Work-related fatigue and related factors among nurses working at the Adnan Menderes University Hospital

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Abstract

Objective: Work-related fatigue is a common health problem among nurses. The objective of this study is to determine the level of fatigue among nurses working at the Adnan Menderes University Hospital in Turkey.

Material and Methods: This cross-sectional study has been carried out in Turkey in 2016. A total of 463 nurses from Adnan Menderes University Hospital in Aydin have agreed and completed the data collection form. They have provided information on sociodemographic characteristics, work place, number of shifts worked, work year and weekly working hours. The visual analogue scale was used to measure levels of energy and fatigue. Linear regression analysis was performed to highlight any significant changes.

Results: In total, 85.3% of the nurses who participated were females. 60.3% were single, 53.6% worked in intensive care units and 26.1% worked only in the day shift, 17.9% worked for more than 45h a week. According to univariate analyses, nurses who were over 40 years of age, married, worked in internal medicine and surgery clinics for over 15 years and constantly worked in the day shift for 40 h a week had lower energy scores and higher fatigue scores. According to the univariate analysis, all the personal and working characteristics are related fatigue and energy subscale scores. Linear regression analysis revealed that age was the only variable affecting energy scores.

Conclusion: It can be stated that factors affecting fatigue among nurses in our study group are associated with age and gender. Prevention and supporting programs may focus on firstly vulnerable nurses (female and older age group).

Keywords: Fatigue; Nurse; Hospital

Introduction

Globalisation demands increased production due to its economic context and imposes rapid changes in work life (1). In modern work life, there are longer working hours, time pressure, reduction in break times, continuous technology processes and work patterns such as shift work have negative effects on employees. One of these negative effects is impairment of the mechanisms of natural biorhythms and fatigue (2,3).

Circadian rhythms are set for high activity during daytime and very low activity during night-time. As temperature and other body rhythms of shift workers do not coincide with the activity patterns of the person, disorientation and fatigue occurs. There is impairment similar to that seen during jet lag (4).

Fatigue is a multidimensional concept. It is a subjective feeling about activity, motivation and concentration. It is a complex perception where somatic and psychological factors play a role (5).

Fatigue is defined as a change in psychophysiological control mechanisms regulating task-related behaviour. Fatigue is not an adverse effect, but a psychophysiological mechanism of compliance or a safety mechanism of an individual faced with a risk of exhaustion and it is a protective response (6). Fatigue is a phenomenon that is affected by individual properties and domestic and social factors such as sex, sleep quality, shift work, psychological state, marital status, employment status, housework, parenting, conflict situations and social support. Work-related fatigue is affected by work environment, work content, work , organisation and policy and poor working conditions (6,7,8,9,10).

As a result of fatigue, performance issues develop at work, poor concentration, attention deficit, problem-solving and decision-making difficulties, memory impairment, delay in response time, professional incompetence and problems in private and social life occur.

It is a condition that can result in work accidents, presenteeism and other occupational health problems. This condition adversely affects the health of employees and the quality of services provided (4,9,11,12). In modern industrial societies, conditions that negatively affect workers are also experienced in the health sector. Health personnel are expected to work 24/7 under time pressure. For this reason, fatigue is widespread among health personnel, particularly among nurses working in hospitals (5). Fatigue causes an increased number of work accidents and occupational health problems among health personnel. Fatigue can also affect the quality of services provided and may lead to malpractice. The well-being of healthcare workers is important for the health and safety of patients they serve. When the health of medical staff is not considered important, the cost of healthcare services increases (9,13,14). Fatigue in nurses is related to unfavorable hospital working conditions and personal factors. In addition, previous studies emphasized that supernurse values contribute to fatigue. Supernurse barriers for developing a culture of safety are related to nurse fatigue. Supernurse characterizes some values and behaviors defining a superhero that exists within nursing professional culture (15).

The nurse fatigue may have negative consequences for nursing practice and quality outcomes both at the individual and organizational level, the entire health care system (16). It is important to be aware of fatigue and its possible causes in terms of patient safety and employee health (11). Nurse training in Turkey started in 1921 with the establishment of six month voluntary caregiver courses. Later, nursing schools that provided training on a high school level were opened. University level nurse education in Turkey began in 1955. All nurses have the same responsibilities, regardless of where they have graduated from(17).

The hard and exhausting working conditions are well known in Turkey (18). On the other hand, patient rights and patient safety are as important in. The Ministry of Health regards patient safety as an important health system performance indicator. Nurses play an important role in ensuring patient safety and reducing medical errors (19).

In Turkey, the health transformation policy for the development of healthcare services was initiated in 2003 and the Turkish Universal Healthcare system has changed dramatically. The main concept is privatization. This concept is included competitive forces and market-oriented incentives within public institutions. The performance-based payment systems in public health sector has started (20).

This study aimed to determine the level of fatigue and factors affecting fatigue among nurses working at the university hospital.

Materials and Methods

This cross-sectional study was conducted in Adnan Menderes University Faculty of Medicine Hospital in Aydın, Turkey. All registered nurses working at hospital were included 463 (89.1%) and all nurses have completed

the data collection form. The inclusion criteria was to provide direct patient care during the data collection periods and willing to participate in the study. Pregnant nurses were excluded from the study.

In 2016, data were collected via an anonymous two-part questionnaire. Information on sociodemographic characteristics, work place, shift work, work year and weekly working hours was obtained. In addition, the visual analogue scale for fatigue (VAS-F), which measures the levels of energy and fatigue, was used. The VAS-F was developed by Lee et al(21) in 1990 and was adapted to Turkish by Yurtsever in 1999(22). It consists of 18 items. The grade scale varied from 1 to 10; the most positive expression in the fatigue subscale is 1 and the most negative expression in the fatigue subscale is 10, whereas the most negative expression in the energy subscale is 1 and the most positive expression in the energy subscale is 10. Items in the fatigue subscale ranged from the most positive to the most negative expression, while items in the energy subscale ranged from the most negative to the most positive expression. A high score in the fatigue subscale was interpreted as high fatigue and a low score in the energy subscale indicate that the severity of low energy levels. This scale is preferred because it is easy to use, brief and clear. Cronbach's α internal consistency coefficient of the fatigue subscale was 0.90 and that of the energy subscale was 0.74. The relationship between fatigue, and participants' characteristics were assessed using the t-test, ANOVA and enter model linear regression analysis. Statistical significance was accepted at $p < 0.05$.

Ethics committee approval was obtained from Adnan Menderes University Medical Faculty Deanery Non-invasive Clinical Research Ethics Committee. The aim and procedures of the study were explained to the nurses and participants were informed that their participation in the study was voluntarily.

Results

The characteristics of the nurses participating in the study are shown in Table 1. In total, 85.3% of the nurses were females, 60.3% were single, 67% were in the age group of 18–29 years and 29.4% had children. Further, 53.6% of the nurses worked in intensive care units and 26.1% worked only in the day shift. Moreover, 60.3% less than 5 years of experience and 17.9% worked for more than 45 h a week. In addition, 47.9% of the nurses stated that they smoked and 8.9% stated that they had at least one chronic illness. The evaluation results of the scores obtained from the fatigue scale according to the sociodemographic characteristics and working conditions of the nurses are shown in Table 2 and 3. The mean score in the energy subscale was 30.59±12.77, and that in the fatigue subscale was 69.18±34.10.

According to univariate analyses, the energy score was lower and the fatigue score was higher among female, over 40 years old, married, vocational high school graduates, worked in internal medicine and surgery clinics, had over 15 years of work experience and always worked in the day shift and for 40 h a week. A linear regression analysis was

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carried out to determine the effect of the variables found to be significantly related in univariate analysis (gender, age, marital status, school graduated, department, work experience years, shift type, weekly study hours) on levels of fatigue. Linear regression analysis revealed that age was the only variable affecting energy scores. Fatigue score was related age and gender (Table 4).

Table 1:. General characteristics of the participant nurses

		N	%
Gender	Female	395	85.3
	Male	68	14.7
Marital status	Married	175	37.8
	Single	279	60.3
	Widow	9	1.9
Age	≥19	20	4.3
	20-29	289	62.7
	30-39	105	22.8
	40-49	47	10.2
Education	High school	127	27.6
	University	289	62.8
	Master degree	44	8.6
Work unit	Internal	121	26.2
	Surgery	93	20.1
	Intensive care	248	53.7
Employment status	Day work	120	25.9
	Shift work	236	51.0
	Night work	103	22.2
Years of experience	0-5	279	60.3
	6-10	68	14.7
	11-14	65	14.0
	15 +	51	11.0
Work hours per week	40	163	35.2
	45	217	46.9
	45 +	83	17.9
Smoking	Yes	222	47.9
	No	207	44.7
	Quit	33	7.1
Chronic Diseases	Yes	41	8.9
	No	420	90.7

Table 2: The energy subscale scores of participant nurses characteristics

Characteristics		Mean (SD)	t-test/ ANOVA	*p value*
Gender	Female Male	30.03(12.65) 34.26(13.03)	-2.53	0 .012
Age	≤19 20-29 30-39 40-49	42.05(10.65) 32.66(11.49) 26.75(12.72) 21.45(13.79)	21.40	0.000
Marital status	Married Single Widow	26.76(12.99) 33.18(11.92) 28.00(16.32)	14.48	0.000
Education	High school University Master degree	35.62(12.05) 29.33(12.45) 26.56(13.07)	10.04	0.000
Work unit	Internal Surgery Intensive care	26.71(12.90) 27.16(12.06) 33.93(12.14)	18.52	0.000
Years of Experience	0-5 6-10 11-14 15 +	33.95(11.61) 28.35(12.73) 25.32(12.78) 22.44(12.67)	19.67	0.000
Employment status	Day work Shift work Night work	24.73(13.79) 31.85(11.04) 34.38(13.06)	19.64	0.000
Work hours per week	40 45 45 +	25.85(13.15) 34.40(11.50) 30.32(12.15)	22.58	0.000
Smoking	Yes No Quit	31.03(13.01) 31.19(12.53) 24.75(11.85)	3.82	0.023
Chronic diseases	Yes No	29.55(13.04) 30.80(12.77)	-0.59	0.55

Table 3. The scores of the fatigue subscale by nurses characteristics

Characteristics		Mean(SD)	t-test/ ANOVA	p value
Gender	Female	71.86(33.48)	4.14	0.000
	Male	53.50(33.70)		
Age	≤19	42.70(33.16)	19.79	0.000
	20-29	62.01(30.37)		
	30-39	83.41(32.83)		
	40-49	95.32(33.15)		
Marital status	Married	79.10(34.41)	10.44	0.000
	Single	62.30(32.01)		
	Widow	89.11(39.13)		
Education	High school	66.16(30.37)	9.13	0.000
	University	73.97(32.83)		
	Postgraduate	81.50(33.14)		
Work unit	Internal	77.95(33.71)	15.32	0.000
	Surgery	78.84(32.07)		
	Intensive care	61.20(33.14)		
Years of experience	0-5	58.90(31.11)	28.79	0.000
	6-10	74.75(32.48)		
	11-14	88.66(31.62)		
	15 +	93.26(3093)		
Employment status	Day work	86.84(32.75	23.53	0.000
	shift work	63.88(30.36)		
	Night work	61.62(36.42)		
work hours per week	40	83.90(33.76)	32.22	0.000
	45	57.31(31.79)		
	45 +	71.39(28.76)		
Smoking	Yes	65.20(35.39)	7.19	0.000
	No	70.23(32.44)		
	Quit	88.72(29.04)		
Chronic diseases	Yes	72.47(30.88)	0.64	0.51
	No	68.82(34.34)		

Table 4: Linear regression analysis of the relationship between subscales and independent variables. *Standardized Coefficients

Independent variables	Fatigue subscale			Energy subscale		
	Beta*	SE	p	Beta*	SE	p
Gender	-0.128	4.238	0.004	0.07	1.63	0.122
Age	0.103	1.564	0.026	-0.097	0.606	0.04
Chronic diseases	0.079	5.262	0.076	-0.064	2.034	0.16
Working unit	-0.092	1.909	0.057	0.132	0.738	0.08
Working years	0.238	3.011	0.012	-0.118	1.164	0.225
Work hours/week	0.066	2.532	0.218	-0.048	0.976	0.383
Education	0.135	4.317	0.145	-0.159	1.669	0.094
Employment status	0.001	2.82	0.982	0.04	1.092	0.501
R^2	0.21			0.25		

Discussion

In the present study, the status of fatigue was determined among nurses. Fatigue is quite a common condition among employees working in the health sector (14,23). Fatigue prevalence was found to be different among studies conducted using different measurement tools. In this study, mean scores energy subscale was 30.59±12.77, and that in the fatigue subscale was 69.18±34.10. Previous study which was carried out on the same scale found that fatigue and energy subscale mean scores were respectively 70.17 (24.66) and 27.5 (9.9) (24). In the present study, according to the univariate analysis results, all of the personal characteristics were associated with fatigue, previous studies reported similar results (25). Most participants are females in this study. In Turkey, the nursing profession is mostly dominated by females. Male nurses generally are a younger age group. Recently, nursing is a profession chosen by men due to easy employment in Turkey.

Fatigue was found to be more prevalent among those who were married. This situation is natural due to the double work load of married nurses; at work and at home. The fatigue scores of women were found to be high and their energy scores were found to be low. Despite social changes in the 21st century, women still take care and manage the house alone child care, child educating, housework and spousal roles (26). Female nurses do their own housekeeping and take care of their children in Turkey.

In our study, employees who were medical vocational high school graduates, worked in the internal medicine and surgery clinics, worked for more than 15 years, only during the day shift and worked for 40 h a week were found to have lower energy scores and higher fatigue scores. All these features are associated with age. In the present study, fatigue was found to be more prevalent among those over 40 years of age. An important proportion of nurses who were over 40 years old in Turkey graduated from medical vocational high schools. Generally, in hospitals, nurses who are senior and over 40 years of age only work in the day shift and in administrative positions and do not stay for the night shift. Although there was a positive discrimination among nurses in this age group in Turkey, fatigue was higher among nurses in this age group than among nurses who were in a younger age group. Age is a factor that negatively affects health. As age increases, adaptation to circadian rhythm decreases and there is more fatigue and energy loss. It has been emphasised that maladaptive fatigue is detected among older nurses (27). Fatigue is reportedly more prevalent among people over 40 years of age (28,29,30). Despite, older nurses' abilities and expertise are valuable. On the other hand, older nurses may be vulnerable (31). Generally, older nurses have greater job responsibility and they work more administrative positions (32). There is a need for more nurses to continue working despite the retirement age and older nurses represent an increasing proportion of the healthcare workforce. Nursing is physically and mentally hard job especially for older nurses due to natural ageing process (31,32).

In this study, no healthy worker effect was determined. Due to the low pension in Turkey, health personnel continue to work even if they are entitled to pension. These people are exempt from working in the night shift in most hospitals. Elderly health personnel experience difficulty in adapting to changing work demands, technology and unstable work environments in cost-focused health institutions (33). Stichler suggested that work stations for older nurses provide a comfortable work environment and that they are motivated to stay healthy, safe and employed and to share their knowledge and skills for the benefit of their younger colleagues and patients (34).

The limitation of this study is that it is a cross-sectional study; therefore, the results are limited in terms of revealing the cause–effect relationship. The results of this study cannot be generalised to all nurses. However, as this is the first work done on this subject in Turkey to the best of our knowledge, it can provide insight into work-related fatigue among nurses.

Conclusion

In conclusion, it can be stated that factors affecting fatigue among nurses in our study group are related to age and gender. Fatigue is an important indicator of opportunities to improve the nursing working systems and to support them. Our suggestion would be to take into consideration age differences in improving of the facilities of nurses and identifying the effects of fatigue on individuals characteristics are when setting fatigue reduction strategies.

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Author's Contributions: SO, AM: Research concept and design; data collecting, analysis and interpretation of data. **SO:** Preparation of article, and Revisions. All authors approved the final version of the manuscript.

Ethical issues: All Authors declare, Originality and ethical approval of research. Responsibilities of research, responsibilities against local ethics commission are under the Authors responsibilities. The study was conducted under defined rules by the Local Ethics Commission guidelines and audits.

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