Birr					
<=2000	102(34.6%)	16(14.2%)	1		

2001-3370	70(23.7%)	16(14.2%)	0.896	0.861	0.970-25.359
3371-5000	85(28.8%)	45(39.8%)	0.403	0.132	1.044-60.614
>5000	38(12.9%)	36(31.9%)	0.200	0.017	0.525-25.868
History of pregnancy					
No	129(43.7%)	25(22.1%)	1		
Yes	166(56.3%)	88(77.9%)	0.174	0.017**	0.042-0.732
Information sources for TTI heard the first time					
Community members	21(7.1%)	2(1.8%)	1		
Health workers	163(55.3%)	101(89.4%)	0.424	0.412	0.055-3.292
Mass media	31(10.5%)	2(1.8%)	7.207	0.166	0.441-117.802
School	80(27.1%)	8(7.1%)	2.222	0.488	0.233-21.184
Place of TTI					
Health Post	19(6.4%)	5(4.4%)	1		
Health Centre	127(43.1%)	47(41.6%)	0.363	0.233	0.069-1.923
Hospital	43(14.6%)	49(43.4%)	0.211	0.076	0.038-1.174
Home/Out reach	22(7.5%)	1(0.9%)	1.076	0.962	0.051-22.937
School	84(28.5%)	11(9.7%)	3.550	0.186	0.542-23.246
Importance of TTI					
To protect self alone from Tetanus	49(16.6%)	35(31.0%)	0.129	0.001**	0.039-0.421
To protect new born alone	101(34.2%)	31(27.4%)	0.350	0.067	0.114-1.077
To protect both, self and child	50(16.9%)	34(30.1%)	0.072	0.0001**	0.021-0.250
I don't know	95(32.2%)	13(11.5%)	1		
Knowing the time interval between each TT injections					
No	278(94.2%)	92(81.4%)	1		
Yes	17(5.8%)	21(18.6%)	0.129	0.001**	0.039-0.426
Number of TT injections needed for full vaccination					
One	27(9.2%)	7(6.2%)	2.560	0.721	0.480-13.664
Two	102(34.6%)	21(18.6%)	**1.224**	**0.752**	0.350-4.290
Three	15(5.1%)	3(2.7%)	**4.731**	**0.183**	0.481-46.546
Four	40(13.6%)	9(8.0%)	**1.821**	**0.406**	0.443-7.487
Five	47(15.9%)	51(45.1%)	**0.255**	**0.014****	0.085-0.761
I don't know	64(21.7%)	22(19.5%)			

***- p-value less than 0.05 considered as statically significant*

Chapter Six: Discussion

This study was conducted in urban community in Debrebirhan town to assess the drop out of tetanus toxoid immunization and associated factors among women aged between 15-49 years old residing in all the nine Kebeles of Debrebirhan town found in North Shewa Zone, Amhara regional state of Ethiopia.

The survey under taken for this study tried to examine the socio demographic and economic characteristics of women and identified the factors associated with the TT immunization drop out. From total reproductive age group women included in the study 72.3% of them drop out their TT immunization according to schedule for routine immunization.

The finding of this study shows that more women in the reproductive age group were drop TT vaccine than a study conducted in Bangladesh which was 55 % of women were drop out TT vaccination(9). The possible explanation for this difference might be due to the health extension workers in the house to house in all Kebeles, and health workers in the health facilities are not giving advice, and not create awareness well about the total dose of TT vaccine needed for lifelong protection and the schedule of each TT vaccine dose intervals and also repeated dose of would have affected and influenced some of reproductive age group women not to receive the repeat dose.

This study revealed that 36(8.8%) of reproductive age group women had achieved complete dose of five TT immunization or protected for lifelong, which is lower than the results 18% of mothers completed their TT vaccination schedule study conducted in Ethiopia (5)and 44.4% received all the five doses of vaccine and are expected to achieved lifelong immunized against tetanus study conducted in Bamenda (10).The possible explanation might be due to the presence of long time interval this may have made reproductive age group women's forget vaccination clinic appointment dates, the quality of the service provider, the awareness about the total dose of TT vaccine needed for lifelong and some women considered taking of two dose of TT vaccine is enough for lifelong protection.

From the total interviewed households, 139(34.1%) them able to show the vaccination card which is lower than the study done in Peshawar which is 59.3 %(17).This difference might be present due to reproductive age group women does not give attention about the importance of card, the card give only for women's who complete TT vaccine and who has history of pregnancy, and also women who take TT1 in school does not have TT card.

In the current study twenty percent of the respondents knew that the importance of taking TT immunization is to prevent mother and the newly born baby from tetanus, this finding is lower than study conducted by Victorine M Ngachangong et al(10) who reported 61.1% of reproductive age group women answered correctly about the importance of tetanus toxoid vaccination. The possible explanation for this difference might be due to the difference of reproductive age group women's' educational status, the quality of health extension workers and health workers in health facility and the way of creating awareness as well as the attitude of reproductive age group women towards TT immunization. .

Only a few reproductive age group women knew the correct time interval between each TT vaccination which is 38(9.3%) this finding is lower than the study conducted in Bamenda which is 18.9% (10).this difference is might be due to the quality of the service, way of communication and health education given by health provider.

Accordingly; the odds of dropping TT vaccine among women able to read and write were 79.1 %less likely(AOR: 0.209, p-value: 0.040, 95% CI: 0.047-0.929), among those attending elementary school were 86.4% less likely (AOR: 0.136, p-value: 0.001, 95% CI: 0.041-0.446) and among these attending college and above were 91.2 % less likely (AOR: 0.088, p-value: 0.0001, 95% CI: 0.028-0.281) than these who can't read .this finding is supported by a study conducted in India (22).The explanation might be that more educated women have greater ability to use health-care inputs to maintain their health, the education impacts individuals' behaviour regarding health. It enhances the women' decision making power and confidence. The educated women may take preventive health-care measures, as they have more control over their lives. They have positions in their households to take decisions regarding their own as well as children' health. And also education increases overall awareness, easy access to information and knowledge of immunization services including health and health-care utilization.

Concerning to occupation of women; these who are government employee were 84.2% less likely drop out TT vaccine (AOR: 0.158, p-value: 0.003, 95% CI: 0.046-0.645) and these who are daily labour were 22 time more drop out TT vaccine (AOR: 22.095, p-value: 0.023, 95% CI: 1.523-320.5) than those who were house wife this finding is consistence with others Cross-sectional study finding on the area (9), (10).The possible explanation might be being government employer have the chance share ideas with each other and to communicate with different health workers, they have chance to use different social medias, and the level of

educational status may help to develop awareness about the interval, the total dose of TTI needed for lifelong protection.

Women having history of pregnancy were 82.6 % less likely drop out TT vaccine than those who are null gravid. This finding was consistent with the study conducted in Bahirdar (21).This is probably due to the utilization of health care facilities for antenatal care, communicate with health provider which has been shown to have a negative impact on the tetanus toxoid drop out. Women who are divorced were 8 times more likely drop out TT vaccine than single (AOR: 7.954, p-value: 0.045, 95% CI: 1.044-60.614). This might be the divorced women related with intentions about the future pregnancy decrease and they perceived TT vaccine taken during pregnancy.

Moreover; women who know the time interval between each TT vaccine injection were 87.1 % less likely drop out TT vaccine than who didn't know (AOR: 0.129, p-value: 0.001, 95% CI: 0.039-0.426) and women who know five dose of TT vaccine needed to be fully vaccinated were 74.5 % less likely than those who didn't know (AOR: 0.255, p-value: 0.014 95% CI: 0.085-0.761).this finding supported by studies conducted in Cameroon(23).study conducted in different areas(9,10,12)revealed that one of the major reason for TT drop out given by reproductive age group women is don't know the time of each TT immunization schedule so once they know the interval the probability of women drop out from TT immunization decrease.

Women who know five dose of TT vaccine needed to be fully vaccinated were 74.5 % less likely drop out than those who didn't know (AOR: 0.255, p-value: 0.014 95% CI: 0.085-0.761.this finding is consistent with study conducted in Nigeria (19).

Strengths and Limitations of the Study

A. Strength

- This study was include all Kebeles in the town and used probability sampling technique so findings can be generalized.
- The survey was community based so that particularly the socio-demographic and economic variables were more credible since the respondents for these variables were adult people.

B. Limitation

- The study had some limitations which included recall bias where women might forget the vaccination status and the correct time that take their TT vaccine**.**
- All women between the age 15-49 years were included in the study which not shows recent vaccination program performance and increase recall bias.
- The study participants may create social desirable bias during the interview.
- Health system is not addressed holistically including health facilities related factors

Chapter: Seven Conclusion and Recommendation

7.1. Conclusion

- Generally the prevalence of drop out of TT immunization among reproductive age group women is low in Debrebirhan Town, Amhara Region, North Ethiopia.
- The study showed factors that were significantly associated with TT vaccination drop out were educational status, marital status, occupation and history of pregnancy, knowledge on the importance of TT immunization, knowledge on the interval between each TT immunization and knowledge on the total dose needed for lifelong protection having p-value less than 0.05.
- In this study variables like, religion, in came, ethnicity, family size, total TT dose taken, source of information for TT immunization heard were not significantly associated with TT vaccination drop out.

7.2. Recommendation

Based on the Research findings, the following recommendations can be forwarded.

For health professionals and health extension worker

- Efforts to educate the public that knowledge of women can decrease TT drop out and enhance lifelong protection.
- Campaign aimed at increasing the knowledge of women of childbearing age about the danger of maternal and neonatal tetanus and the need to prevent the disease by receiving 5 doses of TT.

Amhara Health Bereaue and Debrebirhan Zonal Health Department

- Both bodies in collaboration with MOH should create strategies that used to decrease TT drop out combine the vaccine as a single dose and focused on factors for TT drop out.
- Debrebirhan town health office and health facilities in town should work to Increase community awareness through Intensive health education activities about the benefit and need to complete the entire schedule of vaccination.
- Improving the educational status of women can potentially decrease the TT immunization drop out.
- Establishing defaulters tracing mechanism using health extension package workers and the lower governmental structures below Kebele level.

For researchers

- Further studies are better to conduct health facility record review of tetanus toxoid vaccination to reduce recall bias and in order to assess the quality of health facility and health professionals.

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Annex I: English version of the questionnaire

Jimma University, Institute of Health

Faculty of health Sciences,

School of Nursing and Midwifery

A Questionnaire for the Study of Tetanus toxoid immunization dropout and associated factors among reproductive age group women in Amhara region, Debrebirhan Town, Ethiopia, 2017.

Informed Consent Statement

My name is————.we were conducting a study on maternal Tetanus toxoid immunization dropout and associated factors in Debrebirhan Town. For this purpose certain questions which were thought to be important was asked. The interview was take about 30 minutes. We want to assure you that your answers was strictly kept secret. We were also do not keep a record of your name or address. Participation in this survey was voluntary and you had the right to refuse participation at any time or not to respond to questions that you were not willing to answer. However, your honest answers to these questions was help us in identifying determinant factors of TT vaccination drop out and improve vaccination service in the future. We would appreciate your help in responding to these questions.

01: - Are you willing to participate in the study? Yes… No ---- (if no stop asking)

02. Selected Household having women age 15-49 years 1= yes----2=no (if no stop asking)

03:- - Are you taking TT1 1= yes----0=no-(if no stop asking)

04-.study area: - Kebele----------house number-----

05. Questionnaire Code_____

Name of the interviewer _____ Signature_____

Date of interview____

Name of the supervisor _____Sign._____ Date_____

Contact Address: Principal investigator, phone 0921126875, E-mail kelemdesta2015@gmail.com.

Show the answer of the respondent by circling the number on the space provided.

Part I -Questionnaire on socio-demographic characteristics

Serial No	Questionnaire	Alternative choice for responses	Skip
101	What is your age in completed years?	…… Years	
102	To which ethnic group do you belong?	1. Amhara 3. Guraghe 2. Oromo 4.tigray 5. Other specify	
103	What is your educational status?	1. unable to read and write 2. able to read and write 3.Elementary(1-8)grade 4. high school(9-12) 5. collage and above	
104	What is your occupation?	1.Housewife 4.privetemployer 2.Student 5.Merchant 3. Government employer 6.Dayilylaborer 7. Other specify	
105	What is your religion?	1. Orthodox 3.Protestant 2. Muslim 4. Catholic 5. Other specify	
106	What is your marital status?	1. Single (never married) 3. Divorced 2. Married 4. Widowed 5. Other specify	.
107	History of Pregnancy	0. No 1.Yes	
108	Family size	Total _____	
109	Monthly income	————Ethiopian birr	

Part two: Question about knowledge and health service information related on TT immunization

Serial No	Questionnaire	Alternative choice for responses	Skip
201	Do you heard about TT vaccination	0. No 1. Yes	
202	If yes to above question, from where do you heard	1. Community members 2. health workers 3.from mass media 4.school 5 .other	
203	Source of information for TT Immunization taken	1. Card 3. both history& Card 2. History 4. Other specify	
204	Immunization status(Dose)Total	1. TT1 2. TT 2 3. TT3 4. TT4 5. TT5 6. Other specify	
205	Place of TT1 vaccine given	1. Health Post 3. Hospital 2. Health Centre 4. Home/Out reach 5. Private clinic 6. Other specify	
206	What is the importance of TT Vaccine	1. To protect self alone from Tetanus 2. To protect new born alone during pregnancy &delivery from Tetanus 3. To protect both, self and child from tetanus 4.I don't know 5 .other	
207	How many TT injections is the woman supposed to receive to be fully protected in life?	1. Once 2.Twice 3. three times 4.four times 5.five times 6.I don't know	
208	Do you know the time interval between each TT injections (schedule)?	0. No 1. Yes	

Part III Question about dropout of women from TT vaccination

Ser.no	Questionnaire	Alternative choice for responses	Skip to code
301	Are you dropout TT vaccination	0. No 1. Yes	
302	Dropped TT dose	1. TT2 2. TT3 3. TT4 4. TT5	

Reasons for TT vaccine dropout

1. Family problem
2. being busy
3. Perception that staff are unfriendly
4. Do not know the time of TT vaccination
5. No active follow up of defaulters
6. fear of side effect
7. Postponed time of immunization until another time
8. No faith in immunization
9. frequency of health visits are limited
10. rumors
11. Cultural belief
12. Misconceptions
13. Forgetting
14. Other……..

Annex II:የአማሪኛ ጥያቄዎች

ጅማ ዩኒቨርስቲ

ጤና ሳይንስ ኮሌጅ

የነርሲንግናሚድዋይፈሪ ትምህርት ክፍል

በአማራ ክልል በሰሜን ሸዋ ዞን በደብረብርሀን ከተማ የመንጋጋ ቆልፍ በሽታ ክትባት ማቋረጥና ተያያዥነት ያላቸው ጉዳዮችን ለማጥናት የተዘጋጀ መጠይቅ ::

የስምምነት ቅጽ

ስሜ----------ይባላል::በደብረብርሀን ከተማ በመዉለጃ የእድሜ ክልል ዉስጥ ባሉ ሴቶች የመንጋጋ ቆልፍ በሽታ የክትባት ማቋረጥና ተያያዥነት ያሊቸው ጉዲዮች ላይ እየተካሄደ ባለው ሰይንሳዊ ጥናት ውስጥ የጥናቱ ቡድን አባል በመሆን በመስራት ላይ እገኛለሁ:: ለዚህ ዓላማ ሲባል የተዘጋጁትን ጥቂት ጥያቄዎች በመመለስ እርሶዎ እንዲተባበሩን እንጠይቃለን በአጠቃሊይ መጠይቁ ከ 30 ደቂቃ በላይ እንደማይወስድ እገልጽልዎታለሁ::የሚሰጡት መልስ በሚስጥርነት የሚያዝ ሲሆን ስምም ሆነ አድራሻ ተመዝግቦ አይያዝም::በጥናቱ የመሳተፍ መብትዎ የተጠበቀ ሲሆን እንደዚሁም በማንኛውም ጊዜ አለመሳተፍና መልስ ሊሰጡባቸው የማይፈልጉ ጥያቄዎች ካሉ አለመመለስ ይችላሉ::

ሆኖም የሚሰጡት እውነተኛ መልስ በመንጋጋ ቆልፍ በሽታ ክትባት መቆረጥ ዙሪያ ያሉ ዋና ዋና እንቅፋቶችን ለማወቅና የክትባት አገልግሎቱን የበለጠ ለማሻሻል ትልቅ ጠቀሜታ እንዳለው ላረጋግጥልዎት እወዲሁ::በመጨረሻም ለሚሰጡት መልስ ከልብ አመሰግናለሁ ::

01. በዚህ ጥናት ላይ ለመሳተፍ ፍቃደኛ ኖዎት0=አይደለሁም 1=አዎ--- (መልስዎ አይደለሁም ከሆነ መጠየቁን ያቁሙ)
02. የተመረጠው መኖሪያ ቤት ውስጥ እዴሜቸው ከ 15-49 አመት የሚሆኑ ሴቶች 0 የሉም 1=አሉ------(መልስዎ የሉም ከሆነ መጠየቁን ያቁሙ)
03. የመጀመሪያ ዙር የመንጋጋ ቆልፍ በሽታክትባት ዎስደዋል 0 አልወሰድኩ 1=አዎ----ም(መልስዎ አልወሰድኩም ከሆነ መጠየቁን ያቁሙ)
04. የተሳታፊ መኖሪያ ቦታ ቀበሌ--------የቤት ቁጥር
05. የመጠይቁ ቁጥር…….

የጠያቂዉ ስም…….. ፊርማ……. የተቆጣጣሪዉ ስም…… ፊርማ……. የመጠይቁ ቀን ……..

የጥናቱ ባለቤት ስልክ ቁጥር0921126875 ኢሜል kelemdesta2015@gmail.com.

ክፍል አንድ ስለ ግልና ማህበራዊ ጉዳዮች የሚመለከቱ ጥያቄዎች

ተ.ቁ	ጥያቄ	የምርጫ ቁጥሮች ላይ በማክበብ ወይም በክፍት ቦታዉ ላይ በመጻፍ አሳዩ፡፡	እለፍ ወደ ሚቀጥለዉ ተ.ቁ
101	እድሜሽ ስንት ነው?	_____ዓመት	
102	ብሄርሽ ምንድ ነው?	1.አማራ 3.ጉራጌ 2.ኦሮሞ 4.ትግራይ 5.ሌላ ካለ ይጠቀስ	
103	ከፍተኛ የትምህርት ደረጃሽ ስንት ነው?	1መፃፍና ማንበብ የማይችል 4.ሁለተኛ ደረጃ ት/ቤት(9-12) 2. መፃፍና ማንበብ የሚችል 3.አንደኛ ደረጃት/ቤት(1-8) 5. ከፍተኛ የት/ት ተቋም ና ከዚያ በላይ	
104	ስራሽ ምንድን ነዉ?	1.የቤት እመቤት 4.የግል ተቀጣሪ 2. ተማሪ 5.ንግድ 3.የመንግስት ሰራተኛ 6.የቀን ሰራተኛ 7.ሌላ ካለ ይጠቀስ	
105	የየትኛው ሀይማኖት ተከታይ ነሽ?	1.ኦርቶዶክስ 3.ፕሮቴስታንት 2.ሙስሊም 4.ካቶሊክ 5.ሌላ ካለ ይጠቀስ	
106	የጋብቻ ሁኔታሽ ምን ይመስላል?	1 ያላገባች 3. አግብታ የፈታች 2. ያገባች 4. ባሏ የሞተባት 5.ሌላ ካለ ይጠቀስ	
107	አርግዘዉ ያዉቃሉ	0. አላዉቅም 1.አዎ	
108	የቤተሰብ ብዛት	————ሰዉ	
109	በወር የምታገኙት ጠቅላላ ገቢያችሁ ስንት ነው?	……የኢትዮጵያ ብር	

ክፍል ሁለት ተጠያቂዎች ስለ መንጋጋ ቆልፍ በሽታ ክትባት ያላቸዉን ግንዛቤ ና ከጤና አገልግሎት ጋር የሚያያዙ ጥያቄዎች

ተ.ቁ	ጥያቄ	የምርጫ ቁጥሮች ላይ በማክበብ ወይም በክፍት ቦታዉ ላይ በመጻፍ አሳዩ፡፡	እለፍ ወደ ሚቀጥለዉ ተ.ቁ
201	ስለመንጋጋ ቆልፍ በሽታ ክትባት ሰምተዉ ያዉቃሉ	0. አላዉቅም 1.አዎ	
202	መልሰዎ አዎ ከሆነ ከየት ሰሙ	1.ከማህበረሰቡ 2.ከጤናሰራተኛ 3.ከመገናኛ ብዙሀን 4.ከት/ቤት 5. ሌላ ካለ ይጠቀስ	
203	የመንጋጋ ቆልፍ በሽታ ክትባትን ለመዉሰዳቸዉ ማስረጃ	1. የክትባት ካርድ 3. በሁለቱም 2. በአፍ/ያለካርድ 4.ሌላ ካለ ይጠቀስ	
204	የክትባት ሁኔታ በዙር(ጠቅላላ የክትባት ብዛት)	1.አንድ ጊዜ 3.ሶስት ጊዜ 2.ሁለት ጊዜ 4.አራት ጊዜ 5. አምስትጊዜ	
205	የመጀመሪያ ክትባት የተሰጠበት ቦታ	1.ጤና ኬላ 3.ሐኪም ቤት 2.ጤናጣቢያ 4.ቤት/መስክ 5.የግል ጤና ተቋም 6.ሌላ ካለ ይጠቀስ	
206	የመንጋጋ ቆልፍ በሽታ ክትባት ጥቅም ምንድን ነዉ	1.ራስን ከየመንጋጋ ቆልፍ በሽታ ለመ ጠበቅ 2.በርግዝናና በወሊድ ጊዜ ህፃኑን ከየመንጋጋ ቆልፍ በሽታ ለመ ጠበቅ 3. ራስንናህፃኑን ከየመንጋጋ ቆልፍ በሽታ ለመ ጠበቅ 4.አላዉቅም 5.ሌላ ካለ ይጠቀስ	
207	አንዲት ሴት በህይወት ዘመኗ የመንጋጋ ቆልፍ በሽታን ለመከላከል ሰንት ጊዜ መከተብ አለባት	1.አንድ ጊዜ 2.ሁለት ጊዜ 3.ሶስት ጊዜ 4. አራት ጊዜ 5.አምስት ጊዜ 6.አላዉቅም	
208	በእያንዳንዱየመንጋጋ ቆልፍ በሽታ ክትባት መካከል ያለዉን የጊዜ ገደብ ያዉቃሉ	0. አላዉቅም 1.አዎ	

ክፍል ሶስት የመንጋጋ ቆልፍ በሽታ ክትባትን ያቋረጡ ሴቶችን የሚመለከቱ ጥያቄዎች

ተ.ቁ	ጥያቄ	የምርጫ ቁጥሮች ላይ በማክበብ ወይም በክፍት ቦታዉ ላይ በመጻፍ አሳዩ፡፡	እለፍወደ ሚቀጥለዉ ተ.ቁ
301	የመንጋጋ ቆልፍ በሽታ ክትባትን አቋርጠዋል	0. አላዉቅም 1.አዎ	
302	የተቋረጠዉ የመንጋጋ ቆልፍ በሽታ ክትባት ዙር	1.ሁለተኛዉ 3 አራተኛዉ 2.ሶስተኛዉ 4. አምስተኛዉ	
የመንጋጋ ቆልፍ በሽታ ክትባትን ያቋረጡበት ምክነያቶች			
1. የቤተሰብ ችግር 2. በስራ መወጠር 3. የጤና ሰራተኞቹ እንደጓደኛ አያዩም ብሎ ማሰብ 4. የክትባቱን ጊዜ አለማወቅ 5. ለሚያቋርጡት ፈጣን የሆነ ክትትል አለመኖር 6. የጎንዮሽ ጉዳቱን መፍራት 7. የክትባቱን ቀን ለሌላ ጊዜ ማስተላለፍ 8. በክትባቱ እምንት ማጣት 9. ወደ ጤና ተቋም የሚኬድባቸዉ ጊዜያት ዉስን መሆን 10. አሉባልታ 11. የባህል ተፅኖ 12. ስለ ክትባቱ የተሳሳተ አመለካከት መኖር 13. መርሳት 14. ሌላ ካለ ይጠቀስ……..			