

HEAVY WORKLOAD OF NURSES AND EFFECTS OF IT ON SLEEP/RESTED LEVELS

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ABSTRACT

Aims: In this definitive cross-sectional survey study, it has been aimed to research the effect of nurse workload increase on degradation of the sleep quality and daytime sleepiness.

Methods: 204 volunteer nurses who work in Trakya University Faculty of Medicine Hospital clinics have attended to this study. In the survey, TISS-28 (Therapeutic Intervention Scoring System-28) for workload, Epworth Sleepiness Scale for evaluating the sleepiness and Pittsburgh Sleep Quality Index have been used. TISS-28 scale data has been divided into 4 sub-groups and compared to the rates it has got from the Epworth Sleepiness Scale and Pittsburgh Sleep Quality Index and a meaningful relationship between them has been looked for.

Results: In relation to workload nearly half of the cluster (n:82) can be seen in the 2nd sub-group ($p < 0.05$). We can accept that general nurse population spends a standart shift. In addition, there is a distinct statistical relationship between the degradation of sleepiness(Pittsburgh and Epworth) with the increase in the nurse workload(TISS-28).

Conclusion: The increase of the nurse workload causes the degradation of the sleep status ad worsens the rested status. The degradation of the rested status and the sleep routines of the nurses, threats their health in the physical and mental way and on the other hand reduces the work effectiveness in the hospitals and causes a lot of stress and the other stress related problems in the work areas. In order to prevent this, the work condition of the nurses should be improved, their shift hours and workloads should be adjusted so as to not to disrupt their sleep status.

Key Words: Nurse, sleep disorders, work load

INTRODUCTION

The aim of the study is to identify the effect of the heavy workload of the nurses who have the busiest working conditions, on their sleep quality. Even though sleep looks like a passive process, in reality it is a very active process with its own internal dynamics and has a significant role in rejuvenation of the body.

Sleep, which is a basic need for people of all ages, causes a continuous state of sleepiness when a person is unable to rest sufficiently due to sleep deprivation. The characteristic symptom of excessive daytime sleepiness, which is due to the aforementioned cause, is feeling sleepy and fatigued all day long (1).

Sleep quality, which is determined via criteria such as feeling energetic and well-rested, is affected by many factors. A person's lifestyle, fluctuations in her business life and social life, health issued and illnesses,

and the amount of daily stress one is subjected to can be given as examples to such factors (2). Decrease of sleep quality and increase of sleep disorders are among the current problems of those who work at professions that involve a busy pace and shifts, such as medical staff. Sleep disorders pave the way for the accidents creating threats for life (1).

Most of the hospitals which provide services in modern cities are now providing service 7/24 in order to meet the ever increasing need for health services. Everyone has their shares in providing this health services from doctors to hospital managers and personnel. Nursing, which has a heavy work load and stressful working conditions, comes at the very top of these professions in which people work under heavy responsibility. Especially people working in varying shifts may have daytime sleepiness and the night shift workers may have excessive tiredness, reduced work performance and circadian rhythm disorders. This

sleep disorder affects the services of nursing in a negative way for the nurses who work in watch or shift system.

In order to carry out nursing services in a more qualitative and quantitative way, the identification of the sleep status of the nurses is very important. In order to make this identification the TISS-28 (Therapeutic Intervention Scoring System-28) survey to determine the workload, Epworth and Pittsburg surveys in order to determine the sleep-rested status of the nurses who work in Internal and Surgical Departments within the Trakya University. The results have been evaluated statistically and the effects of work load on sleep-rested levels have been identified.

MATERIAL AND METHODS

This study has been carried out between the dates of 6-27 March 2014 on the nurses who work in Trakya University Hospital clinic services with the approval of the TUTF-GOKAEK 2014/01 ethics committee. Informed consent from each patient participating in this study have been taken, stating that they are fully informed regarding aim of this study and they voluntarily participate in this study.

In order to gather the data of the study, surveys of "TISS-28", "Epworth Sleepiness Scale" (ESS) and "Pittsburgh Sleep Quality Index" (PSQI) have been used. Data has been gathered by using one on one interviewing method by the researcher.

TISS-28 is a test which was developed to determine the severity of a disorder, but it is currently used in the evaluation of nursing activities. It contains 28 therapeutic interventions and the answer choices are "yes" and "no". 1 TISS-28 point corresponds to 10,6 minutes of work load (3).

Epworth Sleepiness Scale: It was developed by Johns in 1991. In this scale, there are 8 items which are required to be awarded points between 0 and 3. The total of the points indicate the degree of sleepiness. The difference between this scale, which enables us to measure the severity of sleepiness, is different from other similar scale sin that it can also be used in measurement of daytime sleepiness. This feature makes this scale much more convenient to use for professions with shifts, such as nursing.

If the total score, which is calculated over a total of 24 points, is 9 or higher, this circumstance is considered to be clinically significant (4, 5).

Pittsburgh Sleep Quality Index: It was developed in 1989 by Buysse and friends (6). This index consists of seven components and used in evaluating the sleep quality or degradation in one month time period. The total Pittsburgh Sleep Quality Index score is obtained when the points relating to the seven domains, which are subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication and daytime dysfunction, are added up. The questions have point values between 0 and 3. While the total score is between 0 and 21, high scores indicate bad sleep quality and low scores indicate sleep quality which can be considered as adequate. A person's total score being over 5 is sufficient to mark such person's sleep quality as clinically bad (6, 7).

Nurses in this study have been divided into four sections as slices of %25 based on the work load score taken in the TISS-28 survey as 15, 30, 45, 60. Work load scores of each sub group have been compared to the sleep of being rested levels.

Data gathered has been calculated from the survey's own scales. SPSS package program (SPSS incl. - V.17 ©) has been used in evaluation. In the statistical evaluation; the confidence interval (CI) has been taken as $p < 0,05$ meaningful. Correlation and regression, also ROC—AUC (Receiver Operator Characteristics – Area Under Curve) analysis have been carried out.

RESULTS

The volunteers which have been taken into the scope of the study (n:204) are the nurses who are actively working in the Trakya University Faculty of Medicine Hospital Clinics. In Table-1, TISS-28, ESS and PSQI values have been presented.

	TISS-28 Mean ± SD	ESS Mean ± SD	PSQI Mean ± SD
1. Sub group (0 - %25) n:64	11,52 ± 6,44	31,59 ± 20,610	5,16 ± 4,072
2. Sub group (%25 - %50) n:82	30,96 ± 5,76	32,46 ± 17,993	6,12 ± 4,749
3. Sub group (%50 - %75) n:43	50,32 ± 5,20	32,60 ± 19,596	5,74 ± 4,478
4. Sub group ((%75-%100) n:15	72,00 ± 9,08	42,87 ± 15,725	7,47 ± 5,540

(TISS-28: Therapeutic Intervention Scoring System-28, ESS: Epworth Sleepiness Scale, PSQI: Pittsburgh Sleep Quality Index)

Table 1: TISS-28, ESS and PSQI values

In relation to workload nearly half of the cluster (n:82) can be seen in the 2nd sub group ($p < 0.05$). We can accept that general nurse population spends a standard shift.

Epworth sleepiness level is found to be high in all the workgroups of nurses. At the same this high rates are continuing to rise in serious amounts ($p < 0.05$).

Even though the sleep quality levels of the nurses stay at the normal levels until 3rd group ($50,32 \pm 5,20$), based on this score there is a fast decrease. ($p < 0,05$). Epworth and PSQI values are increasing together in a meaningful level ($p < 0,04$, r : 232) statistically for the workers of 4th quarter ($50,32 \pm 5,20$ and above)

Regression analyses; indicates a 2 fold increase in ESS and PSQI for each TISS-28; 15' increase for each TISS-28 workload. ROC analyses made indicates an increase in the state of sleepiness and a distinct decrease in the sleep quality in the group with the TISS-28 score of 60 and above; AUC values are 0.754 for ESS and 0.810 for PSQI.

DISCUSSION

A reason has been presented, as an evidence, for our study over the nurses who work in Trakya University Faculty of Medicine work load calculation with TISS-28 survey and compared with the values of sleep orders and being rested and showing the close relation between them, in order to change the work conditions of the nurses and adjusted so as to not to threat the levels sleep and being rested.

As it can be seen, nearly half of the nurses have the standard shift hours with relation to work load. However it can also be seen that the nurses who have average values of work load, have sleep disorders parallel to the increase in the work load. This situation expresses the hardness of the working conditions and the increased stress they have during these hours independent of their working hours. Every profession involves risk factors, whether few or many. Inadequacy of physical conditions, excessive amount of work to be completed within limited time periods, psychological pressure, technical issues, and problems arising from managers and other employees are work sourced factors which expose an individual to stress. Nurses are under heavy exposure to these kinds of stress factors, when considering them being in close contact with the patients and being in a very important position in the healing process of these patients, for a well-functioning and satisfactory health system and it is very important that they have high motivation and in a state in which they could concentrate for their work better is very important (8,9).

The degradation in the sleep quality together with the increasing work load became evident with a distinct and heavy increase in the sleep quality. This shows that there is a limit value for the tolerance to the exposed stress and when this limit value exceeded,

it shows how fast the situation is going worse. It is clear that every physiologic mechanism has the ability to adapt to the negative conditions and tolerate the damage caused by these conditions to a certain degree but when these conditions reach to levels which cannot be tolerated shows itself with the balance loss and a sudden getting worse. It is normal for the nurses who cannot get enough rest under the heavy working conditions after a while to have loss of attention, deterioration of mood and physical tiredness to show them more clearly. The group in which this problem is more clearly seen is the nurse population which has the 60 and above work load. In this group significant sleep quality decrease can be seen. It will not be confusing when experiencing a lot of anomalous situations when the nurses in this group have been studied (10,11).

TISS-28; 3. The meaningful co-increase in the values of Epworth and PSQI values which we used in the rating of the sleep quality by 3rd quarter workers indicates a certain and very similar table to the sleep disorders and the increase in the state of sleepiness against the high scores in the work load of the nurses in this group. Starting from this, it can be understood how a healthy sleep is by itself, enough for renewal, physical fitness and being rested and in the lack of sleep there is an increase in the mistakes made in the routine actions and accidents in the workplace parallel to the tiredness and sleepiness states of the nurses and also there is a serious decrease in the work performance. When the lack of sleep reaches to extreme degrees, there are serious losses in sensory and motor functions; forgetfulness and falling asleep during the daytime in various places are known to occur. This and similar situations disrupt the work of the health system and cause serious material and spiritual losses (12).

When we have look at the regression analyses, each 15 points of increase gained from TISS-28 survey indicates a 2 fold increase in the levels of ESS and PSQI, and creation of a geometric increase on the sleep quality is caused by work load. Inferring from there, it can be easily guessed that even the small differences in work load may cause important changes. The increase in these levels may appear dramatically with the inconveniences and may cause mistakes with no return especially in these groups which have a high work load (13,14).

As a result of our study it can be seen that there is a parallel increase in the sleep disorders with the increase in the workloads of the nurses who work in Trakya University Hospital Services. Especially the

nurses who have a heavy workload according to TISS-28 (60 or above) and clearly high ESS and PSQI scores indicates that the nurses who work with a heavy workload have their sleep cycles in disorder and they cannot rest enough.

The degradation of the rested status and sleep routines of the nurses threat their health in a physical and mental way and on the other hand reduces the work effectiveness in the hospitals and causes a lot of stress and other stress related problems in the work areas. In order to prevent this, the work condition of the nurses should be improved, their shift hours and workloads should be adjusted so as to not to disrupt their sleep status. Extra care should be taken to spare enough resting time for nurses, especially when arranging the work hours of the nurses at night shifts and departments with relatively heavier work load. The need in our country for comprehensive work on this subject is important in respect to provision of qualified and sufficient sources to refer to while carrying out changes regarding such professions. Thus, healthier and more efficient labor policies can be achieved (1).

Ethics Committee Approval: This study was approved by Trakya University Faculty of Medicine Scientific Researches Ethics Committee.

Informed Consent: Written informed consent was obtained from the participants of this study.

Conflict of Interest: The authors declared no conflict of interest.

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