Journal of Health, Medicine and Nursing
ISSN 2422-8419 An International Peer-reviewed Journal
Vol.20, 2015

Perceived Sleep Quality of Heart Failure Patients at Jimma University Specialized Hospital (JUSH) Chronic Follow up Clinic South West Ethiopia, 2015

Abebe Abera Temamen Tesfaye Fikadu Balcha Gugsa Nemera
Jimma University, College of public health and medical sciences, Department of Nursing and midwifery, P.o. Box: 378, Jimma, Ethiopia

Abstract
Background: Chronic heart failure is an important health problem associated with changes in sleep pattern and quality among patients with heart failure. Besides having negative effect on the patients' quality of life, it is one of the most disturbing problems. Poor sleep compromise cognition and one's self-care practice. Though factors affecting sleep among heart failure patients have been investigated in developed world this is not well understood in developing countries like Ethiopia. The aim of this study was therefore, to assess the level of sleep quality and associated factors among heart failure patients.
Methods: - A cross-sectional study was conducted from October 1 to November 15, 2014 at Jimma University Specialized Hospital chronic illness follow up clinic. Data was collected by using standardized structured interviewer administrated questionnaires. Sleep quality was rated by participants using Pittsburg sleep quality scale. Convenient sampling technique was employed. Data analysis was done by SPSS windows version 20.0 statistical package. Statistical association was declared at p-value of <0.05 and results were presented using tables, figures and narratives.
Result: A total of 278 patients participated in the study. On the Pittsburg sleep quality scale 42(15.1%) of the participants rated their perceived sleep quality as very bad with the mean score of 9.23 (SD = 4.05). Overall, 81.65% of participants had poor sleep quality. Patients who were farmers 166(59.7%) had poor sleep quality than others.
Conclusion and recommendation: Majority of the study participants have poor sleep quality having Pittsburgh sleep quality scale score of greater than five whereas only few of them had good sleep quality. Therefore, Health education and symptom management should be focused in this population to improve their sleep quality.
Keywords: Sleep quality, heart failure, Jimma University Specialized Hospital.

Background

Chronic heart failure is important health problem causing high level of sleep disturbance and disorder. Poor sleep is among the most frequently reported symptoms of patients with heart failure. Sleep disordered breathing (SDB) is the common sleep disorder experienced by more than 50 to 80% patients with heart failure (1, 2).

Factors that contribute to poor sleep in heart failure patients are multidimensional and may include demographic characteristics, pathophysiology of HF, comorbid health problems, symptoms of HF, medications, and primary sleep disorders (3). Mohammadi S. Z., et al reported the most frequent causes of sleep disturbances reported by patients were nocturia, followed by respiratory discomfort, pain and bad dreams (4). Multiple environmental factors and noises were also reported to disrupt sleep (5).

The possible consequences of poor/inadequate sleep may include neurologic, respiratory, or cardiac complications; diabetes; depression; falls; accidents; impaired cognition; poor quality of life; prolonged hospital or intensive care unit (ICU) stay; excessive daytime sleepiness (EDS); disturbed mood; poor functional performance; self-care deficits and increased mortality (6, 7). It has also had a negative impact on the self-care capacity and self-care behaviours (8).

A study conducted in Taiwan showed that participants as a whole had poor quality of sleep, short duration of night-time sleep, long sleep latency, frequent waking for urination, lack of sleep efficiency, and day time sleepiness. Sleep quality was positively associated with NYHA functional classification, number of hospitalizations, number of co-morbidities, number of medications currently being taken, and depression score (9).

Studies conducted in Sao Polo Brazil and Qom City, north-central Iran revealed that the mean PSQI score of 8.70 and 13.24 respectively (3, 4). All of the participants of study in Iran had PSQI score >6.53% with mild daytime sleepiness. More than 2/3rd of the participants were categorized as poor sleepers and 53.5% classified as good or very good sleepers, and 46.5% as poor or very poor sleepers. The mean duration of sleep was six hours. A nocturnal sleep of less than 5 hours was reported by 21% of participants. The mean sleep latency time was 42 minutes. Around 37% reported it took them up to 15 minutes to fall asleep, whereas in 22.8% it took over one hour. The mean habitual sleep efficiency was 72%. Age, education, female sex, unemployed, fatigue, smoking, income, body mass index, chronic obstructive pulmonary disease, medications, New York Heart Association functional classification, perceived health, Health Related Quality of Life (HRQoL) social functioning, and

physical symptoms are significantly associated with sleep quality or sleep disorder (4, 10, 11).

The prevalence of insomnia was 44.4% for the elderly group and 31.4% for the younger group. The top three prevalent sleep-disturbing events were: nocturia, long sleep latency, and early wake-up (12). A study done in Germany showed that poor sleep quality (PSQI > 5) was reported in all comorbid depression, chronic pain, and disability, in 60% of the 80 Non-depressive cardiac inpatients (non-DCP), and in 86.4% of the depressive inpatients (DP). (13)

A study in Taiwanese people with heart failure found that self-reported sleep disturbances were prevalent in 74% of the patients (11).

The proportion of poor sleepers among patients with HF is among the highest in chronic diseases. Dyspnea and fatigue, common symptoms of this disease, significantly increase the chance of being a bad sleeper (4).

In developing countries, including Ethiopia, the prevalence and factors affecting sleep quality among heart failure patients is not well understood. To our knowledge there are no related studies conducted in Ethiopia. Since people living in developing countries are living in different culture, living styles and conditions as compared to the developed nations, it's worth to undertake studies related to sleep disturbance and associated factors among heart failure patients in Ethiopia.

Methods

Study setting

This study was conducted from 1st October – 15th November, 2014 at Jimma university specialized hospital (JUSH) located in Jimma town 357 Km southwest of Addis Ababa, capital of Ethiopia. Currently the hospital has a bed capacity of around 432 with a total of nearly 1,000 hospital staffs. It provides services for approximately 9,632 inpatients, 5,000 emergency cases and 80,000 outpatient attendants each year [14]. During this study the number of people living with heart failure (PLWHF) on follow-up in the hospital was about 911.

Study design: A cross-sectional institution based study design was employed.

Sample size and sampling technique

Sample size (n) was calculated by using a single population proportion formula taking an assumption of 50% of heart failure patient sleep quality, 95% confidence interval and 5% margin of error to be tolerated

$$n = \frac{z^2 P(1-p)}{d^2} = 384$$

Then correction formula ($nf = n/1 + n/N$) (where N= 911) was employed to adjust because the total population was less than 10,000 and considering 10% non response rate the final sample was **297**. Conveniently all patients with heart failure coming to the hospital during the study period were included in the study.

Exclusion criteria

Those who were critically ill, mentally ill and under 15 years of age were excluded from the study

Measurement

Two categories of structured questionnaires were adopted for data collection by reviewing relevant literatures. The first questionnaire was composed of basic socio-demographic variables and the second included questions about level and quality of sleep by using Pittsburg sleep quality (PSQI). The PSQI questionnaire has seven components: subjective sleep quality (Component 1), sleep latency (Component 2), sleep duration (Component 3), habitual sleep efficiency (Component 4), sleep disturbances (Component 5), use of sleep medicine) (Component 6) and daytime dysfunction (Component 7). The result from all these seven components were calculated and if the sum of the components is less than 5 it is indicator of good sleeper and if it is greater than or equal to 5 indicates poor sleeper. The questionnaire was prepared in English language.

Data collection process

By using PSQI the participants were interviewed face-to-face by five BSc nurses. Moreover one experienced BSC nurse was recruited as a supervisor. All the data collectors and the supervisors were fluent in local language, Afan Oromo and were given one day training on data collection.

Quality control methods

Training was given for data collectors and supervisor before pretest. The questionnaire was pre-tested on 5% of the sample size a week before the beginning of actual data collection period at Limmu Genet Hospital chronic illness follow up clinic (found at 100Km away). Based on the pretest necessary amendment was made to the questionnaire. Moreover, during the data collection, data collectors were strictly supervised. At the end of each data collection day the principal investigator was checking out the completeness of filled questionnaires. Any error, ambiguity, incompleteness, and other encountered problems were addressed on the following day before starting

next day's activities. Any missing values were checked before data analysis.

Data processing and analysis

Data were coded and entered into SPSS windows version 20.0 statistical soft ware packages for analysis. Before final analyses the principal investigator cleaned and missed values were checked. Binary logistic regression analysis was used to examine the likelihood of effect of the independent variables on quality of sleep pattern. Common descriptive statistics were considered as per variables of interest. Significant values were declared at p value of less than 0.05. The results were summarized and presented in narrative, tables and figures.

Ethical consideration

Ethical clearance letter was obtained from Jimma University College of Public Health and Medical Sciences internal review board (IRB). Then letter of permission was secured from Jimma University Specialized Hospital (JUSH). Further, for each study participant the objective of the study was being stated by the data collectors. In addition participants were informed that they have full right to refuse participating in the study and can interrupt the interview if not comfortable with it, but they were informed that their participation in the study is very important. Confidentiality of the information was assured and privacy of the study population was respected and kept as well.

Results

Socio-demographic characteristics

A total of 278 patients were participated in the study giving 93.6% response rate. Out of this 140(50.4%) were male. The mean age of the participants was 48.90 ± 16.34 years and around 1/4 (23.1%) were in the age group of >65 years. Majority 212(76.3%) were married and 166(59.7%) were farmers by occupation. About half 141(50.7%) were illiterate. (**Table 1**)

General information about the disease

More than half 147(52.9%) of the participants suffer from heart failure for less than 3 years. Out of the total participants 127(45.7%) of them had additional co-morbid illnesses from which hypertension takes the leading part accounting for about 61(21.9%). Forty five (16.2%) of the patients did not have any one who support them. From those who had support 118(50.6%) were being supported by their children. About 40(14.4%) of the patients did not receive any information regarding heart failure and its complications prior to this study whereas majority 216(90.8%) received this information from Hospitals. (**Table 2**)

Substance use

From those 278 study participants 72(25.9%), 6(2.2%), 20(7.2%) and 218(78.4%) uses chat, cigarette, alcohol and coffee/tea respectively. Among those who use these substances; 31(43.1%) uses chat sometimes, 3(50%) uses cigarette occasionally, 10(50.5%) uses alcohol sometimes and 122(56%) uses coffee/tea always. (**Table 3**)

Perceived rating of their sleep quality and having roommates

Forty two (15.1%) of the study participants rated their perceived sleep quality as very bad while only 12(4.3%) rated it as very good. Majority (87.8%) of the patients share bedroom with other individuals out of whom 11(4%) were disturbed from their sleep by their roommates. (**Figure 4)**

The Pittsburgh Sleep Quality Index (PSQI) subscale scores

From the total study participants only 12(4.2%) reported their perceived sleep quality to be very good and 42(15.1%) rated as very bad. In 98(35.3%) it took 16-30 minutes to fall asleep after going to bed. With regard to sleep duration 157(56.5%), 104(37.4%) and 17(6.1%) of them had less than 7, 7 to 8 and greater than 8 hours of actual sleep time. Concerning Habitual sleep efficiency 89(32%) had a very bad (<65%) sleep efficiency. About half of the patients 138(49.6%) had fairly bad sleep disturbance, 6(2.2%) used medicines for sleep once or twice a week and 58(20.9%) experienced very bad day time dysfunction. (**Table 4**)

Effects of sleep disturbance on the activities of daily living

From the total 278 study participants 125 (45.1%) have responded that poor sleep quality affects their activities of daily living and 142 (50.9%) reported it has no effect on their daily living activities whereas 9(4.9%) said they do not perceived the effect.

Sleep latency and coughing or snoring patterns

Only 66(23.7%) of the study participants had no problem with sleep latency whereas 210(75.3%) had sleep onset problems of different degrees. Forty two (15.1%) suffered coughing or loud snoring three or more times a week.

(**Figure 2**)

Level of sleep quality

The mean score for sleep quality was 9.23 (SD = 4.05) after summation of the seven components in Pittsburg sleep quality scale. Overall, 81.65% of participants reported poor sleep quality (having a score of greater than 5). (**Figure 3**)

Binary logistic regression result

Two variables (occupation and educational status) had significant association with sleep quality of heart failure patients. Farmers are 88% times less likely to be poor sleeper than unemployed individuals. Those who complete grade 11-12 are 90% times less likely to be poor sleeper than illiterate individuals. (**Table 5**)

Discussion

Poor sleep can compromise cognition and affect one's self-care practice. Studies showed that factors such as gender, age, marital status, and other clinical variables like degree of HF aggravation related to sleep disturbances in people with HF. Besides having a negative effect on the patients' quality of life, poor sleep is one of the most disturbing problems for this population. Inadequate sleep contributes to heart disease, diabetes, depression, falls, accidents, impaired cognition, and a poor quality of life. (6, 2, 8)

Though more than 1/4th of the participants did chew Khat, there was no statistically significant association between khat chewing and quality of sleep.

In this study more than half (53%) of the participants rated their perceived sleep quality as bad and very bad. This is by far higher than the result of study reported by Santos M.A., et al, and Wang et al, where around 47% and 31% of participants respectively had bad and very bad sleep quality (7, 3). In the current study the mean score for sleep quality was 9.23 which is less than result of study done in Sao Paulo which is 10.8. This difference might be related to health literacy, socioeconomic and living standard differences between the participants. More over the participants in the current study might not consider sleep disturbance as a health problem.

In the current study education and occupation were significant predictors of sleep quality whereby those grade 11 and 12 complete were 90% less likely to have poor sleep quality as compared to those illiterate. Similarly farmers were 88% less likely to have poor sleep quality as compared to those unemployed. Study from Taiwan revealed that education, New York Heart Association functional classification, perceived health, HRQOL, social functioning, and physical symptoms were significant predictors (7).

In the current study in more than 1/3rd (35.3%) of participants it took 16-30 minutes to fall asleep after going to bed. This finding is almost consistent with the report of Wang et al. With regard to sleep duration more than half (56.5%) of the participants had less than 7 hours of actual sleep and this is almost comparable with the result of study done in Sao Paulo where the mean duration of sleep was six hours (7).

Regarding day time dysfunction 125 (45.1%) responded that poor sleep quality affects their activities of daily living. This finding is different from study conducted by Santos M.A, et al where 37.5% indicated day time sleepiness and daytime disorders and 14.5% experienced serious day time difficulties (7). Since farming, which is traditional and relatively labor intensive in Ethiopia, is the major occupation of the participants of current study the effect of poor sleep on farming and daily activity might be easily felt and reported.

With regard to the overall calculated sleep quality 81.65% of the participants had poor sleep quality which is consistent with study done in Taiwan (3). But it is higher than the result of the study conducted in Sao Paulo in which around 2/3rd (68.5%) had poor sleep quality (7).

Conclusion

The majority of the patients in the study were from rural areas and farmers. More than half of the participants reported that they had bad sleep quality which is supported by PQSI scale summary report in which majority of the participants had poor sleep quality. Occupation and educational status were the only significant predictors of sleep quality.

Recommendation

Patients with heart failure should be taught about sleep hygiene, recreational activities, self-management of other chronic co-morbidities, and coping stress skills to improve their sleep quality. Family members should also be given health information regarding how to enhance sleep quality of heart failure patient in the family.

Patients with severe sleep disturbance should be referred to psychiatrists or psychologists for further investigations.

Patients should be encouraged to evaluate their own sleep, negative effect of poor sleep pattern and report to health care professionals.

Acknowledgements
The authors want to pass their heartfelt thanks to Jimma University for providing necessary financial and material support for the accomplishment of this paper. We would also like to extend our acknowledgement to Jimma University Specialized Hospital for their all kind cooperation in conducting the study. Finally we want to pass our gratitude for study participants without whom conducting this study could be difficult.

Funding
This study was sponsored by Jimma University.

List of Abbreviations
BSc Bachelor of Science
CSB-CSA Cheyne-Stokes Breathing-Central Sleep Apnea
DP Depressive patiens
EDS Excessive Daytime Sleepiness
HF Heart Failure
His Health Institutions
HRQoL Health Related Quality Of Life
ICU Intensive Care Unit
IRB Institutional Review Board
JUSH Jimma University Specialized hospital
Non-DCP Non-depressive cardiac inpatients
NYHA New York Heart Association
OSAHS Obstructive Sleep Apnea Hyperpnoea Syndrome
PLWHF People Living With Heart Failure
PLWHF People Living With Heart Failure
PSQI Pittsburgh Sleep Quality Index
SD Standard deviation
SDB Sleep-disordered breathing
SPSS Statistical Package for Social Science

Competing interests
Authors declare that there is no competing interest

Authors' Contributions
AA: contributed a lot in title selection, proposal development, data collection, data analysis, interpretation, and report write-up. TT contributed a lot to the designing of the study starting from title selection through the methodology preparation, data collection and data analysis and report write-up. FB had valuable contribution to the development of methodology part of the study, data collection and data analysis and report write-up. GN had appreciable input to the development of the tool for the study, data collection, data analysis, interpretation, and report write-up.

References
1. A Rao, D Gray (2005) Impact of heart failure on quality of sleep in Nottingham, UK; Postgrad Med J ;81:99-102 doi:10.1136/pgmj.2003.013300
2. Nancy S. Redeker, Ph.D. Sleep-Disordered Breathing in Patients with Heart Failure: An Update
3. Mariana Alvina dos Santos; Erika de Souza Guedes; Ricardo Luís Barbosa; Diná de Almeida Lopes Monteiro da Cruz (2012) Sleeping difficulties reported by patients with heart failure; vol.20 no.4, July/Aug; http://dx.doi.org/10.1590/S0104-11692012000400003
4. Sh Zeighami Mohammadi, M Shahparian (2013) Evaluation of Sleep Problems and Its Associated Factors in Male Patients with Systolic Heart Failure, Qom University of Medical Sciences Journal Vol 6, No 4
5. Bihari S; McEvoy RD; Kim S; Woodman RJ; Bersten AD (2012) Factors affecting sleep quality of patients in intensive care unit. J Clin Sleep Med; 8(3):301-307. 5
6. Peter C Gay (2010) Sleep and sleep-disordered breathing in the hospitalized patient: Respiratory care September Vol 55 No 9
7. WANG T.- J . , LEE T. - S. -C. , TSAY S. -L. & TUNG H. -H. (2010) Factors influencing heart failure patients' sleep quality. Journal of Advanced Nursing 66(8), 1730–1740. doi: 10.1111/j.1365-2648.2010.05342.x
8. Erik Skobela, Christine Norra, Anil Sinha, Christian Breuer, Peter Hanrath, Christoph Stellbrink (2005) Impact of sleep-related breathing disorders on health-related quality of life in patients with chronic heart failure. The European Journal of Heart Failure 505– 511

9. Redeker NS (2008) Sleep disturbance in people with heart failure: implications for self-care. J Cardiovasc Nurs. May-Jun; 23(3):231-8. doi:10.1097/01.JCN.0000305094.20012.76.
10. Gau FY, Chen XP, Wu HY, Lin ML, Chao YF(2010) Sleep-related predictors of quality of life in the elderly versus younger heart failure patients: a questionnaire survey. Int J Nurs Stud. 2011 Apr; 48(4):419-28. doi: 10.1016/j.ijnurstu. Department of Nursing, Taipei City Hospital Yang-Ming Branch, Taiwan. sarbrina@ms26.hinet.net)
11. Peter A. Vanable PhD, James E. Aikens PhD, Lakshminarayana Tadimeti MD, Brendan Caruana-Montaldo MD and Wallace B. Mendelson MD(2000): Sleep Latency and Duration Estimates Among Sleep Disorder Patients: Variability as a Function of Sleep Disorder Diagnosis, Sleep History, and Psychological Characteristics. SLEEP, Vol. 23, No. 1
12. Norra C, Kummer J, Boecker M, Skobel E, Schauerte P, Wirtz M, Gauggel S, Forkmann T (2012) Poor sleep quality is associated with depressive symptoms in patients with heart disease. Int J Behav Med. Dec; 19(4):526-34. doi: 10.1007/s12529-011-9205-2. Department of Psychiatry, Psychotherapy and Preventive Medicine, Ruhr University Bochum, Bochum, Germany. Christine.Norra@rub.de)
13. Chen HM, Clark AP, Tsai LM, Chao YF(2009). Self-reported sleep disturbance of patients with heart failure in Taiwan. Nurs Res. 58(1):63-71. doi: 10.1097/NNR.0b013e31818c3ea0. Chang Gang Institute of Technology Chia-Yi Campus, School of Nursing, Chia-Yi County, Taiwan. hsingmei@ntu.edu.tw)
14. Tirsit Retta Woldeyohanes, Tewodros Eyob Woldehaimanot, Mirkuzie Woldie Kerie, Mubarek Abera Mengistie and Elias Ali Yesuf (2015) Perceived patient satisfaction with in‑patient services at Jimma University Specialized Hospital, Southwest Ethiopia: BMC Res Notes 8:285
15. WANG T.- J. , LEE T. - S. -C. , TSAY S. -L. & TUNG H. H. (2010) Factors influencing heart failure patients' sleep quality. Journal of Advanced Nursing 66(8), 1730– 1740. doi: 10.1111/j.1365-2648.2010.05342.x
16. Nancy S. Redeker. Sleep-Disordered Breathing in Patients with Heart Failure: An Update.

List of tables

Table 1: Socio-demographic characteristics of Heart Failure patients attending Jimma University Specialized Hospital November, 2014 (n=278)

Variables	Category	Frequency	Percent
Gender	Male	140	50.4
	Female	138	49.6
	Total	277	99.6
Age category	15-24	20	7.2
	25-34	36	12.9
	35-44	53	19.1
	45-54	53	19.1
	55-64	50	18.0
	>=65	66	23.7
	Total	278	100.0
Marital status	Single	25	9.0
	Married	212	76.3
	Widow	30	10.8
	Divorced/Separated	11	4.0
	Total	278	100.0
Educational status	Illiterate	141	50.7
	Read and write only	11	4.0
	Grade 1-4	44	15.8
	Grade 5-8	51	18.3
	Grade 9-10	16	5.8
	Grade 11-12	8	2.9
	Diploma	3	1.1
	Bachelor or higher	4	1.4
	Total	276	99.3
Current occupation	Unemployed	14	5.0
	Employed	15	5.4
	Merchant	20	7.2
	Farmer	166	59.7
	Government official	11	4.0
	Daily laborer	32	11.51
	*Others	19	6.83
	Total	277	99.6
Income classification	<=300	103	37.1
	301-600	72	26.3
	>=600	82	29.5
	Total	256	92.1

*tella seller, weaver, cleaner, house servants

Table 2: General information about the disease among Heart Failure patients attending Jimma University Specialized Hospital November 2014

Variables	Categories	Frequency	Percent
Duration since diagnosis of HF	Less than 3 years	147	52.9
	3 to 6 years	75	27.0
	Greater than 6 years	56	20.1
	Total	278	100
Do you have additional co morbid disease?	No	151	54.4
	Yes	127	45.7
	Total	267	96.0
Co-morbid diseases(n=136)	Diabetes mellitus	6	2.2
	Hypertension	61	21.9
	Epilepsy	4	1.4
	Goiter	7	2.52
	BPH	13	4.68
	HIV/AIDS	9	3.24
	Asthma	23	8.27
	*Others	13	4.68
	Total	136	48.9
Anyone in the family who has HF	No	268	96.4
	Yes	10	3.6
	Total	278	100
Family member with heart failure	My mother	3	30
	My father	2	20
	My son	3	30
	My daughter	2	20
	Total	10	100
Having someone to support them during illness	No	45	16.2
	Yes	233	83.8
	Total	278	100
Who was supporting during the illness (n=233)	Children	119	42.6
	Spouse	37	15.9
	Father	35	15.03
	Mother	3	1.3
	More than one family members	40	17.2
	Total	233	100
Received information about complication and intensity of HF (n=278)	No	40	14.4
	Yes	238	49.6
	Total	278	100
Source of information about complication and intensity of HF(n=238)	Hospitals	216	90.8
	Health centers	6	2.5
	Health posts	1	.4
	More than one HIs	15	6.3
	Total	238	100

*Lung infections, UTI, gastritis

Table 3: Frequency distribution of substance uses among Heart Failure patients attending Jimma University Specialized Hospital November 2014

Substances	Used	Frequency	Percent
Chat (n=278)	No	206	74.1
	Yes	72	25.9
	Total	278	100
Cigarette (n=278)	No	272	97.8
	Yes	6	2.2
	Total	278	100
Alcohol (n=278)	No	258	92.8
	Yes	20	7.2
	Total	278	100
Coffee/tea (n=278)	No	60	21.6
	Yes	218	78.4
	Total	278	100
Frequency of Khat chewing	Rarely	4	5.6
	Occasionally	9	12.5
	Some times	31	43.1
	Always	28	38.9
	Total	72	100
Frequency of use of cigarette	Rarely	1	16.7
	Occasionally	3	50
	Some times	1	16.7
	Always	1	16.7
	Total	6	100
Frequency of use of alcohol	Rarely	1	5
	Occasionally	9	45
	Some times	10	50
	Total	20	100
Frequency of use of coffee/tea	Rarely	18	8.3
	Occasionally	20	9.2
	Some times	58	26.5
	Always	122	56
	Total	218	100

Table 4: The Pittsburgh Sleep Quality Index (PSQI) subscale scores of Heart Failure patients attending Jimma University Specialized Hospital November 2014 (n=278)

Variable	Category	Frequency	Percent
Subjective sleep quality (Component 1)	Very good	12	4.3
	Fairly good	118	42.4
	Fairly bad	106	38.1
	Very bad	42	15.1
	Total	278	100
How much it takes you to fall asleep after going to bed? (sleep latency) (Component 2)	<15min	30	10.8
	16-30min	98	35.3
	31-60 min	91	32.7
	3>60min	59	21.2
	Total	278	100.0
How long do you spent in actual sleep during a night? **in hours** (sleep duration) (Component 3)	>7	121	43.5
	6-7	58	20.9
	5-6	62	22.3
	<5	37	13.3
	Total	278	100.0
Habitual sleep efficiency (Component 4)	>85% (Very good)	82	29.5
	75-84% (Fairly good)	61	21.9
	65-74% (Fairly bad)	46	16.5
	>65% (Very bad)	89	32.0
	Total	278	100.0
Subscale score of having trouble sleeping during the last month because of different reasons (sleep disturbances) (Component 5)	Very good (0)	8	2.9
	Fairly good (1-9)	120	43.2
	Fairly bad (10-18)	138	49.6
	Very bad (19-27)	12	4.3
	Total	278	100.0
How often do you use sleep medicine during the last month? (use of sleep medicine) (Component 6)	Not at all	266	95.7
	Less than once a week	5	1.8
	Once to twice a week	6	2.2
	Three or more times a week	1	.4
	Total	278	100.0
Daytime dysfunction (Component 7)	Very good	72	25.9
	Fairly good	52	18.7
	Fairly bad	96	34.5
	Very bad	58	20.9
	Total	278	100.0

Table 5: Binary logistic regression result of sleep quality of Heart Failure patients attending Jimma University Specialized Hospital November 2014

Variables		Sig.	Exp(B)	95% C.I. for EXP(B)	
				Lower	Upper
Occupation	Unemployed	0.000			
	Employed	0.315	2.823	.373	21.356
	Merchant	0.950	0.945	0.156	5.701
	Farmer	0.001	0.123**	0.034	0.442
	Government official	0.677	0.620	0.066	5.866
	Daily laborer	0.539	0.651	0.166	2.560
	Others	0.258	0.388	0.075	2.000
Educational status	Illiterate	0.223			
	Read and write only (1)	0.999	0.000	0.000	.
	Grade 1-4 (2)	0.197	2.097	0.681	6.462
	Grade 5-8 (3)	0.100	0.406	0.138	1.190
	Grade 9-10 (4)	0.200	0.335	0.063	1.780
	Grade 11-12 (5)	0.045	0.102*	0.011	0.950
	Diploma	0.815	0.661	0.020	21.377
	University or above	0.999	0.000	0.000	.

*Significantly associated variable

List of Figure

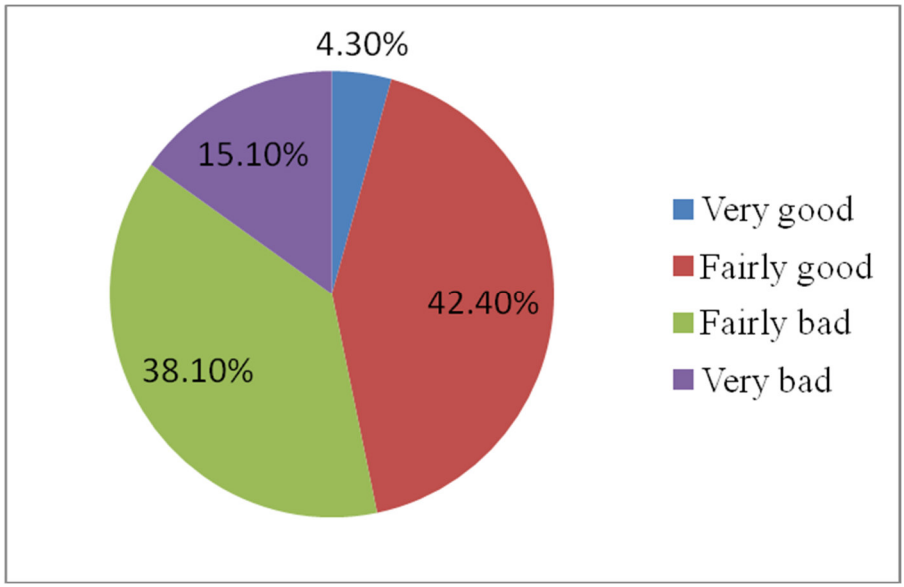

Figure 1: Patients subjective rating of their sleep quality among Heart Failure patients attending Jimma University Specialized Hospital; November, 2014

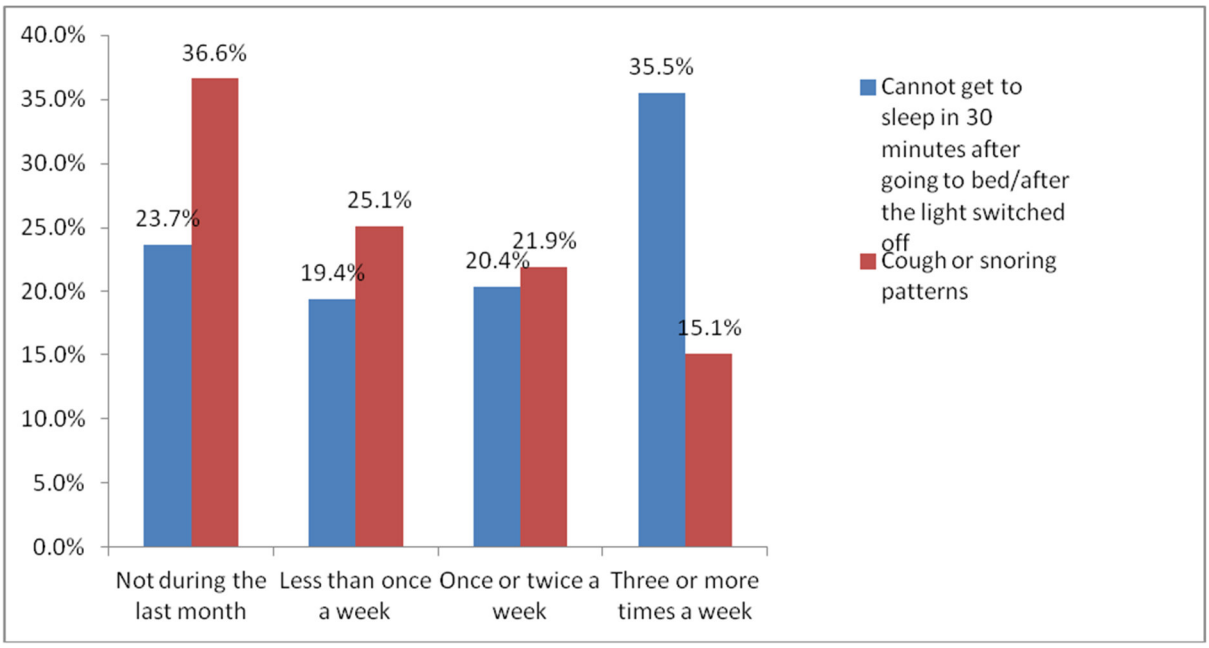

Figure 2: Sleep latency and coughing or snoring patterns of Heart Failure patients attending Jimma University Specialized Hospital November, 2014

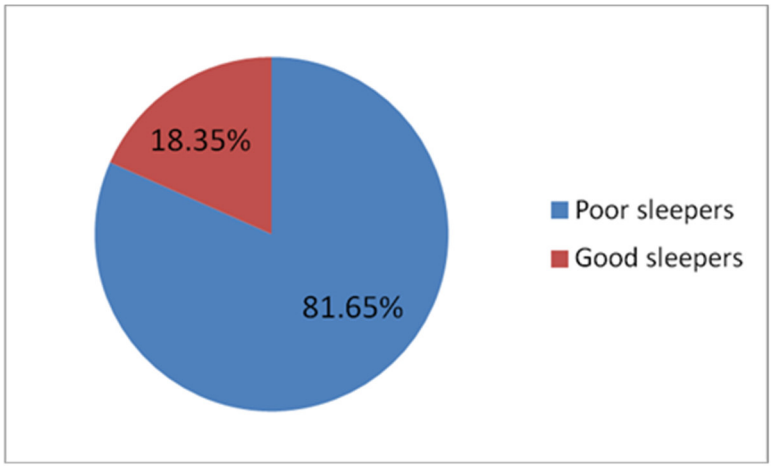

Figure 3: Level of sleep quality among Heart Failure patients attending Jimma University Specialized Hospital; November, 2014