



COLLEGE OF MEDICINE AND HEALTH SCIENCE

SCHOOL OF PUBLIC HEALTH

**KNOWLEDGE OF NEONATAL DANGER SIGNS AND
ASSOCIATED FACTORS AMONG FATHERS AND MOTHERS
WHO GAVE BIRTH IN THE LAST SIX MONTHS IN HAWASSA
CITY ETHIOPIA 2023**

BY: SELAMAWIT ABERA

**A RESEARCH THESIS SUBMITTED TO SCHOOL OF GRADUATE
STUDIES OF HAWASSA UNIVERSITY, COLLEGE OF MEDICINE AND
HEALTH SCIENCES AS PARTIAL FULFILLMENT OF MASTER'S
DEGREE IN REPRODUCTIVE HEALTH**

October 2023

Hawassa, Ethiopia

KNOWLEDGE OF NEONATAL DANGER SIGNS AND
ASSOCIATED FACTORS AMONG FATHERS AND MOTHERS
WHO GAVE BIRTH IN THE LAST SIX MONTHS IN HAWASSA
CITY ETHIOPIA 2023

BY: SELAMAWIT ABERA

ADVISORS: TEGENE LEGESSE(MPH, Assistant professor)

EPHREM LEJORE(MPH, Assistant professor)

November 2023

Hawassa, Ethiopia

Acknowledgment

First and for most, I wish to give glory and Praise to the almighty God!

Secondly, my deepest gratitude goes to my advisors Mr. Tegene Legese Dadi (MPH Assistant Professor) and Mr. Ephrem Lejore (MPH, Assistant Professor), for their constructive and invaluable suggestions, advice, comments and concerns by spending their time and energy starting from title selection I would like to thank participants of this study for generously giving their time and sharing their insights, which have enabled us to deepen our understanding of the subject under investigation.

Contents

Acknowledgment.....	iii
List of figures	viii
Abbreviations /acronyms.....	ix
Summery.....	x
1. INTRODUCTION.....	xii
1.1 Background	xii
1.2 Statement of the Problem	14
1.3 Significance of the Study	16
2 LITERATURE REVIEW	17
2.1 Knowledge of Neonatal Danger Sign among Mothers	17
2.2 Factors Associated With Knowledge of Neonatal Danger Sign	19
2.2.1 Socio-demographic factors	19
2.2.2 Maternal health service exposure and Obstetric factors	20
2.2.3 Source of information	21
2.3 Knowledge of Neonatal Danger Signs among Fathers	22
2.4 Factors Associated With Level Of Knowledge Of Neonatal Danger Signs	Error!
Bookmark not defined.	
2.4.1Socio demographic characteristics.....	22
2.4.2 Obstetric characteristics and health service exposure status of respondents' wife.....	22
2.4.3 Source of information	22
2.5 Conceptual Framework	24
3 OBJECTIVES	26
3.1 General Objective	26
3.2 Specific Objectives.....	26
4 METHOD AND MATERIALS	27
4.1 Study Area and Setting.....	27
4.2 Study Design and Period.....	27

4.3 Population.....	27
4.3.1 Source population.....	27
4.3.2 Study population.....	27
4.4.1 Inclusion criteria.....	27
4.4.2 Exclusion criteria.....	28
4.5 Sample Size Determination.....	28
4.5.1 Sample size calculation for the first objective.....	28
4.6 Data Collection Method and Tools.....	32
4.7 Variables of Study.....	32
4.7.1 The dependent variable.....	32
4.7.2 Independent variables.....	32
4.8 Operational Definition.....	34
4.9 Data Quality Control.....	34
4.10 Data processing and analysis.....	34
4.11 Ethical consideration.....	35
5. RESULTS.....	36
5.1. Socio-demographic Status.....	36
5.2. Obstetrics Related Characteristics.....	37
5.3 Knowledge of Neonatal Danger Sign.....	40
5.3.1 source of information.....	42
5.4. Factors associated with knowledge of neonatal danger sign.....	43
6. DISCUSSION.....	47
7. Strength and limitations of the study.....	50
7.1. Strengths of the Study.....	50
7.2. Limitations of the study.....	50
8. CONCLUSION AND RECOMMENDATION.....	51
8.1. Conclusion.....	51
8.2. Recommendation.....	51

9. References	52
Annex 1	55
□□□ I □□□□□ □□□□	63
II □□□ □ □□□□ □□	64
□□□ III □ □□□□	71

List of figures

Figure 1: Conceptual framework of a study to assess knowledge of neonatal danger signs and associated factors among mothers who gave birth within the last six months in Hawassa city south Ethiopia, 2023 G.C adapted from (28, 40).....	24
Figure 2: Conceptual framework of a study to assess knowledge of neonatal danger signs and associated factors among mothers who gave birth within the last six months in Hawassa city south Ethiopia, 2023 G.C adapted from (20).....	24
Figure 3: Schematic representation of sampling procedure of the study a study to assess knowledge of neonatal danger signs and associated factors among fathers and mothers who gave birth within the last six months in Hawassa city south Ethiopia, 2023	31

Abbreviations /acronyms

ANC	Antenatal Care
AOR	Adjusted Odd Ratio
CI	Confidence Interval
COR	Crude Odd Ratio
EDHS	Ethiopian Demographic Health Survey
EMDHS	Ethiopian Mini Demographic Health Survey
HCP	Health Care Provider
HU	Hawassa university
MCH	Maternal And Child Health
NDS	Neonatal Danger Sign
OR	Odds Ratio
PNC	Post Natal Care
SVD	Spontaneous Vaginal Delivery
SDG	Sustainable Development Goal
SPSS	Statistical Package For Social science
WHO	World Health Organization
UNICEF	United Nations International Children's Emergency Fund

Summery

Introduction Preventable neonatal mortality and morbidity remain challenging in many sub-Saharan African countries including Ethiopia. The majorities of neonatal death were due to avoidable causes and occurred at home. In a developing country like Ethiopia, since husbands are considered decision-makers when it comes to healthcare-seeking in the family, care-seeking behavior toward their neonates highly relies on their knowledge about neonatal danger signs. Lack of knowledge about neonatal danger signs contributes to delays in seeking help which in turn increases neonatal morbidity and mortality.

Objective: The aim of this study is to assess the knowledge of neonatal danger signs and associated factors among fathers and mothers who gave birth in the last six months in Hawassa city.

Method: A community based comparative cross-sectional study was conducted with a sample size of 633 couples in selected kebeles of Hawassa city from February 6 to 20. Data was collected by face-to-face interview using semi structured questionnaire. The data was entered into EPI data version 4.2 and exported to SPSS for further analysis. Bivariate and multivariate logistic regression analysis was performed using SPSS version 25 to determine significant factors associated with knowledge of neonatal danger signs.

Result: The result of this study showed that mothers and fathers who have good knowledge of neonatal danger sign were found to be 56 % (95% CI 52-60) and 40.1% (95% CI 36-44) respectively. The odds of having good knowledge among fathers were positively associated with accompanying spouse during ANC follow-up (AOR=2.674, 95% CI 1.532 to 4.66). Having three or more children (AOR=2.155, 95% CI 1.287 to 3.61) history of neonatal illness (AOR=3.431, 95% CI 1.715 to 6.862). And the odds of having good knowledge among mothers were having a history of neonatal death, (AOR=2.371, 95% CI 1.145-4.911), having three or more children. (AOR=1.49, 95% CI 1.061-2.120) and being counseled by health care professionals at postnatal (AOR=1.482, 95% CI 1.016-2.161)

Conclusion and recommendations in this study, Mothers' and fathers' knowledge about neonatal danger signs was found to be low. Therefore, an intervention modality that focuses on reducing the knowledge gap through health education was pinpointed

Keywords neonatal danger signs, fathers' knowledge, and mother' knowledge

1. INTRODUCTION

1.1 Background

World Health Organization (WHO) defines the neonatal period as the first 28 days of life of a newborn infant, it is classified into the very early (birth to less than 24hours), early (birth to <7 days), and late neonatal periods (7 days to <28 days)(1). The neonatal period is critically important because it encompasses a phase in which most of the vital organs and systems of the newborn are still undergoing development, rendering the infant incapable of independently regulating their bodily functions. As such, any health issues or complications that occur during this time frame can lead to significant consequences for the infant's well-being and development(2).

Annually, approximately 2.6 million infants worldwide die before completing one month of age(3). In 2020, the number of children who died before turning five years old reached 5.0 million, with half of these deaths (2.4 million) occurring within the neonatal period. Regionally, sub-Saharan Africa recorded 1 million neonatal deaths, accounting for 43% of global deaths among newborns. Southern Asia followed with 0.9 million newborn deaths in 2020(4). According to Ethiopian mini-demographic health survey (EMDHS), neonatal mortality decreased from 39 in the 2005 to 29 in 2016(5). However, since then, the rates have remained stable until an increment occurred from 29 in 2016 to 30 per 1000 live births in 2019(6).

There are numerous causes responsible for neonatal mortality, but the leading causes globally are preterm birth, complications during labor and delivery (birth asphyxia), infections, and congenital anomalies, as they contribute to most neonatal deaths(7). During an illness, neonates often display subtle and unnoticeable signs of illness, even in severe cases(8). Neonatal danger signs (NDSs) signify the presence of clinical signs that indicate a high risk of neonatal morbidity and mortality and the need for early medical care(9).

Neonatal danger sign refers to certain signs that indicate a potentially life-threatening condition in a newborn. Prompt recognition and treatment of these signs are crucial to prevent further complications and improve the chances of the baby's survival. Neonatal danger signs include:

poor suckling, convulsions, drowsy or unconscious, difficult/fast breathing (60 breaths per min), diarrhea, raised temperature $\geq 37.5^{\circ}\text{C}$, hypothermia $T^0 \leq 35.5^{\circ}\text{C}$, lethargy or weakness, yellow sole (signs of jaundice), umbilical redness or draining pus, eye infection and skin boils(10).

In today's society, mothers are also involved in income-generating activities besides fathers and earn for their family. Hence, fathers must cooperate with mothers in the upbringing and caring of the child. Fathers play a vital role in implementing childcare. So they must have adequate knowledge and a positive attitude towards child rearing and child care (11). So, this research aims to assess knowledge of neonatal danger signs and associated factors among mothers and husbands of mothers with children less than six months of age and compare and contrast the similarities and difference between the two groups in Hawassa city.

1.2 Statement of the Problem

Recent reports from WHO and UNICEF highlights the high number of infant deaths, particularly among newborns, globally and in specific regions. In 2020, 5 million children died before their fifth birthday, with half of deaths occurring among newborns. Sub-Saharan Africa and southern Asia had the highest number of newborn deaths in 2020. The number of deaths among children aged 1 month to 5 years old has significantly decreased worldwide in recent years. However, despite some progress made, the number of deaths among newborns (neonatal deaths) remains high, with 7,000 newborns dying every day(4). In Ethiopia, the overall mortality rate for children under the age of five has decreased by two-thirds since 1990. However, the decline in neonatal mortality rates is not as impressive as the reduction seen in infant and child mortality(12).

Different studies conducted in sub-Saharan African countries have revealed that half of children under 5 deaths occur at home and are associated with poor illness recognition and care-seeking. Other studies have also shown that lack of understanding of the problem or danger signs by mothers, families, and other newborn caregivers is one of the common causes of delays in receiving appropriate care for serious maternal and newborn complications(13). Parents and other caregivers' knowledge of neonatal danger signs is important for reducing infant mortality and morbidity(14). Caregivers with good knowledge about neonatal danger signs are more likely to make a decision in the best interest of their baby and seek care, which in turn reduces the risk of neonatal mortality(15).

Although mothers are more involved with their children's direct care, fathers also provide a considerable contribution to their newborns(16). Now a day's most of the women are in labor force resulting change in father's role so child rearing is not only the responsibility of mothers but also fathers. In low income countries including Ethiopia, health care decisions for women and child are most often made by their partners without women's involvement; and also husbands are considered as the "final decision maker" even when their partners were included in discussions(17, 18) This makes men or husbands critical partners in the improvement of child health care-seeking behavior and in the reduction of neonatal mortality. If fathers are to be actively involved in decision making and healthcare seeking in maternal and newborn health, improving their knowledge of key issues such as danger signs is a necessary initial point(19).

Evidences from different studies which were conducted in Ethiopia and other countries stated that husbands or fathers' knowledge about neonatal danger signs were low. Studies conducted in Gurage; Ethiopia reported that husbands' knowledge with 3 or more danger signs were 40.7%(20), Bungoma County; Kenya reported that husbands' knowledge with at least one neonatal danger sign were 50% and Kathmandu; Nepal reported 63.1%, 28.2% and 8.7% of fathers had moderate level, low level and high level of awareness regarding newborn danger signs respectively(19, 21).

Even though there are many studies conducted to assess mothers' knowledge of neonatal danger sign in Ethiopia there is limited evidence about the level of fathers' knowledge regarding neonatal danger signs to my best review. So, the aim of this study is assessing the knowledge level of fathers and mothers regarding neonatal danger signs and to identify factors that are related to their knowledge.

1.3 Significance of the Study

Neonatal mortality, which is known for being a high contributor to the burden of under-5 mortalities, could be prevented effectively if caregivers seek medical care and treatment promptly by identifying neonatal danger signs. Research has been done to assess the level of maternal knowledge on neonatal danger signs in different settings, but there is very limited evidence about fathers' knowledge level on neonatal danger signs, even though fathers play an important role in decision making. In Ethiopia, there is evidence gap on the level of fathers' knowledge of neonatal danger signs. This study aims to provide evidence about the level of maternal and paternal knowledge of neonatal danger signs.

The study generates information on the magnitude of the level of knowledge of neonatal danger signs among both mothers' and fathers'. It also shows the association between socioeconomic, obstetric-related, and information-related condition with the knowledge level of neonatal danger signs.

The findings from this study can contribute to increasing the level of knowledge among pregnant women, postnatal women, and their partners to effectively identify neonatal danger signs, which is known to be helpful for seeking care. The findings from this study will also serve responsible bodies like city administrators and the health office of Hawassa city for the development of more effective education programs and strategies to increase mothers' and fathers' knowledge of neonatal danger signs. In addition, researchers who are interested in this area of study can use the study's findings as a reference or baseline data for subsequent research.

2 LITERATURE REVIEW

2.1 Knowledge of Neonatal Danger Sign

Knowledge of neonatal danger signs is one of the crucial steps to improving the health outcomes of newborns, since it enables caregivers and parents to quickly recognize the warning signs of potential illness and seek prompt medical attention(20).

Globally, various studies have been conducted to assess the knowledge levels of fathers and mothers regarding neonatal danger signs. According to a community-based cross-sectional study conducted in Saudi Arabia and China, the overall prevalence of maternal knowledge on neonatal danger signs was 37% and 18.1%, respectively (14, 22).

According to a facility-based cross-sectional study conducted in Bangladesh, the proportion of mothers who mentioned at least one neonatal danger sign from the seven key signs was 51.4%. In this study, 'fever' was the most commonly identified danger sign (43.7%), and hypothermia was the least commonly identified (26.1%)(23).

Findings from studies conducted in sub-Saharan Africa highlighted low levels of knowledge among caregivers and parents regarding neonatal danger signs. According to a study done in a rural community of Uganda, respondents showed a poor level of knowledge of key newborn danger signs, with only 58.2% able to identify one and 14.8% able to identify two. Similarly, a community-based study conducted in Bungoma County, Kenya, found that out of the total of 348 respondents, only 51.2% were able to mention one neonatal danger sign(19, 24).

Facility based cross-sectional study conducted on post-natal mothers from four hospitals in Dar es Salaam, Tanzania reported 85.3% of the participants had heard of neonatal danger signs mentioning fever and inability to breastfeed as the most common danger signs, whereas other danger signs were mentioned less frequently(25).

The pooled prevalence from meta-analysis of fourteen cross-sectional studies conducted to assess the knowledge level of mothers on neonatal danger signs in our country, Ethiopia reveal that the level of mothers' knowledge is 40.7%(26). A community-based cross-sectional study done in Wolita zone, southern Ethiopia, reported the level of mothers' knowledge of neonatal danger signs to be 67% (27). Another community-based cross-sectional study with the same title

from Shashemene town showed the knowledge of mothers to be 33.2%. Similarly, in a study done in public hospitals of Addis Ababa, out of 363 mothers, only 33.3% of them are knowledgeable about neonatal danger signs(28) .

According to a community-based cross-sectional study done on postnatal mothers in Mekelle city, the level of knowledge of neonatal danger signs was found to be relatively good compared to other study findings, with half (50.6%) of mothers identifying three or more neonatal danger signs. The commonly identified danger signs by the mothers are fever, persistent vomiting, and poor sucking (29). Another facility-based cross-sectional study conducted in Woldia general hospital reported a very low level of knowledge, with the majority of mothers (88.3%) having low level of knowledge mentioning less than six of the twelve neonatal danger signs, and only twenty-three (11.7%) of mothers have good levels of knowledge about neonatal danger signs (30).

Men's role in identifying problems and seeking care related to neonatal and child health is crucial and not widely explored as compared with women's but as evidence from few findings on this area shows fathers /male partners knowledge regarding neonatal danger sign is low(16). Hospital based cross sectional descriptive study conducted on Awareness of Fathers Regarding Newborn Danger Signs in Kathmandu, Nepal showed that out of 103 fathers; 28.2%, 63.1% and 8.7% of respondents had a low, moderate and high level of awareness regarding newborn danger signs respectively(21).

Another Quantitative Cross-sectional study conducted on Men's and women's knowledge of danger signs relevant to postnatal and neonatal care seeking in Bungoma County, Kenya, revealed that knowledge of neonatal danger signs was low. Among 82 men sample, 50.0% knew at least one neonatal danger sign(19). Another a community-based cross-sectional study in Gurage Zone; Southern Ethiopia shows that out of a total of 618 respondents, 40.7% of the participants have good knowledge of neonatal danger signs and three-fourths (73.9%) of the respondents knew at least one of the neonatal danger sign(20)

2.2 Factors Associated With Knowledge of Neonatal Danger Sign among mothers

The result of different studies across Ethiopia reported various determinant factors that associate with good level knowledge of neonatal danger sign. Educational status, occupational status, age, place of residence, ANC follow up, PNC follow up, institutional delivery and birth preparedness are the major contributing factor affecting knowledge of neonatal danger sign. In these literature the factors are classified as socio-demographic factors, obstetric factors and source of information ((9),(28),(31)

2.2.1 Socio-demographic factors

Educational level of mothers is commonly associated with knowledge of neonatal danger signs in several studies on the same topic. Even though there are differences in educational status levels, most studies agree that as a mother's educational level advances, her knowledge of neonatal danger signs also improves. According to a community-based cross-sectional study conducted in Debre Tabor, Ethiopia, the odds of mothers having adequate knowledge of neonatal danger signs who attended diplomas and above education were 2.88 times higher than those who had no formal education(32) . Similarly, another facility-based cross-sectional study conducted in the general hospital of Arbaminch also reported that mothers who attend secondary educational level had 5.6 times higher odds of having good knowledge of neonatal danger signs than those with no formal education (33). Maternal educational status has been significantly associated in multivariate analysis of studies conducted in Debretabor, Ambo, Mekdella, and Arrerti (9, 32, 34, 35).

Regarding occupational status study conducted in Woldia general hospital showed that, there was a significant association between mothers' knowledge on neonatal danger sign and mothers' occupation in contrary a study conducted in fiche town Oromia region showed no significant association between maternal occupation and level of knowledge on neonatal danger sign(30, 36)

According to findings from various literature, maternal age is also one of the factors that has significant association with level of knowledge on neonatal danger sign. a study conducted in Woldia general hospital revealed Women whose age 18-35 years were more likely to be knowledgeable as compared to mothers who are < 18 years old(9(30). In a same way as an institution based cross-sectional study done in public health hospitals of Addis Ababa Mothers

whose age 25-34 were 2.99 times and 35 – 44 were 4.97 times more knowledgeable as compared to those mothers who were younger than these age groups(28).

Multiple studies reported husband educational status to be influential factor for mothers' good level of neonatal danger sign. Evidence from a study conducted in south east Ethiopia, Woldia general hospital and from a community-based study done in Wolita Sodo revealed, mothers whose husbands attained a secondary or higher education level were more likely to be knowledgeable than those with a primary or lower education level(30, 33, 37)

2.2.2 Maternal health service exposure and Obstetric factors

Antenatal care attendance is the commonest factor that has been found to be associated with maternal knowledge of neonatal danger sign. According to a community based cross-sectional study conducted in north west Ethiopia mothers who have 2 or more than 2 ANC attendance are more knowledgeable than those who have no follow up(32). This is similar to Another facility based cross sectional study conducted in Chole District, Arsi Zone southeastern Ethiopia(37)

Post-natal attendance is considered as one of the most significant factors that is associated with a level of mothers' knowledge, Various studies has been reported mothers with postnatal follow up experience are more knowledgeable about neonatal danger signs than those mothers who have not visited health care institution. According to a study conducted in central Ethiopia Ambo town, having postnatal attendance is significantly associated with having good knowledge about neonatal danger sign(9). Another community-based study conducted in Sodo town also reported that the odds of having good knowledge is greater in mothers who attend postnatal visit than to those of who did not follow(27).

Maternal increased number of parities is among one of the obstetric factors significantly associated with having good knowledge according to the report of a recently conducted study in public health institutions of Addis Ababa according to this study as the number of maternal parities advance the probability of having good knowledge of neonatal danger sign will also increase(28).

Previous history of having a neonate who developed danger sign is also one factor which associates with the probability of mothers being knowledgeable enough to identify neonatal danger sign. Evidence from a previously conducted cross-sectional study in east Belesa north

west Ethiopia supports this(38), in other hand a study with a similar topic which is conducted in ambo town reported mothers whose current neonate previously developed danger sign are more knowledgeable than those who have not (9). whereas, a result from study conducted in Mekdella town shows having a previous history neonatal death to be associated with having good knowledge(35). The reason for this might be, mothers with previous history of having a sick neonate may fear something the same may happen and need advice and support from health personnel.

Institutional delivery significantly influences having a good knowledge of neonatal danger sign among mothers. This is supported by evidence from a numerous study. Community based cross sectional studies conducted to assess the knowledge level of mothers on neonatal danger sign in east Belesa woreda and Mekdella town Ethiopia, revealed mothers are more likely to identify three or more neonatal danger signs if they delivered in health institution(35, 38). In contrast with these findings, studies conducted in Shashemene town and Sodo town Wolita zone, reported no significant association between place of delivery and knowledge of neonatal danger signs(27, 29)

The neonate's vaccination status is also mentioned in few studies as one factor which influence maternal knowledge of neonatal danger sign. According to study conducted in east Belesa woreda, mothers whose neonates started vaccination immediately after birth are more likely to be knowledgeable about neonatal danger sign(38).

2.2.3 Source of information

As stated by different studies, information regarding neonatal danger sign had a crucial role for improving mothers' knowledge on neonatal danger sign. Exposure to mass media increases the odds of mothers having good knowledge on neonatal danger signs. With regard to this a study done in south west Ethiopia indicated that mothers' access to television increased their knowledge about neonatal danger signs by 3.5 times(39). Similarly, a study on mothers in Chench district shows those who have radio in their house have good knowledge compared to those who does not have one(40)

A study conducted in Addis Ababa Ethiopia showed mothers who are informed about neonatal danger sign from health professionals were 4.54 times more likely to be knowledgeable as

compared to their counterpart, Likewise, participants who had education about neonatal danger signs during PNC visit were 2.7 times more knowledgeable to identify neonatal danger sign as compared to those mothers who had no education during PNC visit(28).

2.3 Factors Associated With Level of Knowledge of Neonatal Danger Signs among fathers

2.3.1 Socio demographic characteristics

According to a study done in Gurage, Ethiopia residence and educational level had a positive association with husbands' knowledge about neonatal danger signs. husbands with an educational level of secondary and above were 4.5 times more likely to be knowledgeable than their counterparts respectively(20).

A Study conducted in Bungoma County Kenya showed that higher household income has shown an association with knowledge of neonatal danger signs. In Kenya Higher household income (at or above KShs 10,000 per month) has shown a significant association with men's knowledge of a minimum of one neonatal danger sign (19)

2.3.2 Obstetric characteristics and health service exposure status of respondents' wife

According to a study done in Gurage Ethiopia, number of children, wives' mode of delivery and respondents who accompany their wives during antenatal care visit (ANC) has a significant association with the respondents' knowledge of neonatal danger signs. Husbands who had three or more children were 2.8 times more knowledgeable than those with two or fewer children. And those whose wives had a history of instrumental vaginal delivery were three times more likely to be knowledgeable than those whose wives had spontaneous vaginal delivery (SVD). And also those who accompanied their wives during the antenatal care visit were 2 times higher odds of being knowledgeable compared to their counterparts(20)

2.3.3 Source of information

A Study conducted in Gurage; Ethiopia revealed that sources of information had significant association with husbands' knowledge of neonatal danger signs. Husbands who acquired information from healthcare providers were 1.8 times more knowledgeable than those who acquired information from other sources (20)

2.4 Conceptual Framework

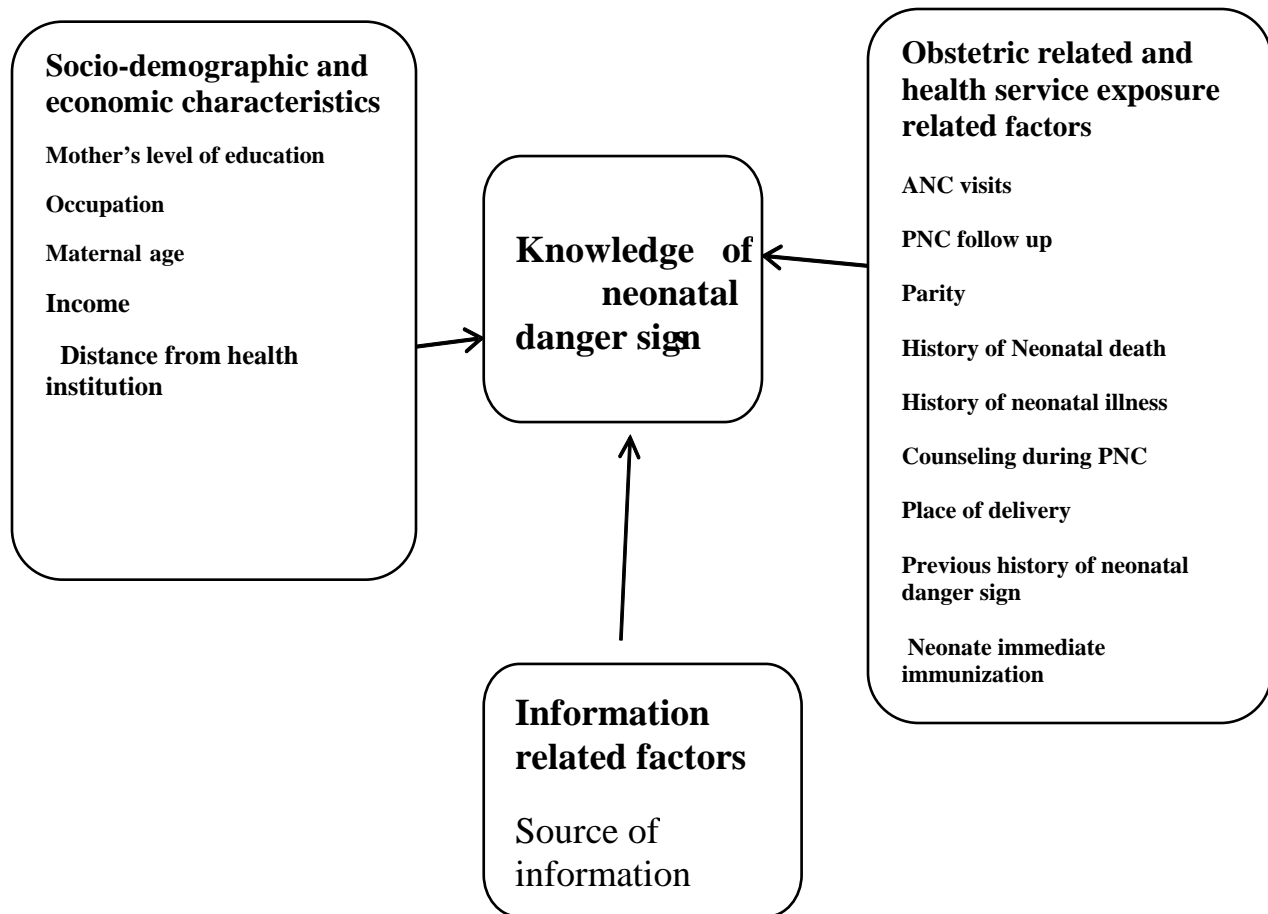


Figure 1: Conceptual framework of a study to assess knowledge of neonatal danger signs and associated factors among mothers who gave birth within the last six months in Hawassa city south Ethiopia, 2023 G.C adapted from (28, 40)(20)

3 OBJECTIVES

3.1 General Objective

To assess knowledge of neonatal danger signs and associated factors among mothers and fathers who gave birth in the last 6 months in Hawassa town, south Ethiopia, from February 6 o 20 ,2023

3.2 Specific Objectives

- ✓ To assess knowledge of neonatal danger signs among fathers and mothers who gave birth in the last 6 months in Hawassa city south Ethiopia, 2023 G.C.
- ✓ To identify factors associated with knowledge of neonatal danger signs among fathers and mothers who gave birth in the last 6 months in Hawassa Ethiopia, 2023 G.C

4 METHOD AND MATERIALS

4.1 Study Area and Setting

The study was conducted in Hawassa city. Hawassa city is the capital city of Sidama regional state. The city is located 275 KM away from Addis Ababa in the southern part of Ethiopia. From 2005 census projection, the city had population of 351,567. In a total of eight sub-cities, within the sub city there are 32 kebeles from which 250,777 were living in urban area and 100,790 were living in peri-urban area. The peri-urban area refers a setting which is partly urban and partly rural, in the city there are have 83 public and private health institutions. These are one public referral and teaching hospital, one public general hospital, 4 private primary hospitals, 9 public health centers, 17 health posts and 51 private clinics

4.2 Study Design and Period

A Community based comparative cross sectional study design was employed with quantitative method of data collection from February 6 to 20, 2023

4.3 Population

4.3.1 Source population

Source population are all mothers and fathers who lives together and have infants less than 6 months of age in Hawassa city

4.3.2 Study population

All mothers and fathers who lives together and have infants with less than 6 months of age in randomly selected kebeles of Hawassa city and who fulfill the inclusion criteria

4.4 Eligibility Criteria

4.4.1 Inclusion criteria

All mothers and fathers who live together and have infants less than 6 months of age who are residents of Hawassa city was included in this study

4.4.2 Exclusion criteria

Mothers or fathers who were seriously ill

Either of the mother or father not around

4.5 Sample Size Determination

The sample size for this study was calculated using a double population proportion formula ($n = (Z_{\alpha/2} + Z_{\beta})^2 * (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2$) by considering the following assumptions. A 95% confidence level, the margin of error (0.05), adding 10% to compensate for non-response rate, the prevalence of mothers knowledge from similar study conducted in fiche town which is 51.7(36) and prevalence of fathers knowledge conducted in Gurage zone 40.7(20) and a design effect of 2 Since we use multistage sampling method,

4.5.1 Sample size calculation for the first objective

$$n = (Z_{\alpha/2} + Z_{\beta})^2 * (p_1(1-p_1) + p_2(1-p_2)) / (p_1 - p_2)^2$$

Where

$Z_{\alpha/2}$ - is the critical value of the Normal distribution at $\alpha/2$ (e.g., for a confidence level of 95%, α is 0.05 and the critical value is 1.96)

Z_{β} - is the critical value of the Normal distribution at β (e.g., for a power of 80%, β is 0.1 and the critical value is 1.28)

P_1 and p_2 are the expected sample proportions of the two groups

P_1 = prevalence of knowledge of mothers (51.7%) (36)

P_2 = prevalence of knowledge of fathers (40.7%) (20)

$Q_1 = 1 - P_1$

$Q_2 = 1 - P_2$

$$n = (1.96 + 1.28)^2 * (0.517(1-0.517) + (0.407(1-0.407)) / (0.517 - 0.407)^2$$

$$n \approx 318$$

Since we use multistage sampling method, we use design effect of 2

n will be 636

By adding 10% non-response rate

n₁=668, n₂=668

n₁ is sample size of fathers' knowledge

n₂ sample size of mothers' knowledge

Table1: Sample size calculation for second objectives of fathers' knowledge about neonatal danger signs in Hawassa city, Ethiopia, 2023 G.C.

Independent variable	% Of outcome in exposed	% Of outcome in unexposed	Sample size	Reference
health professionals as a source of information	62.31	14.94	40	(20)
accompany their wives during the ANC visit	75	15.92	28	

Table 2: Sample size calculation for second objectives of mothers' knowledge about neonatal danger signs in Hawassa city, Ethiopia, 2023 G.C.

Independent variable	% Of outcome in exposed	% Of outcome in unexposed	Sample size	Reference
Media exposure	40.07	12.9	62	(32)
Previous neonate developed danger sign	51.1	68.3	286	

4.5.3 Sampling Procedure

A multistage sampling method was used to draw the final sample size. Hawassa city has 9 sub cities in these sub cities there are 32 kebeles. Taking 35% from total sub cities, 3 sub cities were selected by simple random sampling technique using lottery method. The selected sub cities are Meneharia tabor and Bahil Adarsh sub cities. Within selected Sub cities there are 11 kebeles then taking 35% From the total kebeles by using simple random sampling, 4 kebeles were selected using simple random sampling method. The selected kebeles are Millennium, Dume, Tilte and Andinet kebeles

Households with children less than 6 months of age within the selected kebeles were listed from the family folder of the health extension workers. The total sample size was allocated proportionally to the selected kebeles based on the number households with mothers and fathers in their respective kebeles. Then the final sample which was 668 was selected by simple random sampling technique (using computer generated list of random number) from a list of households with fathers and mothers with infants less than 6 months of age within selected kebeles which was extracted from the family folder of the health extension workers.

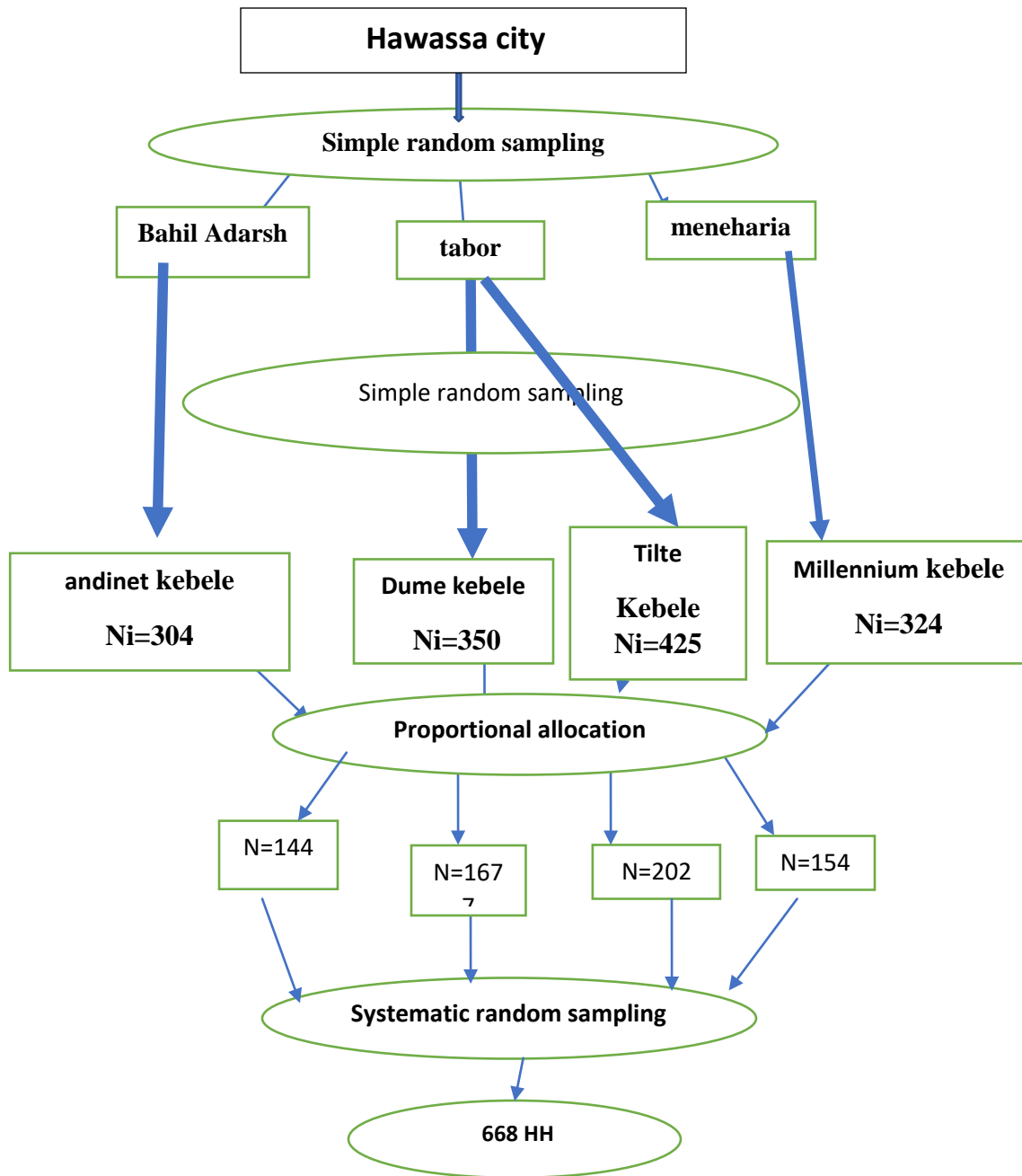


Figure 2: Schematic representation of sampling procedure of the study a study to assess knowledge of neonatal danger signs and associated factors among fathers and mothers who gave birth within the last six months in Hawassa city south Ethiopia, 2023

4.6 Data Collection Method and Tools

A questionnaire was prepared after reviewing relevant literature from previous related studies and other materials, the questionnaire is prepared in English and translated to Amharic. The questionnaire was administered with Amharic version to facilitate understanding. The questionnaire was consisted of questions that are related to Socio-demographic, obstetric, knowledge and source of knowledge characteristics of respondents.

Data was collected by, trained data collectors, who are nursing and midwifery bachelor's degree holders, through a face-to-face interview using a semi-structured questionnaire during household visits.

4.7 Variables of Study

4.7.1 The dependent variable

Fathers' knowledge of neonatal danger signs.

Mothers' knowledge of neonatal danger sign.

4.7.2 Independent variables

Socio-demographic factors of mothers: age, educational status, occupation, religion, household monthly household income

Obstetrical factors: parity, Place of birth of the last baby born, mode of delivery, ANC visit, accompanied by the husband during antenatal care (ANC) visit and post-natal care (PNC), history of last-born baby illness, history of child death, time it takes to reach nearby health institution.

Information related factors: source of information about neonatal danger signs

Socio -demographic factors of fathers: residence, educational level, household monthly income, occupation

Respondents' wife obstetric factors: number of children, history of previous neonatal loss, history of neonatal illness, ANC, accompany wife during , PNC counseling about neonatal danger sign, accompany wife at immediate PNC, time it takes to reach nearby health institution.

Information related factors: source of information about neonatal danger signs

4.8 Operational Definition

Neonatal danger sign: Signs that indicate abnormal health conditions and that happen during the first 28 days of life(4).

Knowledge of neonatal danger signs: mothers and fathers' level of awareness about neonatal danger signs(29).

Good knowledge: respondents who are able to mention at least 3 neonatal danger signs among the 11 neonatal danger signs without prompt(29).

Poor knowledge: respondents who mention less than 3 neonatal danger signs among the 11 neonatal danger signs without prompt (29)

4.9 Data Quality Control

To assure the quality of the data properly designed data collection instrument was developed and pretested before the actual survey in a comparable setting in the town of Yirgalem on 34 participants, after which the necessary corrections and modifications are made accordingly.

To avoid interference respondents were interviewed separately and consistent approach was used to ensure consistency

Two days of Training was given for data collectors on the instrument. The collected data reviewed and checked for completeness and consistency by the principal investigator.

Repeated visit was made when study households are found to be closed or when respondents are unavailable

4.10 Data processing and analysis

After collecting the data, it was checked and reviewed for completeness and consistency manually and entered into Epi-Data V.3.1, and exported to SPSS V.26 for analysis. Cross tabulation was done for exploration of the data, to clean missing value and to determine the expected count per cell.

The associations between the dependent and independent variables were examined using bivariate and multivariate logistic regression models. Variables with p-value ≤ 0.25 in bi-variate analysis were candidate for multivariate logistic regression analysis.

Multi-collinearity was checked to see the linear correlation among the independent variables by using variance inflation factor and tolerance. The Hosmer and Lemeshow test indicated that the model fit was good, with a p-value of 0.393 and 0.933 suggesting that there was no significant difference between the predicted probabilities of the model and the observed outcome frequencies, indicating a good fit between the model and the data

4.11 Ethical consideration

Ethical approval was obtained from the institutional review board of the Hawassa University College of Medicine and Health Sciences. A formal letter from Hawassa University (HU) was submitted to the concerned offices and Kebele Health extension workers.

All study participants were informed about the purpose of the study and their right to refuse to participate, and written and informed consent were obtained before the interview. The respondents were informed that the information obtained would be kept confidential and would not cause them any harm. Respondents who were willing to participate and signed the voluntary consent were interviewed.

5. RESULTS

5.1. Socio-demographic Status

A total of 633 couples with infants less than 6 months of age were included in this study, with a response rate of 94.4%. The mean age of female respondents was 24.6 (SD \pm 5.41), ranging from 17 to 37, while the mean age of male respondents was 35.2 (SD \pm 7.1), ranging from 25 to 50. Nearly one third, or 234 (37%), of the mothers had completed secondary education, while 65.2% of the fathers had attained secondary education or higher. A total of 157 mothers (24.3%) and 228 fathers (36%) worked in the government sector.

Table 3: sociodemographic characteristics of fathers and mothers who gave birth in the last 6 months in Hawassa city Ethiopia 2023 n=633

	Category	frequency	Percent
Age of mother	15-19	104	16.4
	20-24	258	40.8
	25-29	155	24.5
	30-34	50	7.9
	35+	67	10.4
Age of father	25-29	183	28.9
	30-34	135	21.3
	35+	315	49.8
Educational status of mother	No formal education	27	4.3
	Elementary	371	58.6
	High school and above	235	37.1
Educational status of father	No formal education	23	3.6
	elementary	197	31.1
	high school and above	413	65.3
Occupation of mother	House wife	225	35.5
	government employee	157	24.8
	self employed	251	39.6
Occupation of father	Government employee	229	36.1
	non-government employee	311	49.1
	self employed	94	14.8

5.2. Obstetrics Related Characteristics

Majority of the mothers 382(72.1%) had parity of less than or equal to two, while the rest had three or more children. More than half of the mothers 354(53.8%) had given birth in hospital. Majority of the mothers 533(84.4%) had ANC follow-up for the index pregnancy, and 141(22.3%) of the fathers had accompanied their partners during the follow up. Of those who

attended ANC about 193(30.5%) have attended their follow up one time and only 78(12.3%) had attended 4 times and more.

About 384(60.5%) of the fathers have visited their wives at the health facility postnatal unit when gave birth among them only 108(17.1%) of fathers received post natal discharge counseling about neonatal danger signs.

Table 4: obstetrical characteristics of mothers who gave birth in the last 6 months in Hawassa city Ethiopia 2023 n=633

	Category	frequency	Percent
Parity	two and less	382	60.3
	three and more	251	39.7
ANC	Yes	534	84.4
	No	99	15.6
Frequency of ANC	Less than 4	456	87.7
	4 and above	78	12.3
PNC	Yes	623	98.4
	No	10	1.6
Frequency of PNC	Less than 3	355	56
	3 and more	278	44
PNC counseling on NDS	Yes	204	32.5
	No	429	67.5
Mode of delivery	SVD	317	50.1
	instrumental delivery	191	30.2
	cesarean section	125	19.7
Place of delivery	Home	11	1.7
	Privet clinics and Government health centers	269	42.5
	privet and government hospitals	353	55.7
Previous history of neonatal illness	Yes	114	18.0
	No	519	82.0
Previous history of neonatal death	Yes	44	7.0
	No	589	93.0
Last born Immediate immunization of neonate after delivery	Yes	442	69.8
	No	191	30.2
Accompanied by partner at ANC	Yes	215	40.3
	No	318	59.7

5.3 Knowledge of Neonatal Danger Sign

Overall, 40.1% (95% CI 36-44) of fathers had good knowledge about neonatal danger signs whereas 56 % (95%CI 52-60) of the mothers had good knowledge about neonatal danger signs. The most commonly recognized neonatal danger signs by the fathers were yellowish discoloration or jaundice 277 (43.8%) redness of umbilicus 231(36.5%) and difficulty breathing 198(31.1%). on the other hand the commonly recognized neonatal danger sign among the mother respondents are fever 347 (54.8) convulsion 317 (50.1%) and diarrhea 332(52.4) Lack of hygiene is a commonly mentioned cause of neonatal danger sign by the majority of the mothers

Table 5: knowledge of neonatal danger signs of a study to assess knowledge of neonatal danger signs and associated factors among mothers who gave birth within the last six months in Hawassa city south Ethiopia, 2023

Neonatal danger sign	% of fathers knowledge	% of mothers knowledge
Fever	27	54.8
Difficulty breathing	31	16.7
Convulsion	9.8	50.1
Poor suckling	33.2	29.7
Hypothermia	23.1	32.1
Jaundice	48.8	32.1
Redness of umbilicus	36.5	37.8
Body weakness	22.4	27.9
Diarrhea	30.8	52.4
Eye discharge	30.5	46.8
Unconsciousness	22.4	32.1

5.3.1 Source of information

Different kind of media outlets were the source of information on neonatal danger signs for 337 (45.7%) of the fathers and 285(53.2%) of the mothers.

Table 5 source of information about neonatal danger sign among fathers and mothers who gave birth in the last 6 months in Hawassa city Ethiopia 2023 n=633

Category	Mothers		Fathers	
	N	%	N	%
Health care professionals	265	41.8	224	35.3
Media	283	44.7	337	53.2
Family/friends	74	11.7	63	9.9
More than one source	11	1.8	9	1.6

5.4. Factors associated with knowledge of neonatal danger sign

Based on bi-variate logistic regression analysis; last born child age, time to reach nearby health institution, history of neonatal illness, fathers who accompany their spouse during ANC follow-up, and having three or more children, educational status, being counseled at postnatal were candidates for multiple logistic regression analysis. Accompanied wife during ANC visit, history of neonatal illness and having three or more children and time to reach nearby health institution was significantly associated with fathers' knowledge in multivariate logistic regression analysis.

Fathers who accompanied their spouse during ANC follow-up were 2.6 times more likely to have good knowledge of neonatal danger signs than their counterparts (AOR=2.674, 95% CI 1.532- 4.667). Those who have three or more children are 2.1 times more likely to have good knowledge of neonatal danger signs than their counterparts (AOR=2.155, 95% CI 1.287-3.61). Fathers whose neonate has been sick were 3.4 times more likely to have good knowledge of neonatal danger signs than those whose neonates has never been sick (AOR=3.431, 95% CI 1.715-6.862).

Table 6: Regression analysis of Factors affecting knowledge of neonatal danger signs among fathers who have infant less than six month in Hawassa city Ethiopia 2023 n=633

Variable	category	Knowledge		COR	AOR
		poor	good		
Counseled postnatal	atYes	68	40	1.151(0.727-1.821)	0.713(0.39-1.305)
	no	164	111		
				1	
Child number	Two and less	271	111	1	
	Three and more	105	146	3.395(2.43-4.742)**	2.155(1.287-3.61)
History of illness of last born	YES	41	74	0.303(0.198-0.462)**	3.431(1.715-6.682)
	NO	335	183		
				1	
Accompany wife at ANC	YES	90	125	0.318(0.222-0.454)**	2.674(1.532-4.667)
	NO	229	101		
				1	
Time to reach health institution	30 min and less	288	208	0.771(0.521-1.141)	2.435(1.159-5.113)
	More than min	3088	49	1	
Age of last born	Less than 28 day	100	91	0.686(0.486-0.969)	1.167(0.674-2.022)
	28 days upto months	6277	169	1	

The awareness level of mothers regarding neonatal danger signs was assessed for its association with Socio-demographic, pregnancy and obstetric related variables. The bi variate logistic regression model showed that child number, neonatal death, time to reach nearby health institution, history of neonatal illness, and being counseled at PNC visit were statistically associated with knowledge of neonatal danger sign.

Variables that are significantly associated with mother's knowledge of neonatal danger sign are having a history of neonatal death, having three and more children and being counseled by health care professionals at postnatal. Mothers who suffered loss of their neonate previously are 2.4 times more likely to have good knowledge of neonatal danger sign than their counterparts (AOR=2.371,95%CI 1.145-4.911). Mothers who have three or more children are 1.4 times more knowledgeable than their counterparts.(AOR=1.499, 95%CI 1.061-2.120).Mothers who have been counseled about neonatal danger sign during their postnatal visits are 1.4 more likely to have good knowledge than their counterparts(AOR=1.482,95%CI 1.016-2.161)

Table 7 Regression analysis of Factors affecting knowledge of neonatal danger signs among mothers' who gave birth in the 6 months n=633

Category	Knowledge status		COR	AOR	
	Poor	Good			
History of neonatal death	YES	11	33	0.404(0.2-8.14)**	2.371(1.145-4.911)
	NO	266	322		
				1	
Time to reach nearby health institution	<=30 min	210	286	0.756(0.517-1.106)	1.273(0.780-1.815)
	>30 min	67	69		
				1	
History of illness of last born baby	YES	44	71	0.769(0.508-1.164)	1.325(0.783-1.942)
	NO	233	285		
				1	
Counseled PNC NDS	at YES	76	128	0.671(0.477-0.943)**	1.576(1.016-2.161)
	about	201	227		
				1	
Child number	2 and less	189	192	1.823(1.314-2.531)**	1.499(1.061-2.12)
	3 and more	88	163		
				1	
Age last born	Less than 28 days	2873	118	0.705(0.498-0.999)	1.37(0.944-1.988)
	28 days up to 6 months	205	237		
				1	

** = Statistically significant association at P- value < 0.05 in multivariate logistic regression

6. DISCUSSION

The aim of this study was to assess the knowledge of neonatal danger sign and factors associated among fathers and mothers in Hawassa city. In this study it was found that more than half of 56% of mothers and 40.6% of fathers were aware of at least three of eleven listed neonatal danger signs.

From the finding of this study the knowledge level of neonatal danger sign among mothers is in line with study done in Kenya (57.2%) (19). The result of this study is higher than study done in rural community china (42%)(22) and Bangladesh (51%) (23)and also higher than study done in woldia (11%)(30), Shashemene (33.2%)(31) and Addis Ababa(33%)(28).The possible reason for this variation might be the difference in study area and period, sample size difference, sociocultural difference, and difference in defining outcome variable. This study respondents considered to have good knowledge if they mention three and more than three WHO listed neonatal danger sign whereas the study conducted in Addis Ababa, respondents were considered to have good knowledge to have good knowledge if they mention seven or more than seven neonatal danger sign(28). The study conducted in china added locally common neonatal danger signs in addition to the WHO listed neonatal danger sign and the sampling technique used is multistage sampling in addition to this Likert scale were used to measure their level of knowledge, as a result this leads to the observed difference(22).

In this study 40.6% of fathers have good knowledge regarding neonatal danger sign. This finding is in line with a community based study done in Gurage zone Ethiopia (40.7)(20). This finding is higher than a study done in Bungoma county Kenya(50.7%) and another study done in Kathmandu Nepal (8.7%)(19, 21). The difference may be due to variations in research techniques and study setting. in the study conducted in Kenya, respondents were recruited through convenience sampling method from those accompanying their female partners to healthcare clinics, and those who mentioned at least one neonatal danger sign were considered to have good knowledge while in this study, respondents were included from selected household with husbands in the community and respondents who have mentioned three or more dangers are considered to have good knowledge. In the study conducted in Nepal, Non-probability purposive sampling technique was used to select fathers having newborn baby up to 7 days admitted in

Maternity Ward and Birthing Center and Likert scale were used to measure their level of knowledge, as a result this leads to the observed difference(21).

According to the study, most of the mothers (72.5%) were aware of fever which is a common neonatal danger sign, this is consistent with previous studies conducted in Debretabor and Mekelle(29, 32). This could be because mothers can easily detect this symptom by feeling their newborn's temperature and recognize it as a sign of a systemic infection that requires urgent attention (41). According to study the common neonatal danger sign identified by the majority of the fathers is yellow discoloration of palm and soles (jaundice).it is mentioned by 277(43.8%) of the fathers.

The study revealed that receiving postnatal counseling is a significant factor in determining whether mothers are able to mention at least three neonatal danger signs. Mothers who receive postnatal counseling have nearly double the odds of having greater knowledge in this area. This finding is in line with studies done in Mekelle, Addis Ababa, and Gurage zone ((20, 28, 29). This could be because Mothers who receive postnatal counseling are likely to have good knowledge of neonatal danger signs due to access to reliable information, the relevance of the information, reinforcement of information, and peer support. This counseling provides a supportive environment for mothers to learn about neonatal danger signs, helping them to recognize and respond promptly to neonatal danger sign

In the present study fathers who accompanied their spouse at antenatal care follow-up are more likely to have good knowledge of neonatal danger sign than their counterparts. This finding is in agreement with a study conducted in Garage zone Ethiopia. The possible explanation for this finding could be Fathers who attend antenatal care with their spouses can gain knowledge of neonatal danger signs due to the education provided by healthcare professionals during these sessions. This education and involvement in the care of their unborn child allows them to ask questions and address any concerns, enhancing their knowledge of neonatal health(20).

According to this study, both fathers and mothers with three or more babies were respectively 2.5 and 1.4 times more likely to be knowledgeable than those with two or fewer babies. This finding is consistent with the study done in Gurage zone. The possible reason for this finding

could be parents with multiple children have gone through the process of looking after newborns several times, which has provided them with the opportunity to learn about identifying neonatal danger signs(20).

In the present study Mothers who had a history of neonatal death have good neonatal danger sign knowledge than their counterpart ,this finding is similar with a study done in Mekdella woreda(35) and akin to this fathers who encountered a history of neonatal illness are more knowledgeable than their counterparts. This might be due to parents who experienced neonatal illness and neonatal death are likely to have a heightened awareness of neonatal danger signs due to their traumatic experience(35).

In this study mother's' knowledge of neonatal danger sign is greater than fathers' knowledge. This might be due to mothers' spend more time with their newborns which helps them recognize changes in the baby's appearance and behaviors. In addition societal expectation tend to place a greater responsibility on women to care for their children than fathers. Another possible explanation for this could be the health care exposure of mothers during pregnancy child birth and postpartum periods could be the reason for mothers' having relatively high level of knowledge

7. Strength and limitations of the study

7.1. Strengths of the Study

The strength of this research includes; it has used a relatively strong assessment method of knowledge. This was a community-based study that utilized appropriate design and method of analysis that suits the data.

7.2. Limitations of the study

Due to the cross-sectional study design nature which assess exposure and outcome at the same point in time the results might not indicate reverse causality. This study is not free of recall bias because all respondents were interviewed for the content of their baby aged before 28 days of life.

8. CONCLUSION AND RECOMMENDATION

8.1. Conclusion

In conclusion, in this study knowledge of neonatal danger signs among parents is low and factors that are associated with good knowledge are parity, previous history of neonatal morbidity and mortality, distance from nearby health institution, counseling at postnatal and accompanying wife at ANC follow-up.

8.2. Recommendation

For stakeholders

It is recommended that the government health office and non-government organizations that focus on maternal and child health should devise strategies to create awareness to encourage men to accompany their partners to antenatal care follow ups.

This can be achieved through the provision of information through different media outlets on the benefits of antenatal care and the importance of a supportive partner during this time.

The use of campaigns and community outreach programs can also be effective in reinforcing male participation.

For health care providers

Healthcare professionals play an important role in encouraging men to accompany their partners to antenatal care follow ups by

Providing education to men about the benefits of attending antenatal care visits,

Including the opportunity for them to ask questions, discuss neonatal warning signs clearly and comprehensively with the fathers during their attendance.

Discuss neonatal danger signs clearly and comprehensively with parents during postnatal counseling sessions,.

For researchers

To promote researchers to do more qualitative and quantitative research to assess the attitude and practice and associated factors of knowledge of neonatal danger signs

9. References

1. Marcdante KJ, Kliegman R. Nelson. *Pediatría Esencial*: Elsevier; 2019.
2. Aijaz N, Huda N, Kausar S. Disease burden of NICU, at a tertiary care hospital, Karachi. *Journal of the Dow University of Health Sciences (JDUHS)*. 2012;6(1):32-5.
3. Devine S, Taylor G, UNICEF. *Every child alive: The urgent need to end newborn deaths*: Unicef; 2018.
4. Kantorova V, Kariuki S, Kunju S, Lay KK, Li N, Riffe T, et al. *Levels & Trends in Child Mortality Report 2021*. Unicef; 2021.
5. CSA I. Central Statistical Agency (CSA)[Ethiopia] and ICF. *Ethiopia Demographic and Health Survey 2016*. Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF; 2016. 2017.
6. Indicators K. *Mini demographic and health survey*. EPHI and ICF. 2019.
7. Richai G, Rav A. *Committing to child survival: a promise renewed*. *Australasian Medical Journal (Online)*. 2012;5(12):644.
8. Awasthi S, Verma T, Agarwal M. *Danger signs of neonatal illnesses: perceptions of caregivers and health workers in northern India*. *Bulletin of the world health organization*. 2006;84:819-26.
9. Bulto GA, Fekene DB, Moti BE, Demissie GA, Daka KB. *Knowledge of neonatal danger signs, care seeking practice and associated factors among postpartum mothers at public health facilities in Ambo town, Central Ethiopia*. *BMC research notes*. 2019;12(1):1-7.
10. Sreeramareddy CT, Shankar RP, Sreekumaran BV, Subba SH, Joshi HS, Ramachandran U. *Care seeking behaviour for childhood illness-a questionnaire survey in western Nepal*. *BMC international health and human rights*. 2006;6(1):1-10.
11. Roshin M, Sujatha R. *A study on father's knowledge and attitude towards their role in child care in selected areas of Mangalore with a view to develop an informational booklet*. *Journal of Health and Allied Sciences NU*. 2013;3(02):063-8.
12. Health FMO. *National newborn and child survival strategy document brief summary 2015/16-2019/20*. FMOH;. 2015.
13. Syed U, Khadka N, Khan A, Wall S. *Care-seeking practices in South Asia: using formative research to design program interventions to save newborn lives*. *Journal of perinatology*. 2008;28(2):S9-S13.
14. Abu-Shaheen A, Alfayyad I, Riaz M, Nofal A, AlMatary A, Khan A, et al. *Mothers' and caregivers' knowledge and experience of neonatal danger signs: a cross-sectional survey in Saudi Arabia*. *BioMed research international*. 2019;2019.
15. Tiwari G, Thakur AK, Pokhrel S, Tiwari G, Pahari DP. *Health care seeking behavior for common childhood illnesses in Birendranagar municipality, Surkhet, Nepal*: 2018. *Plos one*. 2022;17(3):e0264676.
16. Yogman M, Garfield CF, Bauer NS, Gambon TB, Lavin A, Lemmon KM, et al. *Fathers' roles in the care and development of their children: the role of pediatricians*. *Pediatrics*. 2016;138(1).
17. Greenspan JA, Chebet JJ, Mpembeni R, Mosha I, Mpunga M, Winch PJ, et al. *Men's roles in care seeking for maternal and newborn health: a qualitative study applying the three delays model to male involvement in Morogoro Region, Tanzania*. *BMC Pregnancy and Childbirth*. 2019;19(1):1-12.
18. Asabu MD, Altaseb DK. *The trends of women's autonomy in health care decision making and associated factors in Ethiopia: evidence from 2005, 2011 and 2016 DHS data*. *BMC Women's Health*. 2021;21:1-9.
19. Roney E, Morgan C, Gatungu D, Mwaura P, Mwambeo H, Natecho A, et al. *Men's and women's knowledge of danger signs relevant to postnatal and neonatal care-seeking: A cross sectional study from Bungoma County, Kenya*. *PloS one*. 2021;16(5):e0251543.

20. Shitu S, Abebe H, Adane D, Wassie A, Mose A, Yeshaneh A. Knowledge of neonatal danger signs and associated factors among husbands of mothers who gave birth in the last 6 months in Gurage Zone, Southern Ethiopia, 2020: a community-based cross-sectional study. *BMJ open*. 2021;11(8):e045930.
21. Dangol R, Koirala R. Awareness of Fathers Regarding Newborn Danger Signs: Evidence from a Tertiary Level Hospital of Kathmandu, Nepal. *Open Journal of Nursing*. 2020;10(2):194-207.
22. Zhou J, Hua W, Zheng Q, Cai Q, Zhang X, Jiang L. Knowledge about neonatal danger signs and associated factors among mothers of children aged 0–12 months in a rural county, Southwest of China: a cross-sectional study. *BMC Pregnancy and Childbirth*. 2022;22(1):346.
23. Zaman SB, Gupta RD, Al Kibria GM, Hossain N, Bulbul MMI, Hoque DME. Husband's involvement with mother's awareness and knowledge of newborn danger signs in facility-based childbirth settings: a cross-sectional study from rural Bangladesh. *BMC research notes*. 2018;11:1-6.
24. Sandberg J, Odberg Pettersson K, Asp G, Kabakyenga J, Agardh A. Inadequate knowledge of neonatal danger signs among recently delivered women in southwestern rural Uganda: a community survey. *PLoS One*. 2014;9(5):e97253.
25. Msiba GH, Assenga EN, Ndossa A, Mchomvu F, Zuechner A. Knowledge of essential newborn care and neonatal danger signs amongst post-natal mothers in Dar es Salaam, Tanzania. *Journal of Public Health in Africa*. 2022;13(3).
26. Demis A, Gedefaw G, Wondmieneh A, Getie A, Alemnew B. Women's knowledge towards neonatal danger signs and its associated factors in Ethiopia: a systematic review and meta-analysis. *BMC pediatrics*. 2020;20(1):1-13.
27. Molalegn M, Yohannes F. Assessment of mother's knowledge about neonatal danger sign and associated factors in Sodo town, Wolaita Zone, Southern Ethiopia. *J Prev med*. 2021;6(3):80.
28. Ayele WE, Bante A, Wubie AB, Murugan R, Tesfaye T, Tesema GW. Knowledge on neonatal danger signs and associated factors among post natal mothers in public hospitals of Addis Ababa, Ethiopia, 2019. A cross-sectional study. 2022.
29. Adem N, Berhe KK, Tesfay Y. Awareness and associated factors towards neonatal danger signs among mothers attending public health institutions of Mekelle City, Tigray, Ethiopia, 2015. *J Child Adolesc Behav*. 2017;5(06):365.
30. Jemberia MM, Berhe ET, Mirkena HB, Gishen DM, Tegegne AE, Reta MA. Low level of knowledge about neonatal danger signs and its associated factors among postnatal mothers attending at Woldia general hospital, Ethiopia. *Maternal health, neonatology and perinatology*. 2018;4:1-8.
31. Tesfaye DG, Koboto DD, Gezahegn H. Maternal knowledge, health care seeking behaviour and associated factors for neonatal danger signs among postpartum mothers in Shashamane Town, Ethiopia: Cross sectional study. *International Journal of Africa Nursing Sciences*. 2022;17:100438.
32. Kebede AA, Cherkos EA, Taye EB. Mother's knowledge of neonatal danger signs and health-seeking practices and associated factors in debretabor, Northwest Ethiopia: a community-based cross-sectional study. *Research and Reports in Neonatology*. 2020:47-58.
33. Degefa N, Diriba K, Girma T, Kebede A, Senbeto A, Eshetu E, et al. Knowledge about neonatal danger signs and associated factors among mothers attending immunization clinic at Arba Minch General Hospital, Southern Ethiopia: a cross-sectional study. *BioMed Research International*. 2019;2019.
34. Asfaw T. Knowledge on Neonatal Danger Sign and Associated Factors among Mothers who Give Birth in Arerti General Hospital, Ethiopia from September, 2017-September 2018. *ARC J Nurs Healthc*. 2019;5:1-7.
35. Molla G, Miskir Y. Level of Knowledge About Neonatal Danger Signs and Determinant Factors Among Recently Delivered Mothers in Mokedella Woreda, Northeast Ethiopia 2018: A Cross-Sectional Study. *Northeast Ethiopia*. 2018.

36. Bekele F, Bekele K, Mekonnen M, Jemal K, Fekadu G. Mothers' knowledge and their health seeking behavior about neonatal danger signs and associated factors in Fiche town, Oromia region, Ethiopia. *Journal of Neonatal Nursing*. 2020;26(6):324-9.
37. Getachew T, Assebe T, Dheresa M, Eyeberu A, Gereziher T. Knowledge of Neonatal Danger Signs and Associated Factors Among Mothers Who Gave Birth in the Past Six Months in Chole District, Arsi Zone, South East Ethiopia: Cross sectional Study. 2020.
38. Abate HA, Girma M, Shiferaw Z. Knowledge and health seeking practice of mothers on neonatal danger signs and its associated factors at East Belesa Woreda, Northwest Ethiopia 2020. *PAMJ-One Health*. 2022;7(5).
39. Nigatu SG, Worku AG, Dadi AF. Level of mother's knowledge about neonatal danger signs and associated factors in North West of Ethiopia: a community based study. *BMC research notes*. 2015;8(1):1-6.
40. Mersha A, Assefa N, Teji K, Bante A, Shibiru S. Mother's level of knowledge on neonatal danger signs and its predictors in Chench District, Southern Ethiopia. *Am J Nurs Sci*. 2017;6(5):426.
41. Zenebe GA, Gebretsadik S, Muche T, Sisay D, Meno A, Hareru HE, et al. Level of Mothers'/Caregivers' Healthcare-Seeking Behavior for Child's Diarrhea, Fever, and Respiratory Tract Infections and Associated Factors in Ethiopia: A Systematic Review and Meta-Analysis. *BioMed Research International*. 2022;2022.

Annex 1

Information Sheet and Consent Form (English Version)

Good morning, good afternoon, good evening [According to its convenience]. My name I_____. I came from Hawassa University to gather information about, for the research being done by selamawit abera a 3rd year Masters student at Hawassa University. So, I want to ask you some questions. Your participation in the study is completely voluntary. Your name will not be used in any publications or presentations of the results of the study, and I promise to keep the confidentiality of your reply. It takes us about 30 minutes. Though it seems long time, the study is expected to help in the improvement of child health. You may refuse to answer any of the questions and you may choose not to participate or you can withdraw at any time you like if you are not willing to take part. There are no known risks associated with participating in this study. There are also no direct financial benefits you earn for your participation; however, it is hoped that your participation and genuine responses are more helpful for the completeness of this work. As a result, I kindly request you to participate in genuinely answering.

I agree to participate

I don't agree to participate

Informed consent

I have been briefly informed about the study and I clearly understood the purpose, risks, benefit, and the right to participate and withdraw at any time. Since it doesn't affect my personal life, I don't need any remedy. I have been informed that there is no direct financial benefit for my participation. Consequently, I here approve my consent to take part in the study as an interviewee with my signature.

Signature _____ Date _____

Instruction Read each question carefully, and then answer the question accordingly

Part I: Socio-demographic factors

101	Age		
102	Occupation	1 government employee 2 non gov employee 4 self-employed 5 other	
103	Educational status	1 no formal education 2 primary school 3 secondary school 4 tertiary and above	
105	Monthly income		
106	Residence	1 urban 2 rural	

Part II: obstetric and health service exposure related questions of respondents' wife

No	Questions	options	Skip
201	How many babies your wife gave birth totally		
202	Number of children you have now		
203	Place of birth for the last-born child	1 home 2 health center 3 hospital	
204	Mode of delivery for the last-born child	1 spontaneous vaginal delivery 2 instrumental delivery 3 cesarean section	
205	Sex of the last born baby	1 female 2 male	
206	Age of the last born baby in days		
207	Did your wife attend antenatal care during her recent pregnancy	1 yes 2 no	If no skip to question no 112
208	How many times did your wife attend ANC	1 one time 2 two times 3 three times 4 four times and more	
209	Did you accompany her during her ANC contact	1 yes 2 no	If no skip to question 114

210	How many times did you accompany her		
211	Did you accompany your wife at the health facility post-natal care unit when she gave birth	1 yes 2 no	
210	History of neonatal illness	. 1 Yes . 2 No	
211	History of neonatal death	. 1 Yes . 2 No	

Part III: knowledge about neonatal danger sign

301 could you mention neonatal danger sign that you know?

No	List of neonatal danger sign	Use
1	Convulsions	
2	Fever	
3	Poor feeding/suckling	
4	Difficulty breathing/fast breathing	
5	Body weakness	
6	Hypothermia	
7	Umbilical redness/discharge	
8	Yellow palms	
9	Diarrhoea	
10	Eye draining/pus/redness	
11	Unconsciousness	

Part IV: Source of Information about neonatal danger signs and Health Workers Counseling related question		
401.	Have you ever heard about neonatal danger signs?	1. Yes 2. No
402.	From which source did you get the information? <i>(Multiple response is possible)</i>	1. Health professionals (nurse, Doctor or midwifery and public health office) 2. Health Extension Workers (HEWs) 3. Radio

		4. Television 5. Other_____ 6. more than one source	
--	--	---	--

Knowledge on neonatal danger signs and associated factors among mothers

Part I: Socio-demographic factors

S. No	Question	Response	Skip
101.	Age of the mother	_____ in complete year	
102.	Religion	1. Orthodox 2. Protestant 3. Catholic 4. Muslim	
103.	Educational status of the mother	1. Cannot able to read and write 2. Primary education 3. Secondary education 4. College and above	
104.	Occupation of mother	1. House wife 2. Merchant 3. Government employee 4. NGO employee 5. Daily laborer 6. Other, Specify	
105	Residence	1 urban 2 rural	
108.	How much your family's total monthly income (brr)?		
109	Time it takes to reach nearby health institution		
Part II: Maternal health Services and obstetric questioners			
201	How many times did you give birth?		
202.	Did you have antenatal care visit for the latest pregnancy?	1. Yes 2. No	If "No"s kip

203.	How many times did you receive antenatal care service for last born child?	_____	
204.	Where did you give birth of you last born child?	1. Health Center 2. Hospital 3. Home	
206.	In which mode of delivery did you give birth your last born child?	1. Spontaneous vaginal delivery 2. Instrumental assisted delivery 3. Cesarean section	
205	Sex of the last born baby	1 female 2 male	
206	Age of the last born baby in days		
207	Did you have immediate Post Natal Care visit for the last born baby?	1 Yes 2 No	
208.	How many times did you get PNC visits?	_____	If no skip Q210
209	Did you get the education about neonatal danger signs during PNC visit?	1. Yes 2. No	
210	History of neonatal illness	1 Yes 2 No	
211	History of neonatal death	1 Yes . 2 No	

Section 3: knowledge about neonatal danger sign

part III: knowledge about neonatal danger sign

301 could you mention neonatal danger sign that you know?

No	List of neonatal danger sign	Use
1	Convulsions	
2	Fever	
3	Poor feeding/suckling	
4	Difficulty breathing	
5	Fast breathing	
6	Hypothermia	
7	Umbilical redness/discharge	
8	Yellow palms	
9	Diarrhoea	
10	Eye draining/pus/redness	
11	Unconsciousness	

Part IV: Source of Information about neonatal danger signs and Health Workers Counseling related question

401.	Have you ever heard about neonatal danger signs?	3. Yes 4. No	If "No" skip
402.	From which source did you get the information? <i>(Multiple response is possible)</i>	7. Health professionals (nurse, Doctor or midwifery and public health office) 8. Health Extension Workers (HEWs) 9. Radio 10. Television 11. Other_____ 12. more than one source	

□□□

□□□ □□□ □□□□ □□□ □□□□ □□ □□□ □□□ □□□□□□□□ □□□ □□ □□□□□
□□□ □□□□ □□□□ □□ □□□□□ □□□□ □□□□ □□□□□□ □□□□□□ □□□□□□/
□□□□□ □□□□ □□□□ □□ □□□□□□□ □□ □□□□□ □□ □□□□□□ □□□ □□□□□
□□□□ □□□□□ □□□□ □□□□□□ □□□ □□□□□ □□□□ □□□□ □□□ □□□□ □□□□
□□ □□□□ □□□□□□□ □□□□□ □□ □□□□□ □□ □□□ □□□□ □□□□ □□□□ □□□□
□□□□□ □□ □□□□ □□□□□□□□ □□□□ □□□□□ □□□□□□

□□□□□□□

□□□ □□□ □□ □□□□□ □□□ □□□ □□□□□□□ □□□□ □□□□□□ □□□□□ □□□
□□□□□ □□ □□ □□□ □□□□ □□□□□□ □□□□□□ □□□□ □□ □□□ □□□□□ □□
□□□□ □□ □□□□□□ □□□□ □□□□□□ □□□ □□□□ □□□□ □□□□ □□□□□□□□
□□ □□□□

□□□□□□□ □□□

□□□ □□□ □□□□ □□□ □□□□□□ □□□□□□ □□□□ □□□□□□ □□□□□ □□□□
□□□□□□□□ □□□□□□ □□ □□□□ □□□□□□

□□□□ □□□ □□□□ □□□□□ □□□□ □□□□□□□

□□□□ 0962476303 □□□□@gmail.com

II □□□□ □ □□□□ □□

□□□□ □□□ □□□ □□□□□□□ □□□□□ □□□ □□□ □□□ □□□ □□ □□□□□□ □□
□□□□□ □□□□□□ □□□ □□□□□ □□□□□□ □□□□□□ □□□□□ □□□ □□ □□□□
□□□ □□□□□□ □□□ □□□□□ □□ □□□□ □□□ □□□□□□ □□ □□□□□ □□□ □□□□
□□□ □□□□□□ □□□□□□□

□□□ □□□□□ □□□ □□□□ □□□□ □□ □□□□□ □□□□□□□?

□□ □□□□□□□□

(□□□□□ □□□□ □□□□ □□□□□□ □□□□□□ □□□□ □□□□ □□□□ □□□□ □□□ □□
□□□□□□)

□□□□□ □□ ----- □□□ ----- □□ -----/------/------

□□□ **II** □□□□

□□□ □□□-□□□□□□□□ □□ □□□ □□□□□□

□.□ □□□ □□□ □□□□
□□

101 □□□□ □□□ _____

102 □□□□ □□□□□□ □□□ □□□
(□□□□ □□□□)

103 □□□□ □□□□□□ □□□ □□? _____

104 □□□□□□ □□□□
1. □□□□ □□□□□ □□□□□□
2. □□□□ □□□
3. □□□□ □□□ □□ □□□□
□□□

105 □□□ □□□□ □□?
1. □□□□□□ □□□□
2. □□□ □□□□ □□ □□□□
3. □□□ □□ / □□□ □□□□
4. □□□
5. □□ (□□□□)_____

106 □□□□□ □□
1 □□□
2 □□□

107 □□□□□ □□□□ □□
-----□□

□□□ □□□□ □□□□ □□□□ □□ □□□□□ □□□□ □□□ □□□ □□□□ □□□□□ □□□□ □□□□□ □□□□□

108. □□□□□□ □□□□ □□□□ □□ □□□□□ □□□□ □□□ □□□ □□□□ □□□□□□ □□□□ □□□□?

-

□.□ □□□□ □□□□ □□ □□□□□ □□□□ ‘√’ □□□□ □□□□ □□ □□□ □□□ □□□□□□□□

1 □□□□□□ □□□ □□□□□□□

2 □□□□

3 □□□□ □□□□□□ □□□ □□□□ □□□□□

4 □□□□□□ □□□□□/□□ □□ □□□□□□

5 □□□□□□ □□□ □□□□

6 □□□□□□ □□□□□/□□□□□

7 □□□ □□□ □□ □□□□□ □□□ □□ □□□

8 □□□ □□□ □□□□□□□

9 □□□□

10 □□□□ □□□□ □□□□/□□□□ □□□ □□□□ □□□□ □□□□ □□□□

11 □□ □□□□/□□□□ □□□

□□□ □□□ □ □□□□□ □□□□ □□□ □□□□ □□□□ □□□ □□□□□ □□□□□□□ □□□□□□ □□□□□□

□.□ □□□□□□

□□□

□□□□

□□

- 201 □□□□ □□□□□ □□□ □□□□
□□□□□?
- 202 □□□ □□□ □□□□ □□□ —
- 203 □□□□ □□□□□ □□ □□ □□□□□□/□□? 1.□□
2.□□ □□□
3.□□□□□
- 204 □□□□□ □□□□ □□□□□ □□ 1.□□□□□ □□/□□□
□□□□□□□/□□□? 2.□□□□□□ □□□
3.□□□□ □□□
- 205 □□□□□ □□□□ □□□□□□□□ □□□□ 1.□□ □□□□□
□□□ □□□□ □□□□□□? 2.□□□□□□□□□ □□ □□ □.□
122 □□□
- 206 □□□ □□ □□□□ □□□□□□□? 1. □□□ □□
2.□□□ □□
3.□□□ □□
4.□□□ □□ □□□ □□□ □□□
- 207 □□□□ □□□ □□□□ □□□ □□□□□ 1.□□ □□□□□
□□□ □□□□□? 2. □□□□□ □□ □□ □.□
122 □□□
- 208 □□□ □□ □□□□□ □□□□□? —
- 209 □□□□□ □□□□ □□□ □□□ □□□ 1.□□
□□□□□□□ □□□□□? 2. □□□□□
- 210 □□□□□ □□□□ □□□ □□□ □□□ 1.□□ □□□□□
□□□□ □□□□? 2. □□□□□ □□ □□ □.□
125 □□□

211

□□□□ □□□ □□□ □□□ □□□□ □□□□

□□ □□□□□ □□□□ □□□ □□□ □□□□

□□□□□□ □□□□□□ □□□□ □□□□□□

□□□□□□?

1. □□
2. □□□□□

125

□□□□□ □□□□ □□□ □□□ □□□□□□□

□□□□ □□□ □□□□ □□□□□ □□□□?

1. □□
2. □□□□□

12

6 □□□□ □□ □□□□□□ □□□□ □□

□□□ □□□□ □□□□?

1. □□
2. □□□□□

□□□□□ □□

□□ □.□ 129

□□□

12

9 □□□ □□ □□□□□□ □□□ □□□

□□□□□ □□□□ □□ □□□ □□□

□□□□□?

_____ (□□□□)

13

0 □□ □□□□/□□□ □□□□?

1. □□
2. □□□□□

□□□□□ □□

□□ □.□ 132

□□□

□□□ □□□□ □□ □□□ □□□□ □□□□ □□□□ □□□□ □□□□ □□□ □□□ □□□□□□

□□□□□

- 13 □□ □□□ □□□□ □□□□ □□□□ □□□□□
 - 2 □□□□□□ □□□ □□□ □□□□?
1. □□□ □□□□
 2. □□□□

3. □□□□□ / □□□□

4. □□ □□ _____

□□□□□□ □□□ □□□□□□□□□□

□□□ **III** □□□□

□□□ □□□-□□□□□□□□ □□ □□□ □□□□□

- .□□ □□□ □□□ □□□□
-
- 101 □□□ _____
- 102 □□□□ □□□□□□ □□□ □□□ (□□□□ □□□□) _____
- 103 □□□□ □□□□□□ □□□ □□? _____
- 104 □□□□□□ □□□□
1. □□□□ □□□□□ □□□□□□
 2. □□□□ □□□
 3. □□□□ □□□ □□ □□□ □□□
- 105 □□□ □□□□ □□?
1. □□□□□□ □□□□
 2. □□□ □□□□ □□ □□□□
 3. □□□ □□ / □□□ □□□□
 4. □□□
 5. □□ (□□□□)_____
- 106 □□□□□ □□
- 1 □□□
 - 2 □□□
- 107 □□□□□ □□□□ □□
-

□□□ □□□□ □□□□ □□□□ □□ □□□□□ □□□□ □□□ □□□ □□□□ □□□□□ □□□□ □□□□□ □□□□□

108. □□□□□□ □□□□ □□□□ □□ □□□□□ □□□□ □□□ □□□ □□□□ □□□□□□ □□□□ □□□□?

-

□.□ □□□□ □□□□ □□ □□□□□ □□□□ ‘√’ □□□□ □□□□ □□ □□□ □□□ □□□□ □□□□□□

1 □□□□□□ □□□ □□□□□□

2 □□□□

3 □□□□ □□□□□□ □□□ □□□□ □□□□□

4 □□□□□□ □□□□/□□ □□ □□□□□

5 □□□□□ □□□ □□□□

6 □□□□□ □□□□□/□□□□□

7 □□□ □□□ □□ □□□□ □□□ □□ □□□

8 □□□ □□□ □□□□□□

9 □□□□

10 □□□□ □□□□ □□□□/ □□□□ □□□ □□□□ □□□□ □□□□

11 □□ □□□□/ □□□□ □□□

□□□ □□□ □ □□□□ □□□□ □□□□ □□□ □□□□□ □□□□□□ □□□□□□

□.□□ □□□□ □□□ □□□□

201 □□□□□□ □□□ □□□□ □□□□□?

203 □□□□ □□□□□ □□ □□ □□□□□□/□□?
1.□□
2.□□ □□□
3.□□□□□

204 □□□□□ □□□□ □□□□□ □□
□□□□□□□/□□?
1.□□□□□ □□/□□□
2.□□□□□ □□□
3.□□□ □□□

205 □□□□ □□□□□□ □□□□ □□□ □□□□
□□□□ ? □□□□□ □□ □
□.□ 122 □□□

206 □□□ □□ □□□□ □□□□□□?
1. □□□ □□
2.□□□ □□
3.□□□ □□
4.□□□ □□ □□□ □□□
□□□

207 □□□□ □□□ □□□□ □□□ □□□□□□□□□□
□□□ □□□□? □□□□□ □□ □
□.□ 122 □□□

208 □□□ □□ □□□□□ □□□□?

209 □□□□ □□□ □□□ □□□□□□□□□□
□□□□□□ □□□□?
1.□□
2. □□□□□

210 □□□ □□ □□□ □□□ □□□□ □□□□□□?

211 □□□□ □□□ □□□ □□□ □□□□ □□□□ □□
□□□□□
□□□□ □□□ □□□ □□□□ □□□□□□□
□□□□□□ □□□□ □□□□□□ □□□□□□□?

□□□□□

12
 6 □□□□ □□ □□□□□□ □□□□ □□
 □□□ □□□□ □□□□?

1. □□
2. □□□□□

□□□□□
 □□ □□
 □.□ 129 □□□

12 □□□ □□ □□□□□□ □□□ □□□
 9 □□□□□ □□□□ □□ □□□ □□□
 □□□□□?

_____ (□□□□)

13 □□ □□□□/□□□ □□□□?
 0

- 1.□□
- 2.□□□□□

□□□□□ □□
 □.□ 132 □□□

□□□ □□□□ □□ □□□ □□□□ □□□□ □□□□ □□□□ □□□ □□□□□□
 □□□□□

13 □□ □□□ □□□□ □□□□ □□□□□
 2 □□□□□□ □□□ □□□ □□□?

1. □□□ □□□□
2. □□□□
3. □□□□□ / □□□□
- 4.□□□ □□

□□□□□□ □□□ □□□□□□□□□□