Quality of Sleep among Diabetes and Non–Diabetes–Pilot Study

Neenu Merin[1], Regina Antony[2]

[1]Lecturer, Department of Medical Surgical Nursing, Amrita College of Nursing, Amrita Vishwa Vidyapeetham, Kochi, Kerala, [2]Associate Professor, Department of Medical Surgical Nursing, Amrita College of Nursing, AMRITA Vishwa Vidyapeetham, Kochi, Kerala

Abstract

Almost everyone has trouble sleeping once in a while, but if occasional episodes of sleep escalate into an unhealthy night time routine, and it will hamper the productivity and sap the patients quality of life[1].

Objective: Of this pilot study was to compare the quality of sleep among patients with and without diabetes.

Methodology: Quantitative approach with a descriptive design was used. A non-probability convenience sampling technique was used to select samples in this study. A semi-structured questionnaire prepared by the investigator was used to collect the socio-demographic and clinical data from the subjects. A standardized Pittsburgh Sleep Quality Index tool was used to compare the sleep quality among 37 diabetic and 37 non-diabetic subjects.

Results: The study findings shows that in both diabetic (DM) and non-diabetic (NDM) subjects majority of the subjects 75.7% and 43.2% respectively were of the age group of 56-65 years. In both the groups majority were male (DM-24 and NDM – 27). The results also showed that among the groups most of the subjects were had high school education, were employed,and were married and had a monthly income >Rs.15,000. Among diabetic subjects 22(59.4%) were hypertensive whereas among non-diabetic subjects 9(51.35%) were hypertensive. The study findings revealed that, majority of the subjects with diabetes had poor sleep quality 78.4% (29), whereas among non-diabetic subjects only 51.4% (19) subjects reported poor sleep quality and the quality of sleep among non-diabetic subjects were better than diabetic subjects at (p=0.014).

Conclusion: As a healthcare practitioner, the health care providers should focus their attention to the quality of sleep of their patients and should take initiative to make the people to aware about the importance of sleep in their day to day life to live healthy.

Keywords: *Diabetes Mellitus, Quality of Sleep, Non-diabetes.*

Introduction

It is a long time Diabetes was discovered but no one really knows about its exact history. This silent epidemiology is still a health concern with an increasing prevalence. According to international Diabetes federation, in 2025 the number of patients with type 2 diabetes will be 40 million with an increase of 80%. More than 3 million people have diabetes in Iran, which triples every 15 years. Increasing number of diabetes cases is more serious in the Middle East and is due to the economic changes, compliance with western customs and the aging population[2].

Diabetes can be a debilitating disease associated with reduced quality of life, severe complications, shorter life expectancy, and increased economic burden. Much effort has been devoted to identifying factors associated with the increased risk of developing type 2 diabetes and improved prognosis of people with type 2 diabetes to improve the lives of millions of Americans. Disturbed sleep has recently been proposed as a novel risk facor[3]. A range of sleep disorders are common among people with type 2 DM, including sleep apnoea, insomnia, periodic limb movements, in which sleep apnoea is the most common reported sleep disorder[4].

There is evidence that approximately one third of people with diabetes suffered from sleep problems whilst it was only 8.2% in control group without DM[5]. In another study more than half of the people with type 2 DM were poor sleepers[6]. One more study also shown that using the Pitsburgh Sleep Quality Index as the validated tool for measuring quality of sleep, lower score of PSQI (52%) were reported by people with type 2 diabetes[7]. Evidences showed that poor sleep quality among people with type 2 DM is associated with longer duration of diabetes, poor glycemic control, normal body mass index and hypertension[4]. Hypertension is extremely common in patients with diabetes[8]. Another study investigated the association of sleep duration daytime nap duration with deaths and major cardiovascular events. And its results shows that estimated total sleep duration of 6-8 hours per day is associated with the lowest risk of death and the major cardiovascular events and both short duration (<6 hours) and long duration (>8 hours) are associated with increased cardiovascular events and death[9].

Studies also reported that high prevalence of poor sleep quality among people with type 2 DM has a negative impact on glycemic control. A good sleep quality should be considered as an important component in the prevention and management of type 2 DM[4]. To date, there is a lack of case-control studies investigating quality of sleep among persons with and without type 2 diabetes. We investigated whether differences in sleep quality exist between persons with type 2 diabetes and non-diabetic controls.

Methodology

A quantitative approach and a comparative descriptive design was used. The data was collected from 74 patients attending OPDs of Amrita Institute of Medical Sciences and Research Centre Kochi by using non-probability convenient sampling technique. The setting was selected because of the easy accessibility of the group, familiarity of the setting. The researcher explained the purpose of the study and obtained an informed consent from each subject. The tool for data collection include; Tool I- Socio-demographic data and clinical data and Tool II- Pittsburgh Sleep Quality Index (PSQI) to assess the quality of sleep among patients with diabetes and without diabetes. Data analysis was performed using descriptive and inferential statistics.

Results

Section I: Description of socio-demographic and clinical variables of the subjects

Age:

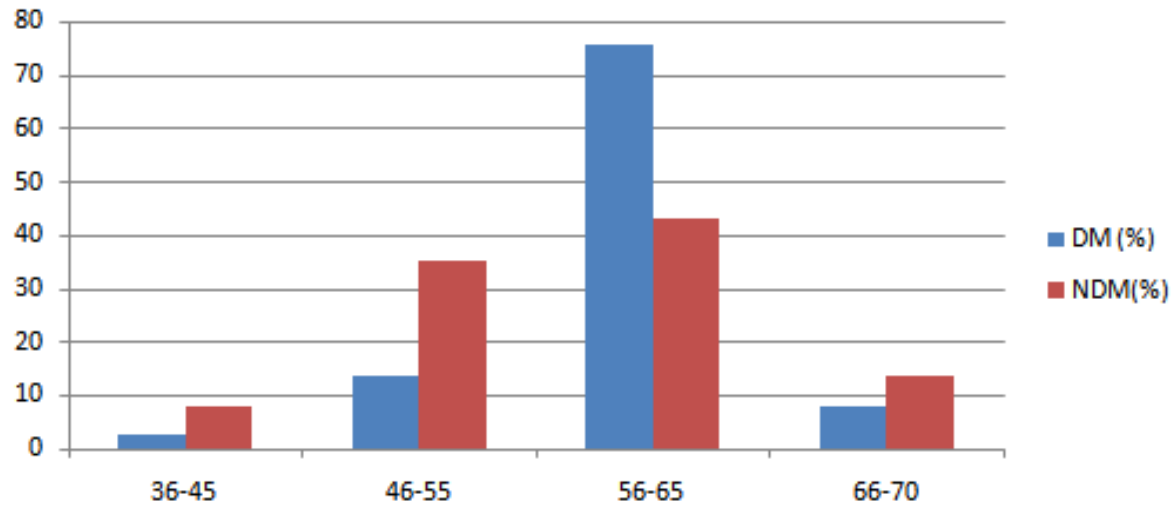

Figure 1: Bar diagram showing distribution of subjects based on age

Figure 1 indicated that in patients with diabetes mellitus majority 28(75.7%) of the subjects w belonged to the age group of 56-65 years and in patients without diabetes mellitus also most of the subjects 16(43.2%) were of the age of 56-65 years.

Gender:

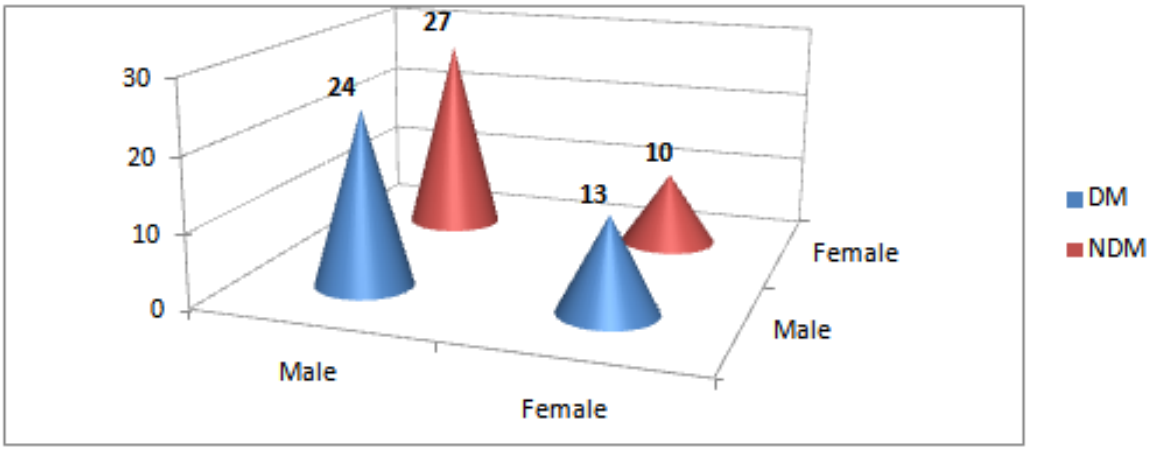

Figure 2: Conical bar diagram showing the gender distribution of subjects with and without diabetes mellitus

The data presented in figure 2 indicated that, in gender wise distribution in both diabetic and non diabetic subjects the majority were males. (13) 35.1% diabetic subjects and (10) 27% non diabetic subjects were female.

Among the subjects with high school education level 51.35% had DM and 45.94% were NDM, and 27.02% subjects were graduated and 97.29% of the subjects were married in both the groups. However,72.97% of the subjects with DM were employed whereas only 54.05% were employed among NDM subjects. Majority of the subjects had a monthly income > Rs 15,000/- in both the groups.

Considering the BMI 20 (54.1%) among diabetic subjects and 15(40.5%) non-diabetic subjects were overweight. And in the case of Neck Circumference 32 (86.5%) diabetic and 29 (78.4%) non-diabetic subjects had a high neck circumference.

Section II: Comparison of Quality of sleep among patients with and without Diabetes

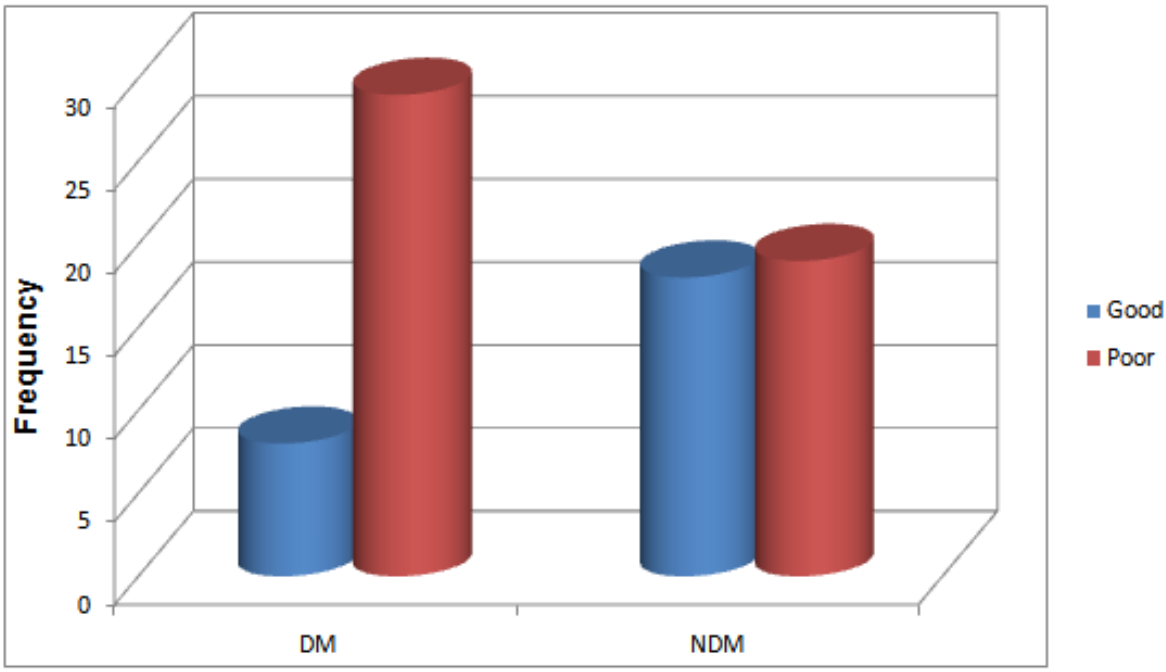

Figure 3: Cylindrical bar diagram showing comparison of sleep quality among subjects with and without diabetes mellitus

In figure 3 the cylindrical bar diagram depicted that majority of the subjects with diabetes mellitus (29) 78.4% reported poor sleep quality whereas non-diabetes mellitus subjects only (19) 51.4% showed poor sleep quality.

Table 1: Comparison of sleep quality among diabetic and non diabetic patient

Group	Quality of Sleep				Chi-square	df	p
	Good		Poor				
	f	%	f	%			
DM	8	21.6	29	78.4	5.929	1	0.014*
NDM	18	48.6	19	51.4			

*significant ($p<0.05$)

The data presented in table1 revealed that among the diabetic patients (29) 78.4% had poor quality of sleep whereas in non-diabetic patients (19) 51.4% had poor quality of sleep. So the results shows that the quality of sleep among non-diabetic subjects were better than diabetic subjects at (p=0.014).

Section IV: Association of sleep quality with selected clinical variables

Among 37 diabetic subjects, 21 subjects were sleeping less than 6 hours per night and majority 20 (95.2%) had poor quality of sleep whereas 16 subjects sleeping 6-8 hours per night, only 9 (56.3%) had poor quality of sleep. There is a significant association between sleep duration and quality of sleep at p value 0.012. However in the case of non-diabetic subjects 27 subjects had a normal sleep duration of 6-8 hours per night and only 10 subjects were sleeping less than 6 hours per night. Among that 10 subjects 9 (90%) had poor quality of sleep. There is also a significant association found between sleep duration and sleep quality at p= 0.008. When looking into the sleep duration and sleep quality, the sleep quality of non-diabetic subjects is better than the diabetic subjects.

Discussion

The present study investigated the quality of sleep and its compared among patients with diabetes and without diabetes. The results of the present study indicated that (29)78.4% subjects with diabetes have poor quality of sleep and only (19)51.4% non-diabetic subjects have poor quality of sleep and the quality of sleep among non-diabetic subjects were better than diabetic subjects at (p=0.014). Clinical researches has shown that up to one third of patients with DM suffered from concomitant sleep disorders, as compared with 8.2% of controls without DM. In another study, more than half of the patients with type 2 DM are likely to report being "poor sleepers", according to a research poll conducted at University of Pittsburgh. The patients with type 2 DM were more likely to have low Pittsburgh Sleep Quality index (PSQI)[10].

In this study among diabetic subjects those who are sleeping less than 6 hours per night (95.2%) had more poor quality of sleep compared to those who are sleeping 6-8 hours per night (56.3%) where as in non-diabetic subjects majority 27 subjects had a normal sleep duration of 6-8 hours per night and only 10 subjects were sleeping less than 6 hours per night. Among 27 subjects sleeping 6-8 hours per night, 63% reported good quality of sleep and only 37% had poor quality of sleep.Both poor quality of sleep and short sleep duration (#6 h) were associated with increased prevalence of diabetes, with higher rates in relatively healthy Chinese people. Compared with the group with good quality of sleep and 6e8 h sleep duration, diabetes was the most prevalent in individuals with poor sleep quality and #6 h sleep duration[11]. Previous studies found that self-reported short sleep duration is associated with diabetes. Some studies have reported that long sleep duration is also associated with diabetes[12,13,14].

Conclusion

To our knowledge, not much study in this area has been conducted, so the researcher out of interest decided to conduct a descriptive pilot study to assess the difference in quality of sleep among subjects with diabetes and without diabetes. Based on the study findings sleep quality improvement plays an important

role in glycemic control among people with type 2 DM. A good sleep quality should be considered as an important component in the prevention and management of type 2 DM.

Conflicts of Interest: All authors have none to declare.

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Ethical Clearance: Ethical clearance obtained from the ethical committee of Amrita Institute of Medical Sciences, Kochi.

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