



HARAMAYA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

**PREVALENCE OF PRETERM BIRTH AND ASSOCIATED FACTORS AMONG
WOMEN WHO GAVE BIRTH IN HEALTH FACILITIES IN GAROWE, PUNTLAND,
SOMALIA**

M.Sc. RESEARCH THESIS

BY

HIBAQ AWIL ELMİ (BSC)

College: Health and Medical Sciences

School Department: Nursing

Program: Maternity and Neonatal Nursing

DECEMBER, 2025

HARAR, ETHIOPIA

HARAMAYA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

**PREVALENCE OF PRETERM BIRTH AND ASSOCIATED FACTORS AMONG
WOMEN WHO GAVE BIRTH IN HEALTH FACILITIES IN GAROWE, PUTLAND,
SOMALIA.**

**A RESEARCH THESIS TO BE SUBMITTED TO THE COLLEGE OF HEALTH AND
MEDICAL SCIENCES, SCHOOL OF GRADUATE STUDIES, HARAMAYA
UNIVERSITY, FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF SCIENCE IN MATERNITY AND NEONATAL NURSING**

Major Advisor: Abera Kenay (PhD, Associate Professor)

Co-Advisor: Kedir Teji (PhD, Associate Professor)

**DECEMBER 2025
HARAR, ETHIOPIA**

APPROVAL SHEET

HARAMAYA UNIVERSITY

POSTGRADUATE PROGRAM DIRECTORATE

I hereby certify that I have read and evaluated this thesis entitled “Prevalence of preterm birth and associated factors among mothers who gave birth in health facilities in Garowe, Puntland, Somalia.” Prepared under my guidance by Hibaq Awil Elmi. I recommend that it be submitted as fulfilling the thesis requirement.

Dr. Abera Kenay	_____	_____
Major Advisor	Signature	Date
Dr. Kedir Teji	_____	_____
Co-advisor	Signature	Date

As a member of the Board of Examiners of the MSc Thesis Open Defense Examination, I certify that I have read and evaluated the Thesis prepared by Hibaq Awil Elmi and examined the candidate. I recommend that the thesis be accepted as fulfilling the thesis requirements for the MSC Degree in Maternity and Neonatal Nursing

_____	_____	_____
Chair Person	Signature	Date
_____	_____	_____
Internal Examiner	Signature	Date
_____	_____	_____
External Examiner	Signature	Date

Final approval and acceptance of the thesis is contingent upon the submission of its final copy to the Postgraduate Program Council (PGPC) through the Candidate’s Department or School Graduate Committee (DGC or SGC).

STATEMENT OF THE AUTHOR

I declare and affirm that this Thesis is my work. I have followed all ethical and technical principles of scholarship in the preparation, data collection, data analysis, and compilation of this Thesis. Any scholarly matter that is included in the Thesis has been given recognition through citation.

This Thesis is submitted in partial fulfillment of the requirements for an MSc degree at Haramaya University. It is deposited in the Haramaya University Library and made available to borrowers under the library's rules. I solemnly declare that this Thesis has not been submitted to any other institution for the award of an academic degree, diploma, or certificate.

Brief quotations from this may be made without special permission, provided that accurate and complete acknowledgement of the source is made. Requests for permission for extended quotations from or reproduction of this Thesis in whole or in part may be granted by the Head of the School or Department when, in his or her judgment, the proposed use of the material is in the interest of scholarship. In all other instances, however, permission must be obtained from the author of the Thesis.

Name: Hibaq Awil Elmi

Signature: _____

Date of Submission: _____

School: Nursing and Midwifery _____

DECLARATION OF ORIGINALITY

I declare that this thesis is the result of my work and that all sources of information used have been acknowledged. This thesis has not been previously submitted for any academic degree or qualification at any other institution.

ACKNOWLEDGEMENTS

First, I would like to express my profound appreciation to Allah, who has allowed me to start and complete this study. I would also like to express my gratitude to Haramaya University particularly College of Health and Medical Sciences, School of Nursing for providing me the opportunity to continue my master's degree. Next, I would like to thank my advisors for their valuable comments and guidance in the preparation of this research thesis finally, compiling this work is not an easy task. It has resulted from combined efforts and assistance from several individuals and institutions. I express my sincere gratitude to all for their support and encouragement.

TABLE OF CONTENTS

APPROVAL SHEET	i
STATEMENT OF THE AUTHOR	ii
DECLARATION OF ORIGINALITY	iii
ACKNOWLEDGEMENTS.....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES	ix
LIST OF FIGURES	x
ABBREVIATIONS AND ACRONYMS.....	xi
ABSTRACT	xii
1. INTRODUCTION.....	1
1.1 Background.....	1
1.2 Statement of the problem.....	2
1.3 Significance of the study	4
1.4 Objectives	4
1.4.1 General objective.....	4
1.4.2 Specific objectives	4
2. LITERATURE REVIEW.....	5
2.1 Prevalence of preterm births.....	5
2.2. Factors Associated with Preterm Births.....	7
2.2.1 Socio-demographic factors:.....	7
2.2.1.1 Residential factor	7
2.2.3 Socioeconomic factors	7
2.2.3.1 Economic factor.....	7

2.2.4 Medical problems and chronic conditions	8
2.2.4.1 Hypertension	8
2.2.4.1.1 Preeclampsia.....	8
2.2.4.2 Malaria.....	8
2.2.5 Obstetric factors.....	8
2.2.5.1 Antenatal factor	8
2.2.5.2 Antepartum hemorrhage.....	9
2.2.5.3 Premature rupture of membrane	9
2.2.5.4 Multiple pregnancy factor.....	9
2.2.5.5 Delivery factor.....	9
2.2.6 Others.....	10
2.2.6.1 Birth weight factor	10
2.2.6.2 Past Obstetric factor	10
2.3 Conceptual Framework.....	11
3. METHODS AND MATERIALS	12
3.1 Study Area and Period	12
3.2 Study Design	12
3.3 Population.....	12
3.3.1 Source Population	12
3.3.2 Study Population	13
3.4 Inclusion and Exclusion Criteria	13
3.4.1 Inclusion Criteria	13

3.4.2 Exclusion criteria	13
3.5 Sample size determination.....	13
3.6 Sampling technique	14
3.7 Data collection methods	16
3.7.1 Data collection tool	16
3.7.2 Data Collection Technique.....	16
3.7.3 Data collectors.....	16
3.8 Study Variables	16
3.8.1 Dependent Variable	16
3.8.2 Independent Variables	16
3.9 Operational definitions	17
3.10 Data Quality Control	17
3.11 Data Processing and Analysis	17
3.12 Ethical Consideration	18
3.13 Information dissemination.....	18
4. RESULTS	19
4.1 Demographic characteristics.....	19
4.2 Obstetric-related factors.....	20
4.3 Medical characterized of the mother	21
4.4 Fetal-related factors	22
4.5 Prevalence of preterm birth	23
4.6 Factors associated with preterm birth	23
4.7:	24
5. DISCUSSION.....	26
5.1 Strength of the study.....	27
5.2 Limitations of the study.....	27

6. CONCLUSION AND RECOMMENDATIONS.....	28
5.1 Recommendations.....	28
7. REFERENCES:.....	29
8. ANNEXES.....	33
8.1 Participant Information Sheet and Informed Voluntary Consent Form for the Head of the institution.....	33
8.2 Participant Information Sheet and Informed Voluntary Consent Form (for competent adults: ages > 18 years).....	35
8.3 participant information sheet and informed voluntary consent form for a minor (age < 18 years)/vulnerable individual to be signed by his/her legally competent representative (e.g.: parent/guardian).....	37
8.4 Somali version of participant information sheet and informed voluntary consent for the participants (for competent adults: ages > 18 years).....	39
8.5 Somali version of participant information sheet and informed voluntary consent for the participants age < 18 years)/vulnerable individual to be signed by his/her legally competent representative (e.g.: -parent/guardian).....	42
8.6 A QUESTIONNAIRE.....	44
8.7 A Somali version of a questionnaire	48
Tilmaamo	48
8.8 Curriculum Vitae	50

LIST OF TABLES

Table 1: Sample size determination for the associated factors	14
Table 2. Socio-demographic characteristics of study participants.	19
Table 3 Obstetric-related factors of the mother.....	20
Table 4 Medical characteristics of the mother	21
Table 5 Fetal-related factors.....	22
Table 6. Associated factors of preterm birth among mothers who gave birth in health facilities in Garowe, Puntland, Somalia, from April 10 to May 1, 2022 (n=419)	25

LIST OF FIGURES

Figure 1: Conceptual framework developed by reviewing scientific literature.....	11
Figure 2 Schematic presentation of sampling procedure of prevalence of preterm births and associated factors in Garowe General Hospital, Arafat Hospital, and Gambol Maternal and Child Health, Garowe, Puntland, Somalia, from April 1 to May 1, 2022.	15

ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
AOR	Adjusted Odds ratio
C/S	Cesarean section,
CI	Confidence interval
COR	Crude odds ratio
GGH	Garowe General Hospital
HTN	hypertension
LMP	Last menstrual period
MCH	Maternal and child health
PIH	Pregnancy-induced hypertension
PL	preterm labor
PROM	premature rupture of membranes
RDS	Respiratory distress syndrome
SDG	Sustainable Development Goal
UNICEF	United Nations Children's Fund
VIFA	Variance inflation factor
WHO	World Health Organization

ABSTRACT

Background: Preterm birth is a major cause of death and a significant cause of long-term loss of human potential amongst survivors all around the world. Approximately 15 million babies are born preterm annually worldwide, indicating a global preterm birth rate of about 11%. Almost 50% (~7.4 million) of the total preterm births worldwide occur in the following countries: The United States, India, China, Pakistan, Indonesia, and Nigeria (Walani, 2020). there are limited studies on the magnitude and factors associated with preterm births in Puntland, Somalia.

Objective: To assess the prevalence of preterm births and associated factors in healthy facilities in Garowe, Puntland, Somalia, from April 1 to May 1, 2022.

Methods: An institution-based cross-sectional study was conducted selected healthy facilities in Garowe City. Study participants were enrolled through a convenience sampling technique until the total sample size was reached. Data were gathered by using structured questionnaires. Data was entered in EpiData 4.6 and analyzed using STATA 14.1. Bivariable and multivariable analyses were used to identify factors associated with preterm birth. A p-value of < 0.05 in the multivariable logistic regression analysis was considered a cut-off for significant association.

Results: Of a total of 422 women who participated in the study, 419(99%) participated in the study. 46 (11 %) (95% 7-13) were preterm births. Number of fetuses (AOR=5.79; 95 CI: 1.71, 19.5), history of preterm birth (AOR = 6.37; 95% CI: 2.64–15.36), Premature rupture of membrane (AOR = 10.76; 95% CI: 3.97–29.15), and low birth weight (AOR=7.78; 95 CI: 3.33, 18.17) were significantly associated with preterm births.

Conclusion: The prevalence of preterm birth in this study was high, and associated factors, including the number of fetuses, the history of preterm birth, premature rupture of membranes, and birth weight (grams) of the mothers and fetus, were significantly and positively associated with the mothers and their fetus for selected healthy facilities at Garowe. Based on the findings of this study, the following recommendations are forwarded. Early screening and counseling programs should be developed for the early prevention of preterm birth. Such as recognize signs of premature rupture of the membrane: be aware of the signs of preterm labor. Treating infections promptly and practicing good hygiene can help prevent infections that might lead to premature rupture of the membrane.

Keywords: *Preterm birth, associated factors, Garowe, Somalia, Puntland.*

1. INTRODUCTION

1.1 Background

The World Health Organization (WHO) defines Preterm as babies born alive before 37 weeks of pregnancy are completed. There are sub-categories of preterm birth, based on gestational age: extremely preterm (less than 28 weeks), very preterm (28 to less than 32 weeks), and moderate to late preterm (32 to 37 weeks) (WHO, 2023).

Preterm birth is a syndrome with a variety of causes and can be classified into two broad subtypes: *spontaneous* preterm birth (spontaneous onset of labor or following pre-labor premature rupture of membranes) and *provider-initiated* preterm birth (induction of labor or elective cesarean section (Goldenberg et al., 2012).

Some preterm births result from early induction of labor or cesarean birth, whether for medical or nonmedical reasons. Most preterm births happen spontaneously. Common causes include multiple pregnancies, infections, and chronic conditions, such as diabetes and high blood pressure; however, often no cause is identified. There is also a genetic influence (March of Dimes, 2012).

Preterm is one of the most comprehensive obstetric and pediatric challenges in medical practice today, becoming one of the major causes of perinatal morbidity and mortality (Visser et al., 2019). Approximately 15 million babies are born preterm annually worldwide, indicating a global preterm birth rate of about 11% (Walani, 2020). Some possible causes of preterm birth can be problems of the fetus, mother, or both. Certain events can stimulate the onset of premature labour, including placental abruption, incompetent cervix, hormonal changes, infection, preeclampsia, or chronic medical conditions. also, there are multiple risk factors for premature birth, including having a previous premature birth, pregnancy with multiple babies, infection, drug or alcohol use, and age (APBPA, 2018).

In 2010, an estimated 14.9 million babies were born preterm, so that 11.1% of all live births worldwide were preterm births, ranging from about 5% in several European countries to 18% in some African countries. More than 60% of preterm babies were born in South Asia and sub-Saharan Africa, where 52% of the global live births occur. Preterm birth also affects rich countries; for example, the USA has high rates and is one of the ten countries with the highest numbers of preterm births (Hannah Blencowe, 2013).

1.2 Statement of the problem

Preterm birth is a major cause of death and a significant cause of long-term loss of human potential amongst survivors all around the world. Approximately 15 million babies are born preterm annually worldwide, indicating a global preterm birth rate of about 11%. Almost 50% (~7.4 million) of the total preterm births worldwide occur in the following countries: The United States, India, China, Pakistan, Indonesia, and Nigeria (Walani, 2020).

On the other hand, in 2016, the rate of preterm birth in Brazil was 11.5 % (Do Carmo Leal et al., 2016) Also, there is another study that covered the prevalence of China, which was 6.4% in 2018 (Deng et al., 2021). Additionally, a 2013 study reported a prevalence rate of 15% in India (Shubhada A, 2013)

Southern Asia and sub-Saharan Africa have the highest rates of preterm birth, and preterm babies in these regions face the highest mortality risk. Together, these two regions account for more than 65% of preterm births worldwide.(UNICEF & WHO, 2023). In Africa, such as in Ethiopia, 12.3% of births are preterm births Muhumed et al., 2021).

An estimated 13.4 million babies were born pre-term in 2020, with nearly 1 million dying from preterm complications, according to a new report released by United Nations agencies and partners. This is equivalent to around 1 in 10 babies born early (before 37 weeks of pregnancy) worldwide. (UNICEF & WHO, 2023)

The report includes updated estimates from WHO and UNICEF, prepared with the London School of Hygiene and Tropical Medicine, on the prevalence of preterm births. Overall, it finds that preterm birth rates have not changed in any region in the world in the past decade, with 152 million vulnerable babies born too soon from 2010 to 2020 (UNICEF & WHO, 2023).

Complications of preterm birth are the single largest direct cause of neonatal deaths, responsible for 35% of the world's 3.1 million deaths a year, and are now the second most common cause of death after pneumonia in children under 5 years old lecture from and Many survivors face a lifetime of disability, including learning disabilities and visual and hearing problems (Hannah Blencowe, 2013).

The issue of preterm birth is of paramount significance for achieving the United Nations Sustainable Development Goal 3 target, which aims to end all preventable deaths of newborns and children aged under 5 years by 2030 (Walani, 2020).

Across countries, the rate of preterm birth ranges from 4 to 16% of babies born in 2020 (WHO, 2023). In low-income settings, half of the babies born at or below 32 weeks (2 months early) die due to a lack of feasible, cost-effective care such as warmth, breastfeeding support, and basic care for infections and breathing difficulties. In high-income countries, almost all these babies survive. Suboptimal use of technology in middle-income settings is causing an increased burden of disability among preterm babies who survive the neonatal period (WHO, 2023).

The estimated preterm birth rates of preterm births in 2014 were Global 10.6% also Asia 10.4%, Europe 8.7%, Latin America and the Caribbean 9.8%, North America 11.2%, North Africa 13.4%, Oceania 10.0% and finally Sub-Saharan Africa 12.0% (Chawanpaiboon et al., 2019).

The prevalence of preterm birth in North America and European countries was Canada (7.8%), Germany (9.2%), (Walani, 2020) also, Asian countries were the study showed in Iran, 30.4% in Israel (8%), Bangladesh, 22.3% (Muhumed et al., 2021). In India, 3.6 million of the 27 million infants born annually are preterm (Bhatnagar et al., 2019).

The prevalence of preterm births in Sub-Saharan African countries has been reported to be high: 23.7% in Nigeria, 18.3% in Kenya, 16.3% in Malawi (Muhumed et al., 2021). About 6.6% in Uganda and 6.6%.3 in Tanzania, babies are born preterm each year (Walani, 2020).

Preterm birth in Somalia is a serious public health problem. In 2015, the estimated Somalia's neonatal mortality rate (NMR) was 40 deaths per 1,000 live births, and preterm birth causes (21.1%) (UNICEF, 2015). In these deaths, according study conducted Fafen zone Somali regional state in 2019, the prevalence of preterm birth was 12.3% (Muhumed et al., 2021) that share characteristics with other Somali communities.

Although preterm birth has been identified as a significant contributor to neonatal morbidity and mortality across most of the different regional state in the country and there is high magnitude rate of preterm birth indicated in Somalia also there is no single of published studies on study area due to lack of research centers Hence, this study was aimed to identify the prevalence of preterm birth and associated factors among neonate in Garowe, Puntland, Somalia.

1.3 Significance of the study

The finding of this study provides vital information on the prevalence and its associated factors among preterm births in Garowe city. This study was helpful Garowe health officer, health personal such as staffs of, general hospitals, private hospitals, MCHs and health centers of the region also, it was help the ministry of health and other organization that interesting research of preterm birth they was benefit like using planning date and baseline of the research also they receive pervious information of their research also baby born preterm birth it might be helped because of its baseline of researches that is was planning other researches of the neonates and what they need.

Furthermore, an adequate number of studies have shown that preterm birth can be minimized significantly by providing quality maternity care beginning from pregnancy and during intrapartum care as well as availability of newborn resuscitation commodities and its adequacy and appropriate resuscitation measure, and prevents risk factors and causes of preterm birth.

1.4 Objectives

1.4.1 General objective

To assess prevalence of preterm births and associated factors in health facilities in Garowe, Puntland, Somalia from April10 to May 1, 2022.

1.4.2 Specific objectives

- To assess the prevalence of preterm births in health facilities in Garowe, Puntland, Somalia
- To determine factors associated with preterm births in health facilities in Garowe, Puntland, Somalia

2. LITERATURE REVIEW

2.1 Prevalence of preterm births

A cross-sectional study was conducted in the USA in 2015 with a total of 1,174 participating mothers. The study found that the prevalence of preterm birth was 15.1% (Leonard et al., 2015).

A study conducted in Germany in 2015 revealed that a total of 17,641 children and adolescents (8,656 girls and 8,985 boys) were studied from 167 cities, towns, and villages, chosen as representative of Germany. The prevalence of preterm birth was 11.6 % (Weichert et al., 2015).

A retrospective study conducted at the Princess Badeah Teaching Hospital in Irbid City, Northern Jordan, between January and December 2011 included 647 participants. The study revealed a preterm birth prevalence of 12.8% (Mohammad et al., 2015).

The descriptive, cross-sectional, retrospective study investigated the prevalence and factors associated with preterm births at Hakim and Qamar Bani Hashem hospitals in Neyshabur city. The study population included all preterm infants born at a gestational age of less than 37 weeks between April 2017 and March 2019, and the prevalence of preterm birth was 2.85% (Rohaninasab et al., 2024).

A cross-sectional study conducted at the maternity unit of Kenyatta National Hospital in Kenya in 2013 involved 322 mothers and found a preterm birth prevalence of 18.3% (Wagura et al., 2018).

A hospital-based cross-sectional study was conducted to assess the prevalence of preterm birth and its associated factors among mothers who delivered at Lira Regional Referral Hospital, Uganda, from August 2022 to November 2022. The findings showed that the prevalence of preterm birth was 14% (Peter, 2024).

A cross-sectional study conducted at a public hospital in Addis Ababa in 2018 found a preterm birth prevalence of 16.5% (Deressa et al., 2018).

An institution-based, cross-sectional study was conducted to assess the prevalence of preterm birth and associated factors among mothers who gave birth in JUSH Jimma from May 25th to June 25th, 2015. The final sample size was 220 mothers, reported the prevalence of preterm births was 25.9% (Bekele I et al., 2017).

A cross-sectional study conducted at Shire Suhul General Hospital in Northern Ethiopia from January to March 2018 included 325 mothers. The study revealed a prevalence of 16.9% (Kelkay et al., 2019).

A cross-sectional study conducted in Ethiopia in 2019 included 304 maternity cards. The study showed that the prevalence of preterm birth was 15.5% (Ahmed, 2020).

A hospital-based cross-sectional study was carried out at Butajira Hospital from May 1 to 21, 2019. The study population included randomly selected maternity records for mothers who delivered at Butajira Hospital. A total of 304 maternity records were reviewed, with a prevalence rate of 15.5% (Abdo et al., 2020).

A cross-sectional study conducted in 2018 at Axum and Adwa public hospitals in Tigray, North Ethiopia, included a total of 472 mothers. The study estimated the prevalence of preterm birth was 13.3% (Aregawi et al., 2019).

A cross-sectional study conducted in 2019 at public hospitals in the Fafen Zone, Somali Regional State, Eastern Ethiopia, included a total of 607 participants. The study reported that the prevalence of preterm births was 12.3% (Muhumed et al., 2021).

2.2. Factors Associated with Preterm Births

2.2.1 Socio-demographic factors:

A retrospective cohort study was conducted at Debra Markos and Felegehiwot Specialized Hospitals in Ethiopia in 2020. The survey of the magnitude and predictors of mortality among preterm neonates identified that the likelihood of PTB among women younger than 18 years and older than 40 years was three times higher compared to women aged 35 years or older, with an adjusted odds ratio (AOR) of 3.47 (Kindie, 2020) (Abebaw et al., 2021).

A cross-sectional study was conducted in USA in 2015 Prepregnancy Risk Factors for Preterm Birth and the Role of Maternal Nativity in a Low-Income, Hispanic Population and showed 18–25 years, the odds of preterm birth were 1.6 times more likely compared than the women aged in 30–34 years and also the that aged 30-34 1.8 times is more likely to born preterm baby when compared the women aged 35 years (Leonard et al., 2015)

2.2.1.1 Residential factor

A cross-sectional study conducted at Axum and Adwa Town public hospitals, Northern Ethiopia, 2018, In Preterm births and associated factors among mothers who gave birth. This study revealed that Mothers who were living in rural areas were two times more likely [(AOR = 2.1 (1.05, 4.12)] to have a preterm birth compared to those who live in urban areas (Aregawi et al., 2019).

A cross-sectional study indicated by Mothers Who Gave Birth in Fafen Zone Public Hospitals, Somali Regional State, in 2019 indicated that the mother's place of residence was significantly associated with preterm birth. Being a rural resident increased the risk of preterm birth by 4.5-fold compared to urban residents [(AOR=4.48, 95% CI (1.39–14.44) (Muhumed et al., 2021).

2.2.3 Socioeconomic factors

2.2.3.1 Economic factor

The study conducted USA in Pre-pregnancy Risk Factors for Preterm Birth and the Role of Maternal Nativity in a Low-Income, Hispanic Population in 2015 and this study showed that the odds of preterm birth in women who experienced financial stress were 1.6 times the odds in those who did not experience financial stress (Leonard et al., 2015).

2.2.4 Medical problems and chronic conditions

2.2.4.1 Hypertension

A cross-sectional study was conducted in USA in 2015 pre-pregnancy Risk Factors for Preterm Birth and the Role of Maternal Nativity in a Low-Income, Hispanic Population and showed the odds in women with high blood pressure were 3.6 times more likely to born preterm birth compared than the odds in those without high blood pressure (Leonard et al., 2015).

The study was cross-sectional by Mothers Who Gave Birth in Fafen Zone Public Hospitals, Somali Regional State, in 2019. Mothers who had a hypertensive disorder of pregnancy were 3.3 [(AOR=3.32, 95% CI (1.08–10.20)] times more likely than mothers who had no hypertensive disorder (Muhumed et al., 2021).

A cross-sectional study conducted at the Kenya National Hospital in Kenya, in the Prevalence and factors associated with preterm birth and revealed that Mothers with PIH had a 5-fold increase in risk of preterm birth (OR 5.203) than the mothers who did not have PIH (Wagura et al., 2018)

2.2.4.1.1 Preeclampsia

A cross-sectional study conducted Butajira Hospital, Southern Nations, Nationalities, and People's Region, Ethiopia, 2019 in Magnitude of Preterm Birth and Its Associated Factors and revealed Preterm birth was five times more likely to occur in mothers with preeclampsia in comparison to mothers who had not (AOR = 5:1; 95% CI: 2.0, 13.3) (Abdo et al., 2020)

2.2.4.2 Malaria

A cross-sectional study conducted at Axum and Adwa Town public hospitals in Northern Ethiopia in 2018 examined preterm births and associated factors among mothers who gave birth. Concerning medical factors, mothers who were exposed to malaria during pregnancy were five times (AOR = 5.43) more likely to have preterm births compared to those who were not Aregawi et al., 2019).

2.2.5 Obstetric factors

2.2.5.1 Antenatal factor

A study conducted Kenya National Hospital in Kenya on the Prevalence and factors associated with preterm birth revealed that Mothers who had not had any antenatal care were one and a half times more likely to deliver a preterm baby (OR 1.503) compared to those who attended antenatal care (Wagura et al., 2018).

2.2.5.2 Antepartum hemorrhage

The study conducted at the Kenya National Hospital in Kenya in the Prevalence and factors associated with preterm birth and revealed that Mothers with APH had a 3-fold increase in risk of preterm birth (OR 2.79). than the mothers who had not with APH (Wagura et al., 2018).

2.2.5.3 Premature rupture of membrane

A cross-sectional study conducted Butajira Hospital, Southern Nations, Nationalities, and People's Region, Ethiopia, 2019 in Magnitude of Preterm Birth and Its Associated Factors and revealed Mothers with premature rupture of fetal membranes were four or more times more likely to have a preterm birth compared than the who had no (AOR = 4:2, 95% CI: 1.4, 12.) (Abdo et al., 2020)

The cross-sectional study conducted at Axum and Adwa Town public hospitals, Northern Ethiopia, in 2018, Preterm births and associated factors among mothers who gave birth and showed that mothers who had PROM were almost four times more likely to have preterm birth compared to mothers who had no PROM. AOR = 3.76 (1.73, 8.19)] (Abdo et al., 2020).

2.2.5.4 Multiple pregnancy factor

A study was conducted Armed Forces Hospital and King Khalid University Hospital, Riyadh, Kingdom of Saudi Arabia, between January 2000 and December 2001 on multiple pregnancy and preterm birth, and approximated that the preterm labor in multiple pregnancies was 7 times greater than in singletons (Mohammed & Al-Hakeem, 2004).

The study conducted at Axum and Adwa Town public hospitals, Northern Ethiopia, in 2018, Preterm births and associated factors among mothers who gave birth and revealed that Mothers with multiple pregnancy outcomes were six times more likely to have preterm birth compared with mothers who gave birth to a singleton [(AOR = 5.59)] (Aregawi et al., 2019).

2.2.5.5 Delivery factor

A study conducted at Kenyatta National Hospital in Kenya in 2013, Prevalence and factors associated with preterm birth, and approximately, Women who delivered via Caesarean section were nearly two times (OR 1.832) more likely to deliver preterm than those who delivered vaginally (Wagura et al., 2018)

2.2.6 Others

2.2.6.1 Birth weight factor

A study was retrospective cohort study was conducted by Debra Markos and Felegehiwot, specialized hospitals in Ethiopia in 2020; Magnitude and predictors of mortality among preterm neonates in this study showed neonates with a birth weight of 1000-1499 grams were nearly four times more likely to die than those with a birth weight of greater than 1500 grams (AOR: 4.370) (Abebaw et al., 2021).

2.2.6.2 Past Obstetric factor

The study conducted at Axum and Adwa Town public hospitals, Northern Ethiopia in 2018, Preterm births and associated factors among mothers who gave birth and showed that mothers who had a history of preterm births were four times more likely to give preterm birth compared to mothers who had no previous preterm births [(AOR = 3.74, 95% CI (1.03, 16.34)] (Aregawi et al., 2019).

2.3 Conceptual Framework

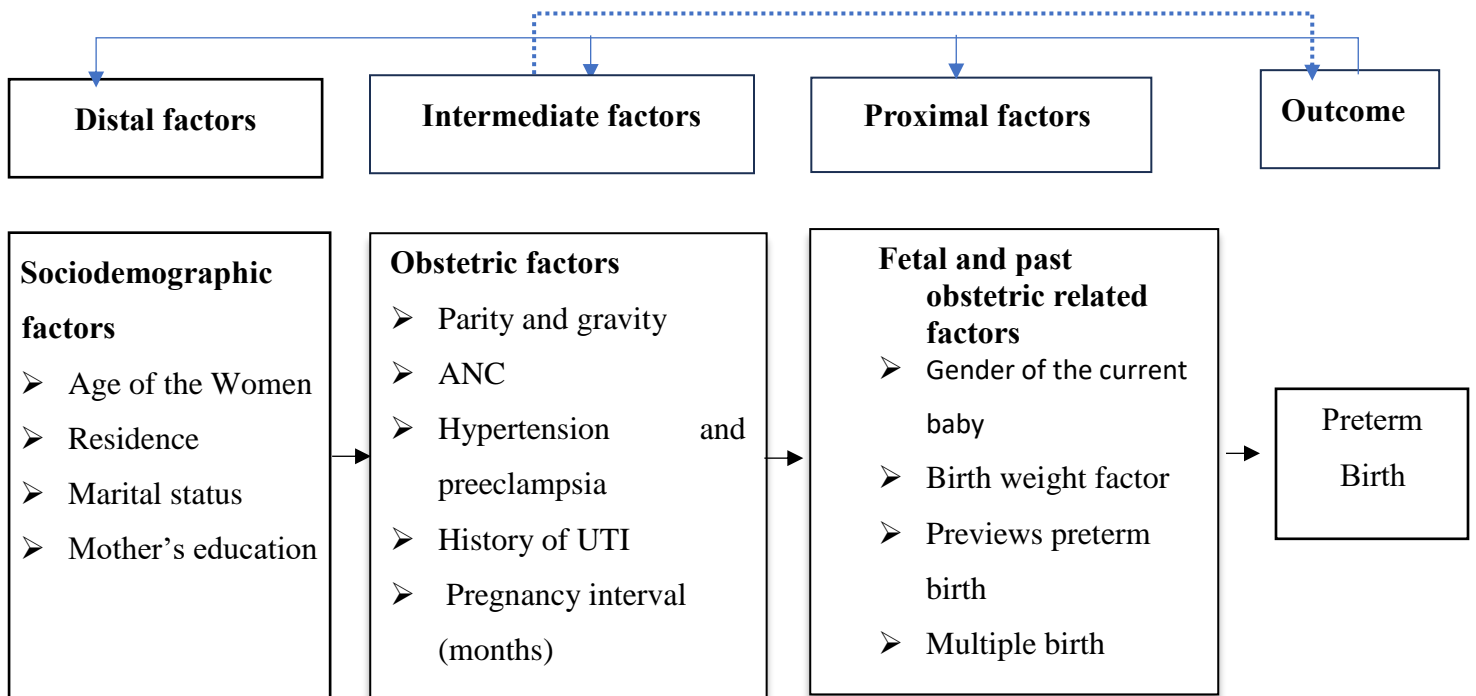


Figure 1: Conceptual framework about the prevalence of preterm births and associated factors of healthy facilities in Garowe, Puntland, Somalia, from April 10 to May 1, 2022.

Developed by reviewing scientific literature (Aregawi et al., 2019), (Wagura et al., 2018)

3. METHODS AND MATERIALS

3.1 Study Area and Period

This study was conducted at Garowe General Hospital, Arafat Hospital, and Gambol Maternity and child health in Garowe from April 10 to May 1, 2022. Garowe is the capital of the Puntland State of Somalia, and is located in the Nugal region. Garowe is also the location of the regional parliament, the presidential parliament, and the government ministries. The city lies north-east of the intersection of Puntland State and Ethiopia and is traversed by a north-south highway that connects the major cities of northern and southern Somalia. The total population of Garowe is estimated at 200,000. The elevation from 467 meters (1,532 feet) above sea level (Jama & Mourad, 2019) The Garowe City has one public referral hospital, four private hospitals, and six health centers with 100% health service coverage (Nugal Regional Health Office, 2021).

Garowe General Hospital (GGH) is a public health facility serving as the main referral center with the expertise of medical specialists in pediatrics, gynecology and obstetrics, general surgery, internal medicine, and others. It provides all basic health services with an annual birth rate of 3000-3500 (Head of GGH, 2021). Arafat Hospital is a private hospital that covers the huge gap in the country's healthcare sector. It provides all services, including advanced care by consultants from Somalia and abroad. The hospital has major wards and sub-specialized care units with an estimated 1400-1500 births per year (Head of Arafat Hospital, 2021). Lastly, Gambol maternity and child health is a major maternal health center in Garowe City. It addresses various health issues and provides care to mothers and children. The estimated annual birth rate is 1000-1050.

3.2 Study Design

An institution-based cross-sectional study was conducted.

3.3 Population

3.3.1 Source Population

All Women who gave birth in the health facilities in Garowe city during the study period

3.3.2 Study Population

All women who gave birth in Garowe General Hospital, Arafat Hospital, and Gambol Maternity and Child Health during the study period.

3.4 Inclusion and Exclusion Criteria

3.4.1 Inclusion Criteria

All Women who gave birth in Garowe General, Arafat Hospitals, and Gambol MCH

3.4.2 Exclusion criteria

Babies for whom gestational age was not specified were excluded

3.5 Sample size determination

To calculate the sample size for this study, assumptions for both objectives were considered. For the first objective, a single population proportion formula with a 95% confidence interval, 5% marginal error, and proportion of preterm birth ($p=0.05$) was considered. Based on the above assumptions, the required sample size for this study was calculated by using the following formula:

$$n = [(Z\alpha/2)^2 p (1 - p)]/d^2$$

Where:

- n Sample size
- Z Standard normal curve with 95% confidence intervals (1.96). With a 95% confidence interval and 5% marginal error.
- P proportion of preterm birth
- $n = [(1.96 * 1.96) * 0.05(1 - 0.05)] / (0.05 * 0.05)$
(Bekele I et al., 2017)
- d margin of error/degree of precision (5%)

The sample size calculated was $n = 384$. With a 10% non-response rate, it has become **422**.

For the second objective: the sample size for associated factors was calculated from some of the factors associated with pre-term birth from different literature by using the statistical calculation of EPI INFO statistical software version 7.2 with the following assumptions of a power 80%, 95% CI, and the ratio of 1:1 among exposed versus unexposed.

Table 1 Sample size determination for the associated factors

Factors considered	The proportion of exposed with the outcome and the proportion of unexposed with the outcome		AOR	Final sample size with a 5% non-response rate	References
	pre-term (exposed)	Term (Non-exposed)			
Maternal Age < 20 years	2(3.4%)	34 (13%)	0.183	96	(Wagura et al., 2018)
Preeclampsia	10 (3.3%)	18 (6%)	4	74	(Abdo et al., 2020)
premature rupture of the fetal membrane	8 (2.6%)	9(2.9%)	4.2	60	(Wagura et al., 2018)

Finally, the required sample size for this study was determined by taking the largest sample size for the first objective, which was 422.

3.6 Sampling technique

In Garowe City, there is one public referral hospital, four private hospitals, and six health centers. Initially, three health institutions were randomly chosen through a lottery method. The final sample size for this study (422) was proportionally distributed among the selected hospitals and health centers based on the average number of births each month. Based on registration data from the past three months, the number of mothers who gave birth at Garowe General Hospital, Arafat General Hospital, and Gambol Maternal and Child Health was 810, 352, and 254, respectively. Therefore, the required sample sizes from these hospitals were: Garowe General Hospital = 242, Arafat General Hospital = 106, and Gambol Maternal and Child Health = 74. Study participants were enrolled through a convenience sampling technique until the total sample size was reached.

Proportional allocation of sample size

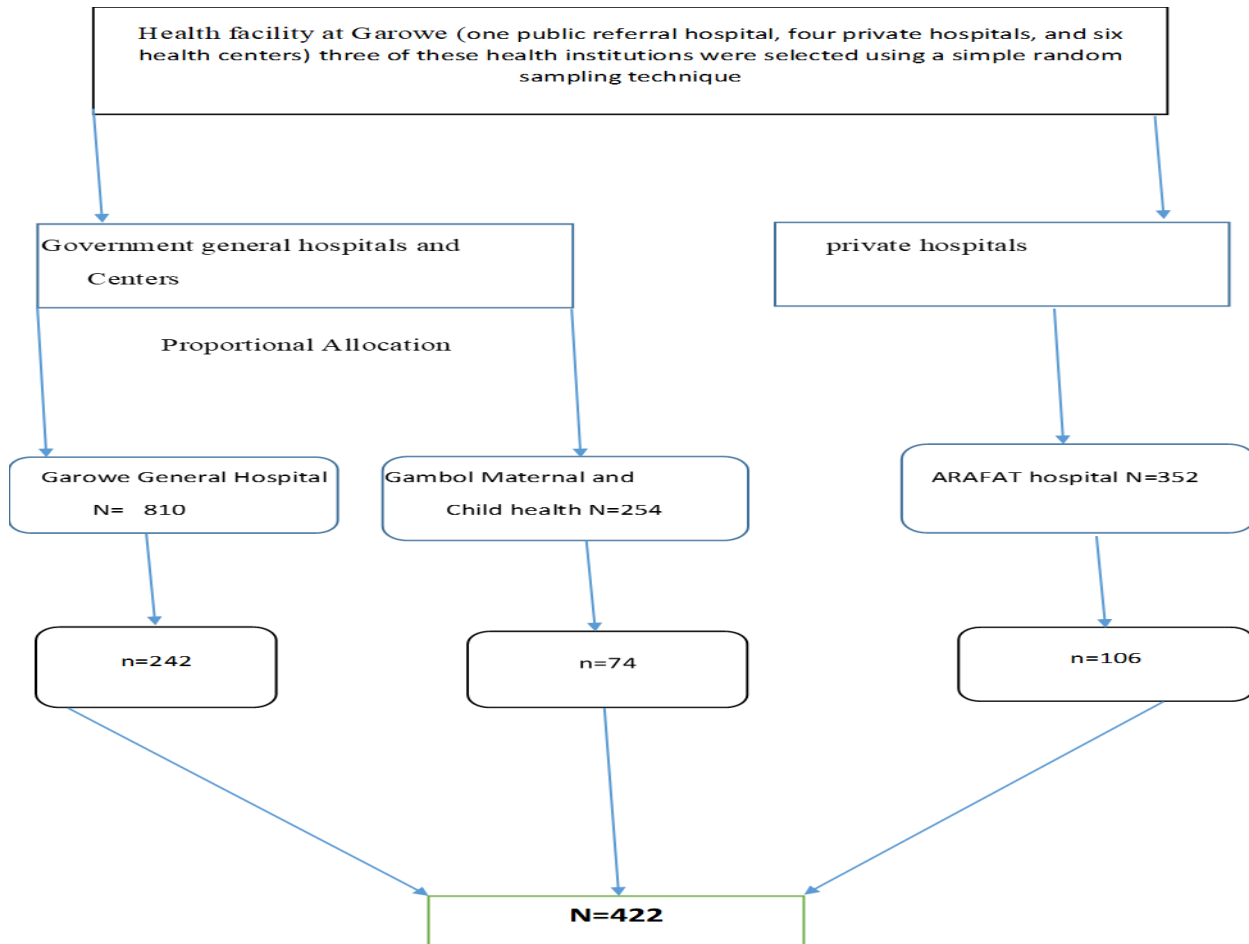


Figure 2 Schematic presentation of sampling procedure of prevalence of preterm births and associated factors in health facilities, Garowe, Puntland, Somalia, from April 1 to May 1, 2022.

3.7 Data collection methods

3.7.1 Data collection tool

Data was collected by face-to-face interviewers using a structured questionnaire adapted from previous literature (Muhumed et al., 2021) The questionnaire was first prepared in English and translated into the local language (Af-Somali) and was translated back to English to check its consistency. The questionnaire contains information on socio-demographic characteristics, medical and obstetric factors, and fetal factors.

3.7.2 Data Collection Technique

Data were collected through interviews with mothers, complemented by a review of medical records.

3.7.3 Data collectors

Two midwives and one clinical officer were trained to collect the data through interviews and the abstraction of data from the medical records using by checklist. The overall data collection process was supervised by one obstetrician.

3.8 Study Variables

3.8.1 Dependent Variable

Pre-term birth

3.8.2 Independent Variables

- **Socio-demographic Factors:** age and place of residence, Marital status, Current education, and current occupation.
- **Medical problems and chronic conditions:** Hypertension, History of Gestational diabetics. History of UTI,
- **Obstetric factors:** Antenatal factors, antepartum hemorrhage, preeclampsia, premature rupture of membranes, Pregnancy interval (months), Onset of labour, Gravidity, parity, mode of delivery, place of birth and previous history of preterm birth.
- **Fetal-related factors:** Number of fetus (Birth outcome), birth weight of the newborn and gestational age.

3.9 Operational definitions

Extremely preterm: is (less than 28 weeks) (WHO, 2023)

Gestational age: Term used to describe how far along the pregnancy is expressed in weeks, from the first day of the woman's last menstrual cycle to the current date. A normal pregnancy can range from 38 to 42 weeks (MOH OF VANUATU, 2017)

Low Birth Weight: Birth weight less than 2500g (MOH of VANUATU, 2017)

moderate to late preterm (32 to 37 weeks) (WHO, 2023)

Preterm: defines Preterm as babies born alive before 37 weeks of pregnancy are completed. (WHO, 2023)

3.10 Data Quality Control

Data collectors and supervisors were trained on the objective of the study, the contents of the questionnaires, and how to maintain the confidentiality and privacy of the study subjects. After that, the questionnaire was pre-tested on 5% of the births in Jilab MCH, and necessary corrections were made. The overall data collection process was strictly supervised. The questionnaire will be translated into the local language and will be back-translated by individuals with good command of both languages.

3.11 Data Processing and Analysis

All collected data were checked for completeness and internal consistency by cross-checking daily. Then, it was coded and double-entered into EpiData 4.6 and exported to STATA 14.1 for analysis. Binary and multivariable logistic regression were fitted to identify the association between preterm birth and each independent variable. The results were described using an adjusted odds ratio (AOR) along with 95% confidence intervals (CI). all variables having a p-value of less than or equal to 0.25 were included in the multivariable logistic regression analysis. A variance inflation factor (VIF) was employed to evaluate the degree of multicollinearity. The model fitness was evaluated using the Hosmer-Lemeshow goodness-of-fit test. Variables with a p-value of less than or equal to 0.05 in the multivariable logistic regression model were considered as significantly associated variables.

3.12 Ethical Consideration

Ethical clearance was obtained from the Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University, College of Health and Medical Sciences. A letter of permission was obtained from the district administrative health bureau. The purpose and benefit of the study were explained to the participating mothers or husbands of those under 18 years. Mothers were old before data collection. Voluntary, informed, written, and signed consent was taken from the primary guardian for both interviews of the selected children.

Confidentiality was maintained, and any information and findings obtained during the study were kept confidential. Children who were born preterm and associated factors were recommended to have medication in collaboration with the local health center.

3.13 Information dissemination

The results of the study were disseminated to the Department of Nursing and Midwifery, Haramaya University, as a requirement for the fulfillment of postgraduate study. The study findings were also submitted to the Garowe Administrative Health Bureau for planning health projects, preventing preterm birth as a maternal and child health problem, and to any concerned and interested organizations. Efforts were made to publicize the project in national and international journals.

4. RESULTS

This study had a sample of 422, of whom 419 mothers responded to the questionnaire, yielding a response rate of 99%. with a Median age of 29 (IQR 22-29) years. However, 29 questionnaires were included, and additional information was obtained from medical records. The distribution of response rate is shown in the table below.

4.1 Demographic characteristics

Of the 422 women who participated in the study, 419 (99%) responded. The ages of the participants ranged from 15 to 45 years, with 294 (70.17%) being between 18 and 35 years old. The majority of the respondents, 368 (87.83%), were married. Most of them, 373 (89.02%), resided in urban areas. A significant number of the women, 299 (72.36%), were housewives. Additionally, 238 participants (56.80%) used gas as their primary energy source for cooking (**Table 2**).

Table 2. Socio-demographic characteristics of study participants

Variable	Category	Frequency (%)
Age of the mother	<18	25(6)
	18-35	294 (70)
	>35	100 (24)
Marital status	Married	368 (88)
	Divorced	28 (7)
	Widowed	23 (5)
Education of the mother	Cannot read and write	158(37.71)
	Non-formal education	117(27.92)
	Can read and write	112(26.73)
	Grade complete (school)	32(7.64)
Occupation of the mother	Housewife	299(72.36)
	Government	32(7.64)
	Self-employee	88(21.00)
Resident	Rural	46(11)
	Urban	373(89)

4.2 Obstetric-related factors

Of our respondents, only 181(43.2%) mothers attended ANC. The majority of the respondents, 269 (64.20%), were multigravida women, and 141(77.4%) of them had fewer than four visits. Most of the respondents had birth-to-pregnancy intervals greater than or equal to 12 months 199, 55.12%). The majority of participants, 327(78.04 %), had a spontaneous onset of labour. Regarding the mode of delivery, 337 (80.43%) of participants had delivered via spontaneous vaginal delivery (**Table 3**)

Table 3 Obstetric-related factors of the mother

Variable	Category	Frequency (%)
Attended ANC	Yes	182(43.20)
	No	238(56.80)
ANC follow-up (n=182)	<4	141(77.47)
	≥4	41(22.53)
Where did you go (last visit)	MCH	109(59.56)
	Hospital	74(40.44)
Why didn't Go	Ignorance of the importance of ANC	80(33.61)
	Lack of awareness	80(33.61)
	Others ^a	78(32.77)
Pregnancy interval (months)	<12	162(45)
	≥12	199(55)
Onset of labour	Spontaneous	327(78.04)
	Induced labour	72(17.18)
	C/S before labour	20(4.77)
Gravida	Primigravida	150(35.80)
	Multigravida	269(64.20)
Parity	0-5	192(45.82)
	6-10	164(39.14)
	≥11	63(15.04)
Mode of delivery	Spontaneous	337(80.43)
	Assisted	33(7.88)
	C/S	49(11.69)
Place of birth	Hospital	345(82.34)
	MCH	74(17.66)

Key: Others ^a: finance problem, far away and Phobia

Abbreviations: C/S: Cesarean section, MCH: Maternal and child health, ANC: Antenatal Care.

4.3 Medical characteristics of the mother

Some of our respondents 116 (27.68%) have a history of abortion, while a history of preterm birth 56(13.40%), more than half of the participants had a history of Urinary tract infection 360(86%), and lastly, most of the respondents 374 (89.26%) had no premature rupture of membrane (**Table 4**).

Table 4 Medical characteristics of the mother

Variable	Category	Frequency (%)
History of abortion	Yes	116(27.7)
	No	303(72.3)
History of preterm birth	Yes	56(13.40)
	No	362(86.60)
History of Gestational diabetics	Yes	31(7.40)
	No	388(92.60)
Pregnancy-induced hypertension	Yes	33(7.88)
	No	386(92.12)
History of UTI	Yes	360(86)
	No	59(14)
PROM	Yes	45(10.74)
	No	374(89.26)

Abbreviations: UTI: Urinary tract infection, PROM: Premature reapture of membrane

4.4 Fetal-related factors

According to fetal-related factors, 375 (89.5%) of the babies had a cephalic presentation. The majority of the fetuses were singletons with 380 (90.69%). Additionally, most of the babies, 320 (76.4%) weighed greater than or equal to 2500 grams (**Table 5**).

Table 5 Fetal-related factors

Variable	Category	Frequency (%)
Fetal presentation	Cephalic	375(89.5)
	Breach	44(10.5)
Gestational age	Term	373(89.02)
	Preterm	46(11)
Number of fetus	Singleton	380(90.69)
	Multiple	39(9.31)
Birthweight of the Baby(gram)	< 2500	99 (23.6)
	≥2500	320(76.4)

4.5 Prevalence of preterm birth

In the current study, the overall prevalence of preterm birth was 11.0 % (95% CI: 7%, 13%).

4.6 Factors associated with preterm birth

This study utilized bivariable and multivariable logistic regression models to identify factors associated with preterm birth. In the bivariable analysis, marital status, maternal occupation, ANC, Number of fetuses, history of preterm birth, history of PROM, sex of the baby, and birth weight of the baby were identified as candidate variables for the multivariable logistic regression analysis, as they were significantly associated with preterm birth at a *p-value* < 0.25.

4.7: Multivariable Logistic Regression Analysis

In the final multivariable logistic regression model, the number of fetuses, history of preterm birth, PROM and Birth weight (grams) of the mother and fetus were significantly associated with preterm birth among neonates in Garowe, Puntland, Somalia ($p < 0.05$). The fetus that delivered multiple were 6 times (AOR=5.79; 95 CI: 1.71, 19.5) more likely to have preterm compared to the fetus that delivered a singleton, Mothers with a history of preterm birth were 6 times (AOR = 6.37; 95% CI: 2.64–15.36). more likely to deliver preterm neonates than those without such a history (On the other hand, mothers with PROM were 10.76 times (AOR = 10.76; 95% CI: 3.97–29.15) higher odds of preterm delivery compared to mothers without PROM. Finally, the fetuses that weighed < 2500 were 7.78 times (7.78; 95 CI: 3.33, 18.17) more likely to be preterm birth than the fetuses their weight ≥ 2500 (**Table 6**).

Table 6. Associated factors of preterm birth among mothers who gave birth in health facilities in Garowe, Puntland, Somalia, from April 10 to May 1, 2022 (n=419)

Variable	Category	preterm %	Term%	COR (CI 95%)	P Value	AOR (CI:95%)	P value
Marital status	Married	38 (10)	330 (90)	1		1	
	Divorced	5 (8)	23 (82)	1.88 (0.67-5.25)	0.224*	3.65 (1.0-13.28)	0.049
	Widowed	3 (13)	20 (87)	1.30 (0.36-4.58)	0.681	2.37 (0.46-12.09)	0.299
Occupation of the mother	Housewife	37 (12)	262 (88)	1.93 (0.78-4.73)	0.151*	1.94 (0.61-6.18)	0.258
	Government employee	3 (9)	29 (91)	1.41 (0.33-6.02)	0.640	0.78 (0.10-6.21)	0.818
	Self-employee	6 (7)	82 (93)	1		1	
ANC attendance	Yes	13 (7)	169 (93)	1		1	
	No	33 (14)	204 (86)	2.10 (1.07-4.12)	0.031*	1.65 (0.72-3.85)	0.238
Number of fetus	Singlet on	35 (9)	345 (91)	1		1	
	Multiple	11 (28)	28 (72)	3.87 (1.77-8.44)	0.001*	5.79 (1.71-19.52)	0.005*
History of preterm birth	Yes	25 (45)	31 (55)	13.1 (6.58-26.02)	0.001*	6.37 (2.64-15.36)	0.001*
	No	21 (6)	341 (94)	1			
History of UTI	Yes	43 (12)	317 (88)	2.53 (0.75-8.44)	0.131*	4.14 (0.82-20.90)	0.085
	No	3 (5)	56 (95)	1			
PROM	Yes	18 (40)	27 (60)	8.23 (4.05-16.75)	0.001*	10.76 (4.0-29.2)	0.001*
	No	28 (7.5)	346 (92.5)	1			
Sex of the baby	Female	4 (9)	40 (91)	1.85 (0.99-3.47)	0.053*	2.12 (0.91-4.924)	0.078
	Male	28 (14)	170 (86)	1			
Birth weight (gram)	<2500	33 (33)	67 (67)	11.59 (5.79-23.2)	0.001*	7.78 (3.33-18.17)	0.001*
	≥2500	13 (4)	306 (96)	1			

Note: COR: Crud Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval, *: Statistically significant association, ANC: Antenatal Care, UTI: Urinary tract infection, PROM: Premature reptime of membrane

5. DISCUSSION

This study assessed the prevalence of preterm birth and associated factors among mothers who gave birth in Garowe, Puntland, Somalia. Accordingly, the prevalence of preterm birth was 11%. These findings are slight line studies that were conducted Brazil (11.5 %) (Do Carmo Leal et al., 2016), Zambia (11.2%) (Mwansa, 2020) and Uganda 12.3% (Peter, 2024). Additionally, the finding in this study was higher than those in studies conducted in Iran, Sub-Saharan Africa, and Abu Dhabi, at 5.1% (Tehrani, Ranjbar et al. 2016), 5.33% (Alamneh et al., 2021), 6.3% (Taha et al., 2020), respectively. Lastly, it is lower than studies conducted in Ethiopia, 14 % (Muchie et al., 2020), and Kenya 18.3% (Wagura et al., 2018).

The possible explanations could include differences in the geographical location of the study population, variations in the study sample size, and assessment methods. Another possible reason is that the government is actively encouraging communities to utilize health services, including mothers and their fetuses.

Being a multiple fetus, having a history of preterm birth, having premature rupture of membrane, and a birth weight under 2500 grams were significantly and positively linked to preterm birth among mothers and their fetuses.

In the final multivariable analysis model, the number of fetuses was found to be an independent predictor of an increase in preterm birth. Thus, the multiple fetuses were 6 times more likely to be delivered preterm compared to their counterparts (singletons). This study was also supported by previous studies conducted elsewhere, such as a study from sub-Saharan Africa (Alamneh et al., 2021), Kenya (Wagura et al., 2018), Jimma, Ethiopia (Sendeku et al., 2021). Multiple gestation is associated with uterine overdistension, and this may result in spontaneous preterm labour.

Similarly, in this study, a mother with a history of preterm birth was independently linked to preterm birth. Consequently, having a history of preterm birth was associated with a six-fold increase in the likelihood of delivering a preterm baby, which aligns with findings from other studies in Brazil (Do Carmo Leal et al., 2016), Jimma, Ethiopia (Sendeku et al., 2021), and Iran (Tehrani et al., 2016), Kenya (Wagura et al., 2018) A history of preterm birth is a determinant of future preterm births because it reflects persistent biological, medical, and social risk factors that increase the likelihood of recurrence.

The chance of giving preterm birth was also 8.6 times more likely among women who had premature rupture of membrane compared to those who had no PROM, Gojjam zone, Ethiopia (Ayele & Moyehodie, 2023), Kenya (Wagura et al., 2018)), Iran (Tehrani et al., 2016) . PROM has been associated with chorioamnionitis, which may be subclinical, and this may cause preterm labour by inducing the release of inflammatory mediators.

This study revealed that the risk of preterm birth for women who delivered a fetus with a weight <2500 grams was 7.3 times more likely than their counterparts. The finding of this study was supported by studies done in different parts of the world, especially in Fafen, Ethiopia (Muhumed et al., 2021) and Jimma, Ethiopia (Sendeku et al., 2021)

The possible explanation might be due to the fact that several organ systems of the fetus usually become mature by the end of 37 weeks of gestation. Premature birth before 37 weeks of gestation leads to interruption of fetal organ maturation that in turn causes low birth weight (Muhumed, Kebira et al. 2021).

5.1 Strength of the study

The main strength of this study was that it contributed valuable data to the limited body of research on the prevalence of preterm birth and association factors among mothers in Somalia, particularly in Garowe city. The use of advanced statistical analysis techniques (STATA), the study used a standardized questionnaire to collect information from the study participants, and translated their own language. Also, we use medical records. According to the Sample Size: A large and well-defined sample can enhance the reliability of the findings and improve the generalizability of the results to the population in Garowe.

5.2 Limitations of the study

The main limitation was that there were research gaps: Insufficient local research and data collection made it difficult to establish a comprehensive understanding of the factors influencing preterm birth in the region. The data for some variables were collected based on the medical records of the subjects, and there may be a potential risk for the quality of the recorded data. Another limitation was that, where the mothers did not accurately remember the date of the first day of the last menstrual period, we calculated gestational age by obstetric ultrasound taken in the first trimester. The last one was the nature of the study design; being cross-sectional may not show the cause-and-effect relationship.

6. CONCLUSION AND RECOMMENDATIONS

The prevalence of preterm birth in this study was high and associated factors including: the number of fetuses, the history of preterm birth, premature rupture of membrane, and birth weight (grams) of the mothers and fetus were significantly and positively associated with the mothers and their fetus for selected healthy facilities at Garowe, Puntland, Somalia.

5.1 Recommendations

Based on the findings of this study, the following recommendations are forwarded.

1. Early screening and counseling programs should be developed for the early prevention of preterm birth.
2. Maintaining regular prenatal care and health facilities to prevent preterm birth
3. Recognize Signs of Premature Rupture of Membrane: Be aware of the signs of preterm labor, such as regular contractions, lower back pain, and changes in vaginal discharge. Seek medical attention immediately if you experience any of these symptoms.
4. Treating any infections promptly and maintaining good hygiene can help prevent infections that might contribute to PROM

7. REFERENCES:

- Abdo, R. A., Halil, H. M., Muhammed, M. A., & Karebo, M. S. (2020). Magnitude of Preterm Birth and Its Associated Factors: A Cross-Sectional Study at Butajira Hospital, Southern Nations, Nationalities, and People's Region, Ethiopia. *International Journal of Pediatrics (United Kingdom)*, 2020. <https://doi.org/10.1155/2020/6303062>
- Abebaw, E., Reta, A., Kibret, G. D., & Wagnew, F. (2021). *Incidence and Predictors of Mortality among Preterm Neonates Admitted to the Neonatal Intensive Care Unit at Debre Markos Referral Hospital, Northwest Ethiopia*. <https://doi.org/10.4314/ejhs.v31i5>
- Alamneh, T. S., Teshale, A. B., Worku, M. G., Tessema, Z. T., Yeshaw, Y., Tesema, G. A., Liyew, A. M., & Alem, A. Z. (2021). Preterm birth and its associated factors among reproductive aged women in sub-Saharan Africa: evidence from the recent demographic and health surveys of sub-Saharan African countries. *BMC Pregnancy and Childbirth*, 21(1). <https://doi.org/10.1186/s12884-021-04233-2>
- (APBPA). (2018). *Preterm birth*. <https://pretermalliance.com.au/>
- Aregawi, G., Assefa, N., Mesfin, F., Tekulu, F., Adhena, T., Mulugeta, M., & Gebreayezgi, G. (2019). Preterm births and associated factors among mothers who gave birth in Axum and Adwa Town public hospitals, Northern Ethiopia, 2018. *BMC Research Notes*, 12(1). <https://doi.org/10.1186/s13104-019-4650-0>
- Ayele, T. B., & Moyehodie, Y. A. (2023). Prevalence of preterm birth and associated factors among mothers who gave birth in public hospitals of east Gojjam zone, Ethiopia. *BMC Pregnancy and Childbirth*, 23(1). <https://doi.org/10.1186/s12884-023-05517-5>
- Bekele I, Demeke T, & Dugna K. (2017). Prevalence of Preterm Birth and its Associated Factors among Mothers Delivered in Jimma University Specialized Teaching and Referral Hospital, Jimma Zone, Oromia Regional State, South West Ethiopia. *Journal of Women's Health Care*, 06(01). <https://doi.org/10.4172/2167-0420.1000356>
- Bhatnagar, S., Majumder, P. P., & Salunke, D. M. (2019). A Pregnancy Cohort to Study Multidimensional Correlates of Preterm Birth in India: Study Design, Implementation, and Baseline Characteristics of the Participants. *American Journal of Epidemiology*, 188(4), 621–631. <https://doi.org/10.1093/aje/kwy284>
- CDC. (2024). Preterm birth rates. *Maternal and Infant Health*. https://www.cdc.gov/maternal-infant-health/preterm-birth/?CDC_

- Chawanpaiboon, S., Vogel, J. P., Moller, A. B., Lumbiganon, P., Petzold, M., Hogan, D., Landoulsi, S., Jampathong, N., Kongwattanakul, K., Laopaiboon, M., Lewis, C., Rattanakanokchai, S., Teng, D. N., Thinkhamrop, J., Watananirun, K., Zhang, J., Zhou, W., & Gülmezoglu, A. M. (2019). Global, regional, and national estimates of levels of preterm birth in 2014: a systematic review and modelling analysis. *The Lancet Global Health*, 7(1), e37–e46. [https://doi.org/10.1016/S2214-109X\(18\)30451-0](https://doi.org/10.1016/S2214-109X(18)30451-0)
- Deng, K., Liang, J., Mu, Y., Liu, Z., Wang, Y., Li, M., Li, X., Dai, L., Li, Q., Chen, P., Xie, Y., Zhu, J., & Liu, H. (2021). Preterm births in China between 2012 and 2018: an observational study of more than 9 million women. *The Lancet Global Health*, 9(9), e1226–e1241. [https://doi.org/10.1016/S2214-109X\(21\)00298-9](https://doi.org/10.1016/S2214-109X(21)00298-9)
- Deressa, A. T., Cherie, A., Belihu, T. M., & Tasisa, G. G. (2018). Factors associated with spontaneous preterm birth in Addis Ababa public hospitals, Ethiopia: Cross sectional study. *BMC Pregnancy and Childbirth*, 18(1). <https://doi.org/10.1186/s12884-018-1957-0>
- Do Carmo Leal, M., Esteves-Pereira, A. P., Nakamura-Pereira, M., Torres, J. A., Theme-Filha, M., Domingues, R. M. S. M., Dias, M. A. B., Moreira, M. E., & Gama, S. G. (2016). Prevalence and risk factors related to preterm birth in Brazil. *Reproductive Health*, 13. <https://doi.org/10.1186/s12978-016-0230-0>
- Goldenberg, R. L., Gravett, M. G., Iams, J., Papageorgiou, A. T., Waller, S. A., Kramer, M., Culhane, J., Barros, F., Conde-Agudelo, A., Bhutta, Z. A., Knight, H. E., & Villar, J. (2012). The preterm birth syndrome: Issues to consider in creating a classification system. *American Journal of Obstetrics and Gynecology*, 206(2), 113–118. <https://doi.org/10.1016/j.ajog.2011.10.865>
- Hannah Blencowe, S. C. D. C. M. O. L. S. A.-B. M. M. K. J. L. (2013). *Born too soon : the global action report on preterm birth* (Vol. 10). World Health Organization.
- Jama, A. A., & Mourad, K. A. (2019). Water services sustainability: Institutional arrangements and shared responsibilities. *Sustainability (Switzerland)*, 11(3). <https://doi.org/10.3390/su11030916>
- Kelkay, B., Omer, A., Teferi, Y., & Moges, Y. (2019). Factors Associated with Singleton Preterm Birth in Shire Suhul General Hospital, Northern Ethiopia, 2018. *Journal of Pregnancy*, 2019. <https://doi.org/10.1155/2019/4629101>
- Leonard, S. A., Crespi, C. M., Gee, D. C., Zhu, Y., & Whaley, S. E. (2015). Prepregnancy Risk Factors for Preterm Birth and the Role of Maternal Nativity in a Low-Income, Hispanic

- Population. *Maternal and Child Health Journal*, 19(10), 2295–2302.
<https://doi.org/10.1007/s10995-015-1748-4>
- March of Dimes, P. S. the C. WHO. (2012). *The Global Action Report on Preterm Birth Born Too Soon*.
- Mohammad, K., Abu Dalou, A., Kassab, M., Gamble, J., & Creedy, D. K. (2015). Prevalence and factors associated with the occurrence of preterm birth in Irbid governorate of Jordan: A retrospective study. *International Journal of Nursing Practice*, 21(5), 505–510.
<https://doi.org/10.1111/ijn.12335>
- Mohammed, M., & Al-Hakeem, M. (2004). Multiple pregnancy and preterm labor. In *Article in Saudi Medical Journal*. <https://www.researchgate.net/publication/8566494>
- MOH of VANUATU. (2017). *STANDARD GUIDELINES FOR OBSTETRICS, GYNAECOLOGY AND NEWBORN CARE A HEALTH WORKER'S GUIDE 2 nd edition*.
[https://www.who.int/data/gho/indicator-metadata-registry/imr-details/low-birthweight-\(-newborns-who-weigh-2.5kg\)#:~:text=Definition:,natal%20weight%20loss%20has%20occurred](https://www.who.int/data/gho/indicator-metadata-registry/imr-details/low-birthweight-(-newborns-who-weigh-2.5kg)#:~:text=Definition:,natal%20weight%20loss%20has%20occurred)
- Muchie, K. F., Lakew, A. M., Teshome, D. F., Yenit, M. K., Sisay, M. M., Mekonnen, F. A., & Habitu, Y. A. (2020). Prevalence and associated factors of preterm birth in Ethiopia: Systematic review and meta-analysis protocol. In *BMJ Open* (Vol. 10, Issue 5). BMJ Publishing Group. <https://doi.org/10.1136/bmjopen-2019-035574>
- Muhumed, I. I., Kebira, J. Y., & Mabalhin, M. O. (2021). Preterm Birth and Associated Factors Among Mothers Who Gave Birth in Fafen Zone Public Hospitals, Somali Regional State, Eastern Ethiopia. *Research and Reports in Neonatology*, Volume 11, 23–33.
<https://doi.org/10.2147/rrn.s295820>
- Mwansa, K. (2020). Prevalence and Factors Associated with Spontaneous. In *Medical Journal of Zambia* (Vol. 47, Issue 1).
- Peter, A. (2024). Preterm Birth and Its Associated Factors among Mothers Delivered at Lira Regional Referral Hospital in Lira District. *Newport International Journal of Science and Experimental Science (NIJSES)*, 5(1). <https://doi.org/10.59298/NIJSES/2024/10.5.13244>
- Rohaninasab, M., Hesari, M., Mollazadeh-Narestan, Z., & Gazerani, A. (2024). Prevalence and risk factors associated with preterm births in Neyshabur hospitals, Eastern Iran. *Journal of Research Development in Nursing and Midwifery*, 21(3), 26–29.
<https://doi.org/10.29252/jgbfnm.21.3.26>

- Sendeku, F. W., Beyene, F. Y., Tesfu, A. A., Bante, S. A., & Azeze, G. G. (2021). Preterm birth and its associated factors in ethiopia: A systematic review and meta-analysis. *African Health Sciences*, 21(3), 1321–1333. <https://doi.org/10.4314/ahs.v21i3.43>
- Shubhada A, 1 Kambale SV,1 Phalke Bd. (2013). Determinants of Preterm Labour in a Rural Medical. *Nepal Journal of Obstetrics and Genecology (NJOG)*, 8(15), 31–33. <https://doi.org/10.3126/njog.v8i1.8858>
- Taha, Z., Hassan, A. A., Wikkeling-Scott, L., & Papandreou, D. (2020). Factors associated with preterm birth and low birth weight in Abu Dhabi, The United Arab Emirates. *International Journal of Environmental Research and Public Health*, 17(4). <https://doi.org/10.3390/ijerph17041382>
- Tehrani, N., Ranjbar, M., & Shobeiri, F. (2016). The Prevalence Rate and Risk Factors for Preterm Delivery in Tehran. *Iran. Journal of Midwifery and Reproductive Health*, 4(2), 600–604. <https://doi.org/10.22038/jmrh.2016.6605>
- unicef. (2015). *Somalia Maternal and Newborn Health Disparities*.
- UNICEF, & WHO. (2023). *150 million babies born preterm in the last decade*.
- Visser, L., de Boer, M. A., & de Groot, C. J. M. (2019). Analysis of Publication Interest on Preterm Birth Over Two Decades. *Maternal and Child Health Journal*, 23(10), 1392–1399. <https://doi.org/10.1007/s10995-019-02772-x>
- Wagura, P., Wasunna, A., Laving, A., Wamalwa, D., & Ng'ang'a, P. (2018). Prevalence and factors associated with preterm birth at kenyatta national hospital. *BMC Pregnancy and Childbirth*, 18(1). <https://doi.org/10.1186/s12884-018-1740-2>
- Walani, S. R. (2020). Global burden of preterm birth. In *International Journal of Gynecology and Obstetrics* (Vol. 150, Issue 1, pp. 31–33). John Wiley and Sons Ltd. <https://doi.org/10.1002/ijgo.13195>
- Weichert, A., Weichert, T. M., Bergmann, R. L., Henrich, W., Kalache, K. D., Richter, R., Neymeyer, J., & Bergmann, K. E. (2015). Factors for Preterm Births in Germany - An Analysis of Representative German Data (KiGGS). *Geburtshilfe Und Frauenheilkunde*, 75(8), 819–826. <https://doi.org/10.1055/s-0035-1557817>
- WHO. (2023). *Preterm birth*. <https://www.who.int/news-room/fact-sheets/detail/preterm-birth>

8. ANNEXES

8.1 Participant Information Sheet and Informed Voluntary Consent Form for the Head of the institution

1.Introduction

Good morning/afternoon dear Sir/Madam! My name is Hibaq Awil Elmi who is studying for My Master's degree at Haramaya University, the College of Health and Medical Sciences. I kindly request you to lend me your attention to explain you about the study and your hospital being selected as the study setting.

The Study: prevalence of preterm births and associated factors in Garowe, Puntland, Somalia.

Objectives: The objective of this study is to assess the prevalence of preterm births and associated factors in Garowe town, The aim of this study is to write a thesis as a partial requirement for the fulfillment of a Master's Program in maternity and neonatal nursing for the principal investigator.

4.Procedure and duration: I will be interviewing you the mothers of the neonates using a questionnaire to provide me with pertinent data that is helpful for the study. There are around 23 questions to answer where I will fill the questionnaire by interviewing the mothers and medical records of the mothers and her baby The interview on each mother will take about 10 minutes.

5.Risks and benefits: The risk of being participating in this study is very minimal, but only taking few minutes from mother's time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

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

7. Rights: Participation for this study is fully voluntary. The participants have the right to declare to participate or not in this study. If they decide to participate, they have the right to withdraw from the study at any time and this will not label them for any loss of benefits which they otherwise are entitled.

They do not have to answer any question that they do not want to answer.

8.Contact address: If there are questions or enquires any time about the study or the procedure, please contact through the following address:

Principal investigator: Mrs. Hibaq Awil Elmi Cell phone +25290 7407592 or +251 920428234.

Email: hibaaqawil834@gmail.com.

Institutional Health Research Ethics Review Committee (IHRERC): Office phone: 025-466-20-11 or P.O.BOX: 235, Harar, Ethiopia.

9. Declaration of informed voluntary consent:

I have read 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 queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that the hospitals have the right to stop this study from being conducted if any misdeeds and unethical procedures are observed during the data collection process in the Hospital's premises. Therefore, I declare my voluntary consent on behalf of (-----) management to allow this study to be conducted in the Hospital with my initials (signature _____).

Name and signature of Head of the Hospital: _____ **Date** _____

Name and signature of PI: _____ **Date** _____

8.2 Participant Information Sheet and Informed Voluntary Consent Form (for competent adults: ages > 18 years)

1. Introduction: Good morning/afternoon, dear Sir/Madam! My name is I am working as a data collector for the study being conducted in this health center, or hospital, by Hibaq Awil Elmi, who is studying for her

Master's degree at Haramaya University, the College of Health and Medical Sciences. I kindly request you lend me your attention to explain to you about the study and being selected as the study participant.

2. The Study: prevalence of preterm births and associated factors in Garowe, Puntland, Somalia.

3. Objectives: The objective of this study is to assess the prevalence of preterm births and associated factors in Garowe town. This study aims to write a thesis as a partial requirement for the fulfillment of a Master's Program in maternity and neonatal nursing for the principal investigator.

4. Procedure and duration: I will be interviewing you using a questionnaire to provide me with pertinent data that is helpful for the study. There are 23 questions to answer, where I will fill the questionnaire by interviewing you and the medical records of the mother and her baby. The interview will take about 10 minutes, so I kindly request that you spare me this time for the interview.

5. Risks and benefits: The risk of participating in this study is very minimal, but it only takes a few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

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

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

8. Contact address: If there are questions or enquires any time about the study or the procedure, please contact through the following address:

Principal investigator: Mrs. Hibaq Awil Elmi Cell phone +25290-7407592 or +251 920428234.

Email: hibaaqawil834@gmail.com.

Institutional Health Research Ethics Review Committee (IHRERC): office phone: 025-466-20-11 or P.O.BOX: 235, Harar, Ethiopia.

9. Declaration of informed voluntary consent:

I have read/ was read to 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 queries. 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 and signature of participant: _____ **Date** _____

Name and signature of Data Collector: _____ **Date** _____

8.3 participant information sheet and informed voluntary consent form for a minor (age < 18 years)/vulnerable individual to be signed by his/her legally competent representative (e.g.: parent/guardian)

1. Introduction:

Good morning/afternoon dear Sir/Madam! My name is ----- I am working as data collectors for the study being conducted in this health center, or hospital by Hibaq Awil Elmi who is studying for her Master's degree at Haramaya University, the College of Health and Medical Sciences. I kindly request you to lend me your attention to explain you about the study and the child's participation.

2.The Study: prevalence of preterm births and associated factors in Garowe, Puntland, Somalia.

3. Objectives: The objective of this study is to assess the prevalence of preterm births and associated factors in Garowe town, The aim of this study is to write a thesis as a partial requirement for the fulfillment of a Master's Program in maternity and neonatal nursing for the principal investigator.

4. Procedure and duration: I will be interviewing you using a questionnaire to provide me with pertinent data that is helpful for the study. There are 23 questions to answer where I will fill the questionnaire by interviewing you and medical records of your child and her baby The interview will take about 10 minutes, so I kindly request you to spare me this time and allow me perform this procedure on your child.

5. Risks and benefits: The risk of being participating for your child in this study is very minimal; but only taking few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

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

7. Rights: Participation for this study is fully voluntary. You have the right to declare to allow your child to be involved in this study or not. If you would allow your child for this study, you have the right to withdraw him/her from the study at any time and this will not label

you/your child for any loss of benefits which you/your child otherwise are entitled. You do not have to answer any question that you do not as well

8. Contact address: If there are questions or enquires any time about the study or the procedure, please contact through the following address:

Principal investigator: Mrs. Hibaq Awil Elmi Cell phone +25290-7407592 or +251 920428234.

Email: hibaqawil834@gmail.com.

Institutional Health Research Ethics Review Committee (IHRERC): office phone: 025-466-20-11 or P.O.BOX: 235, Harar, Ethiopia.

9. Declaration of informed voluntary consent:

I have read/ was read to 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 queries. 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 my child from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to allow my child to participate be involved) in this study with my initials (signature).

Name and signature of parent/guardian: _____ **Date** _____

Name and signature of Data Collector: _____ **Date** _____

8.4 Somali version of participant information sheet and informed voluntary consent for the participants (for competent adults: ages > 18 years)

Subax wanaagsan/ galab wanaagsan marwo magacaygu Waawaxan ka shaqaynayaa xog ururinta cilmi baadhisay dhakhtarkan ka samaynayso Hibaq Awil Elmi oo u qabanaysa masterteda jaamacada Haramaya qaybta caafimaadka iyo sayniska ee ku taal magaalada Harar ee dalka Itoobiya. Waxan si naxariis leh kaaga codsanayaa inad I siiso maskaxdaada si aan kuugu sharaxao waxa ay ku saabsan tahey cilmibaadhistan

1. Ciwaanka Cilmibaadhista

In la ogaado Baahsanaanta dhalshada ilmaha aan sidkiisi dhamaysan (Dhicis) iyo waxyaabaha ama qodobada la xariira ee ilmaha ku dhasha magaalada growe ,Puntland,Somaliya .

2. Ujeedada Cilmibaadhista

Ujedka cilmi baadhistan waa in la qiimeeyo Baahsanaanta dhalshada ilmaha aan sidkiisi dhamaysan (Dhicis) iyo waxyaabaha ama qodobada la xariira ee ilmaha ku dhasha magaalada growe ,Puntland,Somaliya Garashada tani waxay inaga caawin doontaa qorshaynta horumarinta caafimaadka bulshada taasoo anu ku eegi doono ka hortaga xanuunka. Intaa waxa dheer ujeedo ah in aan qoro buuga jmaacada oo loo baahan yahay si aan u buuxiyo shuruudaha shahaadada labaad ee masterta ee qaybta hooyada iyo dhalaanka .

3. Nidaamka iyo wakhtiga

Waan ku waraysan doonaa anoo isticmaalaya tirowaydiimo ah si aad ii siiso xog sugan oo caawisa cilmi baadhistan. Tiro Su, aalo ah ayan ku weydiin donnaa si aan u buuxiyo foomka markan ku warasyto. Waraysigu wuxu qaadan doonaa ilaa tobban daqiiqo.ah Waxan sidoo kale baadhid caafimaad ku samayn doonaa qodobada ka qaadan la xidhiidha hooyada oo saamayn kara Ilmahu dhasho asagoon sid dhamaysan.

4: Khataraha iyo Faaiidada

Khatarta ka qayb qaadashadu aad bay u yartahay laakiin waxay kaa qaadan wakhti yar. Ma jiri doonto lacag si toos ah lagu siin doono si aad uga qayb qaadato. Laakiin xogta laga helo cilmi baadhistan waxay xog muhiim ah siin doontaa dhakhtarada laga samaynayo iyo xafiisyada caafmadka ee magaalooyinkaas caafimaad ee gobolkan si ay u ogaadaan waxyaalaha keena

waxyeelada xangulaha ee ilmuhu ku dhashaan si loo xoojiyo mamulida looguna diyaariyo istaraatiijiyado lagaga hortegayo oo ku aadan dumarka gaadhay de'da dhalhada.

5. Sir ahaan shiyaha/ kalsoonida

Xogta aad na siiso waxay ahaan doonta sir ahaan. Ma jiri doonto xog adiga gaar kuu tilmaanta. Waxa laga helo cilmi baadhista waxay noqon doontaa mid bulsho mana jiri doonto wax gaar u ah qof iyo guri toona. lamana samayn doono wax tixraac toos ah oo ku saabsan ka qayb qaataha qoraal ahaan iyo hadal ahaan midna.

6. Xuquuqda

Ka qayb qaadashada baadhista waa tabarucad buuxada. Waxad xaq u leedahay inad ka qayb qaadato iyo inaad diidaba. Hadaad ogolaato inaad ka qayb qaadato hadana waxad xaq u leedahay inad joojiso wakhtiga aad doonto kugumana keeni doonto inad waydo faa'iidada. Ha ka jawaabin waydiinta ad doonto inanad ka warcelin.

7. Ciwaanka aad kala xidhiidhayso

Hadii ay jiraan wax su'aalo ah oo ku saabsan cilmi baadhista ama nidaamka wakhti kasta waxad la soo xidhiidhi kartaa ciwaandan soo socda Masuulka cilmi baadhista:

E-mail: hibaaqcawil834@gmail.com

Mobile phone: +252907407592 or +251920428234

Ama waxaad kala xariirikartaa Jaamacada Haramaya qaybta caafimaadka iyo sayniska iyo gudiga machadka cilmi baadhista iyo dib u eegista: **Namberka xafiiska:** 0254662011 P.O. **Box:** 235, Harar,

Itoobiya

8. Cadaynta in la wargaliyay damaanad qaadka tabarucada

Waa la ii akhriyaya warqada xogsiinta ka qayb qaataha. Si cad baan u fahmay ujeedada baadhistaanka nidaamka khatarta iyo faa'idada, arimaha sirta, xuquuqda ka qaybqaadashada iyo ciwaanka lagala xidhiidhayo wixii su'aal ah. waxa la I siiyay fursada su'aal weydiinta wax kasta oo mugdi kujiro.

Waxa la I wargaliyay in aan leyahay xuquuqda in aan ka bixi karo wakhti kasta ama anan ka jawaabi

Karin su'aal kasta oo aan doono inaan ka jawaabin, sidaas darteed waxan cadaynaya inaan si tabaruc ah uga qayb qaato baadhista saxiixayguna xagan hoose buu ku qoranyahay.

Magaca iyo saxeexa ka qayb qaataha: -----Taariikhda-----

saxeexa xog ururiyaha -----Taariikhda-----

8.5 Somali version of participant information sheet and informed voluntary consent for the participants age < 18 years)/vulnerable individual to be signed by his/her legally competent representative (e.g.: -parent/guardian)

Subax wanaagsan/ galab wanaagsan marwo magacaygu Waawaxan ka shaqaynayaa xog ururinta cilmi baadhisay dhakhtarkan ka samaynayso Hibaq Awil Elmi oo u qabanaysa masterteda jaamacada Haramaya qaybta caafimaadka iyo sayniska ee ku taal magaalada Harar ee dalka Itoobiya. Waxan si naxariis leh kaaga codsanayaa inad I siiso maskaxdaada si aan kuugu sharaxao waxa ay ku saabsan tahey cilmibaadhistan

1. Ciwaanka Cilmibaadhista

In la ogaado Baahsanaanta dhalshada ilmaha aan sidkiisi dhamaysan (Dhicis) iyo waxyaabaha ama qodobada la xariira ee ilmaha ku dhasha magaalada growe ,Puntland,Somaliya .

2. Ujeedada Cilmibaadhista

Ujedka cilmi baadhistan waa in la qiimeeyo Baahsanaanta dhalshada ilmaha aan sidkiisi dhamaysan (Dhicis) iyo waxyaabaha ama qodobada la xariira ee ilmaha ku dhasha magaalada growe ,Puntland,Somaliya Garashada tani waxay inaga caawin doontaa qorshaynta horumarinta caafimaadka bulshada taasoo anu ku eegi doono ka hortaga xanuunka. Intaa waxa dheer ujeedo ah in aan qoro buuga jmaacada oo loo baahan yahay si aan u buuxiyo shuruudaha shahaadada labaad ee masterta ee qaybta hooyada iyo dhalaanka .

3. Nidaamka iyo wakhtiga

Waan ku waraysan doonaa anoo isticmaalaya tirowaydiimo ah si aad ii siiso xog sugan oo caawisa cilmi baadhistan. Tiro Su, aalo ah ayan ku weydiin donnaa si aan u buuxiyo foomka markan ku warasyto. Waraysigu wuxu qaadan doonaa ilaa tobban daqiiqo.ah Waxan sidoo kale baadhid caafimaad ku samayn doonaa qodobada ka qaadan la xidhiidha hooyada oo saamayn kara Ilmahu dhasho asagoon sid dhamaysan.

4: Khataraha iyo Faaiidada

Khatarta ka qayb qaadashadu aad bay u yartahay laakiin waxay kaa qaadan wakhti yar. Ma jiri doonto lacag si toos ah lagu siin doono si aad uga qayb qaadato. Laakiin xogta laga helo cilmi baadhistan waxay xog muhiim ah siin doontaa dhakhtarada laga samaynayo iyo xafiisyada caafmadka ee magaalooyinkaas caafimaad ee gobolkan si ay u ogaadaan waxyaalaha keena waxyeelada xangulaha ee ilmuhu ku dhashaan si loo xoojiyo mamulida looguna diyaariyo istaraatiijiyado lagaga hortegayo oo ku aadan dumarka gaadhay de'da dhalhada.

5. Sir ahaan shiyaha/ kalsoonida

Xogta aad na siiso waxay ahaan doonta sir ahaan. Ma jiri doonto xog adiga gaar kuu tilmaanta. Waxa laga helo cilmi baadhista waxay noqon doontaa mid bulsho mana jiri doonto wax gaar u ah qof iyo guri toona. lamana samayn doono wax tixraac toos ah oo ku saabsan ka qayb qaataha qoraal ahaan iyo hadal ahaan midna.

6. Xuquuqda

Ka qayb qaadashada baadhista waa tabarucad buuxada. Waxad xaq u leedahay inaad ka qayb qaadato iyo inaad diidaba. Hadaad ogolaato inaad ka qayb qaadato hadana waxad xaq u leedahay inaad joojiso wakhtiga aad doonto kugumana keeni doonto inaad waydo faa'iidada. Ha ka jawaabin waydiinta ad doonto inaad ka warcelin.

7. Ciwaanka aad kala xidhiidhayso

Hadii ay jiraan wax su'aalo ah oo ku saabsan cilmi baadhista ama nidaamka wakhti kasta waxad la soo xidhiidhi kartaa ciwaandan soo socda Masuulka cilmi baadhista:

E-mail: hibaacawil834@gmail.com

Mobile phone: +252907407592 or +251920428234

Ama waxaad kala xariir kartaa Jaamacada Haramaya qaybta caafimaadka iyo sayniska iyo gudiga machadka cilmi baadhista iyo dib u eegista: **Namberka xafiiska:** 0254662011 P.O.

Box: 235, Harar, Itoobiya

8. Cadaynta in la wargaliyay damaanad qaadka tabarucada

Waa la ii akhriyaya warqada xogsiinta ka qayb qaataha. Si cad baan u fahmay ujeedada baadhistaanka nidaamka khatarta iyo faa'idada, arimaha sirta, xuquuqda ka qaybqaadashada iyo ciwaanka lagala xidhiidhayo wixii su'aal ah. waxa la siiyay fursada su'aal weydiinta wax kasta oo mugdi kujiro.

Waxa la I wargaliyay in aan leyahay xuquuqda in aan ka bixi karo wakhti kasta ama aan ka jawaabi

Karin su'aal kasta oo aan doono inaan ka jawaabin, sidaas darteed waxan cadaynaya inaan si tabaruc ah uga qayb qaato baadhista saxiixayguna xagan hoose buu ku qoranyahay.

Magaca iyo saxeexa ka qayb qaataha: -----Taariikhda-----

-- saxeexa xog ururiyaha -----Taariikhda-----

8.6 A QUESTIONNAIRE

Please kindly fill out the questionnaire by answering the questions as honestly as possible.

Please circle the appropriate one.

Part one	SECTION A:	SOCIO-DEMOGRAPHIC DATA OF THE MOTHER
NO	QUESTIONS	CATEGORY
101	What is your current Age (years)?	-----
102	What is your current Marital status?	1. Married
		2. Divorced
		3. Widowed
103	What is your current education level?	1. Cannot read write and
		2. Can read and write
		3. No formal education
		4. Grade complete (school) and Above
104	What is your current Occupation?	1. Housewife 2. Government employee 3. Self-employment
105	Where do you reside?	1. Urban 2. Rural

Part one	SECTION B	MATERNAL AND ANTEPARTUM RELATED FACTORS
NO	QUESTIONS	CATEGORY
201	Have you Attended ANC follows up during this pregnancy?	1. Yes 2. No
202	If yes to Q201 how many times did you get ANC?	1. <4 2. ≥4
	If you answered 'yes' to Q201, where did you get it?	1. MCH 2. Hospital
203	If you answered 'no' to Q201, why didn't you follow ANC?	1. Ignorance of the importance of ANC 2. Lack of awareness 3. Others
204	Do you have Pregnancy-Induced Hypertension?	1. Yes 2. No
205	How many times have you gotten pregnant?	1. Primigravida 2. Multigravida
206	How many times did you give birth?	1. 0-5 2. 6-11 3. > 11
207	Number of fetus	1. Singleton 2. Multiple
208	Place of birth	1. Hospital 2. MCH
209	History of abortion	1. Yes 2. NO
210	History of preterm birth	1. Yes 2. No
211	Pregnancy interval (months)	1. <12 2. ≥12
212	History of UTI	1. Yes 2. No

CHECK LIST (to be collected from the Women/neonate's cards)

Part one	SECTION A	MATERNAL AND RELATED FACTORS	
NO	QUESTIONS	CATE GORY	<input checked="" type="checkbox"/>
301	Which mode did you deliver?	1.Veginal delivery (SVD)	
		2.Assistance delivery	
		3.c/section	
302	Onset of labour	1.Spontaneous	
		2.Induced labour	
		3.C/S before labor	
303	PROM	1. Yes 2. No	
304	What is the fetal presentation?	1. Cephalic 2. Breach	

PART ONE.	SECTION B	SOCIO-DEMOGRAPHIC /IDENTIFICATION OF THE BABY	<input checked="" type="checkbox"/>
NO	QUESTIONS	CATEGORY	
307	What is the Gestational age of the current baby at birth in weeks?	1. < 37 weeks	
		2. ≥ 37 weeks	
308	What is the Gender of the current baby?	1. Male	
		2. Female	
		3. Female and male	
309	What is the weight of the fetus in grams?	1. < 2500	
		2. ≥2500	

8.7 A Somali version of a questionnaire

Tilmaamo

Fadlan si naxariis leh u buuxi su'aalaha adigoo uga jawaabaya su'aalaha sida daacadda ah ee suurtoogalka ah.

Fadlan goobo gali meesha ku habboon

Qaybta 1aad	QAYBTA B:	XOGTA HOOYO ee BULSHADA
NO	SUAALO	KOOX
101	Waa maxay da,daada?	-----
102	Waa maxay xaaladaada guur?	<ol style="list-style-type: none"> 1. Gursatay 2. Lafuray 3. Laga dhintay
103	Xgee maraysaaa waxbarasada waqtigan ?	<ol style="list-style-type: none"> 1. Aqoon la,aan 2. Dugsi hoose/dhexe 3. Dugsi sare 4. Jamacad 5. Waxbarsho dadban
104	Waa maxay shaqaadada waqti xaadirkan ?	<ol style="list-style-type: none"> 1. Arday 2. Guri joog 3. Dowlada u shaqeeya 4. Iskeed u shaqysata
105	Xgee dagantahy ?	<ol style="list-style-type: none"> 1. Magaalo 2. Miya

Qaybta T	ARRIMAHA LA XIDHIIDHA HOOYADA IYO DHALMADA KA HOR	
NO	SUAALO	
201	Masamaysay dabagalka hooyada ee dhalmada ka hor?	1. Haa 2. Maya
202	Maleedahy dhiigkarka uurka ?	1. Haa 2. Maya
203	Intee jeer baa uur qaaday ?	1. Waa kii u horeyay 2. Wax badan
204	Meeqa jeer baa dhashay?	1. Waa kii u horeyay 2. Wax badan
205	Ma mataanba ilmaha hada kuu jooga ?	1. Haa 2. Maya
206	Xgee ku dhashy ilmahan?	1. Cisbitaal 2. Xarunta hooyada iyo dhalaanka

8.8 Curriculum Vitae

Hibaq Awil Elmi

Israc Garowe

Cell phone: +252907407592, +251920428234

E-mail: hibaaqcawil834@gmail.com

OBJECTIVES

- A creative and innovative achievement of the organization's goal
- Learn and share knowledge, and serve according to the organization's guidelines and policies
- person with capacity building (training and related support activities)
- Honest and work effectively in any environment, conditions or culture where my service is required
- Contribute either independently or in a team towards the Educational background
- Postgraduate Diploma in Management and Teaching at the Islamic University in Uganda
- Ongoing Master of maternal and neonatal nursing at Haramaya University, Harar, Ethiopia
- Degree in public Health at Puntland state university -Garowe, Puntland, Somalia.
- Degree of midwifery at the University of Bosaso, Garowe, Puntland, Somalia.
- Secondary Certificate at Kalabayr Secondary school -Kalabayr, Puntland, Somalia.

Working Experience

- ✚ Enumerator Care since 2023
- ✚ Protection officer at SAAD NGO since January 2023
- ✚ Current Lecturer at University Bosaso Garowe (UOBG) since Sept 2022.
- ✚ Current Lecturer at Green Hope University, Garowe (GHU), Since June 2024
- ✚ Community health worker at Jawle IDPS in Garowe from April to December 2019.
- ✚ Midwife at Garowe General Hospital from January 2018 to March 2019.

Professional training and seminars

- Essential newborn care 1&2 at global health alliance
- Supportive supervision “as part Strengthening midwifery education and practice (SMEPS) project in Feb 2024 by UNFPA, MOH, CAM &PAM.
- Research training facilitated by the University of Bosaso Garowe in Sep 2022.
- Updating best practice in midwifery curriculum as part Strengthening midwifery education and practice (SMEPS) project in Sept, 2022 facilitated by UNFPA, MOH, CAM &PAM.
- Training of clinical management of rape facilitated UNFPA&MOH in August, 2022.
- Diploma Business Plan at Somali instate developmental and research analysis (SIDRA) Aug/2018 at Garowe.
- SPSS training at University of Bosaso Garowe in Nov, 2017.
- Writing Skills training at Scaom Bookshop & Library- Garowe in Jan, 2018.
- IMCI training at University of Bosaso Garowe in Jan, 2017.
- Auxillary nursing Institution of OTTI Garowe, Puntland Somalia in June, 2015.

Personal Qualities:

- ❖ Strong verbal and written communication skills in Somali, English and Arabic languages
- ❖ Well-developed analytical skills, critical analysis, and lateral thinker
- ❖ Proficient in the use of a range of typing and computing software’s including MS Office, MS Excel, SPSS and PowerPoint.
- ❖ Ability to work autonomously and within a team
- ❖ Motivated, positive attitude, good initiative and a self-starter
- ❖ Honest, Supportive, and easily adapts to changes.
- ❖ Strong organizational skills with a talent for multitasking
- ❖ Ability to maintain confidentiality required by the position at all times.

References

Dr Abdullahi Abdirisak Farah	Resident of the pediatric ward at KIU in Uganda	Email: Neerovic255@gmail.com Phone: +256700551552
Mrs. Juweria Jama Gelle	Supervisor of the Garowe General Hospital	Email: juweriyogl@gmail.com Phone +252907717928
Mr. Ahmed Jama Hassan	Dean of the student's office in UOBG	Email: Axmedgardaax20212@gmail.com Phone: +252907441265