

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMEN OF NURSING

TITLE: - CAREGIVERS /MOTHERS LEVEL OF KNOWLEDGE OF NEONATAL DANGER SIGN AND ITS ASSOCIATED FACTORS IN WOLKITE UNIVERSITY SPECIALIZED AND TEACHING HOSPITAL AND ATTAT PRIMARY HOSPITAL, GURAGHE ZONE, SNNPR, ETHIOPIA 2023

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A RESEARCH TO BE SUBMITTED TO WOLKITE UNIVERSITY COLLEGE OF MEDICINE AND HEALTH SCIENCE DEPARTMENT OF NURSING FOR THE PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE BACHELOR DEGREE IN NURSING

August, 2023

Wolkite, Ethiopia

WOLKITE UNIVERSITY COLLEGE OF MEDICINE AND HEALTH SCIENCE

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ACKNOLEDGEMET

First of all we would like to thanks almightily God for giving us the spirit and strength all the way through and who made as capable to do this proposal. We feel greatly indebted to Wolkite University College of medicine and health sciences Department of Nursing to support and build capacity. We are very much intended to our advisor Mr, Bogale (BSc, MSc) and Ms, Hagere (BSc, MSc) who is always behind of us during the course of proposal preparation with necessary knowledge, information, encouragement and helping. In addition we would like to express our appreciation to the study hospital, participant mothers and facilitators cooperation. Finally, we would to express our gratitude and special thanks to our parents for their valuable support during study start from initial to the end.

Contents

ACKNOLEDGEMET iii
ABSTRACT ..... - 1 -
CHAPTER ONE ..... - 2 -
INTRODUCTION ..... - 2 -
1.1 Background ..... - 2 -
1.2 STATEMENT OF THE PROBLEM ..... - 3 -
1.3 SIGNIFICANCE OF THE STUDY ..... - 4 -
CHAPTER TWO: ..... - 5 -
LITERATURE REVIEW ..... - 5 -
2.1. Magnitude of Caregivers/Mothers' Knowledge about neonatal danger signs ..... - 5 -
2.2. Factors associated with mothers/ caregivers level of knowledge of neonatal danger sign ..... - 7 -
2.3. Conceptual frame work ..... - 11 -
CHAPTER THREE: ..... - 12 -
OBJECTIVES ..... - 12 -
3.1 General objective: ..... - 12 -
3.2 Specific objective: ..... - 12 -
CHAPTER FOUR: ..... - 13 -
METHODS AND MATERIALS ..... - 13 -
4.1 Study area ..... - 13 -
4.2 Study period ..... - 13 -
4.3 Study Design ..... - 13 -
4.4 Population and sample ..... - 14 -
4.4.1 Target population: ..... - 14 -
4.4.2 Source population: ..... - 14 -
4.4.3 Study population ..... - 14 -
4.5. Inclusion and Exclusion criterion ..... - 14 -
4.5.1 Inclusive criteria ..... - 14 -
4.5.2 Exclusive criteria ..... - 14 -
4.6. Sample size determination and sampling technique: ..... - 14 -
4.6.1 Sample size determination: ..... - 14 -
4.6.2 Sampling procedure ..... - 16 -

4.7 Study variables: ..... - 16 -
4.7.1. Dependent variable ..... - 16 -
4.7.2. Independent variable ..... - 16 -
4.7.3. Operational Definition ..... - 17 -
4.8 Data collection instrument and procedures ..... - 17 -
4.8.1 Data collection instrument: ..... - 17 -
4.8.2 Data collection method: ..... - 17 -
4.8.3 Data collectors: ..... - 18 -
4.8.4 Data quality control ..... - 18 -
4.8.6 Data processing and analysis: ..... - 18 -
4.8.7 Ethical Consideration ..... - 19 -
4.8.8 Dissemination plan ..... - 19 -
CHAPTER 5 ..... - 20 -
Result ..... - 20 -
5.1 Socio-demographic characteristics ..... - 20 -
5.2 Maternal health services and Obstetrics history of the respondents ..... - 22 -
5.4 Mothers' knowledge about neonatal danger sign ..... - 23 -
5.4 Factors associated with maternal knowledge about neonatal danger signs ..... - 24 -
CHAPTER 6 ..... - 26 -
6. Discussion ..... - 26 -
CHAPTER 7 ..... - 28 -
7. 1 Conclusion ..... - 28 -
7.2 RECOMMENDATIONS ..... - 28 -
7.3 Strength and limitation o of the study ..... - 29 -
Reference ..... - 30 -
ANNEX 1: ..... - 33 -

List of table

Table 1: Socio-demographic characteristics of mothers in WKUSTH and Attat primay hospital, Guraghe zone, SNNPR, Ethiopia, 2023 (N=283).....- 21 -
Table 2: Obstetric characteristics of mothers in WKUSTH and Attat primary hospital, Guraghe zone, SNNPR, Ethiopia, 2023 (n=283).....- 22 -
Table 3: Distribution of mothers by their knowledge about neonatal danger signs in WKUSTH and Attat primary hospita, Guraghe zone, SNNPR, Ethiopia, 2023 (N=283).....- 23 -
Table 4: Bivariate and multivariate logistic regression for factors associated with mothers knowledge about neonatal danger signs in WKUSTH and Attat primary hospital, Guraghe zone, SNNPR, Ethiopia, 2023 (N=283).....- 25 -

List of figures

Figure 1: conceptual l frame work of the Study conducted on caregivers/mothers level of knowledge of neonatal danger signs and its associated factors in WKUSTH and Attat primary hospital, Guraghe zone, SNNPR, Ethiopia, 2023 .....- 11 -

ACRONYMS AND ABBREVIATIONS

EDHS	Ethiopia Demographic and Health Survey
ENC	Essential New-born Care
ETB	Ethiopian Birr
HC	Health Centre
IMNCI	Integrated Management of Neonatal and Childhood Illness
IMR	Infant Mortality Rate
MDG	Millennium Development Goal
NMR	Neonatal Mortality Rate
WHO	World Health Organization
WKUSTH	Wolkite University Specialized and Teaching Hospital

ABSTRACT

Background: Globally 10 million children die annually before their fifth birthday, most of them in the neonatal period. More than 98% of these deaths occur in developing countries. One of the way of reducing the new-born morbidity and mortality is early recognition of sick newborn & the danger signs of illness and initiation of prompt treatment.

Objective: To assess knowledge of mothers about neonatal danger sign and its associated factors among months who visit WKUSTH and Attat primary hospital for PNC Guraghe zone, SNNP, Ethiopia, 2023

Method: Institutional based cross-sectional study design was employed to assess the caregivers /mothers level of knowledge of neonatal danger signs and its associated factors in WKUSTH and Attat primary from May 25/2023 to June 25/2023. Face to face interview using structured and pretested questionnaires was employed. By Systematic random sampling technique, 283 caregivers/mothers were selected. The data was coded, cleaned, edited and entered in to Epidata version 4.2 and exported SPSS version 24 for analysis. Bivariate and multivariate logistic regression was used to see the association between dependent and independent variables. Adjusted odds ratio with 95% CI was computed to see the strength of association and those variables ($P < 0.05$) was considered as statistically significant.

Result: The majority (77.4%) of the participant were knows at least one of the ten WHO recognized neonatal danger signs, but only 54.4% (95% CI: 48.4, 60.4) of mothers found to have a good knowledge. Mothers who were aged between 36-45 years were nearly 4.035 times [AOR: 4.035, 95%CI: (2.630, 11.818)] higher to have knowledge about neonatal danger signs as compared to mothers whose age is below 18 years. Similarly, mothers whose husband attain degree and above educational level were nearly 3.301 times [AOR: 3.301, 95%CI:(1.77, 8.16)] to mention at least three neonatal danger signs as compared to mothers whose husbands have no formal education. The odds knowledge of neonatal danger signs were 2.602 among mother who had more than 3 PNC visit [AOR: 2.602, 95%CI: (0.980, 7.408)] as compared to mothers who had one PNC visit. Similarly, the odds of knowledge of neonatal danger signs were nearly 1.623 among mothers who were multigravida [AOR: 1.623, 95%CI: (1.064, 3.846)].

Conclusion: This study shows that more than fifty percent (54.4%) of mothers/caregivers were found to have good knowledge of neonatal danger signs. Improving maternal knowledge about neonatal danger signs is essential for reducing neonatal and infant mortality. Maternal age, husband's higher educational level achievement, multi-gravidity and high exposure to PNC service were the factors that were associated with good maternal knowledge towards neonatal danger sign.

CHAPTER ONE

INTRODUCTION

1.1 Background

Neonatal period refers to the period of less than 28 days after birth(1). A healthy new born is born at term between 37 to 42 weeks, cries immediately after birth, establishes independent respiration, quickly adopts with extra uterine environment. During this time new born must make many physiological and behavioral adaptations to extra uterine life. A new born baby's survival depends on his ability to adapt to an extra uterine environment. New born undergoes a predictable series of events during the first 6 to 8 hours of life(2).

New born is the most critical period of life many complication and deaths may occur. They are at risk for developing illness, health problems and injuries than adults, so continuous observation and constant care from family member is necessary for the survival of new born(3). Early detection of neonatal illness is an important step towards improving new born survival, New born care is highly cost effective because saving the life of a new born baby is associated with survival and productivity of future adults(4).

The major contributors to new born morbidity and mortality are delay in recognizing the new born danger signs; these are the signs which show significant change in the health of new born and require immediate treatment. Common danger signs include poor or no sucking, lethargy or drowsiness, rapid or difficulty breathing, hypothermia and hyperthermia, yellow color of the palms and soles, abdominal distension, bleeding from umbilical cord, diarrhea loose stools or bloody stools, convulsion and vomiting. Assessment of these signs was result in a high overall sensitivity and specificity for predicting the need for hospitalization of a new born in the first week of life(5).

Early identification with prompt and appropriate referral serves as backbone of the programs aiming at reduction in neonatal mortality(6).

Generally, most of the new born deaths can be avoided through simple, affordable interventions, especially in areas with weak health systems and high rates of neonatal morbidity and mortality by requires immediate caregivers recognition of suggestive danger sign in the neonates and visiting

the nearby clinic for early treatment. Trends in Ethiopia society so far recognized mother as caretakers for the majority of neonate(7).

1.2 STATEMENT OF THE PROBLEM

Globally, each year, approximately 2.7 million babies die during the first 28 days of life and another three million are stillborn and eleven new born die every minute before their fifth birth day of life. Neonatal mortality accounts for approximately two-thirds of all infant mortality and 45% of deaths of children aged less than five years (under-five mortality). Although neonatal period is a brief and short period of time, neonatal death during this time contributes for the larger share of under-five mortality rate(8).

Every year an estimated 4 million babies die in the first 4 weeks of life and, Almost all (99%) deaths arise in low income and middle-income countries. The highest numbers are in south-central Asian countries and the highest rates are generally in sub-Saharan Africa(6). In these regions, especially the sub-Saharan, preventable health conditions with access to affordable and simple interventions account for more than half of child deaths (6,9).

Nowadays neonatal mortality rate is very high and facilities for appropriate care of very sick neonates are less. It may take a long time for a sick neonate to reach a hospital. Therefore it is important that they are identified early and referred for appropriate treatment about danger signs. Early identification of a sick new born is difficult. The clinical features are nonspecific for example, whether the illness is of infective or metabolic origin; the signs do not help us in differentiating the cause. Moreover, the distinction between variation of normal behavior and early signs of illness becomes more difficult in low birth weight and preterm infants(2).

Childhood mortality levels are increasing in Ethiopia. According to Ethiopian Demographic Health Survey (EDHS) 2019 Neonatal Mortality Rate are 33 per 1,000 live births. Infant mortality Rate (IMR) is 48 deaths per 1,000 live births and Under-five mortality was 67 deaths per 1,000 live births(10). Most neonatal death take place at home, this indicating that lack early recognition on the danger sign and low treatment seeking practice of mothers (care taker) towards modern health care service(11).

An acceleration of the pace of the progress of under-five and neonatal mortality reduction is urgently required to achieve the sustainable development goal (SDG) target on the child survival particularly in high mortality countries in sub Saharan Africa. A Promise Renewed, aiming for a continued post-2015 focus to end preventable child deaths. With the end of the MDG era, the international community is in the process of agreeing on a new framework –the Sustainable Development Goals (SDGs) which proposed SDG target for child mortality represents a renewed commitment to the world's children: By 2030, end preventable deaths of new born and children under five years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 deaths per 1,000 live births and under-five mortality to at least as low as 25 deaths per 1,000 live birth(8). Therefore, to reduce the incidence of neonatal mortality and morbidity through increasing maternal awareness, adequate information about neonatal danger signs are mandatory.

1.3 SIGNIFICANCE OF THE STUDY

This study was assessed knowledge of mothers about new born danger signs and associated factors. The results of the study was used as base line information to design appropriate policies, strategies, and intervention, which can improve mothers' early recognition of new born danger signs and associated factors to support the maternal and child health service improvement. The study is expected to give insight to the public about neonatal danger sign, used as a tool for decision makers in the study area for improving and developing evidence based intervention. This study can also be an input for further research to be conducted. The beneficiaries of this study can be community, Health officials and other organization who are working in the area.

CHAPTER TWO:

LITERATURE REVIEW

2.1. Magnitude of Caregivers/Mothers' Knowledge about neonatal danger signs

A study conducted in India found that (62%) of mothers had good knowledge. According to this study (40.3%), (22.2%) and 1(13.9%) identified difficulty in breathing, poor sucking and lethargy or unconsciousness as new born danger sign respectively. only (9.7%) and (2.8%) identified convulsion and hypothermia as new born danger sign respectively(13).

Another study which is conducted in Enugu stat, south east Nigeria showed that among 376 mother/or care givers knowledge of more than three of the Ten who recognized danger sign was poor (0.0-30.3%). Majority of the mothers had knowledge of one (i.e. fever) WHO recognized danger sign (95.2%)(14).

A study conducted in north central of Ethiopia on mother's level of knowledge about neonatal danger sign and associated factors showed that out of 363 participant mothers with good knowledge of neonatal danger signs was 61.7%(15).

A study conducted in Mekelle city on awareness and associated factor towards neonatal danger signs showed that about half (50.6%) mothers attending public health institution had an awareness of at least three neonatal danger signs. Those three commonly reported neonatal danger signs are fever, persistent vomiting and poor sucking. According to this study the least known neonatal danger sign which was report by less than 5% of the study subject were umbilical redness, eye discharge, yellow palms/soles/eyes(16).

A study conducted in North West of Ethiopia on level of mother's knowledge about neonatal danger sign and associated factors showed that mothers who had knowledge of three or more neonatal danger sign (good knowledge) were found to be 18.2%(17).

A study conducted in Addis Ababa, Ethiopia on knowledge about neonatal danger sign, from 306 of the total respondent's about 280 mothers knew at least one neonatal danger sign. The most

common mentioned neonatal danger sign were diarrhea 58.9%, persistent vomiting, 43.9%, and fever, 32.9 %. About 121(39.5%) of mother had seen a sick neonate with common manifestation of fever and health care was thought for 65.3% of sick neonates. Overall, most of the respondents 59.8% were a moderately knowledgeable of neonatal danger sign while 24.2% were highly knowledge, and 16% were poorly knowledgeable(18).

A study conducted in Checha District, Southern Ethiopia Mother's Level of Knowledge on Neonatal Danger Signs 50.3% (95%CI: 46.4%, 54.2%) of mothers had good level of knowledge who knows three or more neonatal danger signs out of WHO stated 10 neonatal danger signs(19).

Another study conducted in Gidan district health center, north Wollo showed that about 48.1% of mothers participate in the study had good level knowledge on neonatal danger sign(20).

According to study conducted in Wolaita zone, participants, about 61.1% of the mothers had good knowledge regarding to neonatal danger signs and 54.9% of the mothers mentioned diarrhea as neonatal danger signs(21).

A study conducted in Wolkite town SNNPR on level of mother's knowledge about neonatal danger sign and associated factors showed that mothers who had knowledge of three or more neonatal danger sign (good knowledge) were found to be was 31.32%(22).

2.2. Factors associated with mothers/ caregivers level of knowledge of neonatal danger sign

Socio demographic Factors:

Knowledge about danger sign is determined by multiples of factors. Mothers educational status, most recent baby developed danger signs, exposure to media, higher parity, birth preparedness, mothers decision making power, husband involvement in MCCH, maternal age, socio demographic and socio economic status were significant predictors of mothers knowledge of neonatal danger signs and health care seeking for neonatal danger signs.

Study conducted in China showed that mothers older than 25 years old were 3.8 times more likely to have good knowledge when comparing with mothers younger than 25 years old(17). Studies conducted in Bangladesh showed that those mothers who had middle age were 1.67 times more knowledgeable(4). According to study conducted Sheko district, mothers aged 29-40 years have 2.4 times more likely to have good knowledge of neonatal danger signs than those mothers aged 18-28 years(23). According to study conducted in Woldia, Women whose age 18-35 years were 33% more likely to be knowledgeable as compared to mothers who are < 18 years old(24). According Study conducted in Addis Ababa Mothers whose age 25-34 were 2.99 times and 35-44 were 4.97 times more knowledgeable as compared to mothers who were younger than these age groups(18).

Study conducted in Ethiopia showed that the odds of having knowledge on neonatal danger sign were 3.86 times more likely among women having higher educational level than those who had no education(18). Study conducted in Dire Dawa showed that mothers who had received education on neonatal danger signs from health care professionals were 7 times more likely to have good knowledge as compared to those had not received education on neonatal danger signs(16). According to study conducted in Debretabor the odds of having adequate knowledge of neonatal danger signs among mothers who attend diploma and above education were 2.88 times more than those who had no formal education(25). Study conducted in Sheko district showed that the odds of having knowledge on neonatal danger sign were 2.7 times more likely among mothers with primary and above level of educational status than those who had no education(23). According to

study conducted in Woldia, mothers who had diploma and above education level were three times and more than three times to be knowledgeable about neonatal danger signs as compared to mothers who can't read and write(24).

Study conducted in Woldia showed that mothers who live in the urban area were 22% more likely to have knowledge about neonatal danger signs as compared to those living in rural area(24).

According to study conducted in Dire Dawa, mothers employees government institution were 2 times more likely to have good knowledge than those who were house wife(16).

Study conducted in Harar showed that, mothers whose husband is educated to college and above were 4.95 times more likely to have good knowledge about neonatal danger signs as compared to their counterpart. Similarly, study conducted in Dire Dawa showed that, mothers whose husband is educated to secondary and above were 2.3 times more likely to have good knowledge about neonatal danger signs as compared to their counterpart (16).

A study conducted in Ethiopia showed that women who had exposure to mass media were 1.69 times more likely knowledgeable on newborn danger signs than those did note have exposure to mass media(18). According to study conducted in Debretabor, mothers who had a mass media exposure were 2.58 times more likely to have had adequate knowledge of danger signs when compared to mothers who did not have exposure to mass media(25). According to study conducted in Woldia, mothers who had a mass media exposure werev3 times more likely to have had adequate knowledge of danger signs when compared to mothers who did not have exposure to mass media(24). According to study conducted in Addis Ababa mothers who had source of information from health professionals were 4.54 times more likely to be knowledgeable as compared to their counterpart(7).

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Obstetric factors:-

Study conducted in china showed that mothers who attended more than four ANC follow up were 4.3 times more likely to have good level of knowledge of neonatal danger sign than those mothers who attended less than four ANC visit during pregnancy(17). According to study conducted in Ethiopia, mothers who attended ANC follow up were 2.7 times more likely to have good knowledge on neonatal danger signs than mothers who have no ANC follow up. A study conducted Dire Dawa showed that mothers who attended ANC 4 visit and more were 4.3 times more likely to have good knowledge when compared to those mothers who had not attended ANC during the last pregnancy(16). Study conducted in sheko distinct showed that the odds of having knowledge on neonatal danger sign were3.6 times more likely among mothers who had four or more ANC visit than those mothers with fewer than four ANC visit during pregnancy. Study conducted in Woldia showed that, mothers who attended ANC during the last pregnancy were two times more likely to have good knowledge about neonatal danger signs as compared to those who did not follow(24).

According to study in Ethiopia, Participants who had three and more than three PNC visit during the last delivery were 3.72 times more likely to be knowledgeable on neonatal danger signs. Likewise, participants who had education about neonatal danger signs during PNC visit were 2.77 times more likely to be knowledgeable to identify neonatal danger sign as compared to those mothers who had no education during PNC visit(18). Study conducted in sheko distinct showed that, mothers who had a history of PNC after birth have 2.3 times higher odd of having knowledge on neonatal danger signs than mothers who had no history of PNC(23).

According to study conducted in Ethiopia, mothers who had more than three parity were 5.34 times more likely to be knowledgeable as compared to their counterpart(18). According to study conducted in Debretabor, mothers who give birth more than four times were2.46 times more likely to have good knowledge than those mother who deliver only once(25).

According to study conducted in Dire Dawa mothers whose infant developed danger sign were 3.5 times more likely to have good knowledge than those did not(16). Study conducted in Debretabor showed that the odds of having good knowledge of neonatal danger signs among mothers whose

current baby developed danger signs were 1.83 times more than those mothers did not have current baby developed danger signs(25).

Study conducted in Ethiopia showed that mothers who had birth preparedness on identification of skilled birth attendant during pregnancy had 2.25 times more knowledge on neonatal danger signs as compared to their counterparts(18). Study conducted in Debretabor showed that mothers who had adequate birth preparedness were 9 times more likely to have good knowledge of neonatal danger signs when compared with their counterparts(25).

According to study conducted in Debretabor mothers who got partner/husband involvement in IMNCI related activities were 1.5 times to have good knowledge of neonatal danger signs when compared to mothers who did not have husband /partner involvement in MNCH(25).

2.3. Conceptual frame work

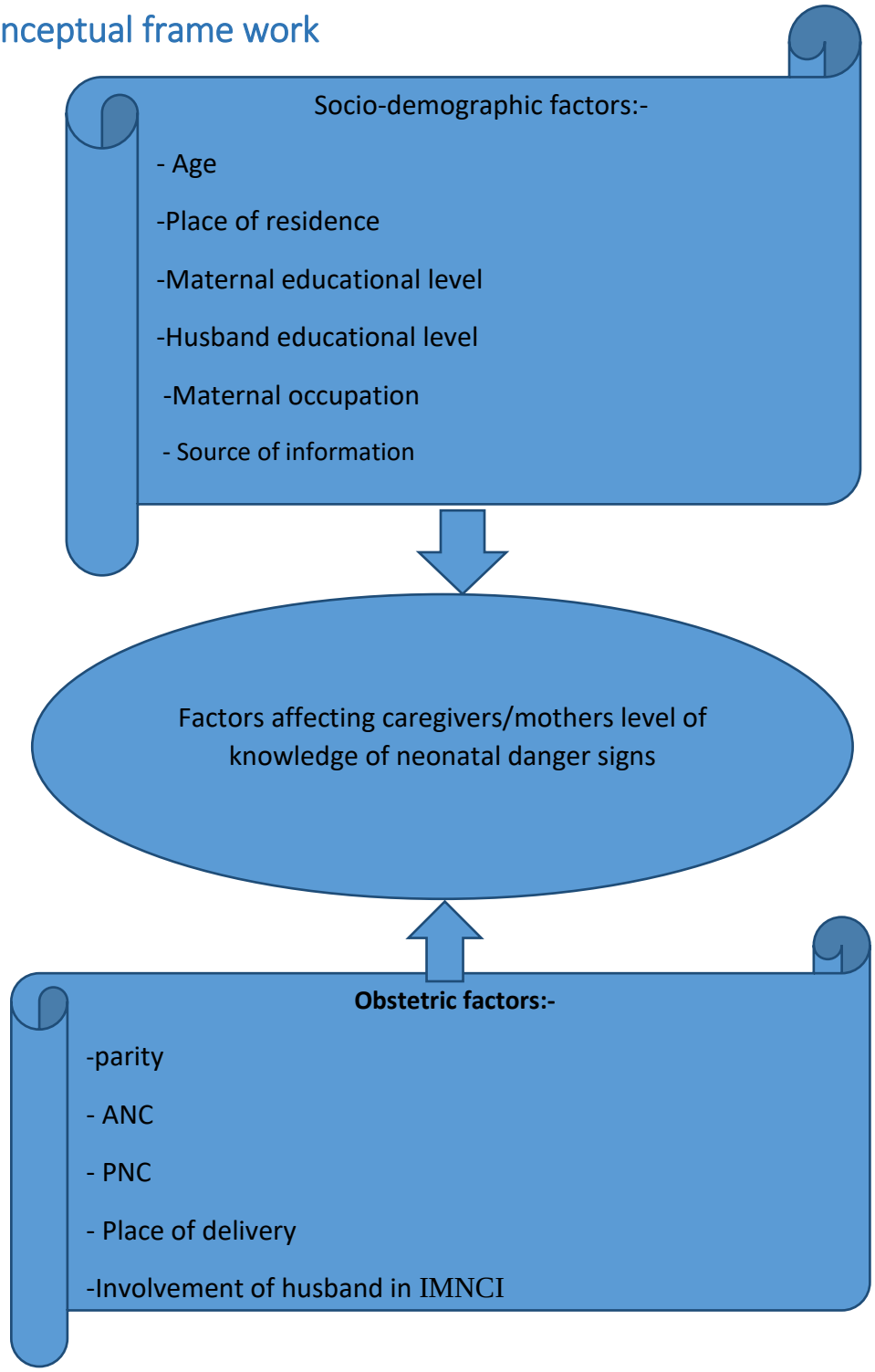


Figure 1: conceptual l frame work of Study conducted on caregivers/mothers level of knowledge of neonatal danger signs and its associated factors in WKUSTH and Attat primary hospital, Guraghe zone, SNNPR, Ethiopia, 2023 (22, 25).

CHAPTER THREE:

OBJECTIVES

3.1 General objective:

- To assess knowledge of mothers about neonatal danger sign and its associated factors among months who visit WKUSTH and Attat primary hospital for PNC Guraghe zone, SNNP, Ethiopia, 2023

3.2 Specific objective:

- To determine knowledge of mothers about neonatal danger among months who visit WKUSTH and Attat primary hospital for PNC Guraghe zone, SNNP, Ethiopia, 2023
- To identify factors associated with knowledge of neonatal danger among months who visit WKUSTH and Attat primary hospital for PNC Guraghe zone, SNNP, Ethiopia, 2023

CHAPTER FOUR:

METHODS AND MATERIALS

4.1 Study area

The study was conducted in Ethiopia, SNNP, Guraghe zone, Attat primary hospital and WUSTH. Attat primary hospital is found about 175km to the south of the capital city of Ethiopia Addis Ababa along Jimma road which founded by Anna Dengel and it is about 17 km from wolkite town. The hospital provides service services to both inpatients and out patients. It has 65 beds. In addition, there are 48 beds in the maternity waiting area, 13 beds in the nutrition unit, 3 labor beds and 2 delivery beds that are used as over flow beds.

This study also conducted in Gubre town WUSTH, southern region, south west Ethiopia which is found around 167km far from the capital city of Ethiopia Addis Ababa. This hospital service the community as well as the university for the purpose of education for student of medicine and other health science collage. This hospital has around 63 male and 61 female nurses, 9 male and 19 female midwife, 9 male and 3 female health officers, 17male and 19 female laboratories, 13 male and 14 female pharmacists, 5 male anesthesiologists, 2 male and 1 female radiologists, 2 male environmental scientists at this hospital.

4.2 Study period

The study was conducted from May 25/2023 to June 25/2023

4.3 Study Design

Institution based cross sectional study design was done to assess the knowledge of neonatal danger sign and associated factors among mothers who give birth in the last six month who visit public health facility for immunization in WKUSTH and Attat primary hospital found in Guraghe zone.

4.4 Population and sample

4.4.1 Target population:

Guraghe zone

4.4.2 Source population:

Mothers who had children aged less than 6 month

4.4.3 Study population

Mothers who had children aged less than 6 month and attending WKUSTH and Attat primary hospital for immunization during data collection period.

4.5. Inclusion and Exclusion criterion

4.5.1 Inclusive criteria

All mothers those who had children less than 6 month of age and attending WKUSTH and Attat primary hospital for immunization during data collection period.

4.5.2 Exclusive criteria

Those women who had difficulty in communication due to severe mental disorder and severely ill and unable to respond

4.6. Sample size determination and sampling technique:

4.6.1 Sample size determination:

The required sample size (n) of the study is calculated by using the formula to estimate a single population proportion by considering the following assumptions: 95% confidence level, proportion (p) from finding 31.32% of mothers knew at least one neonatal danger sign from a study conducted in Wolkite town [] and 5% marginal error.

$$n = \frac{(Z)^2 p\,(1-p)}{W^2}$$

Where n= minimum sample size required for the study

Z= standard normal distribution (Z=1.96) with confidence interval of 95% and α=0.05

P=prevalence/ population proportion (p= 0.3132)

$_0$w=is a tolerable margin of error (w=0.05)

Then $n = \frac{(1.96)^2\,(0.3132)\,(1-0.3132)}{(0.05)^2} = \frac{330.54}{} \approx \mathbf{331}$

Since the total number of our study population is less than 10,000, i.e. 1145, we need correction formula.

$n = n_o/\,(1+n_o/N)$

$=331/\,(1+331/1145)$

$= 256.77 \approx 257$

Then finally we considering 10% non- respondent from the participant

i.e. $n_f = n+10/100*n$

$=257+10/100*257$

$=282.7 \approx 283$

4.6.2 Sampling procedure

Study participants was selected by using systematic random sampling technique until required sample size obtained during the actual data collection period. In 2014 Etc. the total number of mother come to Attat hospital for child immunization are 70 and the total number of mother come to WKSTH for child immunization are 1075. The sum total was 1145 mothers. Then, we calculate k value by using general formula:

K=N/n

K=1145/283=4.046≈ 4

Where: N = total number of mothers came to WKUSTH and Attat primary hospital.

n = sample size

K= sampling interval

Then we were selected "i" by using lottery method from the number (1, 2, 3 and 4) and the selected number was 3.

4.7 Study variables:

4.7.1. Dependent variable

- Knowledge about neonatal danger sign.

4.7.2. Independent variable

Socio demographic factors:

- Residence
- age of the mother
- educational level of the mother
- educational level of husband
- occupational
- income

- family size and
- source of information

Obstetric factors

- gravity
- parity
- number of ANC follow-up
- number of PNC follow-up
- Number of children
- Place of delivery
- Husband involvement in IMNCI

4.7.3. Operational Definition

Good knowledge neonatal danger sign: Mother who mention three and above from the ten key danger sign for neonatal(22).

Poor knowledge on neonatal danger sign: Mothers who were capable of mention two and less key danger signs of neonatal (22).

4.8 Data collection instrument and procedures

4.8.1 Data collection instrument:

Structured interviewer-administered questionnaire was used to collect the data which is adapted from relevant literatures and modified to local context in such a way that all the variables to be assessed was include. First the questionnaires was prepared by English and then translated in to Amharic then retranslated back to English by other individual to check for any inconsistencies.

4.8.2 Data collection method:

Data was collected through face to face interview. The questions and statements are arranged according to particular objectives that they can address. Then the first draft of questioner is submitted to the advisors and colleagues for comments. The valuable suggestions have considered to improving the instrument. Accordingly, redundancy, vagueness and logical flow of the questions was correct. After extensive version, the final version of the English questionnaire was

translated to Amharic version, then back to English to ensure understand ability and message consistency and then it was pre tested on some caregivers/mothers who aren't included in the study.

4.8.3 Data collectors:

Data was collected through interviewer administered structured questionnaire. The data collectors was collected the information by face to face interview of mother. Before interviewing the mothers, data collectors gave information about the aim of the study, purposes, possible risks and benefits, the right of refusal to participate in the study and after information was collected the confidentiality issues. Then that mother who willing and who signed in the voluntary consent was interviewed.

4.8.4 Data quality control

Data was collected by group members and pretesting of the questionnaires was done before the actual data collection. The BSc, MSc advisors was supervise on daily basis for completeness and consistence of the field questionnaires. During analysis, data was cleaned carefully; missing values was handled not to be excluded in analysis by checking again and again through data exploration. The questionnaire was pre-tested among 5% (14) of the study subjects in WUSTH and the necessary modifications and correction were made to standardize and ensure its validity.

4.8.6 Data processing and analysis:

The data was coded, cleaned, edited and entered in to EPI INFO version 4.2 and exported and analyzed by SPSS version 24. The analysis was done by computing proportions and summary statistics. Then the information was presented by using simple frequencies, tables and pie chart. Binary logistic regression model was used. Bivariate analysis and multivariate analysis was computed to see the association between each independent variables. The assumptions for binary logistic regression was checked and p values below 0.25 in the bivariate analysis were considered as candidate variable for multivariate logistic regression to control possible confounders. The direction and strength of statistical association was measured by odds ratio with 95% CI. Adjusted odds ratio along with 95% CI was estimate to identify factors for neonatal danger sign by using multivariate analysis in the binary logistic regression. In this study P-value < 0.05 was considered to declare a result as statistically significant.

4.8.7 Ethical Consideration

Ethical clearance was obtained from research committee of Wolkite University College of medicine health sciences department of Nursing. A formal letter from Wolkite University was submitted to Attat primary hospital and WUSTH, health office and concerned bodies to obtain their co-operation. The purpose of the study was explained to the study participants. At the time of data collection, a written consent was taken from the participants to confirm whether they are willing to participate. Those not willing to participate was given the right to do so. Confidentiality of responses was also ensure throughout the research process.

4.8.8 Dissemination plan

The findings of this study will be presented to WKU College of medicine health science Department of Nursing and the hard copy will be available in WKU library. It will be also disseminating to health facility in Wolkite town and as well as concerned body.

CHAPTER 5

Result

The total 283 mothers selected to participated in the interview were completed the interview and making the response rate of 100%.

5.1 Socio-demographic characteristics

From the 283 participant, 191(67.5) were lives in urban area. The mean age of the respondents was 28(SD ± 5.44) years. One hundred two (36%) of the mothers had primary and forty one (14.4) of them had diploma and above as their highest educational achievement. One hundred thirty three (47 %) of the mothers were house wife and forty three (15.2) of them were civil servant. (Table 1).

Out of the total 283 respondents, 219 (77.4%) of them had information (heard) about neonatal danger sign. The most common 183(64.7%) source of information about neonatal danger signs was health professionals. 151(53.3%) of the respondent heard about it from neighbors, 130 (45.9%) from social media, 78(27.5%) from past experience and 28(9.9%) from reading materials.

Table 1: Socio-demographic characteristics of mothers attending WKUSTH and Attat primary hospital, Guraghe zone, SNNPR, Ethiopia, 2023 (N=283)

Variable	Categories	Frequency	Percentage
Residence	Urban	191	67.5
	Rural	92	32.5
Age	<18	10	3.53
	18-25	90	31.8
	25-35	147	51.9
	36-45	36	12.7
Educational status	Illiterate	43	15.2
	Primary	102	36
	Secondary	97	34.3
	Diploma	14	4.9
	degree and above	27	9.5
Husband educational status	Illiterate	20	7.1
	Primary	55	19.7
	Secondary	98	35.12
	Diploma	24	8.60
	degree and above	82	29.4
Occupation	civil servant	43	15.2
	Student	12	4.2
	Merchant	73	26.1
	house wife	154	54.4
Income	<1500	6	2.1
	1500-3500	39	13.8
	3501-6000	118	41.7
	>6000	120	42.4
Family size	<3	8	2.8
	3-6	239	84.5
	>6	36	12.7

5.2 Maternal health services and Obstetrics history of the respondents

Among the interviewees, 102(36.0%) of them were nulliparous and 181(64%) were multipara and 32(11.3%) of them had at least one history of abortion. Among these mothers 4 of them attend >8, 33 of them attend ≤3, 65 of them attend 7-8, and 181 of them attend 4-6 ANC follow up for their last pregnancy. Two hundred eighty (98.9%) of mothers were gave their last birth at health institution, Seventy one (25.1%) of mothers had three and more than three PNC follow up in last delivery. (Table 2)

Table 2: Obstetric characteristics of mothers in WKUSTH and Attat primary hospital, Guraghe zone, SNNPR, Ethiopia, 2023 (n=283)

Variable	Categories	Frequency	Percentage
Gravity	Primigravida	102	36.0
	Multigravida	181	64.0
Parity	Nulliparous	104	36.7
	Multipara	179	63.3
Abortion	Have history of abortion	32	11.3
	No history of abortion	251	88.7
Number of ANC follow-up	1-3	33	11.7
	4-6	181	64.0
	7-8	65	23.0
	>8	4	1.4
Place delivery of last child	Home	3	1.1
	health centre	60	21.2
	Hospital	220	77.7
Number of PNC follow-up	1	127	44.9
	2	61	30.0
	3	85	21.6
	4	10	3.5

5.4 Mothers' knowledge about neonatal danger sign

The majority (77.4) of the participant were knows at least one of the ten WHO recognized neonatal danger signs, but only 154(54.4%) (95% CI: 48.4, 60.4) of interviewed mothers found to have a good knowledge concerning neonatal danger signs. NB: Good Knowledge: those mothers list three and above neonatal danger signs. Poor knowledge: those mothers list less than three of neonatal danger signs [22]. The newborn danger sign for which there was high awareness among mothers was fever 208 (73.5%), diarrhea 157 (55.5%), poor feeding/unable to suckle 134 (47.3) and followed by persistent vomiting 128 (45.2%). (Table 3)

Table 3: Distribution of mothers by their knowledge about neonatal danger signs in WKUSTH and Attat primary hospital, Guraghe zone, SNNPR, Ethiopia, 2023 (N=283)

Variable	Response	Frequency	Percentage
Do you heard about any neonatal sign	No	64	22.6
	Yes	219	77.4
Least of neonatal danger sign	Difficulty of breathing/fast breathing	89	31.4
	Lethargy/unconsciousness	44	15.5
	Convulsion	18	6.4
	Fever	208	73.5
	Cold baby	2	0.7
	Pus discharge from umbilicus	18	6.4
	Poor feeding	134	47.3
	Persistent vomiting	128	45.2
	Diarrhoea	157	55.5
	Abdominal distension	5	1.8

5.4 Factors associated with maternal knowledge about neonatal danger signs

Binary logistic regression analysis was done to identify candidate variables for multivariable logistic regression at a P-value of 0.25, and from socio-economic and demographic data, mothers' age and husband's educational status, and from obstetrics, gravidity and number of PNC were taken to multivariable logistic regression. In multivariable analysis, four variables, including the mothers' age, husband's educational status, gravidity and number of PNC follow-up, were found to be statistically significantly associated with the mothers' knowledge towards neonatal danger signs after confounders were adjusted in the final model.

Mothers who were aged between 36-45 years were nearly 4.035 times [AOR: 4.035, 95%CI: (2.630, 11.818)] higher to have knowledge about neonatal danger signs as compared to mothers whose age is below 18 years. Similarly, mothers whose husband attain degree and above educational level were nearly 3.301 times [AOR: 3.301, 95%CI:(1.77, 8.16)] to mention at least three neonatal danger signs as compared to mothers whose husbands have no formal education. The odds knowledge of neonatal danger signs were 2.602 among mother who had more than 3 PNC visit [AOR: 2.602, 95%CI: (0.980, 7.408)] as compared to mothers who had one PNC visit. Similarly, the odds of knowledge of neonatal danger signs were nearly 1.623 among mothers who were multigravida [AOR: 1.623, 95%CI: (1.064, 3.846)]. (Table 4)

Table 4: Bivariate and multivariate logistic regression for factors associated with mothers knowledge about neonatal danger signs in WKUSTH and Attat primary hospital, Guraghe zone, SNNPR, Ethiopia, 2023 (N=283)

Variable	Level of knowledge			COR	AOR	P value
		Good	Poor			
Place of residence	Rural	38(13.42%)	54(19.08%)			
	Urban	116(40.99%)	75(26.50%)	2.198(1.324-3.647)		
Mothers age	<18	3(1.06%)	7(2.47)			
	18-25	48(16.96%)	42(14.84%)	2.667(1.196-62.414)	1.436(1.071-19.296)	0.083
	26-35	75(26.5%)	72(25.44%)	2.430(1.386-8.516)	2.073(1.033-8.153)	0.043
	36-45	28(10%)	8(2.9%)	8.167(3.440-12.854)	4.035(2.630-11.818)	0.039
Educational level of the mother	Illiterate	20(7.06%)	23(8.12%)			
	Primary	42(14.84%)	60(21.20%)	0.805(0.6542-2.208)		
	Secondary	61(21.55%)	36(12.72%)	1.948(1.111-5.273)		
	Diploma	10(3.53%)	4(1.41%)	2.875(1.330-5.273)		
	Degree and above	21(7.42%)	6(2.12%)	4.025(2.197-19.952)		
Husbands educational status	Illiterate	7(2.51%)	13(4.66%)			
	Primary	21(7.53%)	34(12.19%)	1.15(2.197-8.952)	0.686(0.425-2.073)	0.089
	Secondary	56(20.07%)	42(15.05%)	2.48(1.330-5.273)	1.639(1.075-4.562)	0.057
	Diploma	16(5.73%)	8(2.87%)	3.71(1.071-3.397)	2.802(0.976-3.329)	0.060
	Degree and above	54(19.35%)	28(10.03%)	3.58(2.113-10.923)	3.301(1.769-8.164)	0.01
Gravity	Primigravida	46(16.3%)	56(19.8%)			
	Multigravida	108(38.2%)	73(25.8%)	1.801(1.103-3.941)	1.623(1.064-3.846)	0.032
Number of PNC follow up	1	56(25.1%)	71(19.8%)			
	2	34(12.0%)	27(9.5%)	1.596(1.160-10.901)	1.26(1.140-9.97)	0.021
	3	58(20 .5%)	27(9.5%)	2.723(1.11-7.712)	2.602(0.980-7.408)	0.023
	4	6(2.1%)	4(1.4%)	1.901(1.09-7.12)	1.79(1.00-6.79)	0.61

CHAPTER 6

6. Discussion

In this study, prevalence of mothers' good knowledge (mothers who mentioned at least three-danger sign) was found to be 54.4%.

The level of knowledge in this mothers is lower than the level reported in India which is 62% (26), North central of Ethiopia which is 61.7% (15) and Wolaita zone Ethiopia which is 61.1% (21). The discrepancy might be because of unprompted question used for assessing the danger signs, a sample size in the current study, and could be because of cultural differences.

But the level of knowledge is higher than the level reported in North west Ethiopia which is 18.2% (15), Wolkite town which is 31.32% (20) and Gidan district, southern Ethiopia which is 48.1% (15) and The discrepancy might be because of unprompted question used for assessing the danger signs, a sample size in the current study, and could be because of cultural differences.

And it is in line with neonatal danger signs knowledge level reported in Checha district, southern Ethiopia which is 50.3% (19), Mekelle city which is 50.6% (16), and Addis Ababa, Ethiopia which is 59.8% (18).

This study showed that, mothers' age is an important determinant factor for mentioning of at least three neonatal danger signs. Mothers who were older than 36 years were nearly 4.035 times higher to have knowledge about neonatal danger signs as compared to mothers whose age is below 18 years. This finding is supported studies conducted in Bangladesh(4) , rural county, south west of China (17)and Chencha district, south Ethiopia(18) . The possible justification for this could be older mothers acquire knowledge about neonatal danger signs through their past experience.

Similarly, husband education was a significant predictor of mothers' good knowledge about neonatal danger signs. The odds of being having knowledge about neonatal danger signs was 3.301 times among mothers whose husbands achieved degree and above and educational level. This study result is supported by study conducted in Dire Dawa Ethiopia (16). This may due to educated husbands are more informed and can help their wives to take the sick neonate to health institution and fathers' in culturally predominant position in a decision-making might positively affects the attitude and knowledge of the mothers.

The study also confirmed that PNC follow up practice creates a good opportunity for the mother to have good knowledge towards neonatal danger sign. Mothers attend who were PNC three and above times were 2.602 times more likely to mention at least three neonatal danger sign as compared to their counterparts, which is supported by a study conducted in Chencha district, south Ethiopia (18) and Sheko district in south west Ethiopia(23). The possible and the best reason for this could be mother's exposure to PNC package, which increased the knowledge of the mother concerning the neonatal danger signs.

An increased gravidity also increased the knowledge of mothers on neonatal danger signs. Multigravida mothers were 1.623 times more likely to mention at least three neonatal danger sign as compared to their counterparts. This finding is supported by study conducted in Chencha district, south Ethiopia(18), Sheko district in southwest Ethiopia (23) and northwest of Ethiopia(25) . The possible justification for this could be mothers who have more than one child acquire knowledge about neonatal danger from their past experience.

CHAPTER 7

7. 1 Conclusion

This study shows that more than fifty percent (54.4%) of mothers/caregivers were found to have good knowledge of neonatal danger signs. Maternal age, husband's higher educational level achievement, multi-gravidity and high exposure to PNC service were the factors that were associated with good maternal knowledge towards neonatal danger sign. Improving maternal knowledge about neonatal danger signs is essential for reducing neonatal and infant mortality. By implementing targeted interventions, such as health education programs, involving husbands and strengthen ANC and PNC service, it is possible to enhance maternal knowledge and ultimately improve neonatal health outcomes in the Guraghe zone.

7.2 RECOMMENDATIONS

Reduction of neonatal and infant mortality to acceptable level is impossible without good maternal knowledge regarding neonatal danger signs. The following recommendations were given based on the above results to the concerned bodies:

- **To regional and zone health offices:**

The health officials should invest maximum effort to make women knowledgeable and work to create awareness by developing public education, policy and strategy aimed at improving mothers/caregivers level of knowledge about neonatal danger signs. Rapid health education program (RHEP) should give a strong emphasis on neonatal danger signs in order to decrease neonatal and infant mortality rate. This program should be designed to reach mothers during pregnancy and after child birth by providing them with comprehensive information about the sign and symptoms that require immediate medical attention for their newborn.

- **To health care providers:**

Health care provider should ensure that sufficient time is dedicated to discussing neonatal danger signs and addressing any questions or concerns the mothers may have by integrating neonatal danger sign education in to routine antenatal visit and post natal visit.

- **Community**

Community should utilize local community resource to overcome cultural barriers and improve knowledge dissemination by implementing community based interventions that target mothers and their family.

7.3 Strength and limitation o of the study

Strength

- The study involves collection of primary data
- Under the study specializes hospital and primary hospital were incorporated
- -high response rate of study participant (100%).
- The data collection tools were standardized from similar previous studies.
- The data were collected by using interviewer-administered questionnaires.

Limitation

- Because of the cross-sectional nature of the study, we can infer association but not causation between the outcome and independent variables.

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ANNEX 1:

Declaration of Informed Voluntary Consent

My name is _____and I am working as a data collector for the study being conducted in this institution on the title of knowledge of neonatal danger sign and associated factors among mother who give birth in the last 6 months who visit public facility for immunization in Wolkite town. I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

I have read/ she/ He is read for me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any question. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to participate in this study with my initials (signature).

Name of Participant: _____

Date _____Time_____

Name and Signature of Data Collector: _____

Date _____Time _____

Thank you!!!

ANNEX: QUESTIONIARE FOR DATA COLLECTION

No	**Section one: Socio-Demographic Characteristics**	
	Question	Options
1	Where do you live now?	1. Urban 2. Rural
2	Age of mother (in complete year)	
3	Age of child(wk.)	
4	Religion	1. Orthodox 2. Catholic 3. Protestant 4. Muslim 5. Other (specify)
5	Ethnicity:	1.Guraghe 2.Oromo 3,Amhara 4.Kembata 5.Siltei 6.Hadiya 7. Other……
6	What is your level of education?	1. Didn't attend school 2. Read and write 3. Primary (1-8) 4. Secondary (9-12) 5. Tertiary (above 12)

7	Husbands' level of education?	1. Didn't attend school 2. Primary (1-8) 3. Secondary (9-12) 4. Tertiary (above 12)
8	What is your occupation?	1. Employed 2. Student 3. Merchant 4. Farmer 5. Housewife 6. Other (specify)
9	What is your marital status now?	1. Not married 2. Married 3. Separated 4. Divorced 5. Widowed……
10	Monthly Income (ETB)	1. <1500 2. 1500-3500 3. 3501-6000 4. >6000
	Monthly expenditure	1. <1500 2. 1500-3500 3. 3501-6000 4. >6000
11	Family size:	_____

No	**Section Two: Obstetric Factors**	
	Question	Categories
20	Gravidity	1. Primigravida 2. Multigravida

21	Parity	1. Nulliparous 2. Multipara
22	Number of ANC follow up	……
23	Place of delivery	1. Home 2. Health center 3. Hospital
24	Mode of delivery	1. Spontaneous vaginal delivery 2. Assisted vaginal delivery 3. C/S
25	Number of PNC follow up	……..
26	Is your husband involved MCH	1.yes 2.no

	Section Three: Knowledge about neonatal danger signs	
No	Question	Options
30	Do know any neonatal danger signs?	1. Yes 2. No
31	Can you mention neonatal danger Signs? *(More than one answer is possible)*	1. Difficult/fast breathing 2. Lethargy/unconsciousness 3. Convulsion 4. Fever 5. Baby is cold 6. Pus discharge from umbilicus 7. Poor feeding or unable to suckle 8. Persistent vomiting 9. Diarrhea 10. Abdominal distention 11. vomiting

		12. Yellow Skin color (jaundice) 13. Other(specify)
32	From whom did you get the Information?	1. Health professional 2. Media 3. Neighbors 4. Friends 5. Reading books 6. Other (specify) ……..
33	Do you know what causes neonatal Illnesses problems?*(More than one answer is possible)*	1. Lack of cleanliness 2. Hanger 3. Coldness 4. Evil spirit (eye) 5. I don't know 6. Other (specify) ……..
34	If; your newborn has any of manifestations of illness what did you do?	1. Take to Health institution 2. I will give Home treatment 3. Take to Traditional healer 4. Leave to god 5. Do nothing 6. Others
35	Where do you seek medical care for your sick neonates	1. Government health institution 2. Private 3. Clinic 4. Pharmacy 5. Other (specify) …
36	Who will decide to seek care for to the neonate/child in your family?	1. My Self 2. Husband 3. Neighbor 4. Grandmother/Relative 5.Other specify

THANK YOU!!!