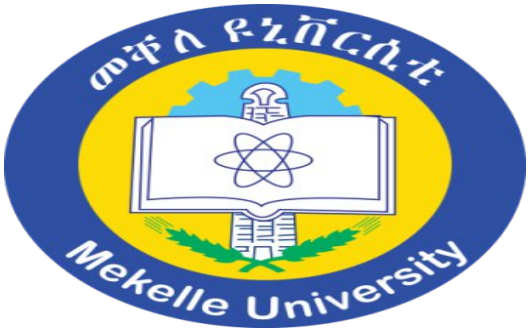

MEKELLE UNIVERSITY

COLLEGE OF HEALTH SCIENCE

FACULTY OF NURSING AND MIDWIFERY
DEPARTMENT OF PSYCHIATRY

SLEEP QUALITY AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN PUBLIC HOSPITALS OF MEKELLE CITY, TIGRAY, ETHIOPIA, 2025

BY: KIDAN G/ANENIA (BSc in Psychiatry nursing)

A THESIS SUBMITTED TO THE DEPARTMENT OF PSYCHIATRY, FACULTY OF NURSING AND MIDWIFERY, COLLEGE OF HEALTH SCIENCES, MEKELLE UNIVERSITY FOR THE PARTIAL FULFILLMENT OF THE DEGREE OF MASTER SCIENCE IN INTEGRATED CLINICAL AND COMMUNITY MENTAL HEALTH

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Advisor's Approval Sheet

This is to certify that the thesis entitled **"**Sleep Quality and Associated Factors Among Pregnant Women Attending ANC in Public Hospitals of Mekelle City**"** is submitted for partial fulfillment of the requirements for the degree of MSc with specialization in "Integrated Clinical and Community Mental Health" to the Graduate Program of the College of Health Sciences of Mekelle University and has been carried out by Kidan Gebreanenia Kahsay ID No: PGR/191906/16 under our supervision. Therefore, we recommend that the student has fulfilled the requirements and hence hereby can submit the thesis to the department.

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Declaration

I hereby declare that this MSc thesis is my original work and has not been presented for a degree in any other university and all sources of material used for this thesis have been duly acknowledged.

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Examiner's Approval Sheet

We, the undersigned, members of the Board of Examiners of the final open thesis defense by "Kidan Gebreanenia Kahsay" have read and evaluated her thesis, "Sleep Quality and Associated Factors among Pregnant Women Attending ANC in Public Hospitals of Mekelle City" and evaluated the candidate. This is therefore to certify that the thesis has been accepted in partial fulfillment of the requirements for the Master's Degree in Integrated Clinical and Community Mental Health.

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Final approval and acceptance of the thesis is contingent upon the submission of the final copy of the thesis to the candidate's Department through the office of the Department Graduate Program Coordinator.

Thesis Approved by

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Graduate program coordinator.	Signature	Date

Certification of the Final Thesis

I hereby certify that all the corrections and recommendations suggested by the Board of Examiners are incorporated into the final thesis entitled "Sleep Quality and Associated Factors among Pregnant Women Attending ANC in Public Hospitals of Mekelle City".

Department head_____ signature_____ date_____

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Abbreviations and acronyms

ACSH	Ayder Comprehensive Specialized Hospital
AOR	Adjusted odds ratio
ASST.	Assistant
ASSOC.	Associate
BSc.	Bachelors of Science
COR	Crude odds ratio
CI	Confidence interval
CMI	Chronic medical illness
DASS	Depression Anxiety Stress scale
DM	Diabetes mellitus
ETB	Ethiopian birr
HPH	Hiwo Primary Hospital
IPV	Intimate partner violence
LPH	Lekatit Primary Hospital
MGH	Mekelle General Hospital
MSc.	Master of Science
OSA	Obstructive Sleep Apnea
OSS	Oslo social support scale
Ph.D.	Doctor of Philosophy
PSQI	Pittsburgh Sleep Quality Index
QGH	Quiha General Hospital
RLS	Rest Leg Syndrome
SHI	Sleep hygiene index
SPSS	Statistical packages for the social science
SRS	Systematic random Sampling

Abstract

Background: Sleep is a vital physiological process that supports maternal and fetal health during pregnancy. However, pregnant women are vulnerable to sleep disturbances because of hormonal, physical and psychological changes, which have been linked to negative health consequences including gestational diabetes mellitus, hypertension, preterm delivery, low birth weight, and postpartum depression. Despite this, evidence on sleep quality and its associated factors is limited in the Tigray region.

Objective: To assess sleep quality and associated factors among pregnant women attending antenatal care services at public hospitals of Mekelle City, Tigray, Ethiopia, in 2025.

Methods: The study was conducted from October 20 to November 18, 2025 using a mixed-methods approach. A total of 282 pregnant women were selected using systematic random sampling. Data were collected through face-to-face interviews using structured and pre-tested questionnaire and sleep quality was measured using the standardized Pittsburgh Sleep Quality Index. Data were analyzed using SPSS version 26, and binary logistic regression was used to identify factors linked with poor sleep quality. Variables with a $p < 0.25$ in the Bivariable analysis were included in the multivariable logistic regression, and statistical significance was declared at a $p < 0.05$. For the qualitative component, ten in-depth interviews were conducted using convenience sampling, and data were analyzed using inductive thematic analysis.

Results: The prevalence of poor sleep quality was 51.4% (95% CI= 45.6-57.3). Factors significantly associated with poor sleep quality were maternal Age ≥30 [AOR=9.56, 95%CI (2.96 -30.93)], pain [AOR=3.08, 95%CI (l.07-8.90), anxiety [AOR=7.60, 95%CI (2.00-28.93)], IPV [AOR=10.41, 95%CI (3.37-32.20)], and stress [AOR=3.74, 95%CI (1.02-13.75)] Qualitative findings revealed varied sleep experiences among pregnant women influenced by physical discomfort, psychological distress, and environmental factors, while personal coping strategies and family support helped to improve sleep.

Conclusion and Recommendations: Poor sleep quality during pregnancy is a significant concern. The findings of this study reflect the combined influence of physical, psychological, and social factors on maternal sleep. Integrating sleep and mental health assessment in to routine antenatal care is essential to improve maternal sleep health during pregnancy.

Keywords: sleep quality, pregnancy, antenatal care, Tigray

1. INTRODUCTION

1.1 Background

Sleep is a fundamental physiological process, occupying nearly one-third of human life. It is a natural, reversible, and periodic state that plays an essential restorative and homeostatic role. It supports brain function, thermoregulation, and energy conservation (1).

Adequate sleep is crucial for maintaining overall health. This includes cardiovascular, metabolic, psychological, and immune system functioning (2–4). Poor sleep negatively affects emotional well-being, cognitive performance, blood pressure regulation, and hormonal balance.

Sleep is often marked by disturbances during pregnancy due to anatomical, hormonal, metabolic, and psychological changes. Frequently reported sleep disorders during pregnancy include insomnia, RLS, OSA, and excessive daytime sleepiness (5, 6). Contributing factors include hormonal shifts, physical discomfort, frequent urination, and heightened anxiety (7, 8). These disturbances often intensify as pregnancy progresses, particularly in the third trimester (9).

Sleep quality refers to a woman's satisfaction with different dimensions of her sleep. These include ease of falling asleep, nighttime awakenings, total sleeping hours, and how refreshed she feels upon waking (10, 11).

Poor sleep quality in pregnancy is typically characterized by reduced sleep duration, increased sleep latency, fragmented sleep, and non-restorative sleep. It is frequently reported across all trimesters but peaks in the third trimester. More than 70% of women experience symptoms such as insomnia (12).

A systematic review and meta-analysis conducted in Ethiopia reported that the pooled prevalence of sleep disturbance among pregnant women was 50.4% (13).

Poor sleep quality in the antenatal care period is linked to unfavorable maternal and fetal consequences. These include gestational diabetes mellitus, hypertensive disorders, preeclampsia, preterm birth, low birth weight, stillbirth, and postpartum depression (14-16).

1.2. Statement of the Problem

Sleep is a vital physiological function that supports physical and psychological well-being. During pregnancy, adequate sleep is especially important. It helps maintain maternal health and fetal growth. Globally, poor sleep quality during pregnancy is a significant concern. Studies reported prevalence rates ranging from 34% in high-income countries such as China to over 50% in middle- and low-income countries, including Egypt and Ethiopia (17-19).

In Ethiopia, despite increasing evidence highlighting the importance of maternal sleep, limited attention is given to this issue within routine ANC services (20). In particular, the Tigray region faces unique challenges due to the prolonged conflict, displacement, and socioeconomic instability, all of which may exacerbate sleep disturbances among pregnant women (21-25). Nevertheless, the magnitude and determinants of poor sleep quality in this region remains underexplored in the existing literatures.

Inadequate sleep during pregnancy has been linked to numerous unfavorable maternal and fetal outcomes, including pregnancy related hypertension, preeclampsia, intrauterine growth restriction, placental abruption, preterm delivery, operative delivery, reduced birth weight, maternal depression, and anxiety (17, 26-29). Studies also showed that nearly 40% of pregnant women experience insufficient sleep duration (defined as sleeping fewer than seven hours per night), which elevates the likelihood of gestational diabetes, prolonged labor, and developmental issues in children (30). These effects are more pronounced in socioeconomically disadvantaged populations (31), which is highly relevant for the Tigray region given the continuing conflict, instability and destruction of health facilities (21-25).

Several factors have been associated with poor sleep quality in pregnancy, including gestational age, maternal age, gravidity, stress, depression, anxiety, unplanned pregnancy, caffeine intake and poor sleep hygiene (32-34). However, these factors have not been systematically studied in Tigray, where ongoing war-related stress, insecurity, and limited access to health services may significantly affect sleep quality.

Although prevalence of poor sleep quality and its potential determinants has been studied elsewhere in Ethiopia, there is a lack of region-specific evidence for Tigray and no mixed-methods study on this topic has been published in Ethiopia in this issue. In addition, practical interventions addressing sleep disturbances during pregnancy remain limited in national level. ANC programs in Ethiopia tend to focus primarily on physical health and nutrition, with limited

attention to sleep and psychological well-being (35, 36). This highlights the urgent need for local data to guide context-specific responses and inform relevant stakeholders in developing comprehensive maternal care strategies.

Accordingly, the present study aims to assess the prevalence and determinants of poor sleep quality among pregnant women receiving antenatal care in public hospitals of Mekelle city, using a mixed-methods approach. The findings are expected to inform the development of context-specific screening tools and interventions.

1.3. Significance of the study

Conducting research on sleep quality and its determinants among pregnant women in Mekelle city holds significant value, as empirical data on maternal sleep health is currently lacking in the region. This study will provide evidence regarding the prevalence and determinants of poor sleep quality during pregnancy. The findings will offer insight that can support health care professionals and policymakers address this overlooked issue within ANC services.

By identifying modifiable risk factors associated with poor sleep quality, the study will provide evidence to support the development of early screening and appropriate management strategies aimed at enhancing maternal sleep health and over all well-being during pregnancy. Given the Tigray region's ongoing instability and related psychological stressors, understanding how these factors affect sleep health is crucial for informing context-specific maternal care strategies.

Contribution of the study

Federal Ministry of Health: By highlighting the often-overlooked issue of sleep quality during antenatal care period, the findings of this study may inform the future revision and enrichment of national ANC guidelines to consider sleep and mental health as important component of maternal care. The study may also support evidence-based planning and resource allocation for maternal sleep health.

Regional health bureau: The study will provide local data to support the integration of sleep health assessment into routine ANC practices.

Policymakers-: This research offers critical evidence that may support the consideration of targeted policies, screening approaches and resource prioritization related to maternal sleep health.

Researchers: By addressing the local evidence gap, the study will serve as a basis for future longitudinal and interventional research.

Health practitioner: The findings will raise awareness among ANC providers about the prevalence and potential determinants of poor sleep quality during pregnancy. It will also encourage the use of screening tool and counseling strategy to address sleep issues and contributing factors.

Study participants: Participants will gain awareness of their sleep health and risk factors, and benefit from early identification of their sleep problem and potential issues that may affect their sleep.

2. Literature review

2.1. Quality of sleep among pregnant women

Pregnancy is widely recognized as a critical period in women's lives, marked by many physiological and psychological changes that affect sleep quality (37). Disturbed sleep is frequently observed during pregnancy and may influence the women's attitude towards experiencing labor pain and their acceptance of the maternal role.

A large study assessing sleep quality across all months of pregnancy among 2,427 pregnant women found that 76% of the study participants experienced poor sleep quality (38).

A cross-sectional study carried out in Turkey also reported that, 48.9% of pregnant women involved in the study were found to have a PSQI score greater than 5 (39). Similarly, a study conducted in Saudi Arabia demonstrated that the prevalence of poor sleep quality increased from 38% to 55% as gestational age advanced (40). Evidence from Iran further supports these findings; a cohort study found that 75.26% experienced poor sleep quality, with lower sleep quality observed in the third trimester (41). A recent cross-sectional study among primigravid women also reported that 76.3% had poor sleep quality (42).

In Asia, a cross-sectional study from China found that 87% experienced poor sleep quality (43), whereas another cohort study there found a prevalence of 34.14% experienced poor sleep quality (17). A study conducted in Thailand reported that 43.2% had poor sleep quality (44), while a study in Malaysia reported 56.3% had poor sleep quality (45). Studies from India also showed prevalence of 46.6% and 39.84% (46, 47).

In Africa, a descriptive study conducted in Egypt reported that (76%) of pregnant women had poor sleep quality (48). A study from Ibadan, southwest Nigeria; found that 50% of the study participants had poor sleep quality (49).

In Ethiopia a systematic review and meta-analysis estimated a pooled prevalence of poor sleep quality during pregnancy was 52.3% (19). Furthermore, a cross-sectional study among 415 antenatal women attending ANC at Jimma Medical Center found a prevalence of 30.8% (50). Another cross-sectional study from referral hospitals of Oromia reported a prevalence of 54.6% (33). Studies from Gondar, Bahirdar and Wadila Primary Hospital reported a prevalence of 42.2%, 55.04% and 68.4% respectively (33, 51, and 52).

2.2. Factors associated with sleep quality among pregnant women

2.2.1. Demographic factors

Age: A study from Poland reported that advanced maternal age was associated with increased risk of sleep disturbance during pregnancy (53). Similarly, a research from Turkey revealed statistically significantly associated between maternal age and poor sleep quality (p= 0.009) (54). A cross-sectional study done in Jordan also showed that increased maternal age was significantly linked with impaired sleep quality (55). Evidence from China further identified age of mother as a contributing factor to poor sleep quality during pregnancy (43).

In Ethiopia, a cross- sectional study conducted at Jimma medical center reported that pregnant women aged ≥ 30 years old were nearly twice more likely to experience poor sleep quality compared with younger women (50). Likewise, a study conducted at Wadila Primary Hospital reported maternal age as a significant predictor of poor sleep quality (52). A recent study from Bahirdar reported that advanced maternal age increases the risk of poor sleep quality during pregnancy (AOR= 3.62) (51). This finding was further supported by systematic review and meta-analysis in Ethiopia, which confirmed maternal age as an important risk factor (19**).**

Marital status: Evidence from Nigeria reported women who were currently married had a 6.13 fold likelihood of poor sleep quality compared with those who were unmarried (49).

Religion: According to a study conducted in Nigeria, Muslim participants were less likely to experience poor sleep quality compared to non Muslims (COR= 0.69; 95% CI: (0.48- 0.98)) (49).

Residence: A study conducted in Pune, China found that, pregnant women living in rural areas had more than six times higher odds of experiencing poor sleep quality compared to urban residents (56).

Educational status: A study from Jordan indicated that pregnant women who had a high school or less education had a greater likelihood of poor sleep quality compared with those who attained higher level of education (B= 1.097) (55).

Income: evidence from Poland indicated that women with lower economic status experienced a higher likelihood of sleep disturbances during pregnancy (53). Similarly, research from Turkey

revealed perceived lower income of pregnant women was linked to poorer sleep quality (p= 0.014) (39). A longitudinal study in Saudi Arabia identified a direct relationship between reduced income and impaired sleep quality among pregnant women (40**).**

Occupation: A study conducted in Taiwan found that unemployed participants reported significantly poorer sleep quality compared to those who were employed (57)

2.2.2. Clinical and obstetrics factors

Gestational age: research from Saudi Arabia reported positive relationship between gestational age and impaired sleep quality, showing that sleep was relatively better in the first trimester, declined in the second trimester and further worsened in the third trimester (40). Similarly, Cross-sectional studies conducted in China (43), Thailand (44), and Nigeria (49) also found that increased gestational age was linked to poorer sleep quality.

In Ethiopia, finding from Gondar University Hospital indicated that being in the third trimester (AOR = 3.45) and first trimester (AOR = 2.31) increase the likelihood of experiencing poor sleep quality (33). In Nekemte women in the third trimester had nearly six fold higher odds of poor sleep quality compared with earlier trimesters (32). Similarly, a cross-sectional study in Bahirdar found that third-trimester women were almost three times more likely to report poor sleep quality (AOR = 2.83) (51).

Gravidity: A research done in Saudi Arabia identified having previous multiple pregnancies as a risk factor of impaired sleep quality during pregnancy (40). At Jimma Medical Center, a cross-sectional study reported that multigravida women were 1.9 times more likely to experience poor sleep quality compared with primigravida women (18). In Bahirdar multigravida women were found to have 2.55 times higher odds of poor sleep quality than in their first pregnancy (51).

Pregnancy intention: As a result of a study done in Nekemte, unplanned pregnancy had 4.25 times higher odds of experiencing impaired sleep quality compared with those with planned pregnancy (32). Likewise, a systematic review and meta-analysis in Ethiopia confirmed unplanned pregnancy as a significant risk factor for poor sleep (19).

Pain: A study conducted in Turkey stated that having back, waist or neck pain was strongly linked to poor sleep quality during pregnancy (p= 0.006) (39). Similarly, study conducted in Jordan found that pregnant women who suffered from leg cramps were significantly more likely to report impaired sleep quality compared with those without leg cramps (B= 1.578) (55)

Co-morbid medical illnesses: A study in Sweden reported that pregnant women with preexisting diabetes were more likely to experience disrupted sleep during pregnancy (58).

History of mental illnesses: research in the Netherland indicated that pregnant women with a history of mental health issues perceived their sleep quality to be worse than women without such conditions (59).

2.2.3. Psychosocial factors

Stress: According to a study conducted in Poland, an increased level of stress was linked to increased risk of sleep disturbance (53). A study conducted at Gondar University Hospital reported pregnant women who had perceived stress were 5.39 times more likely to experience impaired sleep quality during pregnancy (33). A study from Jimma revealed women with stress had 1.85 times higher odds to report impaired sleep quality during pregnancy (18). Furthermore, a result synthesized from a systematic review and meta-analysis study in Ethiopia confirmed that perceived stress was a significant predictor of sleep disturbances among pregnant women (19).

Anxiety: Findings of a study from Turkey reviled anxiety was predictor of impaired sleep quality during pregnancy (54). A research done in Jordan reported that higher anxiety scores significantly increased the risk of poor sleep quality among pregnant women (B= 0.355) (57). A study conducted in Jimma also revealed pregnant women who had anxiety had 1.9 times higher odds of reporting poor sleep quality (18). Similarly, a study conducted in Nekemte reported that participants who reported anxiety had 6.62 times higher odds to experience poor sleep quality (32).

Depression: A study from China reviled that a significant association was observed between prenatal depression and poor sleep (43). A study done at Jimma reported that pregnant women experienced depression had 4.26 times higher odds of reporting poor sleep quality (18). A study from Nekemte reported pregnant women who reported depressive symptoms were 5.73 times more likely to have impaired sleep (32). A cross-sectional study carried out in Gondar stated there was a statistically significant association between depression and poor sleep quality during pregnancy (33). Ethiopian systematic review and meta-analysis study further confirmed depression was significant predictor of poor sleep (19).

Intimate Partner Violence

A study from Gondar reported intimate partner violence increased the odds of poor sleep quality during pregnancy by 5.57 folds (33).

Social support: A study from China found that poor social support was linked with poor sleep quality (60).

2.2.4. Behavioral factors

Current substance use: According to a study done in Ankara, Turkey smoking during pregnancy was linked with poor sleep quality (p= 0.044) (39). A cohort study conducted in China also stated smokers were 1.59 times more likely to experience inadequate sleep compared to non- smokers (17). A study done at Gondar reported that women who were caffeinated substances users were 2.96 times more likely to report inadequate sleep compared to those who were not users (33). A recent study done in Bahirdar also found that coffee consumption was a risk factor for poor sleep quality (51).

Sleep hygiene practice: A study conducted in Nekemte found that women who had poor sleep hygiene practice had 2.93 times higher odds of experiencing poor sleep (32). Ethiopian systematic review and meta-analysis study also reported that poor sleep hygiene practice were significantly associated with poor sleep quality during pregnancy (19).

2.3. Conceptual framework: Factors including demographic, clinical and obstetric, psychosocial and behavioral directly affect sleep quality during pregnancy. This is a conceptual frame work developed from different literatures.

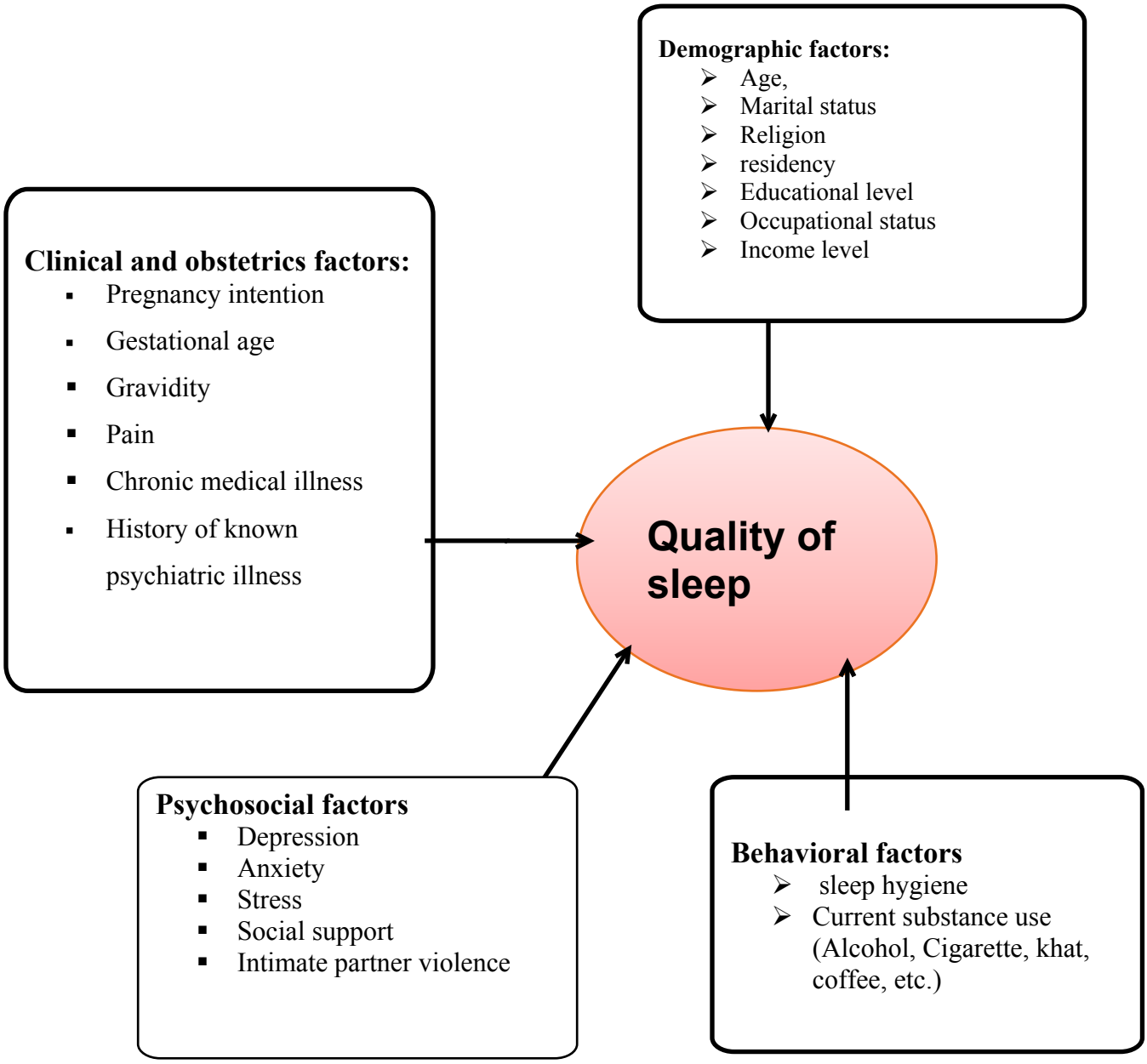

Figure1: Conceptual framework for factors associated with sleep quality among pregnant women, which was developed after reviewing different literatures (32, 33, 49, 51, 53, 56, 57, 59, 60)

3. OBJECTIVES

3.1. General objective

To assess sleep quality and associated factors among pregnant women attending antenatal care in public hospitals of Mekelle city, Tigray, Ethiopia, 2025

3.2. Specific objectives

1. To determine prevalence of poor sleep quality among pregnant women attending antenatal care in public hospitals of Mekelle city
2. To identify factors associated with poor sleep quality among pregnant women attending antenatal care in public hospitals of Mekelle city

4. Methodology

4.1. Study area and period

The study was done in public hospitals of Mekelle City, the capital of Tigray region of Ethiopia, which is 783 kilometers north of Addis Ababa, the capital city of Ethiopia (61). According to 2017 estimates, Mekelle city had a population of 412, 938. Of these, 23.5% were female in the reproductive age (15-49 years), and the number of pregnant women was projected to be approximately 12,333 (62). The town has seven sub-cites under the catchment area and there are five public hospitals, (Ayder Comprehensive Specialized Hospital, Mekelle General Hospital, Quiha General Hospital, Lekatit11 Primary Hospital and Hiwo Primary Hospital), which provide ANC services. The study was conducted from Oct 20- Nov 18, 2025.

4.2. Study design

A convergent mixed-methods study was conducted from Oct 20 – Nov 18, 2025.

4.3. Population

4.3.1. Source Population

All pregnant women attending antenatal follow-up at the public hospitals of Mekelle City

4.3.2. Study Population

Pregnant women attending ANC follow-up at the public hospitals during the study period

4.4. Eligibility criteria

4.4.1. Inclusion criteria

Pregnant women aged 18 years and above, with confirmed pregnancies, attending antenatal care follow-up at the public hospitals.

4.4.2. Exclusion criteria

Pregnant women who were critically ill and unable to communicate were excluded.

4.5. Sample size determination

4.5.1. Sample size determination for the first objective (prevalence)

The required number of samples for this study was determined by using the single population proportion formula considering the following assumption:

$$n = \frac{\left(\frac{Z\alpha}{2}\right)^2 \mathrm{p}(1-\mathrm{p})}{d^2}$$

Where

n = minimum sample size required for the study

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

P= the proportion of poor sleep quality among pregnant women was assumed to be 55.04%, based on the result of a cross-sectional study conducted in Bahirdar (51).

d= Absolute precision or tolerable margin of error (d) =5%=0.05

$$n = \frac{(1.96)^2 \times .5504 \times (1- .5504)}{(0.05)^2}$$

$$n = 380.3 \approx 380$$

Since the source population is less than 10,000, and the calculated sample size constituted a large proportion of the population, the finite population correction formula was used. Therefore nf = n/(1+n/N)

N_f= 380/ (1+380/684) = 244.3≈ 244

To account for the possible refusals or incomplete responses, 10% non-response rate was considered which is consistent with previous Ethiopian studies (33, 50, and 51).

Adding the 10% non-response protection, (244x 1.1= 268.4 ~268)

Table 1: sample size determination for associated factors with sleep quality

Variables	OR	Percent in the exposed group	Percent in the unexposed group	Sample size with 10%	reference
Maternal age	3.62	82.3	56.3	123	51
Gravidity	2.55	82.5	64.9	240	51
Gestational age	2.83	80	58.5	179	51
Coffee consumption	2.19	74.5	57.1	282	51

Comparison of sample size calculated for the first and second objectives showed that the final sample size was 282.

Recruitment of participants for the qualitative study continued until data saturation was achieved. Saturation was assessed using the code frequency count approach. In this approach, newly emerging codes were identified after each interview and compared with previously generated codes. The number of new codes was monitored across successive transcripts to determine whether additional interviews were needed. This process was guided by the concept of inductive thematic saturation, in which data collection was terminated when no new code emerged. Accordingly, ten pregnant mothers were interviewed.

4.6. Sampling technique and procedure

Out of the five public hospitals in Mekelle city (one specialized, two general and two primary hospitals, ACSH, and one from each of the remaining (Mekelle General Hospital and Lekatit Primary Hospital) have been selected by lottery. The total sample size of 282 was distributed proportionally to the hospitals based on the average monthly report of ANC visits in the previous six months. SRS was applied to select participants among pregnant women attending ANC services in each hospital. The sampling interval (k) was calculated by dividing the total population by the calculated sample size (K= N/n= 684/282= 2.42≈ 2).Therefore, respondents were selected among all pregnant women at 2nd interval, and the first respondent was selected by using a lottery method.

If the women at the selected interval (Kth participant) were unavailable or did not meet the inclusion criteria, the next immediate eligible woman was invited to participate. The systematic interval was then continued from the point of the last successfully enrolled participant.

For the qualitative component, convenience sampling was used to recruit pregnant women attending ANC at the selected public hospitals. A total of ten participants were recruited and interviewed using in-depth interviews until data saturation was achieved.

Schematic presentation of sampling frame

In Mekelle city there are one comprehensive specialized hospital (ACSH), two general hospitals (MGH and QGH) and two primary hospitals (HPH and LPH). Of these three hospitals were included in the study. The number of clients for ANC visits in the last 6 months at the selected public hospitals was (ACSH =1830, MGH = 1242, and LPH= 1032).

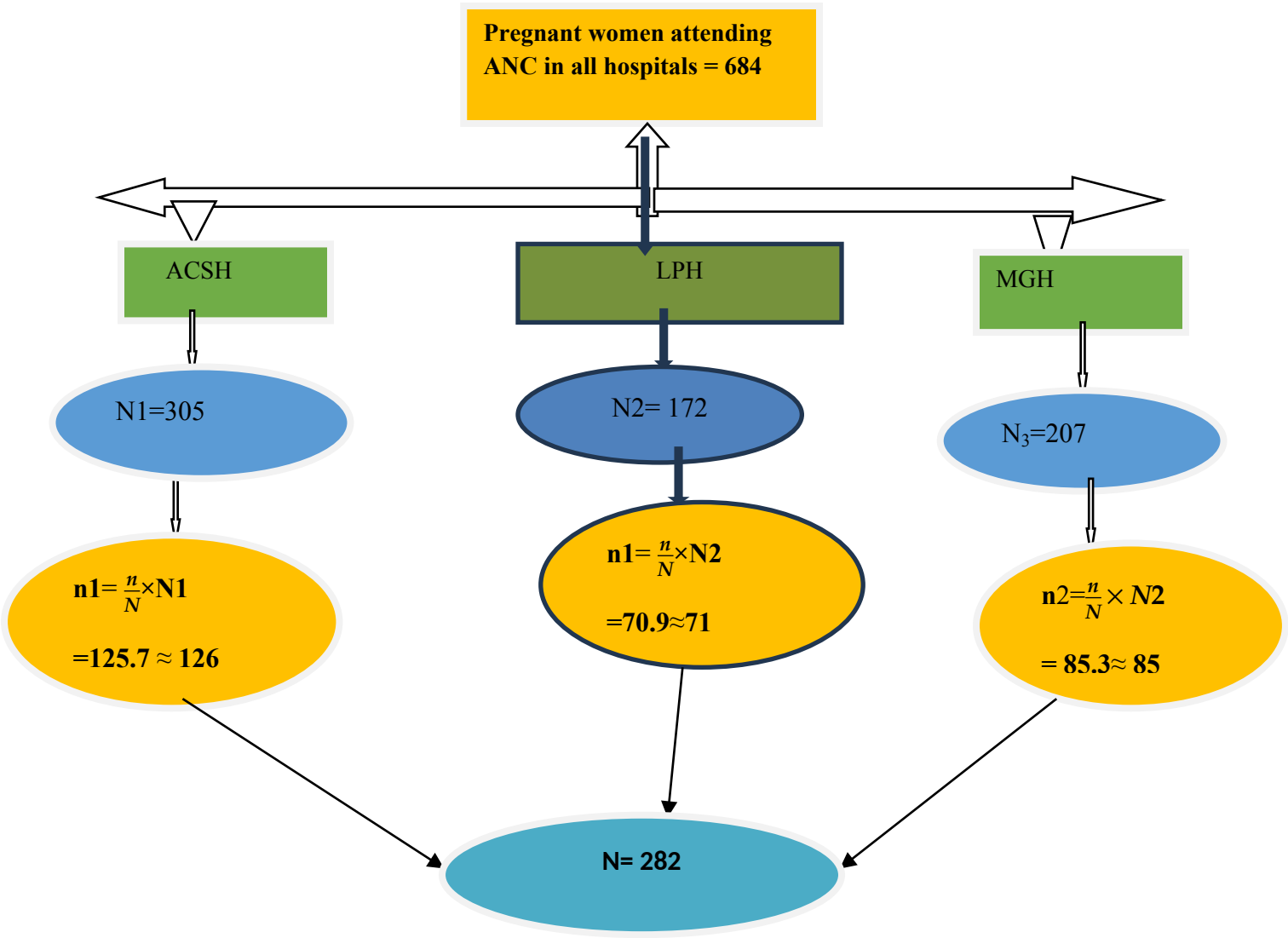

Figure2: Schematic presentation of sampling procedure for the study on sleep quality and associated factors among pregnant women attending ANC follow-up in public hospitals of Mekelle City, Tigray, Ethiopia, 2025

4.7. Data collection tool and procedure

Data collection was carried out using structured, interviewer-administered questionnaire, complemented by relevant open-ended questions. The questionnaire was prepared after reviewing relevant literatures and previous similar studies. Data was obtained via direct interviews by five trained BSc psychiatry nursing professionals in the ANC waiting room of the selected hospitals.

The structured questionnaire included demographics factors, clinical and obstetrics factors, behavioral factors, and psycho-social factors. Sleep quality was assessed using the Pittsburgh Sleep Quality Index, a tool previously validated in Ethiopia. The tool includes seven components; subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Each domain is rated on a scale ranging 0 to 3, resulting in a total score between 0 and 21. Participants with a global PSQI score exceeding 5 were categorized as having poor sleep quality.

Sleep hygiene was measured using Sleep Hygiene Index, which comprises 13 items rated on a Likert scale from 0 (never) to 4 (always), producing an overall score ranging 0 to 52. Scores of 16 or higher were considered indicative of poor sleep hygiene. Social support was assessed using Oslo Social Support Scale, with total scores ranging from 3 to 14. Based on the scoring system, it is classified as poor (3–8), moderate (9–11), and strong (12–14). Intimate partner violence was also assessed by using the Abuse Assessment Screen. Any affirmative response to one or more questions resulted in classifying the participant as IPV-positive. Substance use was assessed based on self-reported current use of alcohol, tobacco or khat within the past three months.

For the qualitative component, data were obtained through in-depth interviews using semi-structured guide. The interviews explored participants' experiences, perceptions, and opinions regarding their sleep quality and influencing factors.

4.8. Study variables

4.8.1. Dependent variable

- Sleep quality (Yes/ No)

4.8.2. Independent variables

1) Demographic factors: Age, Marital status, educational status, religion, residence, occupational status, and household monthly income

2) Psychosocial factors: Depression, anxiety, stress, social support, intimate partner violence

3) Behavioral / lifestyle factors: Sleep hygiene, and current substance use

4) Clinical and obstetrics factors: Pregnancy intention (planned/ unplanned), gestational age, Frequency of ANC visit, gravidity, Pain, chronic medical illness, history of known psychiatric illness

4.9. Scoring Methods and Operational Definitions

4.9.1. Scoring Methods

Poor sleep quality: PSQI>5 (63).

Good sleep quality: PSQI≤5 (63).

Anxiety: DASS-A 21 scored 8 and above (64).

Depression: DASS-D 21, scored 10 and above (64).

Stress: DASS- S 21, scored 15 and above (64).

Poor sleep hygiene: SHI ≥16 (32).

Social support- OSS-grouped in to, poor ”3-8”, moderate “9-11”, strong “12-14”**(**65).

4.9.2. Operational Definitions

Intimate partner violence: At least one “yes” to AAS (66).

Age: The age of participants categorized;

18-24

25-29

≥30 (51)

Monthly income: The total monthly household income categorized as;

< 3073

≥3073 (51)

4.10. Data quality control

Five data collectors and one supervisor received a two-day formal and standardized training on the study purpose, ethical issues, interview techniques, confidentiality, and interviewer bias

reduction through neutral probing and standardized questioning. The questionnaire was initially developed in English, translated to Tigrigna and back-translated into English by different language experts to ensure consistency. A pretest was conducted on 5% of the sample (14 pregnant women) in Wukro General Hospital and necessary modifications were made. The supervisor as well as principal investigator carried out daily supervision. Completed questionnaires were checked daily for consistency, completeness, and accuracy.

To ensure the trustworthiness of qualitative data, several measures were taken throughout the data collection and analysis process. The in-depth interview guide was designed in English, and subjected to translation in to Tigrigna and back-translation in to English to maintain consistency. Interviews were conducted in a private setting and audio recorded with the participant's consent. To ensure credibility, member checking was carried out by summarizing key points during interviews. Systematic coding and maintenance of detailed audit trails were applied to ensure credibility, dependability and conformability. Rich description and direct quotation were used to improve transferability.

4.11. Data processing and analysis procedure

The collected data were systematically coded, entered, and cleaned, then analyzed using SPSS version 26. To minimize data entry errors, double entry was performed independently. Descriptive statistics were applied to summarize participants' demographic, clinical, obstetrics, behavioral and psychosocial characteristics.

Bivariable logistic regression was conducted and variables with p-value <0.25 were included in multivariable logistic regression model. Multi-co linearity was checked with VIF of <2.87 and Model fitness was tested using Hosmer- Lemeshow test and p-value was 0.87. Results were presented as adjusted odds ratios (AORs) with 95% confidence intervals, and a p-value of <0.05 was considered statistically significant.

For the qualitative component, data were analyzed using inductive thematic analysis.

4.12 Ethical Considerations

Ethical approval for the study was obtained from the Institutional Ethical Review Board of Mekelle University, College of Health Science (MU-IRB 2668/2025). A copy of the ethical letter was submitted to the study hospital administrations (ACSH, MGH, and LPH). A letter of

cooperation was written to the head of ANC units of the hospitals that were obtained from the School of Nursing at Mekelle University.

Prior to data collection, all participants were clearly informed about the objective of the study, as well as its risks and benefits. Informed consent was obtained from each participant before the beginning of the interview. Confidentiality and privacy was maintained and all information was handled anonymously.

4.13 Plan for dissemination of findings

The result of this study will be presented to Mekelle University, Faculty of Nursing and Midwifery, Department of Psychiatry. Copies of the final report will be disseminated to relevant stack-holders and all responsible bodies in the study area. Finally, an effort will be made to disseminate the results of the study in national and international conferences, workshops and to publish the paper in peer reviewed scientific journals relevant to the field.

5) RESULT

5.1. Demographic characteristics of participants

In this study, 282 pregnant women were included, yielding a response rate of 100%. The mean age of the respondents was 31.8 years (SD ± 6.8), with a range of 18–46 years. The majority of the participants were followers of the Orthodox Christian religion (78.7%). Most respondents were married (78.0%), and more than half were housewives (53.2%) **(Table2).**

Table 2: Demographic characteristics of pregnant women attending antenatal care in public hospitals of Mekelle City, Tigray, Ethiopia; 2025 (n =282)

Variables	Categories	Good sleep quality n (%)	Poor sleep quality n (%)	Total n (%)
Age	18- 24	24 (8.5)	18 (6.4)	42 (14.9)
	25-29	74 (26.2)	22 (7.8)	96 (34.0)
	≥30	39 (13.8)	105 (37.3)	144 (51.1)
Religion	Orthodox	110 (39)	112 (39.7)	222 (78.7)
	Muslim	16 (5.7)	22 (7.8)	38 (13.5)
	Protestant	10 (3.5)	8 (2.9)	18 (6.4)
	Catholic	1 (0.4)	3 (1.0)	4 (1.4)
Residence	Urban	130 (46.1)	123(43.6)	253 (89.7)
	Rural	7 (2.5)	10 (3.5)	17 (6.0)
	Displaced	0(0.0)	12 (4.3)	12 (4.3)
Occupation	Housewife	69 (24.5)	81 (28.7)	150 (53.2)
	Private work	6 (2.1)	25 (8.9)	31 (11.0)
	Government Employed	38 (13.4)	25 (8.9)	63 (22.3)
	Labor worker	24 (8.5)	10 (3.5)	34 (12.1)
	Other	0 (0.0)	4 (1.4)	4 (1.4)
Marital status	Single	6 (2.1)	17 (6.1)	23 (8.2)
	Married	128 (45.4)	92 (32.6)	220 (78.0)

	Divorced	3 (1.1)	29 (10.2)	32 (11.3)
	Widowed	0 (0.0)	7 (2.5)	7 (2.5)
Monthly income	≥3073	48 (17.0)	93 (33.0)	141 (50)
	<3073	89 (31.6)	52 (18.4)	141 (50)

Others- students, house maid, soldiers

5.2) Psychosocial-related factors

More than half of participants experienced symptom of depression, with 162 (57.4%) classified as having depression. Anxiety was also reported by 178 (63.1%) of participants, and 119 (42.2 %) were found to have stress. Regarding intimate partner violence, 110 (39.0%) of the participants reported experiencing IPV **(as shown in table 3).**

Table 3: Psychosocial relate characteristics of pregnant women attending antenatal care in public hospitals of Mekelle City, Tigray, Ethiopia 2025 (n= 282)

Variables	Categories	Good sleep quality n (%)	Poor sleep quality n (%)	Total n (%)
Anxiety	No	95 (33.7)	9 (3.2)	104 (36.9)
	Yes	42 (14.9)	136 (48.2)	178 (63.1)
Depression	No	105 (37.2)	15 (5.3)	120 (42.6)
	Yes	32 (11.3)	130 (46.1)	162 (57.4)
Stress	No	125 (44.3)	38 (13.5)	163 (57.8)

Variables	Categories	Good sleep quality n (%)	Poor sleep quality n (%)	Total n (%)
	Yes	12 (4.3)	107 (37.9)	119 (42.2)
Social support	Good	44 (15.6)	21 (7.4)	65 (23.0)
	Medium	53 (18.8)	95 (33.7)	148 (52.5)
	Poor	40 (14.2)	29 (10.3)	69 (24.5)
Intimate partner violence (IPV)	No	126 (44.7)	46 (16.3)	172 (61.0)
	Yes	11 (3.9)	99 (35.1)	110 (39.0)

5.3) Behavioral factors

Among the study participants, 235 (83.3%) did not consume alcohol in the past three months. About 121 (42.9%) were current coffee consumers, and 133 (47.2%) had poor sleep hygiene practices. None of the participants reported using tobacco products, khat, or other caffeinated drinks during the past three months **(Table 4).**

Table 4: Behavioral and living habits of pregnant women attending antenatal care in public hospitals of Mekelle City, Tigray, Ethiopia; 2025 (n=282)

Variables	Categories	Good sleep quality n (%)	Poor sleep quality n (%)	Total n (%)
Alcohol Consumption (Past 3 months)	Yes	22 (7.8)	25 (8.9)	47 (16.7)
	No	115 (40.8)	120 (42.6)	235 (83.3)
Coffee consumption (Current)	Yes	51(18.1)	70 (2.8)	121 (42.9)
	No	86 (30.5)	75 (26.6)	161(57.1)
Sleep Hygiene Practices	Good	115 (40.8)	22 (7.8)	137 (48.6)
	Poor	34 (12.1)	111 (39.3)	145 (51.4)
Tobacco Use (Past 3 months)	Yes	0 (0.0)	0 (0.0)	0 (0.0)
	No	139 (49.3)	143 (50.7)	282 (100)

Variables	Categories	Good sleep quality n (%)	Poor sleep quality n (%)	Total n (%)
Khat use (past 3 months)	Yes	0 (0.0)	0 (0.0)	0 (0.0)
	No	137 (48.6)	145 (51.4)	282 (100)
Other substance use	Yes	0 (0.0)	0 (0.0)	0 (0.0)
	No	135 (47.9)	147 (52.1)	282 (100)

5.4) Clinical and obstetrics characteristics

Among 282 participants, 170 (60.3%) reported planned pregnancies, and 234 (82.9%) were multigravida. Pain during pregnancy was reported by 116 (41.1%), whereas chronic medical illness and previously diagnosed mental illness were reported by 23 (8.2%) and 6 (2.1%) respectively **(Table5)**

Table 5: Medical and obstetrics characteristics of pregnant women attending ANC in public hospitals of Mekelle City, Tigray Region, Ethiopia; 2025 (n=282)

Variable	Categories	Good sleep quality n(%)	Poor sleep quality n(%)	Total n(%)
Pregnancy intention	Planned	109 (42.2)	61(21.6)	170 (60.3)
	not planned	28(9.9)	84(29.8)	112 (39.7)
Number of ANC visits	<4	81(28.7)	93(33.0)	174(61.7)
	≥4	56(19.9)	52(18.4)	108(38.3)
Gravidity	Primigravida	25 (8.9)	23 (8.2)	48 (17.1)
	Multigravida	112 (39.7)	122 (43.2)	234 (82.9)
Pain	No	122 (43.3)	44 (15.6)	166 (58.9)
	Yes	15 (5.3)	101 (35.8)	116 (41.1)
Chronic illnesses	No	134 (47.5)	125 (44.3)	259 (91.8)
	Yes	3 (1.1)	20 (7.1)	23 (8.2)
Diagnosed mental illness	No	133 (47.2)	143 (50.7)	276 (97.9)
	Yes	4 (1.4)	2 (0.7)	6(2.1)

With regard to gestational age, 60 (21.3) was in the first trimester, 118 (41.8%) in the second trimester and 104 (36.9) in the third trimester.

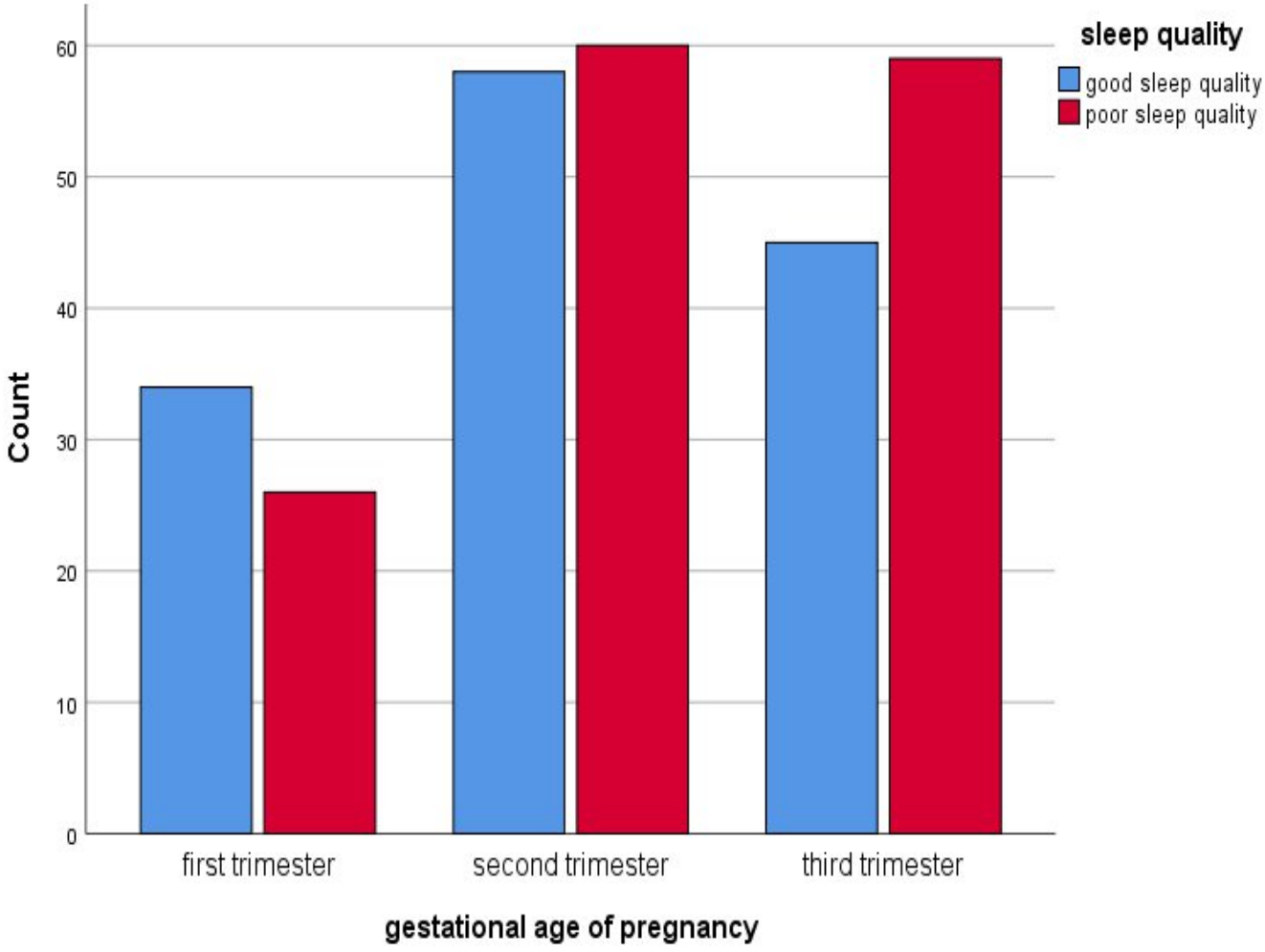

Figure 3: Sleep quality across gestational ages of pregnant women attending antenatal care in public hospitals of Mekelle City, Tigray, Ethiopia, 2025 (n=282)

5.5) Sleep quality among pregnant women attending antenatal care in public hospitals of Mekelle City

The prevalence of poor sleep quality in this study was 51.4% (95% CI: 45.6 - 57.3)**.** The prevalence of poor sleep quality was higher among pregnant women who were age ≥ 30 years (37.2%), those who were married (32.6%), had unplanned pregnancy (29.8%), were multigravida (43.2%), and were experiencing pain during pregnancy (35.8%). Higher prevalence was also

observed among participants with poor sleep hygiene practices (39.4), having anxiety (48.2%), depression (46.1%), and stress (37.9%).

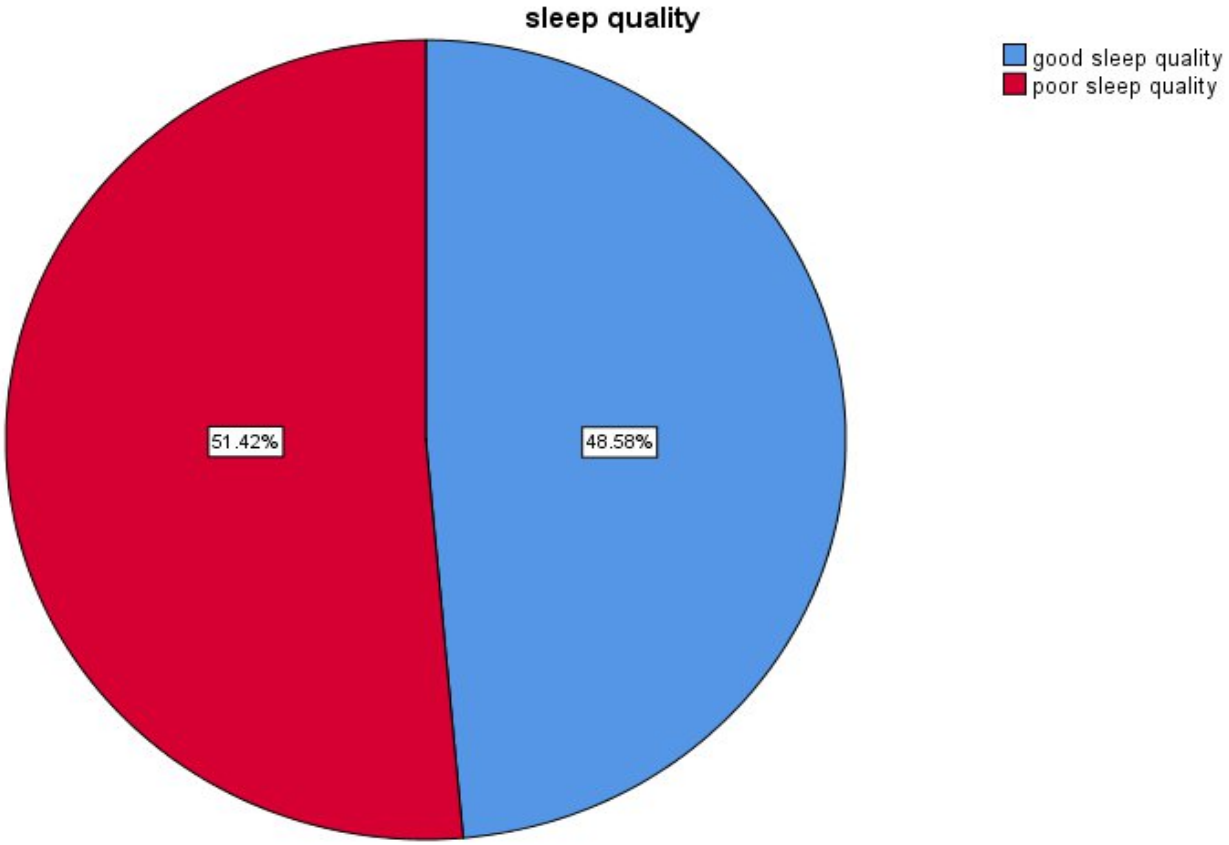

Figure 4: Sleep quality among pregnant women attending antenatal care in public hospitals of Mekelle City, Tigray, Ethiopia, 2025 (n=282)

5.5) Factors associated with poor sleep quality

Binary logistic regression was first performed to assess the association of each variable with poor sleep quality. In the Bivariable analysis, variables with a p-value < 0.25 were considered candidates for the multivariable regression model.

Accordingly, age of mother, pain, stress, anxiety, intimate partner violence, social support, sleep hygiene, monthly income, depression, chronic medical illness, gestational age, pregnancy intention and current coffee consumption were entered into multivariable logistic regression analysis to adjust for potential confounders.

After adjustment, five variables remained associated with poor sleep quality. These included maternal age ≥30, experiencing pain, having stress, having anxiety and experiencing intimate partner violence. Statistical significance was declared at p-value <0.05 with a 95% confidence interval.

The odds of having poor sleep quality were 9.56 times higher among participants aged ≥30 compared with those aged 18-24 (AOR = 9.56, 95% CI: 2.96 - 30.93). Pain was also significantly associated with poor sleep quality, with higher odds among women who reported pain compared with those who did not (AOR=3.08, 95% CI: 1.07 - 8.90).

Likewise participants who reported anxiety had higher odds of poor sleep quality compared with those without anxiety (AOR=7.60, 95% CI: 2.00 - 28.93). Stress was also significantly associated with poor sleep quality (AOR= 3.74, 95% CI: 1.02 - 13.75). In addition, pregnant women who experienced intimate partner violence were more likely to have poor sleep quality compared with those who did not experience such violence (AOR= 10.41, 95% CI: 3.37 - 32.20).

Table 6: Bivariable and Multivariable regression of Factors Associated with Poor Sleep Quality among Pregnant Women Attending antenatal care in Public Hospitals of Mekelle City, Tigray, Ethiopia, 2025 (n= 282

Variable	Category	Sleep quality		COR [95% CI]	AOR [95% CI]	p-value
		Poor	Good			
Age	≥30	105	39	3.59 [1.76 – 7.32]	9.56 [2.96 - 30.93]	<.001
	25-29	22	74	.40 [.183 - .86]	2.58, [.67 - 9.93]	.167
	18-24	18	24	1	1	
Social	Poor	29	40	1.51 [.75-3.07]	.68 [.21-2.17]	.509
support	Medium	95	53	3.76 [2.02-6.97]	1.23 [.29-5.29]	.777
	Good	21	44	1	1	
Pain	Yes	101	15	18..67 [9.82-35.99]	3.08 [1.07-8.90]	.037
	No	44	122	1	1	
Sleep hygiene	Poor	111	22	17.07 [9.04-30.98]	1.71 [.46-6.36]	.420
	Good	34	115	1	1	
Stress	Yes	107	12	29.33 [14.59- 58.98]	3.74 [1.02-13.75]	.047
	No	38	125	1	1	
Monthly	<3073	52	89	.30 [.19-.49]	.41 [.15-1.13]	.085
income	≥3073	93	48	1	1	
Depression	Yes	130	32	28.3 [1.62-55.29]	1.07 [.30-3.81]	.914

	No	15	105	1	1	
Anxiety	Yes	136	42	34.18[15.88-73.53]	7.60 [2.00-28.93]	.003
	No	9	95	1	1	
IPV	Yes	99	11	24.65 [12.13-50.06]	10.41 [3.337-32.20]	.<.001
	No	46	126	1	1	
CMI	Yes	20	3	7.14 [2.07-24.64]	2.42 [.24-23.8]	.449
	No	125	134	1	1	
Gestational age	First	26	34	1	1	
	Second	60	58	1.35 [.72-2.52]	.65 [.17-2.53]	.540
	Third	59	45	1.71 [.90-3.25]	.43 [.13-1.41]	.438
Pregnancy intention	Unplanned	84	28	5.36 [3.15-9.11]	2.36 [.76-7.32]	.136
	Planned	61	109	1	1	
Current Coffee consumption	Yes	70	51	1.57 [.97-2.53]	.98 [.37-2.58]	.970
	No	75	86	1	1	

5.6) Qualitative result

Ten pregnant women were interviewed using an in-depth interview guide. Data were analyzed manually using an inductive thematic analysis approach after repetitive listening to the audio records and repeated reading of the transcripts. Three core themes emerged, reflecting participant sleep experience, factors affecting sleep, and coping mechanisms.

Theme one: Sleep Experiences

Participants described diverse experiences with sleep during pregnancy. Their narratives ranged from severe sleep disruptions to manageable ones. These opposing experiences illustrate that sleep during pregnancy is not uniform, rather widely varied from mother to mother.

Sleep Experiences as Changing

For the majority of participants, sleep during pregnancy was described as difficult, fragmented and unrefreshing. Many reported that their nights were characterized by repeated awakening and inability to resume sleep once disturbed. They felt that pregnancy brought a kind of sleep that was lighter, interrupted, and lacking the deep rest they previously enjoyed. Several women noted that although they attempted to sleep, they often woke up feeling unrefreshed and exhausted, describing their nights as'' not real sleep''. 27 years old married woman said*: ''my sleep during this pregnancy is suffering compared to before. It takes me a long time to fall asleep, and even then I sleep only a few hours. I wake up many times to change position. I always wakeup unrefreshed. I feel like I lost the kind of sleep I used to have……''*

Emotionally, several mothers felt sleep became a struggle something they had to endure rather than to enjoy. They described their sleep restless, resulting in frustration and longing for better rest after birth. 31 years old woman in her third trimester stated that '' *these days my sleep is suffering. My back does not seem to be okay, especially during sleeping hours. It has been a long time since I felt refreshed. Day time gives me relief from the struggle I face at night and I am just waiting for the time after birth to finally sleep well again…….*''

Sleep experienced as manageable

In contrast a small group of participants described their sleep as manageable. Although they acknowledged some changes, they still felt able to achieve adequate rest. They shared that they slept deeply once they fall asleep. For these women, pregnancy did not harm their sleep and mentioned a sense of restfulness. 22 years old housewife women said: *'' Once I fall asleep, 1 do not even hear anything. I even want to sleep more in the morning than usual; although I sometimes feel fatigue. Overall, my sleep is good and has not changed much compared to before……''*

Theme Two: Factors Affecting Sleep

Participants identified a range of interrelated factors that influenced their sleep. These factors were described as physical, psychological, environmental, and social in nature. Most mothers

emphasized that sleep disturbance resulted from the combined effect of bodily changes, emotional concerns, daily workload, and surrounding conditions.

Physical Factors

Many participants attributed poor sleep to pregnancy-related bodily changes. Frequent nighttime urination, pain, fatigue, and general physical discomfort were commonly mentioned as reasons for repeated awakenings and difficulty maintaining sleep.

29 years old second-trimester pregnant woman said *''compared to my sleep before pregnancy, sleep during pregnancy has become more difficult. I wake up many times at night to change my sleeping position, which interrupts my sleep. Once I wake up it is hard for me to fall sleep again. In addition to the discomfort, body pain, and repeated urination further disturb my sleep……''*

Psychological Factors

Psychological distress was another major contributor to poor sleep. Mothers reported that worry, anxiety, anger, and unpleasant thoughts made it difficult to fall asleep or return to sleep once awakened. Concerns related to future uncertainty, social instability and safety were described. Some participants noted that exposure to distressing news or discussions increased mental restlessness at night which in turn affects sleep.

31 years old third-trimester mother said, *"Our current situation is not stable, and the uncertainty what will happen tomorrow makes me increasingly worried. When I wake up at night and start thinking about the future, it becomes difficult to fall asleep again. Sometimes, I worry about whether the situation will remain stable until I give birth and weather I will be able to access a health facility for delivery……."*

Another 22 years old second-trimester woman said "*exposure to distressing news on social media causes discomfort and interferes with my sleep. Any upsetting situations, disagreement, or pressure also affect my sleep, and it becomes worth when it comes from family members, especially my husband……."*

Environmental Factors

Environmental conditions such as noise, light, uncomfortable beds, and room temperature were also reported interfere with sleep. A 40 years house wife pregnant woman said *"My sleeping environment greatly affects my sleep. Noise from the surroundings and light during the night disturb it. I cannot sleep again when my neighbor turns on the light to bake injera as the light enters and makes my room hot.*

29 years old second-trimester pregnant woman also said "*my bed always causes me discomfort; so I have chosen to sleep on the sofa instead. I feel more comfortable there and sleeps better……''*

Theme Three: Coping Mechanisms and Support for Sleep Difficulties

Despite experiencing sleep challenges, many mothers describe active coping strategies to manage sleep difficulties.

Personal Coping Strategies

Participants reported that organizing daily activities, reducing excessive workload, and attempting to relax before bedtime helped to improve sleep. They also reported that, they consciously avoid stressful thoughts, remain calm, or mentally prepare themselves for sleep to sleep well. Some adjusted their sleep schedule by sleeping longer in the morning or resting during the day to compensate for disrupted night sleep.

35 years old married pregnant woman *said "when I start worrying about many things, it became hard for me to sleep. I tried to relax myself and ignored stressful thoughts. When I stayed calm and avoided thinking too much, I noticed that my sleep improved……"*

Another 33years old private worker mother said, *"I sleep better when I organize my home activities and avoid distressing myself. When my day is well planned, I feel calm at night and sleep better……."*

Social Support

Support from husbands, family members, and sometimes neighbors played a crucial role in helping mothers cope with sleep difficulties. Emotional reassurance, shared responsibilities and feeling cared for were helped to reduce worry and improve sleep. 26 years old government employed woman in this regard said that *"when my husband and family are around me and help and take care of me, I feel hopeful and look forward to the day I will see my baby. This makes me less worried, helps me feel relaxed and improves my sleep……''*

6) DISCUSSION

Prevalence of Poor Sleep Quality

In this study, the prevalence of poor sleep quality among pregnant women was 51.4% (95% CI: 45.6 – 57.3). This indicates that more than half of pregnant women experience significant sleep disturbances.

Comparison with other studies

Findings of this study is consistent with several international studies, including a meta-analysis from Canada reported a prevalence 45.7% (67), as well as studies conducted in Turkey(48.9%)(39), Malaysia (56.3%)(45), India (46.6%)(46), and Nigeria (50%)(49).

Similarly, the current finding aligns with evidence from Ethiopia. A systematic review and meta-analysis reported a pooled prevalence of 52.3% (19). Comparable results were also documented in studies from Oromia (54.6%)(34), and Bahirdar (55.04%)(51). These similarities may be due to the shared burden of pregnancy-related physical discomforts, hormonal fluctuations, and increasing psychosocial stress.

However, the prevalence in this study was lower than the results reported in several international studies conducted in Poland (93–95%)(53), Iran (75.26%)(41) and (76.3%)(42), China (87%)(55), and Egypt (76%)(48).

A plausible explanation for these higher findings could be methodological variations, such as study design and area, sample sizes, trimester-specific analysis, or inclusion of women with pre-existing medical and mental conditions.

In Ethiopia, higher prevalence rate have also been reported in studies conducted in Wadila Primary Hospital (68.4%)(49), and Nekemte Referral Hospital (59.1%)(32).

This variation might be attributed to differences in study setting, population characteristics and other methodological variations.

Conversely, the prevalence of poor sleep quality observed in this study was higher than findings reported in a meta-analysis and cross-sectional study from China (44.5%)(42) and (34.14%) (17) Respectively. Lower prevalence was also reported in studies from Thailand (43.2%) (44), India (39.84) (47).

In Ethiopia lower prevalence was reported in studies conducted in Jimma (30.8%)(50), and Gondar (42.2%) (33).

The disparity might be attributed to differences in sample size and characteristics, socioeconomic conditions, and variations in health-care access and environmental stability.

Predictors of poor sleep quality

On this study maternal age ≥ 30 years, pain, anxiety, stress, and intimate partner violence were significant predictors of poor sleep quality during pregnancy.

Participants who were aged ≥ 30 years were 9.56 times more likely to have poor sleep quality than younger women (18-24). This finding is consistent with studies conducted in Poland, Turkey, Jordan, China, Jimma, Wadila Primary Hospital, and Bahirdar, all of which reported that older maternal age was associated with an increased risk of poor sleep quality (53, 54, 55, 43, 50, 52, 51). The possible explanation might be that as maternal age increases, women experience more physiological discomfort, cumulative responsibilities, and increased vulnerability to sleep disruptions during pregnancy.

According to the findings of this study, pregnant women who experienced pain were 3.08 times more likely to report poor sleep quality compared to those without pain. This result aligns with studies conducted in Turkey and Jordan, which reported a significant association between musculoskeletal pain, and leg cramps with poorer sleep quality (39, 55). The reason could be physical discomfort such as backache, waist pain, and leg cramps interferes with the ability to fall and maintain sleep, thereby increasing the likelihood of sleep disturbances and poor sleep quality.

This was supported by a qualitative data in which pregnant mothers described that body discomfort, such as backache, and difficulty with sleeping positions disrupts their sleep. 27 years old pregnant woman said*: ''my sleep during this pregnancy is suffering compared to before. It takes me a long time to fall asleep, and even then I sleep only a few hours. I wake up many times to change position. I always wakeup unrefreshed. I feel like I lost the kind of sleep I used to have……''*

Another 31 years old woman stated that '' *these days my sleep is suffering. My back does not seem to be okay, especially during sleeping hours. It has been a long time since I felt refreshed. Day time gives me relief from the struggle I face at night and I am just waiting for the time after birth to finally sleep well again…….*''

This study also showed that pregnant women who had anxiety were 7.60 times more likely to have poor sleep quality compared to those without anxiety. This finding is in line with evidence

from Turkey, Jordan, and Nekemte, where higher anxiety scores were consistently associated with increased risk of poor sleep quality (54, 55, 32). A plausible explanation for this consistency might be, anxiety increases physiological arousal, intrusive thoughts, and hyper vigilance, which can interfere with the relaxation needed for initiating and sustaining sleep.

Findings in the qualitative data also indicated that feeling anxiety related to future uncertainty, worry, and fear makes difficult pregnant women to fall sleep or return back to sleep once awakened. 31 years mother said, *"Our current situation is not stable, and the uncertainty what will happen tomorrow makes me increasingly worried. When I wake up at night and start thinking about the future, it becomes difficult to fall asleep again. Sometimes, I worry about whether the situation will remain stable until I give birth and weather I will be able to access a health facility for delivery……."*

Moreover, pregnant women who experienced stress were 3.74 times more likely to have poor sleep quality than those who did not report stress. This result is consistent with studies conducted in Poland, and Gondar University Hospital, which reported significant associations between stress and poor sleep quality (53 and 33). An Ethiopian systematic review further supported this association (19). The possible reason might be, stress activates the sympathetic nervous system responses, increases Cortisol levels, and disrupts normal sleep–wake cycles, contributing to insomnia and overall poor sleep patterns.

Participants in the qualitative interviews also highlighted stress and worrying about many things made challenging to sleep, rather avoiding stress and relaxing themselves helps to sleep better. 35 years old pregnant woman said *"when I start worrying about many things, it became hard for me to sleep. I tried to relax myself and ignored stressful thoughts. When I stayed calm and avoided thinking too much, I noticed that my sleep improved……."*

Another 33years old private worker mother said, *"I sleep better when I organize my home activities and avoid distressing myself. When my day is well planned, I feel calm at night and sleeps better……."*

Furthermore, this study demonstrated that participants who experienced intimate partner violence were 10.41 times more likely to have poor sleep quality compared with those who did not experience such violence. This finding is consistent with evidence from Gondar, where IPV was significantly associated with poor sleep quality during pregnancy (33). The possible explanation could be that psychological and physical trauma resulting from IPV increases emotional distress,

fear, and hyper arousal, ultimately disrupting normal sleep and contributing to persistent sleep problems and poor sleep quality during pregnancy.

Qualitative data also indicated experiencing emotional strains and conflicts with their partners negatively affects their sleep during pregnancy. 22 years old pregnant women said "*exposure to distressing news on social media causes discomfort and interferes with my sleep. Any upsetting situations, disagreement, or pressure also affect my sleep, and it becomes worth when it comes from family members, especially my husband……."*

7) STRENGTHS AND LIMITATIONS

7.1) Strengths

Use of a validated tool (PSQI) ensured accurate and reliable measurement of sleep quality.

Multivariable logistic regression enabled the identification of independent predictors while adjusting for potential confounders, increasing the rigor of the analysis.

The mixed-methods approach provided a more comprehensive understanding of sleep experiences.

7.2) Limitations

The use of a cross-sectional design limits the ability to establish causality and temporal relationship between the identified factors and poor sleep quality.

The study was conducted in selected health facilities, which may limit generalizability to all pregnant women in the city.

Sleep quality was assessed using self-reported data, which may be subjected to recall bias.

Variables like substance use and IPV may be subjected to social desirability bias.

8) CONCLUSION

Poor sleep quality remains an important public health concern. The findings of this study highlighted the multi-factorial nature of sleep disturbances, involving physical, psychological and social factors.

Addressing sleep problems during pregnancy therefore requires a comprehensive approach that integrates sleep and mental health assessment into routine antenatal care services.

Furthermore, the study underscores the need for continued research and context-specific interventions to improve maternal sleep health during pregnancy.

9) RECOMMENDATIONS

Federal Ministry of Health (FMoH)

Integrate sleep health assessment into national ANC guidelines, including routine screening for poor sleep quality and associated factors such as anxiety, stress, pain and IPV.

Strengthen maternal mental health programs by allocating resources screening and management of psychological factors such as stress and anxiety.

Tigray Regional Health Bureau

Use the study findings to advocate for the integration of maternal sleep health screening and counseling in to routine ANC services, with emphasis on high risk group such as women age 30 years and above.

Introduce routine screening for psychological conditions (anxiety and stress), pain and IPV during ANC visits to enable early identification and management.

Policymakers

Use the study evidence to develop maternal health policies that incorporate sleep quality as a core component, with a focus on addressing modifiable risk factors such as anxiety, stress, pain and IPV.

Researchers

Conduct further longitudinal studies to establish a causal relationship between sleep quality and identified risk factors.

Explore interventional studies targeting psychosocial support and pain management to improve maternal sleep health.

Conduct community-based studies to improve generalizability beyond hospital-based settings.

Health Practitioners

Routinely screen pregnant women for poor sleep quality and associated factors during ANC visits.

Provide targeted counseling and management, particularly for women at high risk (age ≥30 years and those experiencing anxiety, stress or IPV).

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11) ANNEXES

Annex 1: Bivariable and multivariable logistic regression of Factors associated with poor sleep quality among pregnant women attending antenatal care in public hospitals of Mekelle City, Tigray, Ethiopia, 2025 (n= 282)

Variables in the Equation

								95% C.I. for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	stress categorized(1)	1.320	.664	3.950	1	.047	3.742	1.018	13.747
	social support			1.013	2	.603			
	social support(1)	.210	.743	.080	1	.777	1.234	.288	5.294
	social support(2)	-.394	.597	.435	1	.509	.675	.210	2.172
	age categorized			14.284	2	.001			
	age categorized(1)	.949	.687	1.906	1	.167	2.582	.672	9.927
	age categorized(2)	2.258	.599	14.209	1	.000	9.561	2.956	30.928
	sleep hygiene index(1)	.539	.669	.650	1	.420	1.715	.462	6.363
	income category(1)	-.891	.518	2.959	1	.085	.410	.149	1.132
	IPV (1)	2.343	.576	16.547	1	.000	10.412	3.367	32.197
	depression (1)	.070	.647	.012	1	.914	1.073	.301	3.816
	anxiety (1)	2.028	.682	8.836	1	.003	7.598	1.995	28.931
	chronic medical illness(1)	.885	1.168	.574	1	.449	2.422	.246	23.881
	pain(1)	1.126	.541	4.339	1	.037	3.084	1.069	8.897
	gestational age of pregnancy			1.894	2	.388			
	gestational age of pregnancy(1)	-.422	.688	.376	1	.540	.656	.170	2.526
	gestational age of pregnancy(2)	-.825	.599	1.893	1	.169	.438	.135	1.419
	pregnancy (1)	.860	.577	2.219	1	.136	2.363	.762	7.323
	Current coffee consumption(1)	-.019	.494	.001	1	.970	.981	.373	2.584
	Constant	-5.180	1.439	12.957	1	.000	.006		

a. Variable(s) entered on step 1: stress categorized, social support, age categorized, sleep hygiene index, income category, IPV, depression, anxiety, chronic medical illness, pain, gestational age of pregnancy, pregnancy intention of participant, current coffee consumption.

Annex 2: Information sheet and consent form of participants

Hello! Dear respondent, my name is _____. I am working as a data collector for the study being conducted by Ms. Kidan G/anenia, who is studying her master's degree at College Health Science, department of psychiatry, Mekelle University. I kindly request you to give me your attention to explain about the study as you are selected to participate in this study.

The study title: sleep quality and associated factors among pregnant women attending antenatal care at public hospitals of Mekelle City, Tigray regional state, Northern Ethiopia in 2025.

Purpose of this study; findings of this study can be helpful for pregnant women, policy maker and researchers. Moreover, the aim of this study is to write thesis as a partial requirement for the fulfillment of a Master's degree in integrated clinical and community mental health.

Procedure and duration: I will be interviewing you using a questionnaire to provide me with pertinent data that is helpful for the study. The questionnaire has seven parts and I will fill the questionnaire by interviewing you and the interview will take about 30 minutes.

Risk and benefits: The risk of participant in this study is minimal which is only wasting few minutes from your time. There will not be any harm by participating in this study. However, the results of this study may give important information sleep quality and associated factors among pregnant women.

Confidentiality: The information you will provide will be kept confidential. There will not be information that will identify you in particular. The findings of the study will be general for the participant.

Rights: Participation in the study is a fully voluntary you have the right to participate or not in the study. If you decide to you have the right to withdraw from the study at any time.

Contact address: If there is any question about the study and the procedure or anything else related to the study, please contact through the following address:

Address of principal investigator: Kidan G/anenia

Mobile: +251919013103

Email address: ganeniak@gmail.com

Declaration on the voluntary informed consent: The participant information sheet has been read to me. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and contact address for any queries. I have the opportunity to ask questions for things these have been unclear. I have been informed as I have the right to stop 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 signature as indicated below.

Signature of participant Date

_____ _____

Name and signature of data collector_____ Date_____

Thank you for your cooperation!

Annex 3: Information and consent for Head of Health facilities

My name is Kidan G/anenia. I am attending my Master degree in integrated clinical and community psychiatry in Mekelle University. I am here to conduct a study in your hospital for partial fulfillment of Master in ICCMH. Therefore, I kindly request you to give me time to explain about the study importance, ethical issues and how the study will be conducted to you. First, I would like to thank you for your time and help.

The study title: Sleep quality and associated factors among pregnant women attending antenatal care in public hospitals of Mekelle City, Tigray regional state, Northern Ethiopia in 2025.

Purpose of this study: The findings of this study can be helpful for pregnant women attending ANC and policy maker and researchers. Moreover, the aim of this study is to write thesis as a partial requirement for the fulfillment of a Master's in ICCMH.

Procedure and duration: I will be interviewing the women attending ANC using a questionnaire to provide me with pertinent data that is helpful for the study. The questionnaire has seven parts and I will fill the questionnaire by interviewing the women attending ANC. The interview on each Woman will take about 45 minutes.

Risks and benefits: The risk of participating in this study is very minimal, only taking few minutes from Women'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.

Confidentiality: The information that we will be provided will be kept confidential. There will not be information that will identify the participants in particular. The findings of the study will be general for the study and will not reflect anything particular of individual persons. 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.

Rights: Participation in the 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. I am informing you that you 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.

Contact address: If there is any question about the study and the procedure or anything else related to the study, please contact through the following address:

Address of principal investigator: Kidan G/anenia

Mobile: +251919013103

Email address: ganeniak @gmail.com

Annex 4: English version questionnaires

Questionnaires on quality of sleep and associated factors among pregnant women attending antenatal care follow up at public hospitals of Mekelle City, Tigray, Ethiopia, 2025.

SECTION 1: demographic and obstetric information

No.	Questions	Alternative response	Code
101	Age	In years----------	
102	Religion	1.Orthodox 2.Muslim 3.Protestant 4.Catholic 5.Other	
103	marital status	1.Single 2.Married 3.Divorced 4.Widowed	
104	Level of your education	1.Unable to write and read 2.Primary 3.Secondary 4.College &above	
105	Residency	1.Urban 2. Rural 3. Displaced	
106	Occupational status	1. house wife 2.private work 3. Government employed 4. labor 5.Others-------	
107	monthly income	_____birr	

SECTION 2: Assessment of sleep quality

Instruction-the following question relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the month. Please answer all questions.

201. During the past month, when have you usually gone to bed at night?

Usual bed time _____
202. During the past month, how long (in minutes) has it usually takes you to fall asleep each night?
Number of minute's _____
203. During the past month, when have you actually gotten up in the morning?
Usual getting-up time _____
204. during the past month, how many hours of actual sleep did you get at night?
(This may be different than the number of hours you spend in bed.)
Hours of sleep per night _____
Instruction- for each remaining question check the one best response please answer all equation

205	During the past month, how often have you had trouble sleeping because you:(a-j)	Not during the past month	Less than once a week	Once or twice a week	Three or more time a week
A	Could not get to sleep within 30 minutes				
B	Wake up in the middle of the night or early morning				
C	Had to get up to use the bathroom				
D	Could not breath comfortably				
E	Coughed or snored loudly				
F	Felt too cold				
G	Felt too hot				
H	Had bad dreams				
I	Have pain				
J	Other reason(s), _____				
206	During the past month, how often have you taken medicine to help you sleep				
207	During the past month, how often have you had trouble staying awake during the day?				
		No problem at all	Only a very slight problem	Somewhat of a problem	A very big problem
208	During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done				
209	During the past month, how would you rate your sleep quality over all	Very good	Fairly good	Fairly bad	Very bad

SECTION 3: Sleep hygiene assessment

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale to make your choice.

S. N	**(**SHI) questioners	0	1	2	3	4
		Never	Rarely	Sometimes	Frequent	Always
301	I take daytime naps lasting two or more hours	0	1	2	3	4
302	I go to bed at different times from day to day	0	1	2	3	4
303	I get out of bed at different times from day to day	0	1	2	3	4
304	I exercise to the point of sweating with in 1hr of going to bed	0	1	2	3	4
305	I stay in bed longer than I should two or three times a week	0	1	2	3	4
306	I use caffeine within 4 hours of going to bed or after going to bed	0	1	2	3	4
307	I do something that may wake me up before bedtime (for example; games, watching television	0	1	2	3	4
308	I go to bed feeling stressed, angry, upset or nervous	0	1	2	3	4
309	I use my bed for things other than sleeping (for example: watch television, read, eat, or study)	0	1	2	3	4
310	I sleep on an uncomfortable bed (for example: poor mattress or pillow, too much or not enough blankets)	0	1	2	3	4
311	I sleep in an uncomfortable bed room (for example: too bright, too stuffy, too hot, too cold, or too noisy.)	0	1	2	3	4
312	I do important work before bedtime (for example: schedule or study)	0	1	2	3	4
313	I think, plan, or worry when I am in bed.	0	1	2	3	4

SECTION 4: Depression, Anxiety and Stress Assessment (DASS)

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There is no right or wrong answers. Do not spend too much time on any statement. The rating scale is as follows: 0- Did not apply to me at all 1- Applied to me to some degree, or some of the time 2- Applied to me to a considerable degree, or a good part of time 3- Applied to me very much, or most of the time

No		Rating
401	I found it hard to wind down	0 1 2 3
402	I was aware of dryness of my mouth	0 1 2 3
403	I couldn't seem to experience any positive feeling at all	0 1 2 3
404	I have experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness	0 1 2 3

	in the absence of physical exertion)	

405	I found it difficult to work up the initiative to do things	0 1 2 3
406	I tended to over-react to situations	0 1 2 3
407	I experienced trembling (e.g. in the hands)	0 1 2 3
408	I felt that I was using a lot of nervous energy	0 1 2 3
409	I was worried about situations in which I might panic and make a fool of myself	0 1 2 3
410	I felt that I had nothing to look forward to	0 1 2 3
411	I found myself getting agitated	0 1 2 3
412	I found it difficult to relax	0 1 2 3

413	I felt down-hearted and blue	0 1 2 3
414	I was intolerant of anything that kept me from getting on with what I was doing	0 1 2 3
415	I felt I was close to panic	0 1 2 3
416	I was unable to become enthusiastic about anything	0 1 2 3
417	I felt I wasn't worth much as a person	0 1 2 3
418	I felt that I was rather touchy	0 1 2 3
419	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0 1 2 3

419	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0 1 2 3
420	I felt scared without any good reason	0 1 2 3
421	I felt that life was meaningless	0 1 2 3

SECTION 5- Social support assessment

No.		Alternative response/coding
501	How many people are you so close, to that you can count on them if you have great personal problems?	1. None 2. 1-2 3. 3-5 4. 5 and above
502	How much interest and concern do people show in what you do?	1. Very little 2. Little 3. Uncertain 4. Some 5. A lot

503	How easy is it to get practical help from neighbors if you should need it?	1. Very difficult 2. Difficult 3. Possible 4. Easy 5. Very easy

SECTION6: Substance related factors

S.N	In the past 3 months, have you used any of the following substances?	Alternative response
601	Alcoholic's beverages (beer, wine, talla, teji, arake etc.)	1. Yes 2. No
602	Khat, caffeinated beverages	1. Yes 2. No
603	Tobacco products (cigarettes, chewing tobacco, etc.)	1. Yes 2. No
604	Other substances	----------
605	Do you currently drink coffee	1. Yes 2. No

SECTION 7: clinical and obstetrics factor assessment

No	Questionnaires	Alternative response
701	Pregnancy intention	1.planned 2.not planned
702	Gestational age	1.1st trimester 2.2nd trimester 3.3rd trimester
703	Number of ANC visit	----------
704	Gravida	1.Primigravida 2.Multigravida
705	Do you have pain?	1.Yes 2. No
706	Do you have a chronic medical illness like (hypertension, DM, cardiac case, cancer, HIV, asthma etc.…)?	1.Yes 2.No
707	Do you have history of any diagnosed mental illness?	1. Yes 2. No

8. Intimate partner violence assessment

No	Question	Alternative response

801	Have you ever been physically or emotionally abused by your husband or someone important to you?	1. Yes 2. No
802	Within the last year, have you ever hit, slapped, kicked, or otherwise physically hurt by someone?	1. Yes 2. No
803	Since you have been pregnant, have you been hit, slapped, kicked or otherwise physically hurt by someone?	1. Yes 2. No
804	With in the past year has anyone forced you to have sexual activities when you did want to?	1. Yes 2. No
805	are you afraid of your partner or anyone else in your life?	1. Yes2. No

QUALITATIVE INTERVIEW GUIDE:

1) Could you please describe in detail your overall experience of sleep since becoming pregnant?

- ✓ How was your sleep before pregnancy, and how is it now?
- ✓ Can you describe what a typical night of sleep is like for you these days?
- ✓ Have you noticed any changes in your sleep pattern or quality since getting pregnant?
- ✓ Have you noticed any differences in your sleep patterns or quality as you've moved through the different stages of your pregnancy?

2)There can be many things that affect sleep during pregnancy. Could you tell me the most influential factors affecting your sleep?

- In what way do physical changes (like pain, discomfort, or frequent urinate) affect your ability to fall asleep, stay asleep, or feel rested?
- How would you describe your emotional state during your pregnancy? Have you experienced any feelings of anxiety, worry, or stress that you think might be affecting your sleep?
- How do your typical daily habits or routines like work, meal and household works affect your sleep?
- Could you describe your usual sleeping environment such as noise, light, temperature, or bed comfort? How does it affect your sleep?
- how does the support you received from your partner, children, friends or others affect your sleep?

3) sleep can have many different aspects such as, how long it takes to foll asleep, how many times you walk up at night, how rested you feel in the morning, and how your sleep affects you during the day.

- In general, how well would you say you sleep at night?
- Can you tell me what is usually like for you when you try to fall asleep? Does it take short time or quite a while? What affects that?
- Could you describe how many hours of sleep usually get at night?
- Could you tell me about things that interrupt your sleep during the night or early in the morning?
- Have you used anything like medications or other treatments to help you sleep during pregnancy? What and how it worked for you?
- How does the way you sleep at night affect how you feel or function during the day?

4) What specific things have you tried or do you do to help yourself sleep better during your pregnancy, and how effective have these been for you?

5) Have you noticed any impact of your sleep on your concentration, memory, or ability to perform daily tasks, and in what ways has your sleep experience influenced your overall experience of being pregnant?
6) Is there anything else about your sleep during pregnancy that you feel is important for me to know or that we haven't yet discussed?

ልጋብ1፡- ሓበሬታንመሕትትስምምዕነትተሳትፎመፅናዕቲ

ዝኽበርክንወሃቢቲመልሲ፡-ሽመይ----------ይበሃል።ኣብመቐለዩኒቨርስቲኮሌጅጥዕናንሳይንስክፍሊስነ-ኣእምሮብዝተዋደደክሊኒካውንማሕበረሰባውንጥዕናኣእምሮ (ICCMH)
ማስተርስዲግሪትመሃርዘላኪዳንገ/ኣነንያንመማልኢእቲድግሪዝውዕልመመረቒመፅናዕቲኣብምክያድትርከብእንትኸውንከምኣከባቢመረዳእታኮይነእናሰራሕኹእየ።ንስክንኣብዚመፅናዕቲክትሳተፉካብዝተሓረያወሃብቲሓበሬታኢክን።ሰለዙይእዚመፅናዕቲንምታይንብኽመይንከምዝካየድከብርሀልክንብኣቓልቦተኽታተላኒ።

ርእሲመፅናዕቲ፡-
ፅሬትድቃስንተዛመድቲነገራትንኣብመንግስታዊሆስፒታላትመቐለኣብቅድመውሊድክትትልዝርከባነፍሰጹርኣደታትከተማመቐለክልልትግራይሰሜንኢትዮጵያ 2017 **ዓ/ም።**

ዕላማመፅናዕቲ፡-
እዚመፅናዕቲብዋንነትዝካየድንመማልኢካልኣይድግሪብዝተዋደደክሊኒካውንማሕበረሰባውንጥዕናኣእምሮመመረቒፅሑፍን ምድላውእንትኾንውፅኢትእዚመፅናዕቲንክትትልቅድመወሊድዝጥቀማነብሰፁራት፣ንመውፃእቲፖሊሲ፣ትካላትጥዕናንኣ ብዚርእሲመፅናዕቲንዘካይዱኣካላትክጠቅምተባሂሉይግመት

ከይዲትግበራንፃንሒትን፡-
ነዚመፅናዕቲዝጠቅምመረዳእታካባክንንምውሳድዝጠቕሙሽውዓተክፋላትዘለዉዎመሕተቲኣሎ፤ነዞምሕቶታትብቃለመሕ ትትእንዳሓተትኩመልሰክንከስፍርእየ፤ነዞምሕቶታተንመምላስ 45 **ደቓይቕ ዝውድእ እዩ።**

ጉድኣትንረብሓን፡-
ኣብዚመፅናዕቲብምስታፍኪዝህልውጉድኣትግዜኺምስዋእእዩ፤ካበዚሓሊፉምንምዝበፅሕወይዝስዕብጉድኣትየለንምንምተ ሓታትነትየብሉን።ብኣንፃሩእዚመፅናዕቲናይነፍሰጹርኣደታትፅሬትድቃስንተዛመድቲነገራትንዝምልከትጠቕሚሓበሬታክህ ብንከመላኽትንእዩተባሂሉይእመት።

ሚጥራውነት፡ -

እዚአበዚመፅናዕቲትህብዮሓበሬታንኮነመንነትኪካብመፅናዓይወፃኢማንምዘይረኽቦንካብአካዳሚካዊወፃኢንምንምግልጋሎ ትዘይውዕልንሚስጥራውነቱዝተሓለውንእዩ።

መሰል፡ -

ተሳትፎብወለንታስለዝኾነአብዝኾነእዋንብዘይምስካፍካብቲምስታፍመፅናዕቲምንስሓብይካአልእዩ::አብዚመፅናዕቲምስታ ፍምንምዓይነትዓስቢከምዘይወሃብእውንምፍላጥአገዳሲእዩ።

መወከሲአድራሻ፡ -ዝኾነሕቶወይስክፍታምስዝህልወኪበዝስዕብአድራሻምውካስትኽእሊኢኺ።

ስምተመራማሪት-ኪዳንገ/አነንያ

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ስለቲግዜኽንንሓልዮትክንንየቐንየለይአዚየአመስግን።

ናይስምምዕነትሰነድ:

እቲናይተሳትፎሓበሬታወረቐትተነቢቡለይአሎ።ዕላማናይቲመጽናዕቲ፡ አገባባት፡ ሓደጋታትንረብሓታትን፡ ጉዳያትምስጢ ራዊነት፡ መሰልምስታፍንንዝኾነሕቶታትርክብአድራሻንብንጹርተረዲአለኹ።እዚአምንጹርዘይኮነገራትሕቶታትክሓት ትዕድልአለኒ።አብዝኾነእዋንእቲመጽናዕቲደውከብሎወይዘይደለኽዎሕቶዘይምምላስመሰልከምዘለኒተሓቢሩኒአሎ።ስለዚአ ብዚመፅናዕቲክሳተፍብፍቓደይከምቲአብታሕቲተጠቒሱዘሎብፈርመይርአጋግጽ።

ፈርማተሳታፊ_____ ዕለት_____

ስምአካቢመረዳእታ_____ ፈርማ_____ዕለት_____

ልጋብ 2፡- ናይትግርኛቅዳሕቃለመሕተት

ኣብመንግስታዊሆስፒታላትመቐለኣብቅድመወሊድክትትልዝርከባነፍሰጾራትብዛዕባጽሬትድቃስንተዛመድቲነገራትንዝም ልከትመሕተቲጽሑፍት።

ክፋልሓደ- ማህበረስነህዝባዊሓበሬታ

ታ.ቁ	**ሕቶ**	**መልሲ**	
101	**ዕድመ**	**ብዓመት_____**	
102	**ሃይማኖት**	1.**ኦርቶዶኩስ** 2.**ሙስሊም** 3.**ፕሮቲስታንት** 4.**ካቶሊክ** 5.**ካልኣ**	
103	**ኩነታትሓዳር**	1.**ዘይተመርዓወት** 2. **በዓልቲሓዳር** 3.**ዝተፋተሐት** 4.**ሰብኣያዝሞታ**	

104	**ደረጃትምህርቲ**	1.**ምጽሓፍንምንባብንዘይትኽእል** 2.**ቀዳማይደረጃ** 3.**ካልኣይደረጃ** 4.**ኮላጅንልዕሊኡን**	
105	**መንበሪቦታ**	1.**ከተማ** 2. **ገጠር** 3. **ተፈናቓሊት**	
106	**ኩነታትስራሕ**	1.**ኣብገዛ** 2.**ናይጉልበትሰራሕተኛ** 3.**ኣብናይግሊስራሕ** 4.**ምንግስታዊዝተቆጸረት** 5.**ካልእ**	
107	**ወርሓዊኣታዊ**	_____ **ብር**	

ክፋልክልተ- ኩነታትጽሬትብቃስ

እዞምዝስዕቡሕቶታትኣብዝሓለፈወርሒምስዝነበረኩነታትድቃስኪዝተኣሳሰሩኣንትትኾኑብዝተኽኣልመጠንርግጸኛዝኮንክ ሉንነቲዝሓለፈወርሒብበዝሒዝውክሉንመልሲክትህብናብትሕትናብትሕትናንሓትት።

201. **ኣብቲዝሓለፈሓደወርሒምሸትመብዛሕትኡግዜናብመደቀሲትኣኽዳሉስዓትክንደይነይሩ?** _____

202. **ኣብዝሓለፈሓደወርሒውሽጢመብዛሕትኡግዜድቃስንክወስደክንክንደይግዜ (ብደቓይቕ) ይወስደልኪነይሩ?** _____

203. **ኣብዝሓለፈሓደወርሒንጉሆብበዝሒካብድቃስኪእትትስኣሉሰዓትክንደይነይሩ?** ----------

204. **ኣብዝሓለፈሓደወርሒብበዝሒኣብሓደለይቲክንደይሰዓታትድቃስትረኽቢነይርኪ?**

(እዚካብቲኣብዓራትእተሕፍዮሰዓታትዝተፈልየክኽውንይኽእልእዩ።) ----------

205	ኣብዝሓለፈወርሒዝነበረናይድቃስጸገምምኽንያት	ኣብዝሓለፈወርሒኣጋጠመንን	ኣብ ሰሙን ትሕቲ ሓደ ግዘ	ኣብሰሙንሓደወይክልተግዘ	ኣብሰሙንሰለስተግዘን ልዕሊኡን
205 A	ኣብውሽጢ 30 ደቓይቕድቃስክረክብኣይከኣልኩን				
205 B	ካብድቃስለይቲኣብዝኾነሰዓትወይብንጉሆምብርባር				
205 C	ሽቓቕንምጥቃምብለይቲምትሳእ				
205 D	ንምትንፋስምሽጋር				
205 E	ሰዓልወይድግብልዕልድምጹምሕርናኽ				
205 F	ልዕልዛሕሊምስማዕ				
205 G	ልዕልሙቕትምስማዕ				
205 H	ዘፍርሑሕልምታት				
205 I	ቃንዛ				
205 J	ካልእ_____				
206	ኣብዝሓለፈሓደወርሒክንደይግዜንምድቃስንክሕግዘ ክንመድሓኒትወሲድክን?				
207	ኣብዝሓለፈሓደወርሒክንደይግዜኣብቀትሪንቕሕኮይ ንካናይምጽናሕጸገምኣጋጢሙክን				
		ምንምጸገም አይነበረን	ኣዝዩንእሽቶ ጸገምነይሩ	ጸገምነይሩ	ብጣዕሚዓብዪ ጸገምነይሩ
208	ኣብዝሓለፈወርሒነገራትብንቕሓትኣብምፍጻምክን ደይዝኣክልተሸጊርክን				
209	ኣብዝሓለፈወርሒዝነበረክንናይድቃስጽሬትከምይትገልጸኦ	ብጣዕሚጽቡቕ	ጽቡቕ	ሕማቕ	ብጣዕሚሕማቕ

ክፋል 3- **ብዛዕባጥዑይድቃስንምፍላጥ**

ታቂ		**ፍጹም**	**ሳሕቲ**	**ሓደሓደግዜ**	**ብተደጋጋሚ**	**ኩሉግዜ**
		0	1	2	3	4
301	**ንኽልተሰዓታትወይልዕሊኡናይቅትሪድቃስይድቅስ**					
302	**በቢመዓቱኣብዝተፈላለየሰዓትናብመደቀስየይይኽይድ**					
303	**በቢመዓልቱኣብዝተፈላለየሰዓትካብመደቀስየይይትስእ**					
304	**ቅድሚምድቃሰይቅድሚሓደሰዓትክሳብዝረህጽኣካላዊምንቅስቓስይገብር።**					
305	**ኣብሰሙንክልተወይሰለስተግዜካብቲዝግበኣኒንላዕሊኣብዓራትይጸንሕ**					
306	**ድሕሪናብመደቀሲምእታወይወይኣብውኽጢ** 4 **ሰዓታትቅድሚምእታወይዘነቓቕሑመስተታትይወስድ**					
307	**ክድሚምድቃሰይከነቓቕሑዝኽእሉሓደሓደነገራትይገብርንኣብነትቪድዮጽዋታትምጽዋት፡ቴለቪዥንምርኣይ**					
308	**ናብመደቀስየይእንትኣቱኣብጭንቀት፡ንደት፡ቁጠዕወይድንጋጸስምኢታተይኮይነእዩ**					
309	**መደቀስየይካብብድቃስወጻኢንካልኦትነገራትይጥቀምንኣብነትንምንባብ፡ምንባብወይምምጋብ**					
310	**ኣብዘይምቹመደቀሲይድቅስንኣብነትዘይምቹፍርናስህወይትርኣስይጥቀም፡ልዕሊዓቕንዝኾነወይዘይእኹልኮበርታይኽደን**					

311	**ኣብዘይምችህውመደቀሲክፍሊይድቅስንኣብነትብጣዕሚምውቕ፡ዝሑል፡ብርሃናማወይጸጥታዘይብሉ**					
312	**ቅድሚምድቃሰይኣድለይቲነገራትይገብርንኣብነትትልሚምውጻእ፡መጽናዕቲ**					
313	**ኣብመደቀስየይኮይነይሓስብ፡ይትልምወይይጭነቕ**					

ክፋል 4 ገምጋምጽዕንዕንታ፡ጭንቀትንጸቕጥን-

ንሕድሕድመግለጺኣንቢብክንኣብዝሓለፈሰሙንኣብልዕለኽንክንደይዝኣክልከምዝተፈጸመዝገልጽቁጽሪ 0፡ 1፡ 2፡ወይ 3 ኣክብባ።ቅኑዕንገይጋንዝበሃልመልሲየለን።እቲደረጃኣወሃህባከምዝስዕብይኸውን፡ 0- ፈጹሙኣባይኣይነበረን፡ 1- ብዝተወሰነመጠንወይሓደሓደግዘ፡ 2- ቀሊልብዘይበሃልደረጃ፡ 3- ብጣዕሚወይመብዛሕቲኡግዘኣባይነይሩ

ታቁ		**ነጥቢኣወሃህባ**			
		0	1	2	3
401	**ንክረግጋዕተሸጊረ**				
402	**ኣፈይከምዝደረቐኣስተብሂለ**				
403	**ፈጺሙኣወንታዊስምኢትዝስመሳኒኣይመሰለንን**				
404	**ናይትንፋስጸገምኣጋጢሙኒንኣብነት፡ካብልክዕዝሓለፈፈጣንኣተነፋፍሳ፡ኣካላዊጻዕሪኣብዘይገበርኩሉትንፋስምቁራጽ**				
405	**ነገራትንምስራሕተበግሶኣብምህላውተስሸጊረ**				
406	**ንነገራትካብመጠንንላዕሊምላስህናይምሃብኣዝማምያነይሩኒ**				
407	**ምንቅጥቃጥኣጋጢሙኒንኣብነትኣእዳወይ**				
408	**ብዙሕናይኘርቫጉልበትዝጥቀምዘለኹኮይኑተሰሚኡኒ**				
409	**ብዛዕባዝፈርሑንንነብሰይዓሻዝገብሩኩነታትንይጭነቕነይረ**				
410	**ንመጻኢተስፋኩምዘይብለይተሰሚኡኒ**				
411	**ናይዘይምርግጋዕጸገምኣጋጢሙኒ**				
412	**ንክዘናጋዕ/ክፍታሕታሕይኸብደኒ**				
413	**ሃዘንንጥካዘንኣጋጢሙኒ**				

414	አብቲዝገብሮዝነበርኩንከይቕጽልዝዓግተኒዝኾነይኹንነገርትዕግስቲአይነበረንን				
415	ዝስምብድዘለኹኮይኑተሰሚዕኒ				
416	ንዝኾነነገርህንጡውክኽውንአይከኣልኩን				
417	ከምሰብቡሕዋጋዘይብለይኮይኑተሰሚዕኒ				
418	ብጣዕሚዝሓርቕዘለኹኮይኑይስመዓኒ				
419	አካላዊምንቅስቓስአብዘይብሉናይልበይኩነታት(ንአብነት፡ምውሳኽውቅዕትልቢ፡ውቅዕትልቢምጥፋእ) ተገንዚበ				
420	ብዘይምኽንያትፍርሕፍርሕይብል				
421	ህይወትትርጉምኣልባኮይናተሰሚዕኒ				

ክፋል 5፡ ማሕበራዊድጋፍዝምልከት

ታ.ቁ			ኮድ
501	አብሂወትክንብጣዕሚዝቕርቡንሽግርክንዝካፈሉንክንደይሰባትኣለዉ?	1.ምንም 2. 1 ወይ 2 3. ካብ 3-5 4. ካብ 5 ንላዕሊ	
502	ካልኦትሰባትብዘዕባእቲንስኽንትገብርኦክንደይዝኣክልዝግደሱንዘተሓሳስቦምንይመስለክን?	1. ብጣዕሚውሑድ 2. ውሑድ 3. ርግጸኛኣይኮንኩን 4. ብመጠኑ 5. ብዙሕ	
503	ካብንረባብትኽንግብራዊሓገዝምርካብክንደየናይቀሊልእዩ?	1, ብጣዕሚከቢድ 2. ከቢድ 3. ብቐሊሉዋላኣይኹንክረክብእየ	

		4. ቀሊል 5. ብጣዕምሚቀሊል	

ክፋል6፡ ናይእጽተጠቃምነትኩነታት

ታቁ	**ኣብዝሓለፉ 3 ኣዋርሕካብዞምዝስዕቡንጥረነገራትተጠቒምክንዶ?**	
601	**ኣልኮላዊመስተታት (ቢራ፡ ወይኒ፡ ስዋ፡ ምየስ፡ ኣረቂወዘተ)**	1. **ኣሎ** 2. **የለን**
602	**ጫትንካፈይንዘለዎምመስተታትን**	1. **ኣሎ** 2. **የለን**
603	**ፍርያትትምባኾ(ሽጋራንዝመሳሰሉነገራትን)**	1. **ኣሎ** 2. **የለን**
604	**ካሊእ**	----------
605	**ኣብዚሕጂእዋንቡንትሰትያ ዶ?**	1. **ኣሎ** 2. **የለን**

ክፋል 7፡ ኣካላዊሕማምት

701	**ኩነታትጥንሲ**	1 **ዝተሓሰበ** 2 **ዘይተሓሰበ**	
702	**ናይጥንሲዕድመ**	1 **ትሕቲሰለስተወርሒ** 2 **ካብሰለስተክሳብሽድሽተወርሒ** 3 **ልዕሊሽድሽተወርሒ**	
703	**ንቅድመወሊድክትትልክንደይግዘመጹእኺ**	----------	
704	**ክንደይግዘጠኒስኪ?**	1 **ሓደግዘ** 2 **ክልተንልዕሊኡን**	
705	**ቃንዛ**	1. **ኣሎ**	

		2. **የለን**	
706	**ሕዱርሕማምከም(ጸቕጢ.ደም፥ ሽኮር፥ ካንሰር፥ ናይልቢ፥ ኤችኣይ ቪ፥ ኣስማ፥ ወዘተ)**	1. **ኣሎ** 2. **የለን**	
707	**ብሕክምናዝተረጋገጸሕማምስነኣእምሮ**	1. **ኣሎ** 2. **የለን**	

8.ዳህሳስብናይቀረባመጻምድቲዝፍጸምመጥቃዕቲ

ታ.ቁ	**ሕቶታት**	**መልሲ**
801	**ብመጻምድትኽንወይካሊእንኣኽንኣገዳሲዝኾነሰብኣካላዊወይስምዒታዊአምጥቃዕቲበጺሑኪይፈልጥዶ?**	1. **እወ** 2. **የለን**
802	**ኣብውሽጢዝሓለፈዓመትብዝኾነሰብዝበጽሐክንማህረምቲ፣ መጽፋዕቲ፣ መርገጽቲወይካሊእኣካላዊማህሰይቲይህሉዶ?**	1. **እወ** 2. **የለን**
803	**ካብእትጠንሳጀሚሩብዝኮነሰብተሃሪምክን፣ ተጸፊዕኽን፣ ተረጊጽክንወይዝብርጽሓክንካሊእኣካላዊማህሰይቲይህሉዶ?**	1. **እወ** 2. **የለን**
804	**ኣብውሽጢዝሓለፈዓመትብዘይድሌትክንጾታዊርክብንክትፍጽማዘገደደክንሰብይህሉዶ?**	1. **እወ** 2. **የለን**
805	**ንመጻምድኽንወይካሊእኣብቀረባኽንዘሎሰብትሰግኣወይትፈርሓዲኽን?**	1. **እወ** 2. **የለን**

1) በጃኽን ካብ እትጠንሳ ጀሚሩ ዝነበረ ሓፈሻዊ ናይ ድቃስ ተመኩሮኽን ብዝርዝር ግለጻ።

ቅድሚ ጥንሲ ድቃስክን ከመይ ነይሩ፡ ሕዚኽ ከመይ ኣሎ?

ኣብዚግዜእዚልሙድድቃስለይቲንኣክንከመይከምዝመስልግለጻ?

ካብእትጠንሳንደሓርኣብድቃስክንወይፅሬትድቃስክንዘስተብሃልክንኦለውጢግለጻ?

ኣብዝተፈላለየደረጃታትጥንሲኺኣብድቃስክንወይጽሬትክንዘስተብሀልክንኦፍልልይ?

2)ኣብእዋንጥንሲንድቃስዝጸልዉብዙሓትነገራትክህልዉይኽእሉእዩም።ኣብድቃስክንኣዝዮምዝጸልዉረጃሒታትእንታይእ ንታይእዮም?

ኣካላዊለውጢ (ከምቃንዛ፡ዘይምምቻው፡ወይብተደጋጋሚሽንቲ)
ኣብድቃስንክወስደክን፡ደቂኣክንክትጸንሓወይዕረፍቲክስመዓክንብኽመይመንገዲይጸልዎ?

ኣብእዋንጥንስኽንዘሎስምዒታዊኩነታትብኽመይምገለጽክንኦ?
ንድቃስክንክጸልዎይኽእልእዩኢልክንእትሓበኦናይጽዕንዕንታ: ጭንቀት: ወይጸቕጢስምዒትኣጋጢሙክንዶ?

ልሙድ መዓልታዊ ልምድታትክንከምስራሕ፡መግብንናይገዛስራሕንንድቃስክንብኽመይይጸልዎ?

ልሙድናይድቃስሃዋህውክንከምድምጺ፡ብርሃን፡ሙቐት፡ወይምቐትዓራትግለጻ? ንድቃስክንብኽመይይጸልዎ?

ካብመጻምድትክን፡ደቅኽን፡ኣዕሩኽትኽንወይካልኦትእትረኽበኦደገፍንድቃስክንብኽመይይጸልዎ?

3)ድቃስብዙሕዝተፈላለየመዳያትክህልዎይኽእል።ከም፡ድቃስንኽትድቅሳክንደይግዜከምዝወስደልክን፡ብለይቲክንደይግ ዜከምትበራበራ፡ንግሆክሳብክንደይዕረፍቲከምዝስምዓክን፡ከምኡ'ውንድቃስክንኣብቀትሪብኽመይከምዝጸልወክንዝኣመሰ ሉ።

ብሓፈሻጽቡቕነትናይለይቲድቃስክንከመይትገልጸኦ?

ድቃስክወስደክንኣብእትፍትነሉእዋንንክትድቅሳዝወስድውልክንግዜመብዛሕትኡግዜከመይይመስል?
ሓጺርግዜድዩዝወስድወይስንውሕዝበለግዜ? ነዚዝጸልዎእንታይእዩ፡

መብዛሕትኡግዜኣብለይቲክንደይሰዓታትድቃስትረኽባ?

ብዛዕባካብድቃስለይቲወይብንጥሆድቃስካዘቋርጹኽንነገራትክትነግራኒትኽእላዶ?

ኣብእዋንጥንሲንኽትድቅሳዝሕግዝከምመድሃኒትወይካልእሕክምናታትተጠቒምክንዶ?
እንታይከምዝተጠቐምክንንብኽመይከምዝሓገዘክንንግለጻ?

ብለይቲእትድቅሳሉኣገባብኣብቀትሪንዝስምዓክንስምዒትወይእትሰርሐኦስራሕብኽመይይጸልዎ?

4)ኣብእዋንጥንስኽንዝሓሸድቃስንምርካብእንታይፍሉያትነገራትፈቲንክንወይትገብራለኽን፡እዚኦምከክሳብክንደይውጽኢታዊኮይኖምልክን?

5)
ድቃስክንኣብትኹረትክን፡ናይምዝካርካወይመዓልታዊዕማማትናይምፍጻምዓቕምኽንዝፈጠሮዝኾነጽልዋኣስተብሂልክንዶ፡ተመኩሮድቃስክንኣብሓፈሻዊተመኩሮጥንስኽንብኽመይመንገዲጽልዋኣሕዲሩ?

6)
ብዛዕባኣብእዋንጥንኽንዘሎናይድቃስክንኩነታትካልእንዓይክፈልጦኣገዳሲኮይኑዝስምዓክንወይገናዘይተዘራረብናሉነገርእንተሃልዩ?