

Original Article

Determining the Work-Related Strain Levels of Nurses and Influencing Factors

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Abstract

Background: Nursing is described as a stressful profession with high workload due to the effect of many negative factors caused by the working environment.

Aim: This study was conducted in order to determine the work-related strain levels of the nurses working in a university hospital and the influencing factors.

Material: This descriptive study was conducted with the nurses working a university hospital. The population of the study was composed of the nurses working in a university hospital. Sample selection was not performed in the study and the whole population was aimed to be reached. The study was conducted with 445 nurses who were voluntary to participate in the study.

Method: Two data collection forms were used as the data collection tool in the study. The personal information form prepared by the researchers and the Work-Related Strain Inventory (WRSI). The data were collected by conducting the face-to-face interview technique with the nurses in a university hospital between September 2018- May 2019.

Results: It was determined that the mean score of the nurses in the Work-Related Strain Inventory was 41.18 ± 2.68 . It was determined that marital status, choosing the profession willingly, and job satisfaction were the variables that were effective on the work-related strain level ($p < 0.05$).

Conclusion: The work-related strain levels of the nurses were above the average.

Key Words; Nursing, Work-related strain, Satisfaction, Stress

Introduction

Today, human life has become more complex together with the problems of this age. Business life is the main environment where the individuals face with this complexity (Okutan and Tengilimoglu, 2002). Business life is the main economic income center for the individuals to maintain their life. Besides economic return, it has positive characteristics such as socialization, bringing status-identity but it also has negative aspects such as physical and mental fatigue, stress, strain, and burnout (Grint 1998, Tinar 1996).

Work-related strain is observed more in the occupational groups with high workload. The healthcare professionals are the primary ones

among these occupational groups. Nursing is described as a stressful profession with high workload due to the effect of many negative factors caused by the working environment (Akbal et al., 2001; Taycan et al., 2006). There are many factors causing stress in the working environment. The International Labor Organization describes the main stressors of the nurses in the working environments as task ambiguity, problems and conflicts with managers and colleagues, excessive workload, emotional stress associated with the problems of patients, working with the patients with the need for intensive care and terminally ill ones, problems and conflicts with the patients, and working in shifts (ILO 2002). The stress and strain observed in the occupational groups, whose

working environment is human-driven, such as nursing reduces the motivation, productivity and job satisfaction of the individuals (Arıkan and Karabulut, 2004). In addition, job strain causes the physiological problems such as headache, muscle strain, and sleep disorders as well as mental and emotional losses (Egney et al., 2014; Clegg, 2001; Erdogan et al., 2009). Nursing, expected to fulfill its duties in shaping the healthcare system, is a dynamic process that makes the nursing care plan in accordance with the physical, emotional, mental and social health care needs of individuals in every segment of the society, and applies and evaluates this care plan (Birol 2002). In modern sense, nurses are expected to have skills such as fulfilling these functions duly, communicating effectively, having leadership characteristics, giving the required training, solving problems, and taking risk (Birol 2002). However, due to the work-related strain and stress, the nursing tasks are not fulfilled at desired level. In order to avoid such conditions, it is required to eliminate the work-related problems such as excessive shifts, inadequate number of staff, overtime work, manager pressure, carrier barrier (Koc et al., 2017). Also, enhancing the working environment, self-knowledge, learning the methods to cope with stress, and enhancing the current situation by the defense and coping ways such as social sport and relaxation exercises may be provided (Ulker, 2016).

Aim: This study was conducted in order to determine the work-related strain levels of the nurses working in a university hospital and the influencing factors.

Material and Method

This descriptive study was designed in order to determine the work-related strain levels of the nurses working in a university hospital and the influencing factors. The population of the study was composed of the nurses working in Firat University. Sample selection was not performed in the study and the whole population was aimed to be reached.

However, the nurses, who were on annual leave and maternity-breastfeeding leave during the study period and did not agree to participate in the study, was excluded from the study. The study was conducted with 445 nurses who were voluntary to participate in the study. The data were collected by conducting the face-to-face interview technique with the nurses in Firat

University hospital between September 2018-May 2019.

Data Collection: Two data collection forms were used as the data collection tool in the study. The personal information form prepared by the researcher in order to determine the socio-demographic and working conditions of the nurses and the Work-Related Strain Inventory (WRSI) developed by Revicki et al., were used. The data were collected in the nurse rooms by conducting the face-to-face interview technique in Firat University hospital within the working hours during the day. The verbal consent of the nurses was obtained about their participation in the study after they were informed about the study.

Personal Information Form: It was composed of 10 questions prepared by the researcher including 4 questions evaluating the socio-demographic characteristics of the nurses and 6 questions evaluating the subjects such as working period in the profession, weekly working period, manner of work, choosing the profession willingly, job satisfaction, and future expectations from the profession.

Work-Related Strain Inventory (WRSI): Work-Related Strain Inventory was developed by Revicki et al., in 1991 (Revicki et al., 1991) to determine the work-related strain and stress in the healthcare professionals. It consists of 18 items and it is 4-point likert self-report scale. Minimum score and maximum score of the scale are 18 and 72, respectively. The scale does not have a cut-off point and the work-related strain level changes directly proportionate to the score taken in the inventory. The " Work-Related Strain Inventory " was adapted to Turkish and its reliability and validity study was conducted by Aslan et al., in 1998 (Aslan et al., 1998). In their study, Aslan et al., revealed that the 15th item significantly decreased the item-test correlations. For this reason, as they have stated that it is appropriate to omit this item from the scale and this will increase reliability, the 15th item was omitted from the inventory in this research.

The Data Assessment: The data included in the study were assessed in the SPSS (Statistical Package for the Social Sciences) 23.0 software. Kolmogorov-Smirnov/Shapiro-Wilk test was used to examine whether the data had normal distribution or not. The descriptive characteristics of the nurses were expressed by the age, percentage distribution, mean, standard

deviation values; independent samples t-test in the paired groups in the parametric distributions, Mann-Whitney U test in the non-parametric distributions and ANOVA test in parametric data in the comparisons of three or more groups, and Kruskal-Wallis test in the non-parametric data were performed. In order to determine the effect of the demographic variables on the Work-Related Strain Levels, Linear regression enter model was applied.

Ethical Considerations

In order to conduct the study, ethical approval was obtained from “Firat University Ethics Committee for Non-Interventional Studies” (2019/08-08), and written permissions were received from the Head Physician and Nursing Services Department of Firat University. Also, the verbal consent of the nurses participated in the study was received by informing them about the study and the nurses who agreed to participate in the study were included in the study.

Results

It was determined that the age average of the nurses participating in the study was 32.20 ± 5.92 , 71.1% of them were female, 63.6% were married, 66.8% had a bachelor's degree or a higher education, and 33.0% had a professional experience of 6 -11 years. 53.7% of the nurses worked for 41-60 hours in a week and 23.2% worked in the internal medicine unit. It was determined that the rate of the nurses who willingly chose this profession was 57.4%, 57.9% of them were satisfied with their job and 68,6% answered the question "What are your future expectations from the nursing profession?" as "The conditions should be improved".

It was determined that the mean score of the nurses in the work-related strain inventory was 41.18 ± 2.68 and they had a work-related strain above the average (Table 1).

When examining Table 2, it was determined that there was no statistically significant difference between gender and WRSI total score ($p > 0.05$) but total mean score of the males was higher than total mean score of the females. It was determined that there was a statistically significant difference between marital status and WRSI total score ($p < 0.05$) and the mean score of the married ones was higher than the mean score

of the single ones. There was no statistically significant difference between the educational status, working period in the profession, weekly working period, the service, the manner of work and WRSI total score ($p > 0.05$). In the study, it was found that as the educational level of the nurses increased, their strain score increased; as their working period in the profession increased, their work-related strain scores increased but those having a working period of 18 years and more had the lowest strain scores. It was observed that those, who had the weekly working period of more than 40 hours and were working in the intensive care unit, had higher work-related strain levels. It was determined that there was a statistically significant difference between the status of choosing the profession willingly and WRSI total score ($p < 0.05$) and the mean scores of the ones who chose willingly the profession were lower. There was a statistically significant difference between the job satisfaction and WRSI total score ($p < 0.05$) and the work-related strain levels of those who were satisfied with the profession were lower. There was a statistically significant difference between the future expectations from the profession and WRSI total score ($p < 0.05$) and the nurses with high levels of expectations had the lowest strain mean scores (Table 2).

In Table 3, the effect of the variables related to the descriptive characteristics and working order of nurses on the work-related strain levels was examined. The effect of the characteristics based on the qualitative data on the work-related strain was determined and found as $R = .341$, $R^2 = .187$. It was also found that these variables accounted for 18.7% of the total variance in the dependent variable of work-related strain and the result was not statistically significant ($p > 0.05$). The marital status, choosing the profession willingly and job satisfaction were effective on the work-related strain ($p < 0.05$). Choosing the profession willingly and job satisfaction had negative effects on WRSI (-.307, -.450). The strain levels of the nurses who chose the profession willingly and were satisfied with their profession decreased. It was found that the variables of age, gender, educational level, working period in the profession, weekly working period, the service the nurses worked in, and future expectations from the profession did not have an effect on the work-related strain level ($p > 0.05$) (Table 3).

Table 1. The Scores of The Nurses in the Work-Related Strain Inventory

Work-Related Strain Inventory	Min-Max	X±SD
Total score	32.0-46.0	41.18±2.68

Table 2. The Comparison of The Work-Related Strain Levels of The Nurses Based in terms of Their Socio-demographic Characteristics

Socio-demographic Characteristics	Number	Percent	X±SD	Test and Significance
Age			32.20±5.92	
Gender				
Females	316	71.1	40.59±3.53	t:1.239
Men	129	28.9	41.53±2.22	p=0.07
Marital status				
Single	162	36.4	37.95±3.63	t:1.342
Married	283	63.6	40.85±2.58	p=0.01*
Educational Level				
Vocational High School	83	18.6	38.87±2.99	KW:0.468 p=0.791
Associate degree	65	14.6	39.30±1.78	
Bachelor's degree and Higher	297	66.8	40.33±3.64	
Working period in the profession				
0-5 years				KW:3.607 p=0.30
6-11 years	108	24.3	39.32±2.61	
12-17 years	147	33.0	40.42±1.56	
18 years and over	135	30.3	41.91±3.71	
	55	12.4	38.18±3.40	
Weekly working period				
20-40 hours	206	46.3	40.93±2.77	t=1.193
41-60 hours	239	53.7	41.68±1.61	p=0.19
The working service				
Internal service	103	23.2	39.82±3.78	F=1.892 p=0.234
Surgical service	94	21.1	39.27±3.74	
Pediatric service	80	17.9	40.32±2.50	
Emergency service	77	17.3	41.75±3.84	
Intensive care	91	20.5	42.72±4.57	
Choosing the profession willingly				
Yes				t=0.276 p=0.02*
No	255	57.4	39.17±2.40	
	190	42.6	42.79±3.99	
Job Satisfaction				
Yes	258	57.9	38.67±3.58	KW=0.319 p=0.04*
No	106	14.8	41.78±5.43	
Undecided	81	16.9	39.64±2.73	
Your future expectations from the profession				
Positive	44	9.9	38.62±2.41	KW=2.614 p=0.02*
Negative	96	21.5	42.21±3.14	
The conditions should be improved	305	68.6	40.47±3.82	

*p<0.05

Table 3. Explanation of Factors Affecting Nursing Stress Levels by Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	37.616	4.777		7.875	.000
	Gender	.718	.903	.076	.795	.428
	Marital status	2.628	1.005	.288	2.616	.010
	Educational Level	.686	.555	.158	1.235	.219
	Working period in the profession	.244	.629	.065	.388	.698
	Weekly working period	.265	1.019	.034	.260	.795
	The working service	.034	.185	.020	.186	.852
	Choosing the profession willingly	-.307	.817	-.040	-.376	.020
	Job Satisfaction	-.450	.481	-.091	-.936	.011
	Your future expectations from the profession	-.442	.509	-.079	-.869	.387
	Age	-.091	.095	-.169	-.957	.340

a. Dependent Variable: WRS total score

R	R Square	F	p
.341 ^a	.187	1.206	.279 ^b
p<0.05			

Discussion

This study was conducted to determine the work-related strain levels of the nurses working in a university hospital and the influencing factors. It was determined that the mean score of the nurses for the Work-Related Strain Inventory was 41.18 ± 2.68 , in other words, they had strain over medium-level. In the study by Ozyer, the WRSI mean score of the nurses working in a surgical clinic was found as 40.8 ± 5.4 (Ozyer, 2016). In the study by Ercevik, the WRSI mean score of the nurses was found as 40.77 ± 6.82 (Ercevik, 2010). It was determined that the mean scores were similar. However, Tel et al., found that the WRSI mean score of the nurses working in a university hospital was 38.00 ± 1.47 (Tel et al., 2012), Bascı et al., reported that the WRSI mean score was 31.81 ± 4.09 (Akbulut Bascı et al., 2016). It was thought that the stress levels of the nurses included in the study increased as they

worked in different clinics such as intensive care and emergency service.

In this study, it was determined that there was no statistically significant difference between the gender of the nurses and total score of WRSI and the gender did not affect the strain level. The mean score of the males, who participated in the study, for the WRSI were higher. Also, in the study conducted by Tokuc et al., on the ambulance workers, it was determined that the WRSI mean scores of the men were higher than the mean scores of the women but the difference between them was not statistically significant (Tokuc et al., 2011). In the study conducted by Sunter et al., with practicing physicians, it was observed that the difference between WRSI scores and gender was not significant (Sunter et al., 2006). In the present study, it was determined that there was a statistically significant difference between the marital status and WRSI total score

of the nurses and the married ones had higher mean scores compared to the single ones. Also, in the regression analysis, it was found that the marital status had an effect on the work-related strain level. However, numerous studies conducted in Turkey, have revealed that the marital status does not affect the work-related strain (Sunter et al., 2006; Arıkan and Karabulut, 2004; Aksu et al., 2018; Kaplan et al., 2011). Most of the nurses were female in this study suggested that the work strain increased more due to housework and children and they could not cope with this.

In this study, it was determined that there was no statistically significant difference between the educational level and WRSI total score and the educational level did not affect the work-related strain level. However, it was found that the mean score of the nurses with higher educational level in the WRSI was higher. There was no statistically significant difference between the working period in the profession and WRSI and the working period did not affect the strain level. As the working years increased, the score of the WRSI increased, however, the nurses with the working period of 18 years and higher had the lowest score. In the study by Avcı et al., it was determined that there was a statistically significant difference between the working period and work-related strain levels (Avcı et al., 2018). It was determined that the workers with the working duration of 0-1 year had the lowest work-related strain score and as the working duration increased, the strain score increased, the nurses with the working period of 37 months-5 years had the highest strain scores but the strain scores started to decrease after 5 years. In the study by Akbulut Bascı et al., it was determined that the difference between the working duration and the work-related strain level was not statistically significant. It was observed that the strain levels of the nurses with the working periods of 16 years and over decreased (Akbulut Bascı et al., 2016). In this study, it was thought that the strain levels of the nurses decreased due to the experience brought by long working periods and as their period of retirement was close.

In the present study, it was determined that there was no statistically significant difference between the weekly working period and WRSI total score and the working period did not affect the strain level. However, it was determined that the scores of the nurses working more than 40

hours weekly in WRSI increased. In the present study, it was determined that there was no statistically significant difference between the service of the nurses and WRSI total score and the service of the nurses did not affect the strain level. In this study, the nurses working in the intensive care unit had the highest strain levels and the nurses working in the surgical services had the lowest score in the WRSI. In the study by Kosucu et al., it was determined that the scores of the nurses working in the surgical clinics in the WRSI were lower than the scores of the nurses working in the internal medicine clinics (Kosucu et al., 2017). In the study by Chiang and Changa, it was determined that the nurses working in the internal medicine units had higher stress and depression levels compared to the nurses working in the other units (Chiang and Changa, 2012) In this study, the nurses working in the intensive care unit had the highest strain levels. The fact that the clinic levels of the patients, receiving care in intensive unit is provided are more severe suggested that the strain level may have increased as the intensive care units are much more complex environments.

In the present study, it was determined that there was a statistically significant difference between the status of choosing the profession willingly and WRSI total score and choosing the profession willingly was effective on the strain level. In parallel with the present study, Arıkan and Karabulut conducted a study on the work-related strain and burnout levels of nurses and determined that the nurses choosing the profession willingly had more intrinsic and job satisfaction and lower emotional burnout (Arıkan and Karabulut, 2004) Also in their study, Uzen et al., reported that choosing the profession willingly affected the total work stress score of the nurses positively. Those who have chosen the profession unwillingly worked under more stress (Uzen et al., 2015). In this study, it was determined that there was a statistically significant difference between the job satisfaction and WRSI and the job satisfaction was effective on the strain level. It was observed that the nurse who was satisfied with their job had lower work-related strain levels. It was determined in the present study that there was a statistically significant difference between the future expectations from the profession and WRSI total score but it was also found in the regression analysis that future expectations from the profession did not have an effect on the

work-related strain level. It was determined that the nurses with positive future expectations from the profession had low strain mean scores. In the study conducted by Acık et al., on the emergency department employees, they obtained results, which are parallel to the present study (Acık et al., 2016). In accordance with these results, it was observed that the nurses who were satisfied with their profession and had hope to advance in their careers had lower strain levels.

Limitations of the study

In this study, the number of people participating in the study was limited due to work intensity. Since the data of the study were collected in a single center, the results did not generalize to the universe.

Implications and Recommendations for Practice

There are many factors causing stress in the working environment. Nurses with high levels of work-related strain experienced various physical and psychological problems. Accepting and loving the profession are essential for the nurses whose focus point is human beings to have a happy and stress-free working life in their profession. It is obvious that satisfaction, success and productivity will increase in every working environment in which people work willingly.

Conclusion

It was determined in this study that the work-related strain levels of the nurses were at the above the average. The strain levels of the married ones were high and the strain levels of the nurses who chose the profession willingly, had job satisfaction and hope about the future of their profession were low. As a result of the regression analysis, it was determined that marital status, choosing the profession willingly, and job satisfaction were the variables that were effective on the Work-related strain level.

Acknowledgements

The authors would like to thank the participants who took part in the study without whose time and contributions it would not have been possible to undertake this work.

Conflict of interest statement

The authors declare that they have no conflict of interest.

It is presented as an oral presentation at the 5th National 1st International Congress of Current Approaches in Nursing

References

- Acık Y. Yigitbas C. Bulut A. Deveci E. Pirincci E. Oguzoncul F. Ozan T. Demirbag C. Arın E., Rahman S. (2016) Work-Related Strain, Using the Methods of Overcoming the Stress and the Affecting Factors in Emergency Staff. *Turkish Clinical J Med Sci*, 36(1), 22-9
- Akbal-Ergun Y. Ozer Y. Baltas Z. (2001) Stress Levels of Nurses Working in Intensive Care and Effects of Stress on Nurses. *Journal of Intensive Care Nurses*, 5 (2), 70-79
- Akbulut Bascı B.A. Ozyurda F. & Yilmazer G. (2016) The Level of Work Related Strain and Role Conflict-Role Ambiguity Status of Nurses Working in Ankara University Hospitals. *G.O.P.Taksim E.A.H.JAREN*, 2(2), 51-5
- Aksu İ. & Erdim A. (2018) How Do Operating Room Nurses Cope with Work-Related Strain and Stress? *Turkish Clinical J Nurs Sci*. 10(1), 28-37
- Arikan D. & Karabulut N. (2004) Work-Related Strain in Nurses and Determination of the Factors Affecting This. *Journal of Ataturk University School of Nursing*, 7(1), 10-8.
- Aslan H. Alparslan N. Aslan O. Kesenpera C. & Unal M. (1998) Validity and reliability of Work-Related Strain Inventory in healthcare workers. *Dusunen Adam The Journal of Psychiatry and Neurological Sciences*.11, 4-8.
- Avcı G.G. Ozturk G. Azaklı N. Cekinmez T.S. (2018) Determination of Work-Related Stress Levels of Nurses and Style of Coping with Stress. *Izmir Katip Celebi University Faculty of Health Sciences Journal*. 3(1): 1-7
- Biröl L. (2002) Nursing Process. 5. Printing, Impact Printing Publishing. Izmir.
- Chiang Y.M. & Changa Y. (2012) Stress, depression, and intention to leave among nurses in different medical units: implications for healthcare management / nursing practice. *Health Policy*. 108:149–57
- Clegg A. (2001) Occupational stress in nursing: A review of the literature. *J Nurs Manag*, 9(2), 101-106.
- Egney D.G. Craigie M. Hemsworth D. Osseiran-Moisson R. Aoun S. Francis K. (2014) Compassion Satisfaction, Compassion fatigue, anxiety, depression and stress in registered nurses in Australia: Study 1 results. *Journal of Nursing Management* 22, 506–518.10.
- Erdogan T. Unsar S.A. & Sut N. (2009) Influences of Stress on the Employees: One Research. *Suleyman Demirel University The Journal of Faculty of Economics and Administrative Sciences*, 14(2), 447-461

- Ercevik R. (2010) Work-related strain, burnout, and contributing factors among nurses. Halic University Institute of Health Sciences Master Thesis, Istanbul.
- ILO (2002). Definition of occupational health adopted by the Joint ILO/WHO Committee on Occupational Health.
http://www.ilo.org/safework_bookshelf/english?content&nd=857170174
- Keith G. (1998) The Sociology of Work, Blackwell Publishing, USA
- Koc S. Ozkul A.S. Urkmez D.O. Ozel H.O. Cevik L.Ç. (2017) An Analysis of Level and Sources of Stress in Nurses Working in a Health Organization. *Eur Arc Med Res*, 33(2), 68–75.
- Kosucu N.S. Goktas B.S. Yıldız T. (2017) Evaluation of work related stress and job satisfaction levels of surgical and internal medicine nurses. *Cukurova Medical Journal*, 42(4), 675-681
- Okutan M. & Tengilimoglu D. (2002) Methods of Coping with Stress and Stress in a Business Environment: A Field Practice. *Gazi University Journal of Economics and Administrative Sciences* 4(3), 15-42
- Ozyer Y. (2016) Workload Perception, Work-Related Stress and Medical Error Attitudes of Nurses Working in Surgical Clinics. Ordu University Institute of Health Sciences, Master Thesis
- Revicki D.A. May H.J. & Whitley T.W. (1991) Reliability and validity of the work related strain inventory among health professionals. *Behavioral Medicine*, 17:20
- Sunter A.T. Canbaz S. Dabak S. Oz H. & Pesken Y. (2006). The levels of burnout, work-related strain and work satisfaction in general practitioners, *Journal of General Medicine*, 16(1), 9-14.
- Taycan O. Kutlu L. Cimen S. & Aydın N. (2006). Relation between sociodemographic characteristics depression and burnout levels of nurse working in university hospital. *Journal of Anatolian Psychiatry*, 7(2), 100-108
- Tel H. Aydın H.T. Karabey G. Vergi İ. & Akay D. (2012) Status of Coping with Work-Related Strain and Stress Among the Nurses. *Cumhuriyet Nursing Journal*, 2, 47-52
- Tınar M. Y. (1996) Psychology Studies, Dokuz Eylul University, İzmir.
- Tokmak C. Kaplan C. Turkmen F. (2011) A research of stress over medical employees which is caused by job conditions in Sivas. *Journal of Business Research-Turk*, 3(1), 49-68.
- Tokuc B. Turunc Y. Ekuklu G. (2011) Work Related Stress and Mental Health Levels of Ambulance Workers in Edirne. *Professional Health and Safety Journal*, 11(42), 39-44.
- Ulker N. (2016) Stress and Stress Management of Workers in Hospitals. *Balkan and Near Eastern Journal of Social Sciences*, 2(2), 28-37
- Uzen S. Karabacak U. Dogu O. & Duyan A. (2015) Determination of Intensive Care Nurses Working of Organizational Stress Levels. *Journal of Intensive Care Nursing*, 19(1), 15-20