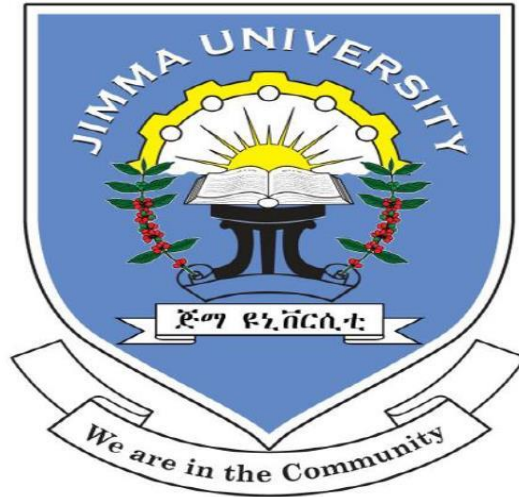**SLEEP QUALITY AND ASSOCIATED FACTORS AMONG PATIENTS WITH SCHIZOPHRENIA ATTENDING FOLLOWUP TREATMENT AT JIMMA UNIVERSITY MEDICAL CENTER PSYCHIATRIC CLINIC, JIMMA, SOUTHWEST, ETHIOPIA**

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A THESIS SUBMITTED TO THE DEPARTMENT OF PSYCHIATRY, FACULTY OF MEDICINE, INSTITUTE OF HEALTH, JIMMA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN INTEGRATED CLINICAL AND COMMUNITY MENTAL HEALTH

OCTOBER, 2019

JIMMA, ETHIOPIA

SLEEP QUALITY AND ASSOCIATED FACTORS AMONG PATIENTS WITH SCHIZOPHRENIA ATTENDING FOLLOWUP TREATMENT AT JIMMA UNIVERSITY MEDICAL CENTER PSYCHIATRIC CLINIC, JIMMA, SOUTH WEST, ETHIOPIA

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Abstract

Background: - *Schizophrenia is a persistent and disabling psychotic illness comprises different symptoms one of which is sleep problem. Although sleep disturbances occur in 30–80% of schizophrenic patients and diminished sleep quality are common in schizophrenia, studies about sleep quality and association with worsening of the illness are little. So, this study is aimed to fill a little gap in this area of study.*

Objectives: - *To assess sleep quality and its associated factors among patients with schizophrenia on followup treatment at psychiatric clinic, Jimma University Medical Center.*

Methods: - *A hospital based cross sectional study design using consecutive sampling method among 411 people with schizophrenia was used. Pittsburgh Sleep Quality Index at cut off five was used to assess quality of sleep. Severity of psychotic symptoms and medication adherence was assessed by positive and negative syndrome scale and Morisky medication adherence scale respectively and substance use was assessed by adopted World Health Organization Alcohol, Smoking and Substance Involvement Screening Test version 3.0. Data were entered to Epi data 3.1 and analyzed using SPSS version 23.0. Logistic regression was used to assess the association between independent variables and dependent variable. P-value of < 0.05 was considered as statistically significant.*

Result: -Quality of sleep was poor among 236 (57.4%) of the participants and majority (71%) of them had reported sleep disturbance in general. Majority (70.6%) of the participants was male and primary school is dominant educational status (33.3%). Urban residence 4.59(2.20, 9.58), high antipsychotic medication adherence 0.07(0.03, 0.15), khat ever use 2.72(1.31, 5.68), severity of positive psychotic symptoms 14.64(6.25, 34.29) and overall psychopathology 3.25 (1.54, 6.84) were significantly associated with poor sleep quality.

Conclusion: -The result suggested that prevalence of poor sleep quality was high in people with schizophrenia. Sleep should be routinely assessed and managed during follow up visits in these groups of patients. Antipsychotic medication adherence should be encouraged and comorbid use of psychoactive substances like khat should be controlled.

Key words: - *schizophrenia, sleep quality, JUMC, Jimma, Ethiopia*

Acknowledgement

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Acronyms and abbreviations

ASSIST	Alcohol, Smoking and Substance Involvement Screening Test version
CI	confidence interval
DSM	Diagnostic and Statistical Manual of Mental Disorders
ETB	Ethiopian Birr
ICCMH	Integrated Clinical and Community Mental Health
ICD	International Classification of Diseases
JUMC	Jimma University Medical Center
MMAS	Morisky Medication Adherence Scale
OPD	Outpatient department
OSAS	Obstructive Sleep Apnea Syndrome
PANSS	Positive and Negative Syndrome Scale
PLEs	Psychotic-Like Experiences
PSQI	Pittsburg Sleep Quality Index
PTSD	Post-traumatic Stress Disorder
REM	Rapid Eye Movement
RLS	Restless Leg Syndrome
SD	Standard deviation
SWS	Slow wave sleep
USA	United States of America
WHO	World Health Organization

Chapter 1: Introduction

1.1 Background

Schizophrenia is a syndrome which includes the number of disorders with different etiologies. It is a persistent and disabling psychotic illness that ruins the lives of patients and their families. Schizophrenia affects emotion, behavior, perception, thought, speech, motor activities and sleep disturbances although these symptoms are not specific to schizophrenia(1). Schizophrenia affects emotion, behavior, perception, thought, speech, motor activities and sleep disturbances although these symptoms are not specific to schizophrenia(2).

Sleep is defined as a state of decreased awareness of environmental stimuli and relatively reversible quickly and characterized by relative unconsciousness of the external world and a general lack of memory of the state. It is a biological periodic state of mind and body which crucial to the maintenance of mental and physical health. Sleep quality is defined as satisfaction with sleep experience and integrating aspects of sleep initiation, sleep maintenance, sleep quantity and refreshment upon awakening. It is relevant to optimal health and functioning and related to mental health in both clinical and non-clinical populations(3).

Sleep disturbances which affects up to 80% of schizophrenic patients, have been highly associated with increases in severity of positive and negative symptoms of schizophrenia and often herald relapse of psychotic episodes and under diagnosed and under treated may be due to lack of attention to the problem(4). People with schizophrenia have been identified to experience sleep disorders at relatively higher rates than general population and sleep problems including difficulty falling asleep and maintaining, increased sleep latency, decreased total sleep time and sleep efficiency and diminished sleep quality are common in these subjects(5). Comorbid sleep difficulties adversely affect not only mental health; but also quality of life and major medical illnesses in many aspects(6).

To maintain good physical, mental, and emotional health, sleep is very important. Short sleep duration (which is defined as less than 7 hours generally) raises rates of mortality and reported as an important risk factor for different adverse outcomes. Sleep is an important and restorative process for homeostasis regulation and proper physiological systems functioning(7). Because of

these, National Sleep Foundation (NSF) has recommended optimal daily sleep durations for different age groups(8).

People living with schizophrenia frequently faced poor sleep quality when compared to the general population which in turns worsens psychotic symptoms and contributes to increased physical co-morbidities. Even though the association of sleep disturbance to symptoms exacerbation in psychiatric illness is gaining increasing attention, yet it has been studied little in our country(9). So the aim of this study is to add some value in narrowing the existing gap in the studies concerning these subjects.

1.2 Statement of the problem

World Health Organization (WHO) report that, in Ethiopia, mental illness is the leading non-communicable disorder and indeed, predominantly in the rural area of the country(10). Schizophrenia is a mental illness which affects about 1% of general population worldwide(1). It contributes 13.4 million years of life lived with disability (YLDs) to burden of disease globally and affects about 0.5% of people in Ethiopia(11,12).

Sleep problems, especially decreased and non-restorative sleep, are common complaints among people with mental illness and affects up to 30-80% of schizophrenic patients. Physical, mental, and emotional fatigue can caused from repeated disturbance of the sleep cycle or failure to initiate and maintain sleep(13). Poor sleep in schizophrenia can precede psychotic onset in new patients as prodromal and associated with worsening cognitive functioning and cause persistent and treatment refractory deficits(14).

Short sleep duration has been linked with negative health consequences, including chronic medical illness, poor mental health, accident and mortality(15). Sleep problem can affects many people world wide and cause high economical burden. For instance, insomnia alone affects about 25 million people in United States and leads to a burden of 100 billion dollar annually shows that, the cost of not treating insomnia is greater than the cost of treating it(16).

Poor sleep quality is among various factors that can negatively affect mental health and even can be associated with suicidal behaviors. It was associated increased psychotic expreinces, depression, anxiety, lower quality of life and was very common in patients with schizophrenia which worth predictable and ongoing assessment in psychiatric practice(17).

Sleeping for short duration (5 hours or less) and too long sleeping time (9 hours or more) results in elevated rates of depression, increased severity of psychotic symptoms like delusion and hallucination and increased completed suicide rates(18). Presence of sleep problem is associated with the worsening of psychotic symptoms and sometimes the disturbance may even cause symptoms like paranoia(9). It was reported that as schizophrenic patients with sleep disturbances of all types were about 13 folds more likely to have suicidal ideation, suicide attempts and completed suicide than those without sleep disturbances(19).

Although sleep disturbance is associated with excessive drowsiness, tension and poor mood, little is known about patterns of sleep in different mental disorders, particularly among sub-Saharan Africans(20). So the aim of this study is to contribute value in narrowing the gap concerning the studies about the magnitude of the problem and factors contributing for it among schizophrenic patients.

Chapter 2: Literature Review

2.1 Sleep quality in patients with schizophrenia

In schizophrenia, sleep problems are common although these complaints are often dominated by more noticeable clinical concerns like active positive symptoms of the illness and poor sleep quality is frequent in this disorder which in turns associated with lower quality of life, impaired cognition, and other risks like weight gain. The prevalence sleep problem in psychiatric patients varies from 60% among newly referred to 91% of hospitalized patients(21).

A cross-sectional study done in Portugal showed that, among a total of 113 study participants, 67.3% of them had reported poor sleep quality(22). Another study done in USA among sixty one patients with early onset schizophrenia showed, more than half (50.8%) of them were poor sleepers(23). In the other study done in Brazil among clinically stable 82 schizophrenic patients, 51.3% of them reported poor sleep quality(24). Similar study done in China among 505 schizophrenic patients showed that, more than one-third (36%) of the respondents were poor sleepers(25).

As the study done in Republic of Korea, among total study participants of outpatient schizophrenia, more than half (53.3%) of the patients had reported poor sleep quality(26). Similar study done in Israel in a total of 145 outpatient people with schizophrenia reported 45.4% of poor sleepers out of total participants(27). Other higher finding was found in cross sectional study done among 100 patients with schizophrenia in Farabi Hospital in Kermanshah, Iran in which all (100%) of the respondents reported poor sleep quality(28). The finding of study done in Turkey among a total of 28 patients with schizophrenia showed that, 35.7% of the participants had reported poor sleep quality(29).

2.2 Factors associated with sleep quality in patients with schizophrenia

Sleep disturbance is associated with many socio-demographic characteristics like housing condition, economic level, marital status and job; clinical factors like symptom severity and emotional states(30). Factors like quality of life (QOL), physical exercise, medication adherence and co morbid substance use also affects sleep quality in schizophrenic patients(31–33).

2.2.1 Socio-demographic factors and sleep quality in patients with schizophrenia

A cross-sectional study done in Ningxia Mental Health Center, China showed that, sleep quality among schizophrenia is associated with socio-demographic characteristics like marital status, educational level, living situation, current drinking, and economic status. Accordingly, lower educational level and poor school completion, low income, lower socio-economic status and living large families are associated with poor sleep quality in schizophrenic patients(30).

The other study done in tertiary psychiatric institution in Singapore among 280 people with psychotic disorders showed that, sleep quality and duration is associated with age. As this study reveals, older age associated with low risk of insomnia(34). Another study conducted in United States of America (USA) with 441 general psychiatric participants who attended the Mid-Life in the United States (MIDUS) Research Center at the University of Wisconsin–Madison showed that, on average, women had longer total sleep time than men, higher sleep efficiency and shorter sleep onset latency(35).

Another study carried out at the Lagos University Teaching Hospital, Nigeria, among a total of one hundred and eighty-four subjects with different psychiatric disorders of which the majority of diagnosis was schizophrenia (35.9%) shows, insomnia was most prevalent among the elderly subjects (aged 60 years and above), the widowed and the unemployed participants(36).

According to country wide Demographic and Health survey conducted in Ghana among 4,916 women and 4,568 men, those aged below 30 years, female gender, rural residents, non-Christian, those completed secondary level education, those who had two rooms for sleeping, those who use bed net, those who had high income and who had employed had relatively high sleeping hours (averagely >7 hours)(37).

2.2.2 Clinical factors associated with sleep quality in patients with schizophrenia

2.2.2.1 Psychopathology and sleep quality in patients with schizophrenia

Regardless of the type of underlying disorder, severity of psychopathology affects quality of sleep either by decreasing or increasing it(38). The study conducted among a total of 100 patients with schizophrenia who were in stable condition after admitted to the Farabi Hospital in Kermanshah, Iran showed the substantial difference between quality of sleep in patients with positive and

negative symptoms of schizophrenia in which patients with positive symptoms reported poorer sleep quality. Patients with the positive symptoms also showed a higher impairment of daily functions than those with negative symptoms although there was no noteworthy difference in the delayed sleep, sleep duration and the use of sleep medications between the 2 groups (28).

Another study done in Oxford among Sixty-eight non-clinical volunteers who underwent a sleep loss condition (restricted to 4 hours sleep each night for 3 consecutive nights. According to this study, the sleep loss condition was associated with significant occurrence and increases in hallucinations (43.4%), paranoia (>90%), and cognitive disorganization and presence of these conditions also affects quality of sleep in vice-versa(39).

Another study was done among 811 adult outpatients with a diagnosis of schizophrenia from Spain and Portugal who were divided into two groups according to the presence (or absence) of sleep disturbances to assess for symptom severity and quality and patterns of sleep. As the result, patients with sleep disturbances were significantly more symptomatic and scored significantly higher on all components of the PSQI and revealed worse quality of sleep as compared to patients without sleep disturbances(5).

A similar study conducted in Portugal at Lisbon's Psychiatric Hospital Center among twenty-three patients who were evaluated with the Positive and Negative Syndrome Scale (PANSS) and grouped in two according to prominent positive or negative symptoms showed that, both groups presented above 5 for PSQI scores which is considered as poor sleep quality and no significance difference was found between two groups(40).

2.2.2.2 Substance use and sleep quality in patients with schizophrenia

A study done in USA among 385 of Matriculating college students who reporting at least one heavy drinking episode and more than half of them were screened for general psychiatric disorders showed that, 25% of them reported poor sleep quality and 36% failed to achieve the recommended minimum of 7 hours of sleep per night(41).

The clinical trials conducted at Yale University to know the effects of chronic substance use on sleep showed that, for both stimulants and depressants, decrease in sleep time, increase in sleep latency and deficiency in slow-wave sleep were common in chronic use of alcohol, cocaine, cannabis, and opiates and REM sleep was affected by both acute and chronic use of these

substances(42).

The study done in Australia showed that, the association between benzodiazepines use and sleep quality among patients with psychiatric disorders is dependent on the half-life and long-acting benzodiazepines are associated with higher night-time sleep quality (AOR=4.00, 95% CI) while short-acting benzodiazepines are associated with longer daytime napping times (AOR=1.77, 95% CI)(43). Another study conducted in Canada showed that, long-term benzodiazepines users were more probable to report poor sleep quality and women are frequent users and more likely to report poor sleep quality(44).

As the other country wide survey conducted to compare sleep patterns of drinkers and non-drinkers in community in Ghana among 4,916 women and 4,568 men indicates, more than 10% of drinkers reported sleeping for less than 7 hours compared to non-drinker participants(37).

2.2.2.3 Treatment adherence and sleep quality in patients with schizophrenia

A study done among 811 schizophrenic patients who were recruited from psychiatric hospitals (709 in Spain and 102 in Portugal) showed that, patients with bad adherence to pharmacological treatment reported more sleep disturbances and significantly higher scores on the PSQI(45). Another study done in LVR-KlinikBedburg-Hau in Germany among outpatient 30 patients with schizophrenia and 58 patients with depression showed that, patients with schizophrenia who reported a worse quality of sleep were more treatment-adherent than those who reported a better quality of sleep as this study(46).

2.2.2.4 Types of medication and sleep quality in patients with schizophrenia

There was the study conducted in China among twenty-five patients (13 males and 12 females) with schizophrenia or schizoaffective disorder by using within-subject design. All patients received chlorpromazine 100 mg/d for the first week and 500–600 mg/d for another 8 weeks. Accordingly, objective sleep was assessed by four indexes including sleep onset latency, longest wake episode, sleep percentage, and mean activity level by an automatic algorithm. As the finding of this study shows, by administering chlorpromazine, all sleep onset latency, longest wake episode and mean activity level were significantly decreased while the sleep percentage was statistically increased(47).

Another study done in USA among single-blind 14 schizophrenic inpatients shows, patients were evaluated for two nights after they kept drug-free for at least 2 weeks after 3 weeks of Haloperidol treatment with a dosage of (654.0 mg chlorpromazine equivalent dose). As the result of this study shows, stage 2 sleep latency significantly decreased while sleep efficiency and REM latency increased ($p < 0.05$)(48).

The other study which compared patients those who were received a mean dosage of 9.5 (SD 4.3) mg/day of Risperidone for 42.5 (SD 16.8) weeks with those received typical antipsychotics with equivalent dosage was done among schizophrenic outpatients attending Leicestershire UK Mental Health Hospitals and showed that, patients who received Risperidone had showed better sleep quality and morning sleepiness(49).

In general, people with schizophrenia have a combination of symptoms among which sleep disturbance is frequent complaint in these people. As several studies implies, sleep pattern in schizophrenic patients can be affected by a lot of factors including socio-economic factors (like age, sex, economic status and patient's living condition); severity of psychopathology, co morbid substance use, medication adherence and types of medication used.

2.3 Conceptual Framework
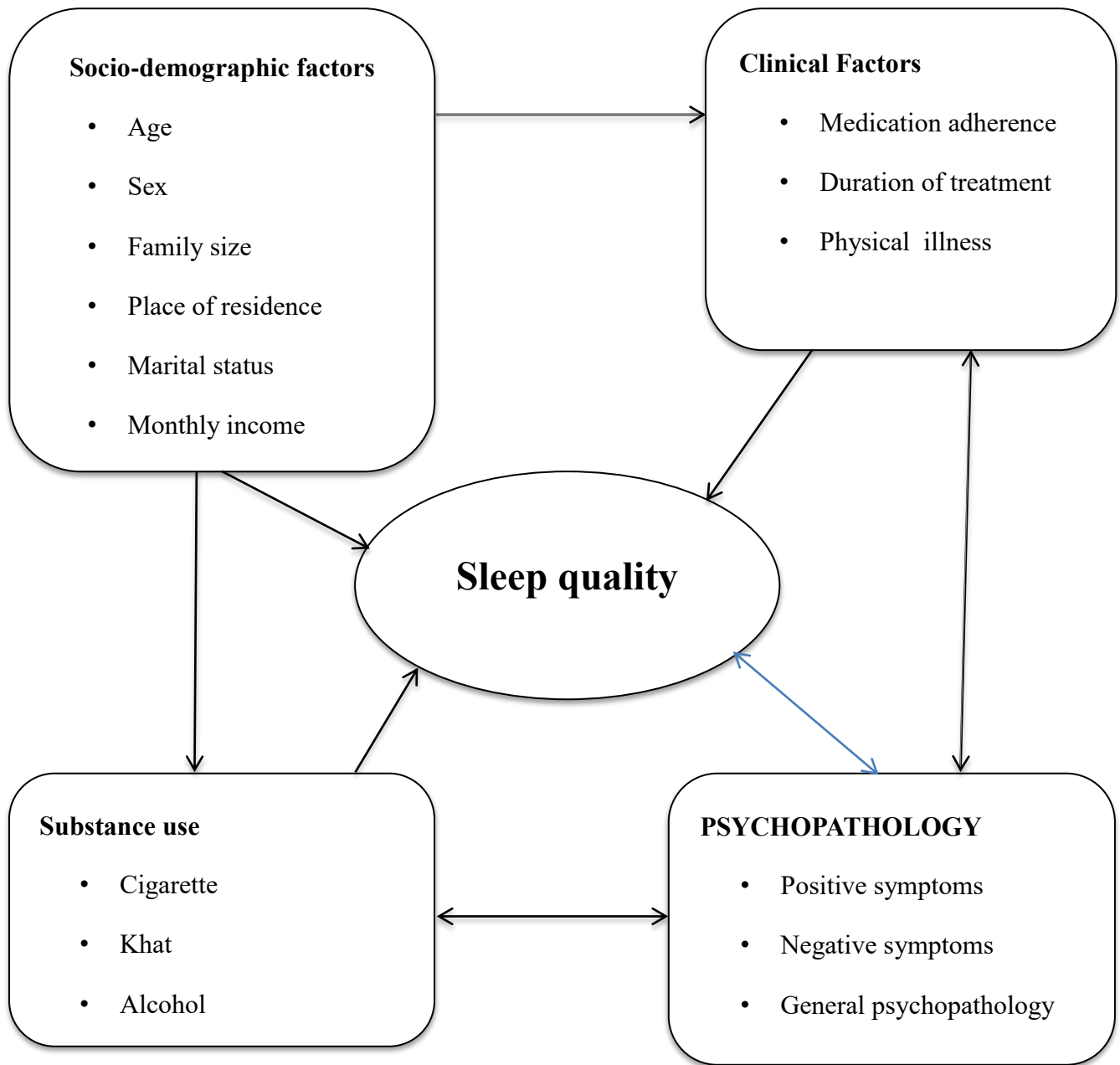
Figure 1: Conceptual frame work of factors affecting sleep quality in patients with schizophrenia (source: literature review).

2.4 significance of the study

Sleep is one of the restorative processes which affected highly in the patients with schizophrenia. When the sleep pattern is disturbed in these patients in addition to different disturbing symptoms from the nature of the illness, the outcome become worse and the affected individual will be subjected to more disturbances to the extent of harming him/herself or others. This is a continuous problem existing ever and widely speared in these patients and needs investigation to give way for solution. Although knowing the magnitude of sleep problems and managing well is vital, no study is found which was done to know the quality of sleep and what associated with it among these subjects in our country to our best knowledge. So, this study is aimed to assess the quality of sleep and associated factors among patients with schizophrenia attending follow up treatment at Jimma University Medical Center (JUMC) psychiatric department and will try to fill the knowledge gap concerning the problem. Knowing the distribution of the problem will help the health care provider and educator to give evidence based services, policy makers to act accordingly and help the patients in preventing further disturbance and complications. This leads to quality improvement and shortens the duration of the treatment which is so long among these patients and in turns improves the outcome or progress of the treatment. The findings of this study also will be used as a baseline data for future researchers, health planners and program managers to improve the problem and give quality services. In addition, the findings of the study will help the clinicians to appreciate the prevalence of the problem and make sound decision on managements of the issue.

Chapter 3: Objectives

3.1 General objective

➢ To assess quality of sleep and its associated factors among patients with schizophrenia attending follow up treatment at JUMC psychiatry clinic

3.2 Specific objectives

To determine prevalence of sleep quality among patients with schizophrenia attending follow up treatment at JUMC psychiatry clinic

To identify factors associated with quality of sleep among patients with schizophrenia attending follow-up treatment at JUMC psychiatry clinic

Chapter 4: Methods and Materials

4.1 Study area and period

The study was conducted from April 21-June 20, 2019 in JUMC psychiatry clinic. JUMC is found in Jimma town which found in Oromia regional state and 352 km far from Addis Ababa, the capital city of Ethiopia to south west. JUMC is one of the oldest governmental hospitals and was established in 1937 during Italian occupation for the service of their soldiers. After the withdrawal of the colonial conquerors, it has been running as public hospital under the Ministry of Health by different names at different times and currently named as "Jimma University Medical Center". In 1996, psychiatric clinic of JUMC was established next to Amanuel mental health specialized hospital and giving service including both inpatient and outpatients for about 15 million population in south west Ethiopia. Currently there are more than 1000 patients who are attending follow up treatments at outpatient department (OPD) monthly and on average, about 48 patients admitted per month and around 50 patients are visiting on daily base. Currently, the psychiatric clinic has 26 beds for inpatient services and 6 OPDs.

4.2 Study Design

Hospital based cross-sectional study design was used

4.3 Population

4.3.1 Source population

All patients with schizophrenia attending follow up treatment at JUMC psychiatric clinic

4.3.2 Study population

Patients with schizophrenia who was attended follow up treatment at JUMC psychiatric clinic during the study period and who fulfill inclusion criteria was included.

4.4 Inclusion and Exclusion criteria

4.4.1 Inclusion criteria

Patients with schizophrenia who are aged 18 and above

4.4.2 Exclusion criteria

Patients who are acutely disturbed and unable to communicate and patients who have other psychiatric co morbidity were excluded.

4.5 Sample size and sampling techniques

4.5.1 Sample size Determination

The minimum number of sample size required for this study was determined by using the formula to estimate single population proportion using the following assumptions.

$$n = \frac{(z_{\alpha/2})^2 \, p(1-P)}{d^2}$$

Where,   **n**= minimum sample size required

- ❖ $Z_{\alpha/2}$ = standard score value for 95 % confidence level=1.96
- ❖ P= Estimated prevalence of poor sleep quality in schizophrenic patients (taken 50% since no published material is found in our country and in Africa among the same subjects as far we searched).
- ❖ d= is margin of error (5%)

Using the above assumptions; **n = [(1.96)^2 x 0.5 (1-0.5)] / (0.05)^2 n= 384**

By adding 10% (384 x 0.10 = 38) of non-respondent, the final sample size was (384+38) = **422.**

4.5.2 Sampling Technique

The sample size required for this study was 422. The participants were involved in study as they came until the intended sample size achieved by using consecutive sampling technique. To avoid the repeated patient, coding of the participants was used.

4.6 Study Variables

4.6.1 Dependent Variable

- ❖ Status of sleep quality

4.6.2 Independent Variables

➢ **Socio-demographic Factors**

- ❖ Age
- ❖ Sex
- ❖ Occupation
- ❖ Monthly income
- ❖ Ethnicity
- ❖ Educational status
- ❖ Religion
- ❖ Place of residence
- ❖ Marital status
- ❖ Family size

➢ **Clinical Factors**

- ❖ Psychopathology
- ❖ Co morbid substance use
- ❖ Medication adherence
- ❖ Physical illness
- ❖ Duration of the treatment

4.7 Data collection instruments and procedures

4.7.1 Data collection Instruments

Quality of sleep was assessed by using the Pittsburgh Sleep Quality Index (PSQI). It was an effective instrument used to measure the quality and patterns of sleep and to differentiate "poor" from "good" sleep by measuring seven domains: sleep duration, sleep disturbances, and sleep latency, use of sleep medication, daytime dysfunction, habitual sleep efficiency and subjective sleep quality over the last month. Scoring of the answers is based on a 0 to 3 scale, whereby 3 reflects the negative extreme on the Likert Scale. A global sum of "5"or greater indicates a "poor" sleeper, while score < 5 was considered good quality sleep(50). The tool was validated in Ethiopian adult community and has good psychometric validity and moderate internal consistency (Cronbach's alpha was 0.59). Internal homogeneity was sufficient as indicated by correlation coefficient between the scores of individual components and global score of the tool. With the cut-off scores of 5.5, the tool's sensitivity was 82% and its specificity was 56.2%(51).

Positive and negative symptoms of schizophrenia and severity of the symptoms was measured by using Positive and negative syndrome scale (PANSS). It is 7-point rating instrument which was carefully defined and operationalized method that evaluates positive, negative, and general symptom dimensions on the basis of a formal semi-structured clinical interview. The scale has 30- items which are grouped in to seven positive items which used to measure symptoms that are

superadded over a normal mental status, another seven negative items which used to assess features which are absent from a normal mental status and the remaining 16 items constitute general psychopathology scale that measures the overall severity by summation of scores(52).

Medication adherence was measured by 4-itemMorisky Medication Adherence Scale (MMAS-4) which is generic self-reported medication taking behavior scale. Patients score 1 point for every „Yes" answer and 0 point for „No" answer. A total of 0 indicates high adherence; a score of 1 or 2 indicates intermediate adherence; and a score of 3 or 4 indicates low adherence and it was extensively used in Ethiopia in assessing adherence of different medication(53).

Co morbid substance use was assessed by using adapted WHO Alcohol, Smoking and Substance Involvement Screening Test version 3.0 (WHO ASSIST V3.0). It contains 8 items with different scoring mechanisms. The score will be added from item 2 to item 7 both inclusive except for tobacco in which item 5 is not added to the score. By this calculation it yields a total of 39 except for tobacco which gives a total sum of 31 score. Then the score is interpreted as Mild (0-3), Moderate (4-26) and Severe (27+) except for alcohol which is Mild (0-10), Moderate (11-26) and Severe (27+).

The duration of treatment and absence/presence of any physical illness was reviewed from the patient card.

4.7.2 Data collection procedure

Data was collected by face to face interview using structured and pre-tested interviewer administered questionnaires and card review. The patient diagnosis was reviewed from the patient card before data collection.

4.8 Operational definitions

Poor sleep quality- A global sum of five or greater on score of PSQI

Good sleep quality- A total sum of less than five on score of PSQI(50).

Sleep latency- A period from "lights out" or from bed time to the sleep onset(54).

High adherence- A total score of zero on MMAS-4

Intermediate adherence- An score of 1 or 2 on MMAS-4

Low adherence- An score of 3 or 4 on MMAS-4(53).

Substance use- Ever use of any psychoactive substance in the past 12 months(1).

Low risk use- a score of 0-10 for alcohol and 0-3 for other substances on ASSIST score

Moderate risk use- a score of 11-26 for alcohol and 4-26 for other substances on ASSIST score

Severe risk of substance use- a score of 27+ for all substances on WHO ASSIST V3.0 score.

Non-substance user- the patient who never used substance in life

Severity of Positive and Negative psychotic symptoms

1- **Absent-** total absence of symptoms
2- **Minimal –** questionable or subtle or suspected pathology
3- **Mild –** clearly present but not pronounced and little interference with functioning
4- **Moderate –** serious problem that occurs only occasionally or only to a moderate extent
5- **Moderate severe –**impact on one's functioning but not all consuming
6- **Severe –** frequent gross pathology, highly disruptive and needs direct supervisions
7- **Extreme –** most serious pathology which disrupt in all major areas of functioning(52)**.**

Physical illness –any diagnosed medical problems like hypertension, diabetic mellitusm, etc

4.9 Data quality control

English version of the questionnaires were translated into local languages (Afan Oromo/Amharic) and then back to English by another person who was fully blinded for the original version of the questionnaires to ensure consistency. Training was given for data collectors and supervisor. Pre-test was done on 5% of the sample at Shenan Gibe General Hospital to identify the possible problems and difficulty of understanding in data collection tools and to make necessary modification. Regular supervision and support was given to data collectors by supervisor and principal investigator and collected data was checked for clearness and consistency on daily bases by principal investigator during data collection.

4.10 Data processing and analysis

Collected data were coded, edited and entered into Epi data version 3.1 and was exported to

SPSS version 23.0 for analysis. Descriptive statistics such as frequency, parcentage and mean was used and the result was presented by using tables and charts. To examine the relation between dependent and independent variables, odd ratio was used. A binary logistic regression was used to assess the association between independent and outcome variables. Variables which had p-value <0.25 were taken as candidate for multiple logistic regressions. Multiple logistic regressions was used to test for confounders, Hosmer and Lameshow modelfitness was checked and to decide statistically significant association of outcome variables, adjusted odd ratio, 95% confidence interval and P-value < 0.05 were used and variables which were less likely to associate with poor sleep quality depends on the reviewed literatures were taken as reference.

4.11 Ethical consideration

Ethical clearance was obtained from the Ethical review board of Jimma University Institute of health. The aim of the study was explained clearly to the study participants by data collectors and written consent was obtained. The right of the participant was considered in a case any participant refuse to participate or wants to discontinue interview and the participant has a right to ask any thing not clear about the study. For the purpose of confidentiality, participant's name was not used and the collected data and any personal information were kept entirely confidential and those identified with poor sleep quality will be linked to psychiatric clinic.

4.12 Dissemination Plan

Copy of the results of this study will be submitted to office of psychiatry department, faculty of Medical science, JUMC administration, psychiatry clinic and research coordinating office of Jimma University and concerned body. The research paper will be presented in health professional organizations, annual meetings, professional conferences and trainings as the opportunity obtained. Finally, effort will be made to publish results in international journal to disseminate the findings worldwide.

Chapter 5: Results

5.1 Socio-demographic characteristics

From the total of 422 interviewed participants, 411 of them were involved for data analysis giving 97.4% response rate. Majority 290 (70.6%) respondents were male and 166 (40.4%) of the participants were between the age of 25-34. One hundred ninety (46.2%) of the participants were Muslim by religion followed by 146 (35.5%) Orthodox Christian and one third (33.3%) of the participants were followed primary school. Some of the respondents (22.4%) were merchants in occupation and most 208 (50.6%) of the participants were from rural residence. One hundred ninety six (47.7%) of the participants were married and majority (74.2%) of them were living with five or less family member. More than 30% of the respondents had income between 500-1250 Ethiopian birr (ETB) (see table 1).

Table 1: Socio-demographic characteristics of patients with schizophrenia on follow-up at JUMC, psychiatry clinic, 2019 (n=411)

Variables		Frequency (%)
Age (Years)	18-24	65 (15.8)
	25-34	166 (40.4)
	35-44	122 (29.7)
	45-54	37 (9.0)
	≥55	21 (5.1)
Sex	Male	290 (70.6)
	Female	121 (29.4)
Religion	Muslim	190 (46.2)
	Orthodox	146 (35.5)
	Protestant	47 (11.4)

	Catholic	24 (5.8)
	Others	4 (1.0)
Educational status	No formal education	94 (22.9)
	Primary(1-8)	137 (33.3)
	Secondary(9-12)	110 (26.8)
	Above secondary	70 (17.0)
Occupation	Government employee	65 (15.8)
	Self employed	70 (17.0)
	Farmer	59 (14.4)
	House wife	75 (18.2)
	Merchant	92 (22.4)
	Student	34 (8.3)
	Others	16 (3.9)
Residence	Urban	203 (49.4)
	Rural	208 (50.6)
Marital status	Never married	166 (40.4)
	Married	196 (47.7)
	Divorced	45 (10.9)
	Widowed	4 (1.0)
Family size	1-5	305 (74.2)
	6-10	93 (22.6)
	More than 10	13 (3.2)

Income (ETB)	<500	113 (27.5)
	500-1250	126 (30.7)
	1251-2000	70 (17.0)
	2001-2750	32 (7.8)
	2751-3500	37 (9.0)
	3501-4250	18 (4.4)
	≥4251	15 (3.6)

5.2 Clinical characteristics of the study participants

Majority 359 (87.3%) of the patients had no comorbid physical illness, chlorpromazine was commonly 155 (37.7%) used medication followed by risperidone 90 (21.9%). Among the study participants; 79 (19.2%), 59 (14.4%) and 140 (34.1%) had used tobacco, alcohol and khat in their life time respectively (See table 2).

Table 2: Clinical characteristics of patients with schizophrenia on follow-up at JUMC, psychiatry clinic, 2019 (n=411)

Variables		Frequency (%)
Comorbid physical illness	Yes	52 (12.7)
	No	359 (87.3)
Current psychotropic medication	Chlorpromazine	155 (37.7)
	Haloperidol	91 (22.1)
	Thioridazine	36 (8.8)
	Risperidone	90 (21.9)
	Olanzapine	39 (9.5)

Ever use of substance

Tobacco	Yes	79 (19.2)
	No	332 (80.8)
Alcohol	Yes	59 (14.4)
	No	352 (85.6)
Khat	Yes	140 (34.1)
	No	271 (65.9)

Majority of the participants (57.4%) with 95%CI (0.52-0.62) had poor sleep quality. Only 154 (37.5%) of the participants had sleep duration more than seven hours and one hundred thirty four (32.6%) of them had sleep efficiency >85%. Majority 295 (71.8%) of them had reported sleep disturbance and 265 (64.5%) of respondents had daytime dysfunction (See table 3).

Table 3: Score on PSQI of patients with schizophrenia on follow-up at JUMC, psychiatry clinic, 2019 (n=411)

Variables		Frequency (%)
Subjective sleep quality	Very good	109 (26.5)
	Fairly good	147 (35.8)
	Fairly bad	95 (23.1)
	Very bad	60 (14.6)
Sleep latency	Very good	100 (24.3)
	Fairly good	122 (29.7)
	Fairly bad	82 (20.0)
	Very bad	107 (26.0)

Sleep duration	> 7 hours	154 (37.5)
	6-7 hours	142 (34.5)
	5-6 hours	66 (16.1)
	< 5 hours	49 (11.9)
Sleep efficiency	> 85%	134 (32.6)
	75-84%	131 (31.9)
	65-74%	79 (19.2)
	< 65%	67 (16.3)
Sleep disturbance	Yes	295 (71.8)
	No	116 (28.2)
Use of sleep medication	Yes	222 (54.0)
	No	189 (46.0)
Daytime dysfunction	Yes	265 (64.5)
	No	146 (35.5)
Global PSQI score	Poor sleep quality	236 (57.4)
	Good sleep quality	175 (42.6)

Considering the PANSS measure, the mean score for positive scale was $15.4 \pm$ SD 9.1; whereas, it is somewhat lower for negative scale which was 11 ± 4.4 (see table 4).

Table 4: Positive and negative scale rating score of patients with schizophrenia on follow-up at JUMC, psychiatry clinic, 2019 (n=411)

Variables	M±SD
PANSS Positive Score	15.4±9.1
PANSS Negative Score	11±4.4
PANSS General psychopathology	23.5±8.6
PANSS Total Score	50±17.7

Out of the total participants, nearly half (47.7%) of them had high adherence to anti-psychotic medications (see figure 2).
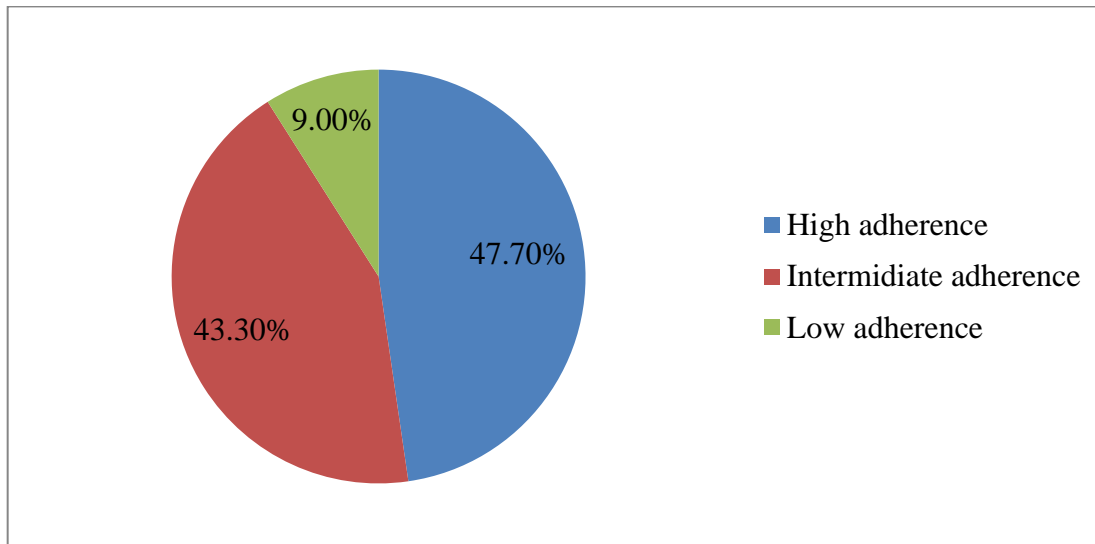
Figure 2: Antipsychotics medication adherence status of patients with schizophrenia on follow-up at JUMC, psychiatry clinic, 2019

5.3 Factors associated with sleep quality

Variables such as age 25-34, urban residence, family size 1-5, high medication adherence, khat ever use, PANSS positive and PANSS overall score were significantly associated with poor sleep quality. After adjusting for potential confounders using multivariate analysis, the odds of poor

sleep quality for respondents between the ages of 25-34 were five times (AOR=5.26, 95 % CI: 1.90-14.53) than those who were between the ages of 18-24 and urban respondents had about four times (AOR=4.59, 95 % CI: 2.20-9.58) odds of poor sleep quality than rural respondents. Poor sleep quality was 93% (AOR=0.07, 95 % CI: 0.03-0.15) less likely to occur in patients who were high adherent to medication compared to those who had intermediate adherence.

On the other hand, the odds of poor sleep quality for patients who had khat ever use were about two times (AOR=2.72, 95 % CI: 1.31-5.68) than those who had not use khat ever. The odds of poor sleep quality for the patients who had scored above mean for PANSS positive scale were about 14 times (AOR=14.64, 95 % CI: 6.25-34.29) and about three times (AOR=3.25, 95 % CI: 1.54-6.84) for those who had scored above mean on overall PANSS score(See table 5).

Table 5: Bivariate and multivariate logistic regression analysis of factors associated with sleep quality among patients with schizophrenia on follow up at JUMC, psychiatry clinic, 2019 (n=411)

Variables	Sleep Quality (%)		COR (95 % CI)	AOR (95% CI)	P-Value
Age category	**Good**	**Poor**			
18-24	44 (25.1)	21 (8.9)	1.00	1.00	
25-34	66 (37.7)	100(42.4)	3.18(1.73,5.82)*	5.26(1.90,14.53)**	0.001
35-44	49 (28.0)	73 (30.9	3.12(1.66,5.88)*	2.42(0.85,6.90)	0.098
45-54	13 (7.4)	24 (10.2)	3.87(1.65,9.07)*	1.95(0.46,8.22)	0.362
≥55	3 (1.7)	18 (7.6)	3.5(0.76,16.01)*	1.70(.02,131.92)	0.998
Occupation					
Gov't employee	30 (17.1)	35 (14.8)	1.00	1.00	
Self-employed	21 (12.0)	49 (20.8)	2.0(0.99,4.05)*	1.04(0.27,4.05)	0.961
Farmer	19 (10.9)	40 (16.9)	1.81(0.87,3.75)*	4.44(0.90,22.03)	0.068

House wife	34 (19.4)	41 (17.4)	0.79(0.21,2.99)	0.69(0.17,2.77)	0.728
Merchant	41 (23.4)	51 (21.6)	1.07(0.563,2.02)	1.16(0.34,4.03)	0.812
Student	25 (14.3)	9 (3.8)	0.31(0.13,0.76)*	0.71(0.08,6.57)	0.761
Others	5 (2.9)	11 (4.7)	1.2(0.35,4.18)	1.78(0.12,26.59)	0.999
Residence					
Rural	116(66.3)	92 (39.0)	1.00	1.00	
Urban	59 (33.7)	144(61.0)	3.08(2.05,4.63)*	4.59(2.20,9.58)**	<0.001
Family size					
1-5	149(85.1)	156(66.1)	0.34(0.20,0.58)*	0.18(0.07,0.47)**	<0.001
6-10	23 (13.1)	70 (29.7)	1.00	1.00	
More than 10	3 (1.7)	10 (4.2)	1.10(0.28,4.33)	0.98(0.14,6.98)	0.986
Medication adherence					
High	152(86.9)	44 (18.6)	0.04(0.02,0.07)*	0.07(0.03,0.15)**	<0.001
Intermediate	21 (12.0)	157(66.5)	1.00	1.00	
Low	2 (1.1)	35 (14.8)	2.3(0.52,10.45)*	0.83(0.13,5.49)	0.844
Tobacco ever use					
No	153(87.4)	179(75.8)	1.00	1.00	
Yes	22 (12.6)	57 (24.2)	2.22(1.29,3.79)*	0.48(0.14,1.61)	0.236
Alcohol ever use					
No	156(89.1)	196(83.1)	1.00	1.00	

Yes	19 (10.9)	40 (16.9)	1.68(0.93,3.01)*	0.99(0.17,5.64)	0.993
Khat ever use					
No	139(79.4)	132(55.9)	1.00	1.00	
Yes	36 (20.6)	104(44.1)	3.04(1.94,4.76)*	2.72(1.31,5.68)**	0.008
Physical illness					
No	164(93.7)	195(82.6)	1.00	1.00	
Yes	11 (6.3)	41 (17.4)	3.14(1.56,6.30)*	2.36(0.61,9.10)	0.214
PANSS Positive					
≤ mean	162(92.6)	87 (36.9)	1.00	1.00	
> mean	13 (7.4)	149(63.1)	21.3(11.4,39.8)*	14.64(6.25,34.29)**	<0.001
PANSS Negative					
≤ mean	145(82.9)	117(49.6)	1.00	1.00	
> mean	30 (17.1)	119(50.4)	4.9(3.1,7.9)*	0.53(0.22,1.28)	0.159
PANSS General **psychopathology**					
≤ mean	150(85.7)	106(44.9)	1.00	1.00	
> mean	25 (14.3)	130(55.1)	22.9(12.6,41.6)*	2.04(0.51,8.21)	0.318
PANSS Overall					
≤ mean	160(91.4)	75 (31.8)	1.00	1.00	
> mean	15 (8.6)	161(68.2)	7.4(4.49,12.07)*	3.25(1.54,6.84)**	0.002

**Significant association (p-value <0.05)

*Significant association (p-value <0.25)

Chapter 6: Discussion

Although sleep is the restorative physiological process and vital for life, poor sleep quality is highly prevalent in schizophrenic patients and the prevalence rate is varying widely. In this cross sectional study, more than half of the patients (57.4%) with 95%CI: [0.52,0.62] were reported poor sleep quality which is in agreement with the studies done in USA (50.8%), Brazil (51.3%) and Korea (53.3%) (23,24,26). The finding of this study was higher than studies done in China (36%), Israel (45.4%) and Turkey (35.7%) (25,27,29). The difference in these findings was accounted by different factors. In the study done in China, the sample size was larger than this study and the participants were recruited from two different settings of advanced urban which were in contrast with our study in which majority of the respondents were from rural area recruited only from one setting. In that study, patients with the duration of illness five years and above and who were stable for at least three months were included. In our study, we did not consider that criteria and patients with stable condition and at any duration of illness were included which can contribute for this difference. Other important factors that can make the difference were that they excluded patients with any physical illness any patients with past or current substance use except nicotine. The other factor that can contribute for this discrepancy was the tool/criteria they used to assess sleep quality. They had assessed sleep quality depending on the DSM-IV three standard yes/no statements of sleep disturbances lasting two or more weeks in the past 12 months in which one positive answer was considered as poor sleep quality; while we had used PSQI which assess the condition of sleep in the past one month and use five or more cut off points to say poor sleeper.

In the study done in Turkey, the sample size was much smaller than current study and they used comparative cross sectional study design. Additionally, they had used the cut off points of six on PSQI to assess poor sleep quality in which we had used cut off points of five on the same tool. Similarly, the study done in Israel was used smaller sample size than current study five years back and the study participants were selected from longitudinal study. Patients with any substance use and comorbid physical illness were excluded and some of the participants were assessed on their discharge from facility, some of them were from rehabilitation center and the others were from OPD which was in contrast with current study in which the participants were assessed with their use of any substance and comorbid physical illness from OPD only. On the

other hand, they used semi-structured questionnaires to assess past and present medical history, personal and family history and basic laboratory investigations were done which was opposite to our study in which the medical record of the patients were reviewed and subjective report of the patients were considered.

However, the finding of this study was lower than studies done in Portugal (67.3%) and Iran in which all participants reported poor sleep quality(22,28). The difference between our finding and the study done in Portugal might be accounted by that in their study the participants were recruited from seven different settings and majority of them were those with low level of educational achievement which might be accountable for more poor sleep quality. The other probable cause of this difference was that they excluded those patients whose their medication was changed in the past one month which was not the case in current study. Similarly, the study done in Iran was done 3 years back by using convenience sampling technique which can cause selection bias among participants. In that study, they were used both qualitative and quantitative methods of data collection which is not convenient with our study in which we used only quantitative method. The other cause of the discrepancy can be that they had excluded patients who had currently taking benzodiazepines which is not the case in our study. Moreover, they had controlled for negative sleep state misperception in which patient report good sleep quality despite difficulty in sleep in actigraphy records which was not considered in current study.

Generally, the discrepancy among prevalence of poor sleep quality in schizophrenic patients in these different studies might be accounted by difference in life style and availability of different medications in western countries compared to current study setting in addition to the study specific reasons mentioned above.

In our study, female participants reported longer sleep time, higher sleep efficiency and shorter sleep latency when compared with male which was consistent with the study done in USA(35). On the other hand, patients who were between the ages of 25-34 had greater odds of poor sleep quality. This finding can be accounted by use of khat in current setting which can be evidenced in current study by that, more than 70% of participants who had positive history of khat use were between the ages of 25-44. This finding lacks consistent result. This finding was inconsistent with the study done in China in which advanced age was significantly associated with poor sleep

quality(30). This finding was also in contrast with the study done in Turkey in which patients between ages of 15-21 were significantly associated with poor sleep quality(55). Urban residents had higher odds of poor sleep quality than rural residence in current which was in line with the study done in Turkey Gevher Nesibe Medical Faculty hospital in which those respondents from the center of the city had reported poor sleep quality and the study done in Ghana in which urban residents had reported shorter sleep time (< 7 hours) than rural respondents(55). In the current study, respondents who were living with 1-5 family members were 18% less likely to had poor sleep quality than those who were living with 6-10 family members. This might be evidenced by the reality that different individuals had different behaviors and time of sleep which in turn can disturb each other during sleep. This finding was consistent with the done in Ghana in which large respondents from family had reported more disturbed sleep than those who live with four or less family members and study done in USA in which participants living with 3 or more children had reported frequent insufficient and poor sleep quality(37,56).

On the other hand, patients who had high adherence to antipsychotic medications were 7% less likely to face poor sleep quality than those who were intermediate adherent in current study. This can be evidenced by that adherence to antipsychotics is effective in improving disturbing symptoms like hallucination and paranoid delusions and reduce the relapse, rehospitalization and the cost. This in turn improves out come, reduce the stress and improve sleep quality(57). This finding was consistent with the study done in Portugal and Spain in which patients with bad pharmacological adherence had reported more sleep disturbances and higher score of PSQI than those who had reported good medication adherence and inconsistent with the study done in Germany in which patients with schizophrenia who reported worse quality of sleep were more treatment adherent than those who reported a better sleep quality(5,46).

In our study, participants with Khat ever use were more likely to had poor sleep quality. This can be evidenced by the fact that khat has stimulant effects that can increase sleep latency and in turn contribute for poor quality of sleep. The finding of study done in Yale university supports this result in which both stimulants and depressants had significantly decrease sleep time and increase sleep latency and contribute to worse sleep quality(42). The Odenwald M. also reported similar finding in which khat chewing was significantly associated with poor sleeping and psychotic symptoms severity and similarly, the study done in Jimma town community also reported as khat

chewing has significance association with poor sleep quality(58,59).

The findings of current study reviled that, respondents who were scored greater than mean for PANSS positive scale and overall PANSS summation had greater odds of poor sleep quality than those who scored less than mean on the same scales. This finding can be justified by that positive psychotic symptoms like hallucinations and delusions can made the patients feel fear and fall asleep more slowly which can contribute for bad sleep in these patients. In other cases, presence of other overall psychopathology like anxiety and depressive symptoms can cause persistent nightmares which can highly affect sleep quality(4). Current finding was agrees with the study done in Iran in which positive psychotic symptoms were significantly associated with disturbed sleep, higher impairments of daily functioning and poorer sleep quality and the study done in Oxford which was reported as hallucination and paranoia had significantly associated with sleep disturbances and poor sleep quality(28,39). In contrast to this, the study done in Portugal reported that, no significant difference was observed between both patients with dominant positive and negative psychotic symptoms(40).

Strength and limitation of the study

Using the standard tools and sufficient response rate could be seen as strength of this study. However, some limitations were identified while doing current study. Firstly, the study was done by using self-reported measures to assess sleep quality of the patients and objective measures like actigraphy and polysomnography was not performed. So it was highly patients' perceptions and patients with schizophrenia might experience difficulties in clearly identifying the frequency of sleep disturbances, actual hours of sleep and overall quality of their sleep. As a result, recall bias cannot be ruled out. Moreover, as any self-report, it can be prone to both underestimations as well as over estimations of the results. Secondly, sleep disorders were not ruled out. Lastly, cross-sectional nature of study design could not allow drawing any definite conclusions concerning causal relationship between sleep quality and associated factors. Additionally, absence of comparable data in the same subjects in our country should consider because of socio-economic difference of current study setting and the previous studies. Despite these limitations, the study was able to give some insight and clue about the problem and factors associated with it which in turn could help professionals to open their eyes and give attention to the problem.

Chapter 7: Conclusion and recommendations

6.1 Conclusion

In this study, 57.4% of the participants had poor sleep quality and more than 70% of them had reported sleep disturbance in general which was considered higher. Result of this study revealed that, urban residence, five or more family size, poor medication adherence, psycho-active substances like khat, positive psychotic symptoms overall psychopathology were significantly associated with poor sleep quality.

6.2 Recommendations

In our study, majority of patients with schizophrenia on follow up had reported poor sleep quality which needs clinical attentions and concerns in different aspects. Therefore, it is recommended for JUMC administration that it is better to employe sleep laboratory in which objective sleep assessment will carried out. For professionals, it is recommended to give attention and perform through assessment of sleep at every visit to manage problem timely. It is also better to manage psychotic symptoms and overall psychopathology among schizophrenic patients to improve sleep quality in these subjects. Drug adherence could be encouraged at any visit to improve outcome and it is recommended to look for and manage co morbid substance use like khat to improve sleep quality.

Furthermore, more research is needed in the future in this area as there is no sufficient data to compare in our setting to our knowledge.

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Appendices

Annex I: Information sheet

Title of the research project: - Assessment of quality of sleep and associated factors among patients with schizophrenia attending follow-up treatment at Jimma University Medical Center (JUMC) psychiatric clinic, Jimma, south west Ethiopia, 2019.

Name of the principal investigator: - Aman Dule Gemeda

Name of the organization: - Jimma University

Name of the sponsor: - Mettu University

Introduction: - Schizophrenia is a syndrome which includes the number of disorders with different etiologies and includes patients whose symptoms presentations, response to the management, and progressions of the illness vary. It comprises different categories of symptoms which include sleep disturbances. Sleep disturbances are frequent complaint in these patients which in turn associated with different symptom worsening. So it is wise to know the quality of sleep in these patients and take proper management.

Purpose of the research project:- The purpose of this research is to assess quality of sleep and associated factors among patients with schizophrenia attending follow-up treatment at JUMC psychiatric clinic, Jimma, south west Ethiopia. The study will help to determine the level of quality of sleep and associated factors among patients with schizophrenia and to improve quality of sleep in these patients and it also will guide researchers to study further in this area. In addition, the finding of the study will help clinicians to know level of sleep quality in these patients and take wise decision.

Procedure: You are warmly invited to participate in this project. If you are willing to participate in this project, you need to understand the purpose and sign the agreement form to continue. You will be interviewed by the data collectors if you agree. You are not expected to mention your name or to give your phone number to the data collector and all information obtained from you will be kept confidentially by using coding system whereby no one will have access to your information.

Risk/Discomfort: - Participating in this research project has no health or other risk but you may feel discomfort especially on wasting your valuable time (about 30 minutes). Understanding these all, we hope you will participate in the study for the sake of the benefit of the research result.

Benefits: - Participating in this research project may not have direct benefit to you; but your participation is likely will help us to meet the research objective. Eventually, this will help us to improve quality of services provided to patients with schizophrenia in this country.
Incentives: - You will not be provided any incentives or payment to participate in this project.
Confidentiality: - All information collected for this research project will be kept confidential and information that you prove us also will be stored in a file, without your name, with a coded number that will not be revealed to anyone except the principal investigator and it will be kept locked.

Right to refuse or withdraw: - Your full right to refuse participating in this study and withdraw whenever you like is kept. You have also the right to respond to some questions and refuse to some if you did not want.

Contact person: - This research project will be reviewed and approved by the ethical committee of Jimma University. If you have any question you can contact the following individual and you can ask any thing doubt about this study.

Phone number: +251932848553   **E-mail:**amandule1993@gmail.com

Annex II: Informed consent form

Are you voluntary to participate in the study?   Yes------------ No----------------
I hereby confirm that I understand the contents and nature of the research project, and I consent to participating voluntarily in the research project. I understand that I am at autonomy and can withdraw from the study any time I want.

Signature of participant _____ Date _____

Name and signature of data collector: _____Date_____

Name and signature of supervisor: _____Date_____

Annex III: English Version Questionnaires

Questionnaires for the assessment of sleep quality and associated factors of patients with schizophrenia attending follow-up treatment at Jimma University Medical Center (JUMC) psychiatry clinic, South West Ethiopia, 2019.

INTRODUCTION: Thank you for your agreement to take part in this brief interview. The aim of the study is to assess the quality of sleep among patients with schizophrenia in our country and above all intended to know the patterns of their quality of sleep and helping in giving them the holistic services and increasing the quality of care for these people. Telling your name or giving your phone number is not expected from you and all obtained information will be kept confidential. Without permission or legal body requirement, no information is disclosed.

INSTRUCTION: The questionnaire has five parts and it will take about 40 minutes to complete the interview. Please try to respond all questions and tick under the option you choose. Thank you very much for your patience!

Part I: Socio-demographic characteristics of the patient

S/N		
1	Age	
2	Sex	a. male b.female
3	Ethnicity	a.Oromo b.Amhara c.Kaffad.Dawuro e.Gurage f.Yem g.Others (specify)
4	Religion	a.Muslim b.Orthodox c.Protestant d.catholic e.Other
5	Educational status	a.No formal education (cannot read and write) b.Primary school (1-8) c.Secondary school (9-12) d.Above secondary
6	Occupation	a.Government employee b. self employed c.Farmer d.House wife e.Merchant f.student g.others

7	Current place of residence	a.Urban b.Rural			
8	Marital status	a.Never married b.Married c.Divorced d.Widowed			
9	Family size				
10	Income (ETB)				

Part II: Pittsburgh Sleep Quality Index (PSQI)

Instructions: The following questions 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 past month.

During the past month, what time have you usually gone to bed at night? _____

During the past month, how long (in minutes) has it usually takes you to fall asleep each night? _____

During the past month, what time have you usually gotten up in the morning? _____

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 spent in bed.) _____

5. During the past month, how often have you had trouble sleeping because you…	Not during the past month	Less than once a week	Once or twice a week	Three or more times a week
a. Cannot get to sleep within 30 minutes				
b. Wake up in the middle of the night or early morning				
c. Have to get up to use the bathroom				
d. Cannot breathe comfortably				
e. Cough or snore loudly				
f. Feel too cold				

	No problem at all	Only a very slight problem	Somewhat of a problem	A very big problem
g. Feel too hot				
h. Have bad dreams				
i. Have pain				
j. Other reason(s), please describe:				
6. During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?				
7. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?				
	No problem at all	Only a very slight problem	Somewhat of a problem	A very big problem
8. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?				
	Very good	Fairly good	Fairly bad	Very bad
9. During the past month, how would you rate your sleep quality overall?				

Part III: Positive and Negative Symptom Severity Assessment Questionnaire

P		Absent (1)	Minimal (2)	Mild (3)	Moderate (4)	Moderate severe (5)	Severe (6)	Extreme (7)
P1	Delusion							

P2	Conceptual disorganization							
P3	Hallucinatory behavior							
P4	Excitement							
P5	Grandiosity							
P6	Suspiciousness/persecution							
P7	Hostility							
N1	Blunted affect							
N2	Emotional withdrawal							
N3	Poor rapport							
N4	Passive social withdrawal							
N5	Difficulty in abstract thinking							
N6	Lack of spontaneity &flow of conversation							
N7	Stereotyped thinking							
G1	Somatic concern							
G2	Anxiety							
G3	Guilt feelings							
G4	Tension							
G5	Mannerisms & posturing							
G6	Depression							

G7	Motor retardation							
G8	Uncooperativeness							
G9	Unusual thought content							
G10	Disorientation							
G11	Poor attention							
G12	Lack of judgment & insight							
G13	Disturbance of volition							
G14	Poor impulse control							
G15	Preoccupation							
G16	Active social avoidance							

Part IV: Medication Adherence Questionnaire

S/N	Questions	YES 1	NO=0
MA1	Do you ever forget to take your medicine?		
MA2	Are you careless at times about taking your medicine?		
MA3	When you feel better do you sometimes stop taking your medicine?		
MA4	Sometimes if you feel worse when you take the medicine, do you stop taking it?		

Part V: Substance use Questionnaire

INTRODUCTION: I am going to ask you some questions about your experience of using substances across your lifetime and in the past three months. Some of the substances listed may be prescribed by a doctor (like amphetamines, sedatives, pain medications). For this interview, we will not record medications that are used as prescribed by your doctor. However, if you have taken such medications for reasons other than prescription, or taken them more frequently or at higher doses than prescribed, please

let me know. While we are also interested in knowing about your use of illicit drugs, please be assured that the information will be kept confidential.

Q1 In your life, which of the following substances have you ever used? *(NON-MEDICAL USE ONLY)*	NO(0)	YES(3)
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)		
b. Alcoholic beverages (beer, wine, spirits, etc.)		
c. Cannabis (marijuana, pot, grass, hash, etc.)		
d. Cocaine (coke, crack, etc.)		
e. Khat		
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)		
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)		
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)		
i. Opioids (heroin, morphine, methadone, codeine, etc.)		
j. Other - specify:		

If "No" to all items, stop interview; if "Yes" to any of these items, ask Question 2 for each substance ever used

Q2 In the past three months, how often have you used the substances you mentioned *(FIRST, SECOND DRUG, ETC)*?	Never(0)	Once or Twice(2)	Monthly(3)	Weekly(4)	Daily /Almost Daily(6)
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)					
b. Alcoholic beverages (beer, wine, spirits, etc.)					
c. Cannabis (marijuana, pot, grass, hash, etc.)					

d. Cocaine (coke, crack, etc.)					
e. Khat					
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)					
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)					
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)					
i. Opioids (heroin, morphine, methadone, codeine, etc.)					
j. Other - specify:					

If "Never" to all items in Question 2, skip to Question 6. If any substances in Question 2 were used in the previous three months, continue with Questions 3, 4 & 5 for each substance used.

Q3 During the past three months, how often have you had a strong desire or urge to use (FIRST, SECOND DRUG, ETC)**?**	Never(0)	Once or Twice(3)	Monthly(4)	Weekly(5)	Daily /Almost Daily(6)
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)					
b. Alcoholic beverages (beer, wine, spirits, etc.)					
c. Cannabis (marijuana, pot, grass, hash, etc.)					
d. Cocaine (coke, crack, etc.)					
e. Khat					
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)					
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)					
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)					
i. Opioids (heroin, morphine, methadone, codeine, etc.)					

j. Other - specify:					

Q4 During the past three months, how often has your use of (FIRST, SECOND DRUG, ETC) led to health, social, legal or financial problems?	Never(0)	Once or Twice(4)	Monthly(5)	Weekly(6)	Daily /Almost Daily(7)
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)					
b. Alcoholic beverages (beer, wine, spirits, etc.)					
c. Cannabis (marijuana, pot, grass, hash, etc.)					
d. Cocaine (coke, crack, etc.)					
e. Khat					
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)					
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)					
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)					
i. Opioids (heroin, morphine, methadone, codeine, etc.)					
j. Other - specify:					

Q5 During the past three months, how often have you failed to do what was normally expected of you because of your use of (FIRST DRUG, SECOND DRUG, ETC)?	Never(0)	Once or Twice(5)	Monthly(6)	Weekly(7)	Daily /Almost Daily(8)
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)					

b. Alcoholic beverages (beer, wine, spirits, etc.)					
c. Cannabis (marijuana, pot, grass, hash, etc.)					
d. Cocaine (coke, crack, etc.)					
e. Khat					
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)					
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)					
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)					
i. Opioids (heroin, morphine, methadone, codeine, etc.)					
j. Other - specify:					

Q6 Has a friend or relative or anyone else ever expressed concern about your use of *(FIRST DRUG, SECOND DRUG, ETC.)?*	No, Never(0)	yes, in the past 3 months(6)	Yes, but not in the past 3 months(3)
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)			
b. Alcoholic beverages (beer, wine, spirits, etc.)			
c. Cannabis (marijuana, pot, grass, hash, etc.)			
d. Cocaine (coke, crack, etc.)			
e. Khat			
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)			
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)			

	No, Never(0)	yes, in the past 3 months(6)	Yes, but not in the past 3 months(3)
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)			
i. Opioids (heroin, morphine, methadone, codeine, etc.)			
j. Other – specify:			

Q7 Have you ever tried and failed to control, cut down or stop using (FIRST DRUG, SECOND DRUG, ETC.)?	No, Never(0)	yes, in the past 3 months(6)	Yes, but not in the past 3 months(3)
a. Tobacco products (cigarettes, chewing tobacco, cigars, etc.)			
b. Alcoholic beverages (beer, wine, spirits, etc.)			
c. Cannabis (marijuana, pot, grass, hash, etc.)			
d. Cocaine (coke, crack, etc.)			
e. Khat			
f. Inhalants (nitrous, glue, petrol, paint thinner, etc.)			
g. Sedatives or Sleeping Pills (Valium, Serepax, Rohypnol, etc.)			
h. Hallucinogens (LSD, acid, mushrooms, PCP, Special K, etc.)			
i. Opioids (heroin, morphine, methadone, codeine, etc.)			
j. Other – specify:			

ASSIST Questions 2 – 5:-   **Never:** not used in the last 3 months   **Once or twice:** 1 to 2 times in the last 3 months.   **Monthly:** 1 to 3 times in one month.   **Weekly:** 1 to 4 times per week.

Daily or almost daily: 5 to 7 days per week

Part VI: Other Clinical Related Factors

S/N	Questions	YES	NO
CF1	Is there any diagnosed physical illness? (Card review)		
CF2	If the response to CF1 is "yes" write the **diagnosis:**		
CF3	Medication/s he/she is using currently with dose(card review)		
	1._____ 2._____ 3._____		
CF4	How long he/she used 1st, 2nd, 3rd, etc. drug?	1st-	
		2nd-	
		3rd-	

Annex IV: Afan Oromo Version Questionnaires

GUCA EEYYAMUMMAA

Naga jirtuu! Maqaan koo_____jedhama. As kan dhufe hospitaala ispeeshaalaayizdii fi barsiisummaa Jimmaatti wal'aanamtoota dhukkuba sammuu isa cimaadhaaf hordoffii yaalaa irra jiran irratti odeeffannoo qo'annoof ta'u walitti qabaa ta'eeti. Unka kanarratti maqaan nama hirmaatee kan hin dhahamne yoo ta'u, odeeffannoowwan akka haala jireenya hawaasummaa fi eenyummaa dhukubsataa, wantoota sammuu namaa kakaasan (caatii, alkoolii fi sigaaraa) fayyadamuu fi dhiisuu isaa, haala cimina mallattoo dhukkubichaa fi qoricha akka aboomametti fudhachuu fi dhiisuu yemmuu ta'u, gaaffii fi deebichi daqiiqaa 20 hanga 30 fudhachuu danda'a. Waan ifa hin taane yoo jiraate sa'aatii kamittuu gaafachuu fi akkasumas yoo barbaaddan adeemsa gaafii fi deebii addaan kutuu ni dandeessu. Haa ta'u malee odeeffannoon isin nuuf kennitan qorannoo kana galmaan gahuu fi akkasumas tajaajila wal'aanamtootaaf kennamu fooyyessuu irratti gahee ol aanaa qaba.

Hirmaachuudhaaf eeyyamamoodhaa?

Eeyyeen_____Lakki_____Eeyyee yoo ta'e gaafii fi deebii eegalaa; miti yoo ta'e garuu galateeffadhaatii gaggeessaa!

Guyyaa_____Maqaa nama odeeffannoo funaanuu_____

Mallattoo_____Koodii addaa nama hirmaatee_____

Kutaa 1^{ffaa}: Gaaffilee dhimma hawaasummaa fi eenyummaa nama hirmaatuu

LAKK		
Q101	Umrii	
Q102	Saala	A.Dhiira B.Dubara
Q103	Sabummaa	A.Oromoo B.Amaara C.Kaafaa D.Daawuroo E.Guraagee F.Yem G. Kan biroo
Q104	Amantii	A.Muslima B.Ortoodoksii C.Piroteestaantii D.Kaatoolikii E. Kan biroo
Q105	Sad. Barnootaa	A.Dubbisuu fi barreessuu kan hin dandeenye B.Sad. 1^{ffaa} (1-8) C.Sad.2^{ffaa} (9-12) D.Sad.2^{ffaa} oli
Q106	Hojii	A.Hojjataa mootummaa B.hojjataa dhuunfaa c.Qotee Bulaa d.Haadha manaa e.Daldalaa f.barataa g.Kan biraa
Q107	Bakka jireenyaa isa ammaa	A.Baadiyyaa B. Magaalaa
Q108	Haala fuudhaa fi heerumaa	A.Kan hin fuudhin/heerumin B.Kan fuudhe/heerumte C.Kan hike/hiikte d.Kan irraa duute/du'e
Q109	Baay'inna maatii	
Q110	Galii ji'aa (Birriidhaan)	

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Kutaaa 2^{ffaa} : Gaaffilee qulqullummaa hirriba dhukkubsataatiin wal qabatan:-Gaaffilleen armaan gadiitiin haalli hirriba keetii guyyaa fi halkanii ji'a darbe keessa yeroo baay'ee akkam akka ture nutti himi.

Q201. Ji'a darbe keessatti yeroo baay'ee gara siree hirribaaf kan deemtu sa'atii meeqatti?	
Q202. Siree irra erga baatee booda daaqiiqaawwan meeqa keessatti hirribni si fudhata?	
Q203. Yeroo baay'ee hirribaa kan dammaqxu sa'atii meeqatti?	
Q204. Halkan tokkotti hirriba sirrii kan argattu sa'atii meeqaaf? (sa'atii hirriba sirrii itti argatte qofa)	

Q205. Ji'a darbe keessatti sababaawwan armaan gadiitiif yeroo meeqaaf hirribni si rakkise?	Ji'a darbe na hin mudanne(0)	Torbanitti yeroo 1gadi(1)	Torbaanitti yeroo 1ykn 2(2)	Torbaanitti yeroo 3 fi isaa oli(3)
A.Daqiiqaa 30 keessatti hirribni nanqabu ture.				
B.Halkaniin ykn osoo hin bari'in hirribaa dammaqa ture.				
C.Mana qaama dhiqannaa deemuuf dammaqa ture.				
D.Salphatti hafuura baafachuu hin danda'u ture.				
E.Na qufaasisa/ni huursa ture.				
F.Baay'ee natti qorra ture.				

G.Baay'ee natti hoo'a ture.				
H.Abjuu gadhee arga ture.				
I.Sababni biraa yoo jiraate ibsaa				
Q206.Ji'a darbe keessatti qoricha hirribaaf si gargaaru yeroo meeqa fayyadamte?				
Q207.Ji'a darbe keessatti osoo konkolaachistu, osoo nyaattu ykn osoo sochiilee hawaasummaa gootu dammaqinnaan akka hin turre yeroo meeqa rakkatte?				
	Rakkoon hin turre(0)	Rakkoo baay'ee xiqqoo(1)	Rakkoo muraasa(2)	Rakkoo baay'ee guddaa(3)
Q208.Ji'a darbe keessatti dammaqinnaan dalagaa dalaguuf yeroo meeqa rakkatte?				
	Baay'ee gaarii(0)	Gaariidha jechuu ni danda'a(1)	Gadheedha jechuu ni danda'a(2)	Baay'ee gadhee(3)
Q209.Ji'a darbe keessatti haala hirriba keetii walumaa galatti akkamitti ibsita?				

Kutaa 3^{ffaa}: Gaaffilee waa'ee sadarkaa ciminaa amalootadhukkubasammuupoozetivii fi negatiiviiqoratan (Positive and Negative Symptom Severity Assessment Questionnaire)

		Hin jiru-1	Baay'ee xiqqoo-2	Xiqqoo-3	Giddu-galeessa-4	Giddu-galeessa cimaa-5	Cimaa-6	Garmale cimaa-7
P301	Amantaa addaa dogoggoraa(Delusions)							
P302	Hubannaa walxaxaa (Conceptual disorganization)							
P303	Wanta nu bira hin jirre arguu(Hallucination)							
P304	Gammachuu qabaachuu							
P305	Sababii gahaa osoo hin qabaatin ol of qabuu (grandiosity)							
P306	Sababii tokko malee namootni na miidhuuf jedhanii shakkuu							
P307	Amala diinummaa (hostility)							
N301	Fuula miirri isaa gad-bu'e (blunt affect)							
N302	Ta'iwwan jireenyaaf miira dhabuu							

N303	Walitti dhufeenya gadi bu'aa						
N304	Hirmaannaa hawaasummaaf fedhii fi kaka'umsa dhabuu						
N305	Haala garagaraan (gad-fageessanii) yaaduu dadhabuu						
N306	Dubbii qindeessanii dubbachuu dadhabuu						
N307	Yaada faayidaa hin qabneen deddeebisanii qabamuu						
G301	Qaamaan kan walqabate rakkoo ilaalchaa						
G302	Dhiphachuu						
G303	Ballessaan kan kooti jedhanii of ceepha'uu						
G304	Sodaachuu						
G305	Sochii qaamaa kan uumamaan ta'uu hin dandeenye						
G306	Gadduu/gammachuu						

	dhabuu/							
G307	Hir'achuu sochii qaamaa							
G308	Eeyyamamaa ta'uu dhiisuu/beekaa diduu							
G309	Yaada qabiyyeen isaa duraan hin baratamne							
G310	Yeroo, bakkaa fi nama adda baasuu dadhabuu							
G311	Xiyyeeffannoo dhabuu							
G312	Murtee sirrii kennuu dadhabuu fi dhukkuba qabaachuu beekuu dadhabuu							
G313	Rakkoo kaka'umsaa qabaachuu fi yaada, amala, sochii fi dubbii ofii to'achuu dadhabuu							
G314	Fedhii fi raawwii ofii to'achuu dadhabuu							
G315	Yaada tokkoon dursanii qabamuu							
G316	Sababii shakkii ykn sodaa irraan kan ka'e dhimmoota							

hawasummaarraa baqachuu							

Kutaa 4^{ffaa}-Gaaffilee Haala fudhannaa qoricha dhukkubsataa

Lakk.	Gaaffilee	Eeyyee(1)	Lakki(0)
Q401	Qorich keessan fudhachuu dagattanii beektuu?		
Q402	Yeroo qorichi itti fudhatamutti akka feetee taatanii beektuu?		
Q403	Yeroo miirri gaariin isinitti dhagahamu qoricha fudhachuu ni dhiistuu?		
Q404	Yeroo tokko tokko yemmuu qoricha fudhattanitti miirri badaan yoo isinitti dhagahame qoricha fudhachuu ni dhaabduu?		

Kutaa 5^{ffaa} Gaaffilee itti fayyadama wantoota araada nama qabsiisaniin wal qabatan

Q501. Umrii keessan kessatti, wantoota araada nama qabsiisan kan kanatti aanan fayyadamtanii beektuu?	Lakki(0)	Eeyyee(3)
A.Oomisha tamboo (sigaaraa, tamboo alanfatamuu,.fi knf)		
B.Dhugaatii alkoolii (biiraa, wayinii, fi knf.)		
C.Caatii		
D.Kiniina hirribaa (diyaazepaam fi knf.)		
E.Kaanaabiis (maariwaana,hashishii fi knf.)		
F. Kan biroo		
Yoo deebiin kee hundumaafuu lakkii ta'e, gaaffii fi deebii dhaabi; yoo eeyyeen ta'e immoo gara gaaffii lammaffatti darbi.		

Q502. Ji'oota sadan darban keessatti, wantoota armaan gadii kanneen irra deddeebii hangamiin fayyadamtan?	Gonkumaa (0)	Yeroo 1-2 (2)	Ji'atti (3)	Torbaa nitti (4)	Guyyaa guyyatti (6)
A.Oomisha tamboo (sigaaraa, tamboo alanfatamuu,.fi knf)					
B.Dhugaatii alkoolii (biiraa, wayinii, fi knf.)					
C.Caatii					
D.Kiniina hirribaa (diyaazepaam fi knf.)					
E.Kaanaabiis (maariwaana,hashishii fi knf.)					
F. Kan biroo					

Deebiin gaafii 2ffaa hundaafuu yoo gonkumaa ta'e, gara gaaffii lakk.6tti darbi. Isaan tarreefaman keessaa ji'oota sadan darbanitti kan fayyadaman yoo jiraate gara gaaffii lakk 3, 4, fi 5 tti darbi.

Q503. Ji'oota sadan darban keessatti wantoota armaan gadii fayyadamuuf fedhiin hangam jira ture?	Gonkumaa (0)	Yeroo 1-2 (3)	Ji'atti (4)	Torbaa nitti (5)	Guyyaa guyyatti (6)
A.Oomisha tamboo (sigaaraa, tamboo alanfatamuu,.fi knf)					
B.Dhugaatii alkoolii (biiraa, wayinii, fi knf.)					
C.Caatii					
D.Kiniina hirribaa (diyaazepaam fi knf.)					
E.Kaanaabiis (maariwaana,hashishii fi knf.)					

F. Kan biroo					

Q504. Ji'oota sadan darban keessatti sababaa wantoota armaan gadii fayyadamuu kee yeroo hangam rakkoo fayyaa,hawaasummaa,seeraa ykn maallaqaaf si saaxile?	Gonkumaa (0)	Yeroo 1-2 (4)	Ji'atti (5)	Torbaa nitti (6)	Guyyaa guyyatti (7)
A.Oomisha tamboo (sigaaraa, tamboo alanfatamuu,.fi knf)					
B.Dhugaatii alkoolii (biiraa, wayinii, fi knf.)					
C.Caatii					
D.Kiniina hirribaa (diyaazepaam fi knf.)					
E.Kaanaabiis (maariwaana,hashishii fi knf.)					
F. Kan biroo					
Q505. Ji'oota sadan darban keessatti sababaa wantoota armaan gadii fayyadamuu keetiin yeroo hangam hojjii sirraa eeggammuu hojjachuu dadhabde?	Gonkumaa (0)	Yeroo 1-2 (5)	Ji'atti (6)	Torbaa nitti (7)	Guyyaa guyyatti (8)
A.Oomisha tamboo (sigaaraa, tamboo alanfatamuu,.fi knf)					
B.Dhugaatii alkoolii (biiraa, wayinii, fi knf.)					
C.Caatii					
D.Kiniina hirribaa (diyaazepaam fi knf.)					
E.Kaanaabiis (maariwaana,hashishii fi knf.)					
F. Kan biroo					

Q506. Hiriyyonni, maatiin fi firrikee waa'ee fayyadama araada kee irraatti dhiphatanii beekuu?	Gonkumaa (0)	Eeyyee ji'oota sadan darban keessatti(6)	Eeyyeen;garuu ji'oota sadan darbanitti miti(3)
A.Oomisha tamboo (sigaaraa, tamboo alanfatamuu,.fi knf)			
B.Dhugaatii alkoolii (biiraa, wayinii, fi knf.)			
C.Caatii			
D.Kiniina hirribaa (diyaazepaam fi knf.)			
E.Kaanaabiis (maariwaana,hashishii fi knf.)			
F. Kan biroo			
Q507. Araadaa fayyadamtu kana dhaabuuf ykn too'achuuf yaaltee osoo siif hin milkaa'in hafee beekaa?	Gonkumaa (0)	Eeyyee ji'oota sadan darban keessatti(6)	Eeyyeen;garuu ji'oota sadan darbanitti miti(3)
A.Oomisha tamboo (sigaaraa, tamboo alanfatamuu,.fi knf)			
B.Dhugaatii alkoolii (biiraa, wayinii, fi knf.)			
C.Caatii			
D.Kiniina hirribaa (diyaazepaam fi knf.)			
E.Kaanaabiis (maariwaana,hashishii fi knf.)			
F. Kan biroo			

Ibsa Gaaffilee 2-5 tiif

Gonkumaa:ji'oota 3 darban keessatti hin fayyadamne   **Yeroo 1-2:** ji'oota 3 darban keessatti yeroo 1-2

Ji'atti: ji'atti yeroo 1-3   **Torbaanitti:** Torbaanitti yeroo 1-4   **Guyyaa guyyatti:** torbaanitti guyyaa 5-7

Kutaa 6^{ffaa}: Gaaffilee gara biroo dhukkubaan wal qabatan

S/N	Gaaffilee		Eeyyee-1	Lakki(0)
Q601	Dhukkuba qaamaa kan mirkanaa'e (kaardii irraa ilaali)			
Q602	Gaaffii Q601f eeyyee yoo ta'e, maqaa dhukkubichaa barreessi			
Q603	Qoricha/qorichoota amma fudhachaa jiru (kaardii irraa ilaali)			
	1._____ 2._____ 3._____			
Q604	Qoricha kana yeroo hangamiif fudhateera?	1^{ffaa}	2^{ffaa}	3^{ffaa}

Waan hirmaattaniif guddaa galatoomaa!!

Annex V: Amharic version Questionnaires

የፍቃደኝነት ማረጋገጫ ;- ጤና ይስጥልኝ, _____ እባላለሁ: እዚህ የመጣሁት በጅማ ዩኒቨርሲቲ ስፔሻላይዝድ ና ማስተማሪያ ሆስፒታል በአአምሮ መመሰቃቀል ህመም ህክምና ክትትል ላይ ያሉት ህሙማን ያላቸውን የእንቅልፍ ጥራት መጠን እና የእንቅልፍ ጥራት ላይ ተፅዕኖ የሚያመጡ ነገሮችን ለማጥናት መረጃ ሰብሳቢ ሆኜ ሲሆን፤ ከ20 እስከ 30 ደቂቃ ሊፈጀዉ ይችላል። እርስዎ በማንኛዉም ሰአት ያልገባዎት ነገር መጠየቅና ቃለመጠይቁን ሂደት ማቋረጥ ይችላሉ። ነገርግን የእርስዎ ተሳትፎ ለዚህ ጥናት ከፍተኛ ሚና አለዉ።

ለመሳተፍ ፍቃደኛ ነዎት? ሀ. አዎ -------------- ለ. አይደለሁም-------------

መልሱ አዎ ከሆነ መጠይቁን ይጀምሩ። አይደለሁም ከሆነ ግን አመስግነው ይሰናበቱ።

ቀን-----------------------የመረጃ ሰብሰቢ ስም------------------------------------ፊርማ----------የጥናቱ ተሳታፊ መለያ ቁጥር---------------------

ክፍል 1: የታካሚውን ማህበረ-ስነ-ሁኔታ ባህሪያት

LAKK		
Q101	ዕድሜ	
Q102	ፆታ	ሀ. ወንድ ለ. ሴት
Q103	ብሄር	ሀ. ኦሮሞ ለ. አማራ ሐ. ካፉ መ. ዳዉሮ ሰ. ጉራጌ ረ. የም ሠ. ሌላ (ይግለጹ)
Q104	ሀይማኖት	ሀ. ሙስሊም ለ. ኦርቶዶክስ ሐ. ፕሮቴስታንት መ. ካቶሊክ ሰ. ሌላ
Q105	የትምህርት ደረጃ	ሀ. ማንበብና መጻፍ አይችሉም ለ. የመጀመሪያ ደረጃ (1-8) ሐ. ሁለተኛ ደረጃ (9-12) መ. ከሁለተኛ ደረጃ በላይ
Q106	ስራ	ሀ. የመንግስት ሰራተኛ ለ. የግል ሰራተኛ ሐ. አርሶ አደር መ. የቤት እማቤት ሰ. ነጋዴ ረ. ተማሪ ሠ. ሌላ
Q107	ወቅታዊ የመኖሪያ ቦታ	ሀ. ገጠር ለ. ከተማ
Q108	የጋብቻ ሁኔታ	ሀ. ያላገባ/ች ለ. ያገባ/ች ሐ. የፈታ/ች መ. የሞተችበት/ባት
Q109	የቤተሰብ ብዛት	
Q110	ወርሃዊ ገቢ (በብር)	

ክፍል 2. የእንቅልፍ ጥራት መለከያ መጠይቅ

መመሪያ፤ በሚከተሉት ጥያቄዎች ያለፈው ወር ቀን ና ለሊት አብዛኛዉ ጊዜ የእንቅልፍ ልማድዎን አስተዉሰዉ ይናገሩ፡

Q201. ያለፈው ወር ውስጥ አብዛኛው ግዜ ወደመኝታ የምሄዱት ስንት ሰዓት ላይ ነው?	
Q202. አልጋ ላይ ከወጡ በኃላ በምን ያህል ደቂቃዎች ውስጥ እንቅልፍዎ ይመጣሌ?	
Q203. አብዛኛው ግዜ ከእንቅልፍዎት የሚነቁት ስንት ሰዓት ነው?	

Q204. በአንድ ለሊት ምን ያህል ሰዓታት ትከክለኛ እንቅልፍ ያገኛሉ? (ትክክለኛ እቅንቅልፍ የተኙበት ሰአት መጠን)				
Q205.ያለፈው ወር ውስጥ በሚከተሉት ምክንያት ምን ያህል ግዜ የእንቅልፍ ችግር አጋጥሞዎታል?	ባለፈው ወር አላጋጠመኝም-0	በሳምንት ከአንድ ጊዜ ያነስ (1)	በሳምንት አንዴ ወይም ሁለቴ (2)	በሳምንት ሶስቴ ና ከዛ በላይ (3)
ሀ.በ 30 ደቂቃ ውስጥ እንቅልፍ አይወስደኝም ነበረ				
ለ. ለሊት ወይም ገና ሳይነጋ ከእንቅልፍ እነቃ ነበረ				
ሐ. መታጠብያ ቤት ለመሄድ እነቃ ነበረ				
መ. በቀላሉ መተንፈስ አልችልም ነበረ				
ሠ. ያስለኝ ነበረ/ የማንኮላፋት ችግር ነበረብኝ				
ረ. በከፍተኛ ደረጃ ይበርደኝ ነበረ				
ሰ. በከፍተኛ ደረጃ ይሞቀኝ ነበረ				
ሸ. መጥፎ ህልም ይታየኝ ነበረ				
ቀ. ሕመም ይሰማኝ ነበረ				
በ.ሌላ ምክንያት ካለ ያብራሩ				
Q206. ባለፈው ወር ውስጥ ለእንቅልፍ ሊረዳዎት የሚችል መድሃኒት ምን ያህል ግዜ ተጠቅመዋል?				
Q207. ባለፈው ወር ውስጥ ሲነዱ ፤ምግብ ሲበሉ ወይም በማህበራዊ እንቅስቃሴ ሲሳተፉ				

በንቃት እንዳይቆዩ ምን ያህል ጊዜ ተቸግረዋል?				
	ቸግር የለም (0)	በጣም ትንሽ የሆነ ቸግር ብቻ (1)	የተወሰነ ቸግር(2)	በጣም ትልቅ ቸግር(3)
Q208. ባለፈው ወር ውስጥ ነገሮች በትጋት ለማከናወን ምን ያህል ያስቸገርዎት ነበረ?				
	በጣም ጥሩ (0)	በአንዛራዊ ጥሩ (1)	በአንዛራዊ መጥፎ (2)	በጣም መጥፎ (3)
Q209. ባለፈው ወር እንቅልፍዎን በአጠቃላይ እንዴት ይገመግሙታል?				

ክፍል 3: ጠንካራ አዎንታዊ እና አሉታዊ ምልከቶችን መገምገሚያ ጥያቄዎች

		የለም-1	ትንሽ(2)	መለስተኛ(3)	መካከለኛ (4)	መካከለኛ ጠንከር ያለ(5)	ከባድ (6)	እጅግ በጣም ከባድ (7)
P301	የተሳሳቱ ልዩ እምነቶች							
P302	የግንዛቤ መዛባት ወይም ቸግር							
P303	የሌለን ነገር እንዳለ አድርጎ መረዳት							
P304	የእንቅስቃሴ መጨመር							
P305	ያለበቂ ምክንያት እራስን ከፍ ከፍ ማድረግ							
P306	ያለ ምንም ምክንያት ሰዎች ያጠቁኛል የሚል እምነት							

P307	ጠላትነት							
N301	ስሜቱ የቀነሰ የፊት ገጽታ							
N302	ለህይዋት ክስተቶች ፍላጎት ወይም ስሜት ማጣት							
N303	ደካማ የሆነ መስተጋብር							
N304	ማህበራዊ ተሳትፎ ለማድረግ የፍላጎት መቀነስ							
N305	ነገሮችን በጥልቀት የማሰብ ችግር							
N306	የንግግር ብዛትና ፍልሰት ችግር							
N307	ዓላማ የሌለው ተደጋጋሚ ሀሳብ							
G301	አካልን በተመለከተ የሥነ-ልቦና ችግር							
G302	ጭንቀት							
G303	የጥፋተኝነት ስሜት							
G304	ውጥረት ወይም ፍርሀት							
G305	ዓላማ የሌለው ተደጋጋሚ ድርጊት እና ከተፈጥሮዊ የሰውነት አቀማመጥ ውጪ ሰውነትን ማድረግ							
G306	ድባቴ							
G307	የእንቅስቃሴ መቀነስ/ዝግየት							
G308	አለመተባበር ወይም ፍቃደኛ							

	አለመሆን							
G309	ያልተለመደ የሀሳብ ይዘት							
G310	ቦታ፣ሰዓት እና ሰውን ለመለየት መቸገር							
G311	ትኩረት ማጣት							
G312	የማመዛዘን ችግርና ስለ ህመም ማወቅና መረዳት አለመቻል							
G313	የተነሳሽነት ችግር							
G314	ድርጊትና ስሜትን አለመቆጣጠር							
G315	ቀድሞበአንድ ነገር ላይ መወሰን							
G316	በጥርጣሬ እና በፍርሃት ምክንያት ከመህበራዊ ጉዳዮች ራስን ማግለል							

ክፍል 4: የመድሃኒት መዉሰጃ የማረጋገጫ መጠይቅ

ተ/ቁ	ጥያቄዎች	አዎን (1)	አይ (0)
Q401	መድሃኒትዎን ለመውሰድ ረስተዉ ያዉቃሉ?		
Q402	የመድሃኒት መዉሰጃ ሰአት ላይ ግድ የለሽ ይሆናሉ?		
Q403	ጥሩ ስሜት ሲሰማዎ አንዳንድ ጊዜ መድሃኒቱን መውሰድ ያቆማሉ?		
Q404	አንዳንድ ጊዜ መድሃኒቱን ሲወስዱ መጥፎ ስሜት ካጋጠመዎት መዉሰዱን ያቆማሉ?		

ክፍል 5፡ የአደንዛዥ እጽ መጠየቂያ ቅጽ

Q501. በህይወትዎ ውስጥ ከሚከተሉት ንጥረ ነገሮች ውስጥ የትኛው ተጠቅሞ ያዉቃሉ? (ለህክምና ያልሆነ ብቻ)	አይ (0)	አዎ (3)
ሀ. የትምባሆ ምርቶች (ሲጋራዎች፣ ትንባሆ ማንኪ፣ ወዘተ)		
ለ. የአልኮል መጠጦች (ቢራ፣ ወይን፣ መናፍስቶች ወዘተ)		
ሐ. ጫት		
መ. የእንቅልፍ መድሃኒቶች		
ሠ. ካኒቢስ (ማሪዋና፣ ማሰሮ፣ ሃር፣ ሃሽ፣ ወዘተ)		
ረ. ሌላ - ይጥቀሱ		

ለሁሉም 'አይ' ከሆነ ቃለ መጠይቁን ያቁሙ. ከነዚህ ንጥሎች ውስጥ 'አዎ' ከሆነ፣ ለተጠቀሰዉ ለያንዳንዱ ንጥረ ነገር ጥያቄ 2 ን ይጠይቁ

Q502. ባለፉት ሶስት ወራት ውስጥ የጠቀሱቸውን የተለያዩ ንጥረ ነገሮች ምን ያህል ጊዜ ተጠቅመዋል?	በጭራሽ (0)	አንድ /ሁለት ጊዜ (2)	ወርሃዊ (3)	ሳምንታዊ (4)	ዕለታዊ/በየቀኑ (6)
ሀ. የትምባሆ ምርቶች (ሲጋራዎች፣ ትንባሆ ማንኪ፣ ወዘተ)					
ለ. የአልኮል መጠጦች (ቢራ፣ ወይን፣ መናፍስቶች ወዘተ)					
ሐ. ጫት					
መ. የእንቅልፍ መድሃኒቶች					
ሠ. ካኒቢስ (ማሪዋና፣ ማሰሮ፣ ሃር፣ ሃሽ፣ ወዘተ)					
ረ. ሌላ - ይጥቀሱ					
Q503. ባለፉት ሶስት ወራት ለተጠቀሰዉ ንጥረ ነገር ምን	በጭራሽ	አንድ /ሁለት	ወርሃዊ	ሳምንታዊ	ዕለታዊ/

ያህል ጊዜ የመልካም ምኞት ወይም የመጠቀም ፍላጎት አለዎት?	(0)	ጊዜ (3)	(4)	(5)	መጨረሻው በየቀኑ (6)
ሀ. የትምባሆ ምርቶች (ሲጋራዎች, ትንባሆ ማኘክ, ወዘተ)					
ለ. የአልኮል መጠጦች (ቢራ, ወይን, መናፍስቶች ወዘተ)					
ሐ. ጫት					
መ. የእንቅልፍ መድሃኒቶች					
ሠ. ካነቢስ (ማሪዋና, ማሰሮ, ሃር, ሃሽ, ወዘተ)					
ረ. ሌላ - ይጥቀሱ					
Q504. ባለፉት ሶስት ወራት ውስጥ ንጥረ ነገሩን መጠቀምዎ ምን ያህል ለጤና, ማህበራዊ, ህጋዊ ወይም የፋይናንስ ችግሮች መንስኤ ሆኖዋል?	በጭራሽ (0)	አንድ /ሁለት ጊዜ (4)	ወርሃዊ (5)	ሳምንታዊ (6)	ዕለታዊ/ መጨረሻው በየቀኑ (7)
ሀ. የትምባሆ ምርቶች (ሲጋራዎች, ትንባሆ ማኘክ, ወዘተ)					
ለ. የአልኮል መጠጦች (ቢራ, ወይን, መናፍስቶች ወዘተ)					
ሐ. ጫት					
መ. የእንቅልፍ መድሃኒቶች					
ሠ. ካነቢስ (ማሪዋና, ማሰሮ, ሃር, ሃሽ, ወዘተ)					
ረ. ሌላ - ይጥቀሱ					
Q505. ባለፉት ሶስት ወራት ውስጥ, ንጥረ ነገሩን በመጠቀምዎ ምክንያት ምን ያህል ጊዜ ከርሶ ምጠበቀዎን ስራ ሳይሰሩ ቀርተዋል?	በጭራሽ (0)	አንድ /ሁለት ጊዜ (5)	ወርሃዊ (6)	ሳምንታዊ (7)	ዕለታዊ/ መጨረሻው በየቀኑ (8)
ሀ. የትምባሆ ምርቶች (ሲጋራዎች, ትንባሆ ማኘክ, ወዘተ)					

ለ. የአልኮል መጠጦች (ቢራ, ወይን, መናፍስቶች ወዘተ)			
ሐ. ጫት			
መ. የእንቅልፍ መድሃኒቶች			
ሠ. ካኒቢስ (ማሪዋና, ማሰሮ, ሃር, ሃሽ, ወዘተ)			
ረ. ሌላ - ይጥቀሱ			
Q506. ጓደኛ ወይም ዘመድ ወይም ሌላ ማንኛውም ሰው ስለ አጠቃቀምዎ ተጨናንቀውፎ ያዉቃሉ	አይ ፈጽሞ (0)	አዎ ባለፉት 3 ወራት (6)	አዎ ግን ባለፉት 3 ወራት ውስጥ አይደለም (3)
ሀ. የትምባሆ ምርቶች (ሲጋራዎች, ትንባሆ ማንካ, ወዘተ)			
ለ. የአልኮል መጠጦች (ቢራ, ወይን, መናፍስቶች ወዘተ)			
ሐ. ጫት			
መ. የእንቅልፍ መድሃኒቶች			
ሠ. ካኒቢስ (ማሪዋና, ማሰሮ, ሃር, ሃሽ, ወዘተ)			
ረ. ሌላ - ይጥቀሱ			
Q507. ለመቆጣጠር, ለመቀረጥ ወይም ለመቆም ሞክረዉ ሳይሳካለት ቀርተዉ ያዉቃል?	ፈጽሞ (0)	አዎ ባለፉት 3 ወራት (6)	አዎ ግን ባለፉት 3 ወራት ውስጥ አይደለም (3)
ሀ. የትምባሆ ምርቶች (ሲጋራዎች, ትንባሆ ማንካ, ወዘተ)			
ለ. የአልኮል መጠጦች (ቢራ, ወይን, መናፍስቶች ወዘተ)			
ሐ. ጫት			
መ. የእንቅልፍ መድሃኒቶች			

ሠ. ካኒቢስ (ማሪዋና, ማሰሮ, ሣር, ሃሽ, ወዘተ)			
ረ. ሌላ - ይጥቀሱ			

ጥያቄ ቁጥር 2-5

ፈጽሞ: ባለፉት 3 ወራት ውስጥ አልተጠቀሙም   አንዴ/ሁለት ጊዜ: ባለፉት 3 ወራት ውስጥ ከ 1 እስከ 2 ጊዜ. ወርሃዊ: 1 ወር ውስጥ ከ 1 እስከ 3 ጊዜ.   ሳምንታዊ: በሳምንት ከ 1 እስከ 4 ጊዜ.   በየቀኑ ወይም በየቀኑ ማለት ይቻላል: በሳምንት ከ 5 እስከ 7 ቀናት

ክፍል 6: ሌሎች ክሊኒካል ተዛማጅ ሁኔታዎች

S/N	ጥያቄዎች	አዎ	አይ
Q601	የተረጋገጠ የአካል ሕመም አለ? (የካርድ ግምገማ)		
Q602	ለ Q601 የተሰጠው ምላሽ 'አዎ' ከሆነ የምርመራውን ውጤት ይጻፉ:		
Q603	መድኃኒት / በአሁኑ ወቅት የሚወስድ (የካርድ ምርመራ)		
	1._____ 2._____ 3._____		
Q604	መድሃኒቱን ለምን ያህል ጊዜ ተጠቅሞዋል.	1 ኛ 2ኛ 3ኛ		

ለማይተካ እና ዉድ ጊዜዎት አመሰግናለሁ