

Research Article

Sleep quality and associated factors among patients with chronic illness at South Wollo Zone Public Hospitals, Northeast Ethiopia

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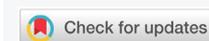
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Keywords: Sleep quality; Chronic illness; Ethiopia

Abbreviations and Acronyms: AOR: Adjusted Odds Ratio; BMI: Body Mass Index; COD: Crude Odds Ratio; ETB: Ethiopian Birr; HEPA: Health Enhancing Physical Activity; IPAQ -7: International Physical Activity Questionnaire Item 7; MET: Metabolic Equivalent; PSQI: Pittsburgh Sleep Quality Index; SPSS: Statistical Product and Service Solution



Abstract

Background: Pathological and nighttime sleep deprivations have substantial adverse effects on regulation of weight, sugar and blood pressure because of endothelial dysfunction, sympathetic nervous system stimulation, regulation and activation of systemic inflammation. Thus, this study was aimed to assess quality of sleep among patients with chronic illness and its associated factors at South Wollo Zone Public Hospitals, Northeast Ethiopia.

Methods and Materials: The study was conducted at South Wollo Zone Public Hospitals, Northeast Ethiopia from February 15 2019 till April 15 2019. Institutional based cross sectional study design was employed. All patients with chronic illness who are on follow up in South Wollo Zone Public Hospitals were sources of population. Sample size was calculated by using EPI info version 7 and the total sample size was 344. The study employed stratified random sampling technique and study participants were selected by systematic sampling. After taking ethical approval from College of Medicine and Health Sciences Ethical Approval Committee, permission from selected Hospitals and informed verbal consent from patients, the data were collected by a tool which has 3 parts: Sociodemographic data, Pittsburgh Sleep Quality Index and factors affecting sleep quality. Data were entered in to Epi data version 4.1 and exported to Statistical Package for Service Product 25 for analysis. Different data presentation tools and binary logistic regression were enrolled by considering 95% confidence level and p value of 0.05.

Result: Among the total study participants, near to one third (31.7%) of them got sleep after 30 minutes. More than one fourth of them slept for less than 7 hours. Less than half of the study participants had habitual sleep efficiency of more than 85% however 296(86%) of them did not face day time dysfunction

Conclusion and recommendations: more than one third of patients with chronic illness had poor sleep quality. One third of study participants had sleep duration of less than the recommendations(less than 7 hours). Age, educational status, residence, and perception of prognosis of disease were factors that have associations with poor sleep quality among patients with chronic illness. Health care providers who are doing in chronic illness follow up clinic should be initiated to assess and screen those patients with poor sleep quality.

Background

Sleep is a universal need of all higher life forms including humans [1]. Adequate quality and duration of sleep like diet and exercise positively influences many aspects of health including physical, cognitive, and emotional health [2]. Excess or restricted sleep duration from the normal sleep duration may produce or result from serious problems that affect health and well-being [3].

As to the 2015 National Sleep Foundation Guideline, the recommended sleep duration is 7 to 9 hours for young adults and adults, and 7-8 hours of sleep is for older adults [3]. Despite this fact, the public attention to sleep quality is low [4]. The quality and duration of sleep are disturbed by crowded urbanization, long work schedule, night and shift work, spending more time in watching television and using internet and disease conditions [1].



Although poor sleep quality contribute to poor health and diminished wellbeing, it is given little attention by public [4,5]. Chronic sleep deprivation is estimated to affect between 7.5% - 20% of the general population [6] however patients with chronic illness do not bring sleep issues while they are coming to health institution for follow up [7]. As a result of this, poor quality of sleep among patients with chronic illness is often unrecognized and untreated [8,9].

Poor sleep quality results in different physiological disturbances such as hormonal fluctuations, immunologic dysfunction, and metabolic alterations [10]. Different articles across the world showed that a large number of patients with chronic illnesses such as diabetes, hypertension and heart failure have poor sleep quality [11-13]. Pathological and night time sleep deprivations have substantial adverse effects on regulation of weight, sugar and blood pressure because of endothelial dysfunction, sympathetic nervous system stimulation, regulation and activation of systemic inflammation [2,3] which increases further complication of chronic illnesses [14,15]. Studies show that poor sleep quality impaired exercise capacity of patients; results adverse prognosis of the disease [14]; impaired functional outcomes [16,17], daily functions [18], self-care behavior of patients; and increases the burden of the disease [8]. All these increases the health care expenditure of one's country; and leads to poor control of disease, and poor quality of life [7,19].

Poor sleep quality has not only being associated with various diseases but also leads to occupational accidents [7], poor performance, higher health care utilization, car crash injuries[1], falls especially in older adults [20], suicidal ideation [21].

Poor quality of sleep can have a negative impact on psychological health, physical functioning and quality of life [22] among patients with chronic illness. Studies shows that poor sleep quality impaired exercise capacity of patients, results adverse prognosis disease [14], impaired functional outcomes [16, 17], daily functions [18], self-care behavior of the patients, and increases the burden of the disease [8]. These increases health expenditure of one's country; and leads to poor control of disease, and poor quality of life [7,19]. Thus, identifying and treating co existing sleep problems among patients with chronic illness will improve the treatment outcome of chronic illnesses [23].

Poor sleep quality is a neglected public problem in Ethiopia that lowers the functional outcome of individuals especially individuals with chronic illness. It is unrecognized and under attention factor that affects the self care behavior, daily function of patients and increases the adverse prognosis of chronic illnesses such as hypertension, heart failure and diabetes. Despite this fact, there is no adequate study which assessed the quality of sleep among patients with chronic

illnesses such as in Ethiopia. Thus, this study assessed sleep quality and its associated factors among patients with chronic illnesses.

Methods and materials

Study area and period

The study was conducted at South Wollo Zone Public Hospitals which are found at Northeast direction of Ethiopia from January 1st 2019 to February 30 2019. There are 10 district hospitals and one Comprehensive Specialized Hospital (Dessie Comprehensive Specialized Hospital) in South Wollo Zone. District hospitals include Boru Meda Hospital, Hidar 11 Hospital, Mekane Selam Hospital, Tenta Hospital, Wogdi Hospital, Saint Hospital, Mekedela Hospital, Delanta Hospital, Jamma Hospital, and Woreilu Hospital. The population is now estimated to reach more than three million. The largest ethnic group reported in South Wollo Zone is the Amhara (99.3%); all other ethnic groups made up 0.67% of the population. Amharic is spoken as a first language by 98.65%; the remaining 1.35% spoke all other primary languages reported. 70.89% are Muslim, and 28.8% of the populations practice Ethiopian Orthodox Christianity. The study was conducted from April 15 2020 till June 15 2020.

Study design

Institutional based cross sectional study design was employed.

Population

All patients with chronic illness who are on follow up in South Wollo Zone Public Hospitals were sources of population. All selected patients with chronic illness who are on follow up in South Wollo Zone Public Hospitals during data collection period were study populations.

Inclusion and exclusion criteria

On follow up patients with chronic illness and who are 18 years and above were included. In contrast, patients with chronic illness who have history of hospital admission in the past one month, patients with chronic illness who have history of acute infection in the past one month and Patients with chronic illness who are seriously ill were excluded.

Sample size determination

Sample size is calculated by using EPI info version 7 with 95% confidence level, 4% margin of error and proportion of poor sleeper among patients with heart failure. Proportion, which is 81.65%, is taken from study conducted on sleep quality of heart failure patients at Jimma University Specialized Hospital Chronic illness follow up clinic in 2015 [18]. The total sample size was taken by adding 10% non-response rate of the calculated sample size which is 312.



Non response rate – 10% of 312 → 31.2~ 32

Total sample size = 312+32 = 344

Sampling technique and procedure

The study utilized stratified random sampling technique. Initially, patients with chronic illness were stratified into Diabetes Mellitus (DM), hypertensive, heart failure, epilepsy, chronic obstructive pulmonary disease and others based on their diagnosis. After that, the total sample size was allocated for each stratum based on their proportion. Then, study participants were selected by systematic sampling in every k^{th} value which is 7 from each stratum. K value was calculated from the proportion of sample in each stratum to the total population for each respected stratum. The first patient was selected by simple random sampling from patients who are coming for follow up during data collection period. After that, data were collected in every 7th patient from each stratum until the total sample size is achieved.

K value is calculated as follows:

K for each hospitals → total number of patients with chronic illness/sample

Variables

Dependent Variables

Sleep quality: Good/Poor

Independent Variables

- * Socio demographic data (sex, age, resident, occupation, marital status, economic status, education, weight, height, family size, media exposure)
- * Disease characteristics (duration of disease since diagnosis, number of medication, adherence to medication, overall health)
- * Substance and alcohol use (coffee and tea use, smoking, chat chewing, alcohol drinking)
- * Other factors (physical activity, Health education about sleep hygiene)

Operational definition

Adequate dietary diversity: Study participants who scored > the mean of dietary diversity score.

Good sleep quality: after calculating the global score of sleep quality, the global score of PSQI which is five and below [21,24].

Inactive: are those individuals who do not meet criteria for minimally active or Health Enhancing Physical Activity (HEPA) [25].

Inadequate dietary diversity: Study participants who scored below the mean of dietary diversity score.

Health Enhancing Physical Activity: Vigorous-intensity activity on at least 3 days achieving a minimum of at least 1500 Metabolic Equivalent (MET) - minutes/week or 7 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 3000 MET-minutes/week [25].

Minimally active: 3 or more days of vigorous activity of at least 20 minutes per day or 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day or 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 Metabolic Equivalent (MET) - min/week [25].

Poor sleep quality: after calculating the global score of sleep quality the global score PSQI which is above five [21,24].

Sleep quality: is the degree to which restful sleep is maintained during the night and the individual feels refreshed on waking and throughout the day [22].

Chronic illness is an illness that makes the patient to have follow up.

Data collection tool and procedures

Data collection tool: The data were collected structured questionnaire. It has 3 parts. The first part asked about socio demographic data of study participants. The second part measured sleep quality by Pittsburgh Sleep Quality Index (PSQI) questionnaire which is a golden standard to measure sleep quality. It has 19 items with seven components. Component 1 is subjective sleep quality; Component 2 is sleep latency; Component 3 is sleep duration; Component 4 is habitual sleep efficiency; Component 5 is sleep disturbances; Component 6 is use of sleep medicine; and Component 7 is daytime dysfunction. Validity and reliability of the PSQI is checked in Ethiopian population [26]. Its reliability in this study was 0.65. The third part focused on factors that affect sleep quality of patients with chronic illness which includes dietary diversity, physical activity, substance use, alcohol use, support from any one and health education about sleep hygiene. Medication adherence, dietary practice and physical activity will be screened by standardized questionnaire which are validated in Ethiopian population.

International Physical Activity Questionnaire (IPAQ -7) which is also standardized questionnaire used to assess physical activity of patients with chronic illness. It is validated in Ethiopian population [27].

All parts of the questionnaire were prepared in English version initially and translated into Amharic then back to English to check their consistency. Additionally, weight



and height of the patient were measured by data collectors during data collection.

Data collection procedures: After preparing the questionnaire, 4 BSc nurses for data collection and 1 supervisor were recruited. Two days training was given for each of them on meaning of every items of the questionnaire and the techniques of data collection such as ways of greeting, ways of taking consent and ways of addressing ambiguous items. After this, data were collected by face to face interview and height and weight were measured during data collection by data collectors. Supervisor and principal investigator monitored closely the data collection process.

Data quality assurance

The quality of data were assured by training data collectors and supervisor, carefully designing questionnaire, monitoring the data collection process and checking completeness of data during data collection time. In addition to these, before reached to the respondents, all questionnaires were pre tested on 5% of the sample size at Kemissie General Hospital to address confusing items and to increase the quality of data since it modifies the ambiguity items.

Data processing and analysis procedure

After data collection, completely collected data were entered in to epi data version 3.1 and exported to Statistical Package for Social (SPSS) version 25 for analysis. The results of study were presented by using different data presentation tools and binary logistic regression model will be enrolled by considering 95% confidence level and p value of 0.05. Multivariable binary logistic regression was done by taking variables that have p value of < 0.2 from bivariable logistic regression to identify factors associated with sleep quality. The Hosmers and Lemeshow test for model fitness was 0.393.

Ethical consideration

Before data collection period, ethical clearance and approval was obtained from College of Medicine and Health Sciences Ethical Committee. A supportive letter was given to the Hospitals and permission was obtained from Hospital Manager to implement the study. Prior to interviewing the respondents, the aim and objectives of the study were clearly explained to the participants and oral informed consent was obtained. Additionally, participants were informed about the right to ask question and stop response in anywhere. Confidentiality and anonymity were ensured throughout the execution of the study.

Results

Sociodemographic characteristics of respondents

A total of 344 study participants were participated with 100% response. Among these respondents, 168(48.8%) were female, 135(39.2%) did not read and write and 210(61%)

were from urban areas. Over one fifth of the total respondents (21.8%) were government and nongovernmental employee. Near to one fourth of the respondents (24.7) had above 3400ETB of monthly income. Body mass index was high higher than the normal for 70(20.3%) study participants (Table 1).

Disease characteristics

Among the total respondents, the duration of disease for 56(16.3%) was above 6 years. One fifth of the respondents (70) were adherent to their medication. Majority of them 319(92.7) were taking below 5 drugs. One the other hand, 213(61.9%) of them had good perception to the prognosis of their illness (Table 2).

Level of physical activity, dietary practice and education about sleep hygiene

Among 344 patients with chronic illness, 274 (79.65%) of

Table 1: sociodemographic characteristics of study participants at South Wollo Zone Public Hospitals, Northeast Ethiopia, 2020 (N=344).

Variable	Category	Frequency	Percent (%)
Sex	Female	168	48.8
	Male	176	51.2
Age	18-24	48	14
	25-29	37	10.8
	30-34	27	7.8
	35-44	58	16.9
	45-64	127	36.9
	≥ 65	47	13.7
Educational status	Unable to read and write	135	39.2
	Able to read and write (informal school)	29	8.4
	Grade 1-8	47	13.7
	Grade 9-12	52	15.1
	Certificate	9	2.6
	Diploma and above	72	20.9
Marital status	Single	65	18.9
	Married	212	61.6
	Widow	47	13.7
	Divorced	20	5.8
Residence	Urban	210	61.0
	Rural	134	39.0
Occupation	Farmer	122	35.5
	Merchant	112	32.6
	Student	25	7.3
	Gov't and non gov't employee	75	21.8
	Others (retired, no job)	10	2.9
	Monthly income (ETB)	≤ 1000	107
	1001-2000	74	21.5
	2001-3400	78	22.7
	> 3400	85	24.7
Family size	≤ 4	209	60.8
	> 4	135	39.2
Body Mass Index	$< 18.5 \text{ kg/m}^2$	36	10.5
	$18.5-24.99 \text{ kg/m}^2$	228	66.3
	$\geq 25 \text{ kg/m}^2$	70	20.3
	Total	334	100
Any support	Yes	269	78.2
	No	75	21.8

Note: Monthly income was categorized based on quartile range; family size was based on mean; BMI was based on WHO weight classification for Ethiopia.



Table 2: disease characteristics of study participants at South Wollo Zone public Hospitals, Northeast Ethiopia, 2020.

Variable	Category	Frequency	Percent (%)
Duration of disease after diagnosis	Below 3 years	146	42.4
	3 to 6 years	142	41.3
	Above 6 years	56	16.3
Perception towards prognosis of illness	Good	213	61.9
	Fair	94	27.3
	Poor	37	10.8
Adherence to medication	Adherent	274	79.3
	Non adherent	70	20.7
Number of drugs taken daily in the past one month	Below 5 drugs	319	92.7
	5 and above drugs	25	7.3

them had good dietary practice. Among the 302 respondents, 206(59.9%) of them performed health enhancing physical activity. Moreover, 312(91.3%) of the respondents didn't get any education about sleep hygiene (Table 3).

The pittsburgh sleep quality index (PSQI) subscale scores

Among the total study participants, near to one third (31.7%) of them got sleep after 30 minutes. More than one fourth of them slept for less than 7 hours. Less than half of the study participants had habitual sleep efficiency of more than 85% however 296(86%) of them did not face day time dysfunction (Table 4).

Overall sleep quality

From the total 344 patients with chronic illness, 124(36%) of them had poor sleep quality.

Factor associated with sleep quality

Variables that have associations with poor sleep quality at p value of $p < 0.2$ in bivariable logistic regression were sex, age, educational status, residence, marital status, occupation, family size and perception to prognosis of illness. However, only age of respondents, educational status, residence and perception of patients to prognosis of their disease were significantly associated with poor sleep quality. According to the result, study participants whose age is above 65 years were 5 times more likely develop poor sleep quality compared with study participants whose age is 18-24 years (AOR - 4.52; 95% CI: 1.63 - 12.49; $p = 0.004$). Patients whose educational status is certificate were 6 times more

Table 3: level of physical activity and education about sleep hygiene among study participants in South Wollo Zone Public Hospitals, Northeast Ethiopia, 2021.

Variable	Category	Frequency	Percent (%)
Dietary practice	Good practice	274	79.65
	Poor practice	70	20.35
Physical activity	Inactive	21	6.1
	Minimally active	75	21.8
	Health enhancing physical activity	206	59.9
	Total	302	100
Education about sleep hygiene	Yes	30	8.7
	No	314	91.3
	Total	344	100

Table 4: The Pittsburgh Sleep Quality Index (PSQI) subscale scores of patients with chronic illness at South Wollo Zone Public Hospitals, Northeast Ethiopia, 2021.

PSQI Subscale	Category	Frequency	Percent (%)
Rate of overall sleep quality (Component 1)	Very good	105	30.5
	Fairly good	184	53.5
	Fairly bad	42	12.2
	Very bad	13	3.8
Sleep latency (Component 2)	0-15 minutes	103	29.9
	16-30 minutes	132	38.4
	31-60 Minutes	98	28.5
	> 60 minutes	11	3.2
Sleep duration (Component 3)	> = 7 hours	225	65.4
	6-7 hours	65	18.9
	5-6 hours	31	9.0
	Less than 5 hours	23	6.7
Habitual sleep efficiency (Component 4)	> = 85%	162	47.1
	75% - 84%	95	27.6
	65%- 74%	36	10.5
	Less than 65%	51	14.8
Medication use for sleep (Component 6)	Not during the past month	337	98
	Less than once a week	2	6
	Once or twice a week	1	0.3
	Three or more times a week	4	1.2
Day time dysfunction (Component 7)	Not during the past month	296	86
	Less than once a week	31	9
	Once or twice a week	7	2
	Three or more times a week	10	2.9

likely develop poor sleep quality compared with patients who do not unable to read and write (AOR - 5.61; 95% CI: 1.15 - 27.22; $p = 0.032$). Patients whose residence is rural develop poor sleep quality 2 times more likely compared with patients who lived in urban area (AOR - 1.93; 95% CI: 1.04 - 3.58; $p = 0.036$) (Table 5).

Discussion

Patients with chronic illness have compromised quality of life because of their disease condition and poor sleep quality. However, their quality of sleep is not recognized and screened while they are coming to health institution for their follow up. This study was conducted to assess the level of sleep quality and its associated factors among patients with chronic illness in South Wollo Zone Public Hospitals. According to the finding, among the total study participants, 36% (95% CI: 30.8% - 40.7%) of them poor sleep quality. The finding of this study is in line with study conducted in Debre Markos Referral Hospital among patients with diabetes, hypertension and heart failure (36.5%) [28] and study conducted at Korean patients (38%) [29].

However, the finding of this study is lower than the pooled prevalence of poor sleep quality among Ethiopian population (53%) [30], study conducted in Jimma among type 2 diabetes patients (55.6%) [31], study conducted in Jimma town among community dwelling adults (63%) [32], study conducted in Addis Ababa among epileptic patients (65.4%) [33], study conducted in Wadila district among pregnant mothers (68.4%) [34] and among diabetes patients (55.4%) [35]. The difference might be because of the difference in study

**Table 5:** Bivariable and multivariable logistic regression output on the association of sleep quality and factors, 2021 (N = 344).

Variable	Category	Sleep quality		COR	AOR	p value
		Poor	Good			
Sex	Female	67	101	1.38(0.89-2.15)		
	Male	57	119	1		
Age	18-24	11	37	1	1	0.001
	25-29	9	28	1.08(0.39-2.96)	1.02(0.35-2.99)	
	30-34	8	19	1.41(0.49-4.11)	1.80(0.56-5.78)	
	35-44	18	40	1.51(0.63-3.62)	1.91(0.74-4.96)	
	45-64	52	75	2.33(1.09-4.99)	3.02(1.27-7.17)	
	≥65	26	21	4.16(1.71- 10.09)	4.52(1.63-12.49)	
Educational level	Unable to read and write	52	83	1	1	0.030
	Able to read and write	14	15	1.49(0.66-3.33)	2.33(0.95-5.85)	
	Grade 1-8	20	27	1.18(0.79-2.79)	2.84(1.26-6.36)	
	Grade 9-12	16	36	0.70(0.35-1.40)	1.96(0.80-4.76)	
	Certificate	6	3	3.19(0.76-13.32)	5.61(1.15-27.22)	
	Diploma and above	16	56	0.46(0.23-0.88)	1.14(0.49-2.71)	
Marital status	Single	17	48	1		
	Married	76	136	1.58(0.85-2.93)		
	Widowed	23	24	2.70(1.22-5.99)		
	Divorced	8	12	1.88(0.65-5.38)		
Residence	Urban	64	146	1	1	
	Rural	60	74	1.85(1.18-2.90)	1.93(1.04-3.58)	0.036
Occupation	Farmer	53	69	1		
	Merchant	41	71	0.75(0.45-1.27)		
	Student	5	20	0.32(0.11-0.92)		
	Employee	20	55	0.47(0.25-0.88)		
	Others(retired, no job)	5	5	1.30(0.35-4.73)		
Family size	≤ 4	67	142	1		
	> 4	57	78	1.55(0.99-2.42)		
Perception to prognosis of illness	Good	58	155	1	1	0.001
	Fair	45	49	2.45(1.48-4.06)	2.10(1.23-3.60)	
	Poor	21	16	3.50(1.71-7.18)	4.09(1.99-8.82)	
Substance use	Yes	12	17	0.78(0.36-1.69)		
	No	112	203	1		

Notes: Hosmer and Lemeshow test = 0.393.

population. For example, in study conducted in Saudi Arabia, the study populations are only diabetes patients.

Age is associated with poor sleep quality. In this study, study participants whose age is above 65 years were 5 times more likely develop poor sleep quality compared with study participants whose age is 18-24 years. The possible justification might be due to physiological deterioration such as cortical atrophy [36]. This finding is supported by a study conducted at Jimma Town [32], study conducted in Wadila district [34].

Educational status of study participants also had association with poor sleep quality. In this study, patients whose educational status is certificate were 6 times more likely develop poor sleep quality compared with patients who do not unable to read and write. This finding is similar with the study conducted at Saudi Arabia [35].

Patients whose residence is rural develop poor sleep quality 2 times more likely compared with patients who lived in urban area. This might be due to less comfortable sleeping room and condition. In addition, patients in rural area are exposed to physical work. A study conducted at Northwest Ethiopia among diabetes, hypertension and heart failure patients supported the finding of this study [28].

Patients who had poor perception towards the prognosis of their illness had poor sleep quality 4 times more likely compared with patients with good perception. This could be hopelessness and minimal self-care practice for the management of their illness [37].

According to American sleep foundation, the duration of sleep should be 7 - 9 hours for adult individuals. In this study, only 65.4% of study participants had sleep duration of 7 hours and above. The habitual sleep efficiency should be 85% and above for adults. But, in this study, less than half of the total respondents had sleep efficiency as to the recommendation. The possible justification for this discrepancy could be sleep disturbance as a result of nocturia, orthopnea, awoken from bad dreams, pain [38], dyspnea [39]. Some medication taken for chronic illness such as alpha adrenergic drugs (clonidine), angiotensin receptor antagonist drugs and antiarrhythmics drugs also decreases habitual sleep efficiency and sleep duration [40].

Conclusion and recommendations

In this study, more than one third of patients with chronic illness had poor sleep quality. One third of study participants had sleep duration of less than the recommendations (less



than 7 hours). More than half the study participants had poor sleep habitual efficiency. Age, educational status, residence, and perception of prognosis of disease were factors that have associations with poor sleep quality among patients with chronic illness. Health care providers who are doing in chronic illness follow up clinic should be initiated to assess and screen those patients with poor sleep quality. Training on screening of sleep quality should be given to health care providers. In addition, screening of sleep quality should be added as a routine activity in follow up of patients with chronic illness. Researches should undertake extensive and further study on sleep quality of patients with chronic illness separately.

Declarations

Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki. Before data collection period, ethical clearance and approval was obtained from Wollo University College of Health Science Research and Ethical Committee. A supportive letter was given to the South Wollo Health Department and permission was obtained from hospital manager to implement the study. Prior to interviewing the respondents, the aim and objectives of the study were clearly explained to the participants and oral informed consent was obtained since ethical approval committee waived written consent. Additionally, participants were informed about the right to ask questions and stop response in anywhere.

Availability of data and materials

The dataset will not be shared in order to protect the participants' identities but is available from the corresponding author on reasonable request.

Author's contribution

AE conceived and designed the study, performed analysis and interpretation of data. SA and AA advised and supervised the design conception, analysis, interpretation of data and made critical comments at each step of research. AE drafted the manuscript. All authors read and approved the final manuscript. Confidentiality and anonymity were ensured throughout the execution of the study.

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