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Relationship Between Burnout Syndrome and Internet Addiction, and the Risk Factors in Healthcare Employees in a University Hospital

ABSTRACT

Objective: We aimed to evaluate the level of internet use and burnout syndrome among the physicians, nurses, and other employees working at a university hospital, to demonstrate the possible relationships between these two factors, and to define the relationships between both conditions and sociodemographic variables.

Methods: The population of this study was selected by simple random sampling method and sample size was calculated considering a confidence interval of and an error rate of 0.05. A self-structured questionnaire, Maslach Burnout Inventory (MBI), and Internet Addiction Scale (IAS) were completed.

Results: While emotional exhaustion and desensitization were significantly higher among surgical medicine physicians, emotional exhaustion levels were significantly lower among the participants who stated that their job selection was intentional. When the correlations between participants' age or their job experience and the scales were assessed, a significant negative correlation was found with internet addiction. There was a significant correlation between burnout sub-dimensions and internet addiction.

Conclusion: This study suggests that factors such as method of preferring jobs, workload, and regular sleep, having hobbies, marriage and having children have significant effects on burnout and internet addiction.

Keywords: Burnout Syndrome, Internet Addiction, Risk Factors, Healthcare Employees.

Tükenmişlik Sendromu ve İnternet Bağımlılığı Arasındaki İlişki ve Bir Üniversite Hastanesindeki Hastane Çalışanlarında Risk Faktörleri

ÖZET

Amaç: Bu çalışmanın amacı bir üniversite hastanesinde görev yapan hekimler, hemşireler ve diğer çalışanlar arasında tükenmişlik düzeylerini ve internet kullanım düzeylerini saptayarak bu iki faktör arasında bir ilişki olup olmadığını belirlemek, bu iki durumun sosyodemografik değişkenlerle arasındaki ilişkilerini tanımlamaktır.

Yöntem: Bu çalışmanın örnekleme basit rastgele örnekleme yöntemiyle seçilmiş olup örnekleme hacmi güven aralığı ve hata payı 0.05 kabul edilerek hesaplandı. Katılımcılara yarı yapılandırılmış bir anket formu, Maslach Tükenmişlik Ölçeği ve İnternet Bağımlılığı Ölçeği uygulandı.

Bulgular: Duygusal tükenme ve duyarsızlaşma cerrahi branş hekimlerinde anlamlı bir şekilde daha yüksek bulunurken duygusal tükenme kendi isteğiyle meslek seçimi yapanlarda anlamlı bir şekilde düşük bulundu. Katılımcıların yaşı ya da iş deneyimi ve ölçekler arasındaki korelasyonlar değerlendirildiğinde, internet bağımlılığı ile anlamlı negatif korelasyon bulundu. Tükenmişlik alt boyutları ile internet bağımlılığı arasında anlamlı bir ilişki vardı.

Sonuç: Bu çalışma meslek seçme yöntemi, iş yükü ve düzenli uyku, hobi, evlilik ve çocuk sahibi olma gibi faktörlerin tükenmişlik ve internet bağımlılığı üzerinde anlamlı etkilerinin olduğunu göstermektedir.

Anahtar Kelimeler: Tükenmişlik Sendromu, İnternet Bağımlılığı, Hastane Çalışanları, Risk Faktörleri

INTRODUCTION

Burnout has long been deemed as an occupational damage faced by the individuals performing person-oriented jobs, such as human services, education and healthcare services (1).

The term burnout was first defined by Freudenberg in 1974, and later on in 1981, a more detailed definition was made by Maslach and Jackson (2,3). Maslach and Jackson defined burnout as a state of physical, emotional, and mental fatigue towards life and occupation, which develops with chronic physical exhaustion, despair, and a negative self-conception. According to Maslach and Jackson, burnout consists of three dimensions, including emotional exhaustion, depersonalization and diminished personal accomplishment. Emotional exhaustion results in apathy and decreased attention. Desensitization is characterized by the development of negative and cynical (loss of belief in human kindness) attitudes towards workplace, as well as towards individuals who works in mutual interaction (co-workers and patients). Individuals experiencing this condition may need help, refuse to be kind and can even discredit or despise the patients. Diminished personal accomplishment, on the other hand, manifests as a trend towards negative self-conception, incorporating a weak work performance as self-assessed by the individual (3).

An individual's self-conception of insufficiency and failure results in loss of self-esteem and development of depression (4,5). At this state, burnout symptoms consist of emotional fatigue, a feeling of frustration, anger, cynicism, non-productiveness, and helplessness (4).

It is stated in the literature that burnout symptom is more common among physicians and nurses who are under excessive workload and responsibilities, who deal with fatal diseases, who face intense requests and pressure, who have economic concerns and cannot allocate sufficient time to his/her personal life while trying to deal with such concerns (6). No research has been found to compare and assess the burnout of other healthcare employees.

Internet is another element of investigation in this study, the roots of which have been established in the United State back in 1960s, and rapidly spread worldwide over years. According to the "Digital in 2016" report published by "We Are Social", 3.419 billion of the World's 7.395 billion population have access to internet, while in Turkey with a population of 79.14 million, there are currently 46.3 million internet users (7). Household Information Technologies Use Research Data, published by the Turkish Statistics Institute in 2016 (TUIK), indicated that 61.2% of Turkish population use internet (8).

In his study performed in 1996, Goldberg was the first to suggest that internet may cause addiction, while the first operational definition of addiction was made by Young (9,10). Individuals defined as internet addicts are known to have

reduced social interactions and experience problems in interpersonal relations (11). Heavy users of internet are known to get in less interaction with their families and friends, and allocate less time to these individuals (12).

To the best of our knowledge, there is no study simultaneously investigating internet addiction and burnout syndrome among healthcare employees. In the present study, we aimed to evaluate the level of internet use and burnout syndrome among the physicians, nurses, and other employees working at a university hospital, to demonstrate the possible relationships between these two factors, and to define the relationships between both conditions and sociodemographic variables.

MATERIAL AND METHODS

The study population included a total of 458 individuals working at Yuzuncu Yıl University, Faculty of Medicine, representing different occupational clusters (i.e., resident physicians at internal and surgical departments, nurses working in the clinics, and administrative staff). The population was selected by simple random sampling method and sample size was calculated considering a confidence interval of and an error rate of 0.05. (The formula ' $n = N t^2 p q / d^2 (N-1) + t^2 p q$ ' was used to calculate the sample ($N=458$, $t = 1,96$, $p=0,5$, $q=0,5$, $d=0,05$). Calculations showed that a minimum sample size of 208 individuals had the sufficient power to represent the complete population. In total, 232 individuals were contacted to complete the questionnaire and 4 individuals refused to participate in the study. The study sample consisted of 228 individuals aged over 18 years, who volunteered to participate in the study and had the sufficient power to represent the population for each cluster. A written approval of institutional managers was obtained for study conduct before the initiation of the study.

Study data were collected on a questionnaire by the researchers through face-to-face interview technique. Before completion of the questionnaires, the participants were informed about the study and their informed consent was obtained. The participants completed the 24-item sociodemographic data form, which was prepared by the researchers based on the literature, the Maslach Burnout Inventory (MBI) and Internet Addiction Scale (IAS).

Validity and reliability of the Turkish Maslach Burnout Inventory was demonstrated by Ergin, and it consists of 24 items in total (13,14). This inventory is a 5-rate likert scale (0: never, 1: very rare, 2: sometimes, 3: most of the time, 4: always) with 3 sub-dimensions:(1) emotional exhaustion (9 items), which defines an individual's feeling of exhaustion and overload due to work, run out of energy as a result of excessive psychological and emotional demands faced in work life; (2) desensitization (5 items), which defines an

individual's insensitive and careless attitude towards the individuals he/she provides service for; (3) personal accomplishment (8 items), which defines an individual's sense of competence and success for occupations requiring face to face interactions with other individuals. While high scores for emotional exhaustion and desensitization sub-dimensions mean a high level of burnout, low scores for personal accomplishment sub-dimension indicate a high level of burnout. Cronbach α levels are 0.81 for emotional exhaustion, 0.70 for desensitization and 0.73 for personal accomplishment (15).

Regarding the scale used in the present study, scores between 0-11 indicated low, 12-17 indicated moderate and scores equal to or higher than 18 indicated high risk for emotional exhaustion; whereas for desensitization, scores between 0-5 indicated low, 6-9 indicated moderate and scores equal to or higher than 10 indicated high risk. Personal accomplishment was also linearly scored in this study, and scores between 0-21 indicated high, 22-25 indicated moderate and scores equal to or higher than 26 indicated high risk.

The likert-type scale published by Kesici and Sahin, entitled "Turkish Adaptation Study of Internet Addiction Scale" was used to determine the level of internet addiction. This scale consists of 26 items. (1: never, 2: rarely, 3: occasionally, 4: mostly, 5: always). Specific margins were considered for each total score to interpret collected data. Scores between 1- 34 indicated 'no risk', while scores between 35- 67 were considered to indicate 'low-risk', 68-101 indicated 'high-risk', and scores between 102-135 indicated 'an addict'. The Cronbach α reliability coefficient of the scale was defined as 0.94. (16).

Declaration of Helsinki was followed throughout the study. The study was approved by the Ethical Committee of Turkish Republic, Ministry of Health, Van Regional Training and Research Hospital (Ethic no: 2014-2).

Statistical analysis was performed using SPSS version 22 software (SPSS Inc., Chicago, IL, USA). Data assessment for independent samples was performed by *t*-test, one-way analysis of variance (ANOVA), and Pearson correlation analysis. A *p* value of <0.05 was considered statistically significant.

RESULTS

Of a total number of 228 participants, 43.8% (n=100) were women and 56.2% (n=128) were men. The mean age was 29.02 ± 5.677 (range: 19 to 50) years. Of all, 47.8% (n=109) were married and living with a spouse. There was not participant who spouse died. According to occupation, 44.7% (n=102) of the study population consisted of resident physicians and of those, 74.5% were working in internal and 25.5% were working in surgical departments. Of all participants, 36.4% (n=83) were

nurses and 18.9% (n=43) were administrative officers who did not have a healthcare background.

Among all participants, 50.9% (n=116) were in high risk group for emotional exhaustion, 29.4% (n=67) were in high risk group for desensitization, 57% (n=130) were in high risk group for diminished personal accomplishment and 11.4% were in high risk group for internet addiction, while 1.4% (n=4) were found to be internet addicts.

Of all participants, 49.1% (n=112) stated that they willingly preferred their profession, 19.7% (n=45) stated that they selected their profession randomly, and 31.1% (n=71) stated that their selection was influenced by their close ones.

The most commonly preferred method to overcome stress was talking to friends, as reported by 46.1% (n=105), followed in line of order by walking 10.1% (n=23), shopping 5.3% (n=12), doing housework 4.8% (n=11), and reading 4.8% (n=11). Of all participants, 13.6% (n=31) stated that they did not share anything about the causes of their stress.

Of all participants, 75.4% (n=172) had a kind of hobby, 29.9% (n=66) were smokers, 9.2% (n=21) had a chronic disease and 56.6% (n=129) had irregular sleep.

Of the participants who reported having night duties in the hospital (n=186), 25.8% (n=48) stated they were able to take a leave of absence after the night duty.

The mean scores of all participants were as follows: emotional exhaustion score 27.47 ± 7.682 , desensitization score 12.32 ± 3.889 , diminished personal accomplishment score 27.50 ± 5.163 and internet addiction score 43.72 ± 19.105 .

While there was no significant relation between gender and burnout or internet addiction, significantly lower scores of emotional exhaustion, desensitization and internet addition were noted among the married participants. Moreover, all three scores significantly decreased with increasing number of children parented by the individuals (Table 1).

No significant relation was found between the methods to cope with stress and emotional exhaustion, desensitization or internet addiction. On the other hand, there was an almost significant relation between mean scores of diminished personal accomplishment ($p=0.053$), and mean scores of individuals reporting spending time with the family, praying, spending time in nature, dancing or smoking as methods of coping with stress were found to be higher and their level of burnout was found to be lower compared to those reporting the other methods of coping with stress (talking with friends, shopping, doing housework, walking, reading, doing sports, playing a musical instrument, listening to music, playing games such as okey).

Table 1. Comparison of the participants' mean scores of Maslach Burnout Inventory and Internet Addiction Scale based on sociodemographic variables

Variables	Emotional Exhaustion	Desensitization	Diminished Self Accomplishment	Internet Addiction
Gender	p= 0.929 F= 0.008	p=0.401 F=0.707	p=0.667 F=0.186	p=0.969 F=0.002
Female	18.42±7.228	7.08±3.803	19.68±4.316	43.67±20.812
Male	18.52±8.050	7.52±3.960	19.38±5.751	43.77±17.777
Marital Status	p=0.010* F=3.884	p=0.000* F=7.567	p=0.649 F=0.549	p=0.000* F=11.351
Single	18.59±7.465	7.32±3.690	19.24±4.528	47.62±18.871
Married	17.53±7.519	6.79±3.729	19.92±5.528	37.39±14.753
Divorced	20.33±6.110	7.00±3.606	18.67±6.658	58.67±41.861
Fiancée or engaged	25.00±8.475	12.00±4.062	18.38±6.552	62.15±26.312
Number of children	p=0.040* F=2.559	p=0.005* F=3.823	p=0.513 F=0.821	p=0.002* F=4.414
0	19.13±7.787	7.74±3.935	19.14±4.744	47.29±20.144
1	19.05±7.405	7.74±3.830	20.30±5.226	41.60±18.011
2	17.55±7.288	6.55±3.738	20.50±6.085	34.50±12.023
3	14.33±6.966	4.13±2.588	19.87±6.770	34.67±13.222
4	11.60±5.030	5.20±1.789	17.60±6.950	29.60±5.941

All data are presented as means(M) and standart deviation (SD).

*p<0.05

While emotional exhaustion and desensitization were significantly higher among surgical medicine physicians, emotional exhaustion

levels were significantly lower among the participants who stated that their job selection was intentional (Table 2).

Table 2. Comparison of mean Maslach Burnout Inventory and Internet Addiction Scale Scores based on the occupations and job selection methods of the participants

Variables	Emotional Exhaustion	Desensitization	Diminished Self Accomplishment	Internet addiction
Occupation	p=0.036* F=2.887	p=0.002* F=5.070	p=0.4 52 F=0.880	p=0.196 F=1.575
Internal medicine physician	18.76±6.629	7.63±3.871	18.92±4.009	46.03±19.177
Surgical medicine physician	21.08±8.361	9.28±3.247	18.84±4.643	48.00±20.111
Nurse	18.80±8.201	7.30±4.099	20.11±5.376	42.53±19.682
Other personnel	15.71±7.471	5.67±3.244	20.11±5.376	39.53±16.773
Selection of profession	p=0.006* F=5.267	p=0.154 F=1.885	p=0.369 F=1.001	p=0.402 F=0.915
Intentionally	16.83±7.470	6.82±3.840	19.95±4.807	41.98±16.994
Randomly	20.33±7.428	7.89±3.821	18.69±5.265	44.84±22.326
Under influence of others	19.91±7.723	7.77±3.961	19.34±5.626	45.73±20.004

All data are presented as means M) and standard deviation (SD).

*p<0.05

No significant relation was found between the opportunity to take a leave of absence after night duty and burnout scores or internet addiction scores of the participants.

Among the participants having any kind of hobby, mean scores of diminished self-accomplishment was significantly higher, thus the

level of burnout was lower, compared to those without any hobbies (Table 3). The mean scores of emotional exhaustion and desensitization were higher among smokers or those drinking alcoholic beverages, compared to their counterparts, but the differences did not reach the level of statistical significance. However, emotional exhaustion and

desensitization was significantly elevated among those reporting sleep irregularities. No significant

relation was found between having a chronic disease and the mean scale scores (Table 3).

Table 3. Comparison of the participants' mean scores of Maslach Burnout Inventory and Internet Addiction Scale based on different variables

Variables	Emotional Exhaustion	Desensitization	Diminished Self Accomplishment	Internet addiction
Hobbies	p=0.613 F=0.256	p=0.504 F=0.448	p=0.006* F=7.840	p=0.953 F=0.003
Yes	18.40±7.622	7.26±3.970	20.04±4.654	44.02±19.428
No	19.07±8.564	7.70±3.841	17.67±6.429	43.83±19.161
Smoking	p=0.069 F=3.349	p=0.514 F=0.427	p=0.505 F=0.445	p=0.173 F=1.872
Yes	19.94±9.114	7.59±4.523	19.15±6.115	41.03±18.015
No	17.88±6.963	7.22±3.606	19.66±4.279	44.85±19.488
Drinking alcoholic beverages	p=0.706 F=0.142	p=0.153 F=2.061	p=0.929 F=0.008	p=0.119 F=2.453
Yes	19.00±6.164	8.33±3.883	19.59±4.870	49.11±20.463
No	18.40±7.877	7.19±3.880	19.50±5.213	42.99±18.848
Having a chronic disease	p=0.311 F=1.030	p=0.076 F=3.180	p=0.575 F=0.316	p=0.974 F=0.001
Yes	20.10±6.964	8.76±3.793	18.90±5.319	43.86±20.611
No	18.31±7.749	17.18±3.878	19.57±5.156	43.71±18.998
Irregular sleep	p=0.000* F=17.620	p=0.001* F=11.259	p=0.813 F=0.056	p=0.287 F=1.139
Yes	20.28±6.967	8.07±3.819	19.44±4.786	44.93±20.416
No	16.09±7.964	6.36±3.783	19.60±5.642	42.18±17.257

All data are presented as means(M) and standart deviation (SD). *p<0. 05

When the correlations between participants' age or their job experience and the scales were assessed, a significant negative correlation was found with internet addiction.

When the correlation between job experience and the scales was analyzed for the physicians alone, a negative significant correlation was found with emotional exhaustion and desensitization (Table 4).

Table 4. Correlations between different parameters and burnout and internet addiction scores

Variables	Emotional Exhaustion	Desensitization	Diminished Self Accomplishment	Internet addiction
Age	-0.074	-0.065	-0.049	-0.140*
Duration of job experience	-0.059	-0.107	0.087	-0.159*
Duration of job experience for physicians	-0.210*	-0.218*	-0.028	-0.065
Duration of experience in the current hospital	-0.175*	-0.284**	0.181*	-0.225**
Weekly hours worked	0.199**	0.273**	-0.082	0.163**
Number of night duties per month	0.264**	0.155*	0.059	0.032
Daily sleep duration	-0.249**	-0.176**	0.016	0.116*
Internet addiction	0.125*	0.278**	-1.37*	

*Correlations are significant at 0.005

**Correlations are significant at 0.001

Weekly working hours had a positive significant correlation with emotional exhaustion, desensitization and internet addiction. Moreover, a positive significant correlation was found between the monthly number of night duties and desensitization (Table 4). Total daily sleep duration had a negative correlation with emotional

exhaustion and desensitization scores, and a positive significant correlation with internet addiction (Table 4).

Analyses of the correlations between scales demonstrated that there was a significant correlation between burnout sub-dimensions and internet addiction (Table 4).

DISCUSSION

Previous studies have demonstrated that the risk of burnout increases in occupations which expose individuals to an emotional burden and stress, as faced by physicians, requiring busy working hours, heavy workload, providing care to deadly ill patients, and providing support as necessary to the patients and their closed ones (17-19). Aktug et al. (20) reported that burnout was particularly common at the sub-dimensions of emotional exhaustion and desensitization among resident physicians. In their study including physicians continuing specialty training on anesthesiology and specialist physicians, Beyhan et al. (21) reported similar results. Arica et al. (22) reported significantly elevated levels of desensitization among surgical assistants who had longer daily working hours and a higher number of weekly night duties. In a German study, Heim (23) observed higher levels of emotional exhaustion and desensitization among physicians who had a higher number of night duties, longer daily working hours and can allocate less time for sleep.

Findings of the present study support these data. The present study showed that resident physicians of the surgical branch experienced an increased level of emotional exhaustion and desensitization and were under the highest occupational burnout risk, compared to internal medicine physicians, nurses and other hospital staff. The lowest level of burnout was observed among administrative hospital officers. As no previous study in the literature investigated internet addiction among physicians, nurses and other hospital staff, we were unable to compare our data.

In a German study performed by Hersbach (24), working conditions (workload, daily working hours, number of seen patients and night duties, sleep irregularity) were shown to be the most significant stress factor causing workplace burnout syndrome among physicians. In a study performed by Aslan et al. (25) on Turkish physicians, desensitization and emotional exhaustion scores of the physicians increased with the increase in daily working hours, and diminished personal accomplishment scores were lower among physicians working eight hours or less. In another Turkish study performed by Beyhan et al. (21), weekly working hours were not shown to have an effect on burnout.

In the present study, desensitization and emotional exhaustion scores increased with the increase in weekly working hours and number of night duties, and by the decrease in daily sleep duration. While the duration of job experience did not appear to have an impact on burnout in the investigated population, an analysis made based on occupational clusters showed that emotional exhaustion and desensitization decreased among physicians by increasing durations of experience.

We believe that further large-scale studies are required to establish a definite conclusion.

Although several studies in the literature reported that burnout scores were higher among female compared to male physicians, some others did not demonstrate any significant effect of gender (18,20,21,26,27). Additionally, some studies reported that internet use was more common among men and their addiction scores were higher, while there are also studies reporting no significant difference (28-32). The present study did not show any significant relation between gender and burnout or internet addiction.

In the studies performed by Arica et al. (22) and Erol et al. (33) in Turkey, no significant difference was found in the burnout levels based on marital status. Considering internet addiction scores, Aslan et al. (34) reported that internet use was more common among single participants.

In the present study, emotional exhaustion, desensitization and internet addiction scores were significantly lower among married participants, suggesting that marriage can be a protective factor for burnout and internet addiction. While internet addiction and burnout may still be among several causes of divorce, the present study demonstrated that the married individuals are under less risk of internet addiction and burnout compared to single individuals. We believe that burnout and internet use is less common among married individuals, since married couples have increased emotional sharing, can discuss and resolve issues together, and experience less loneliness.

Erol et al. (35) reported decreased levels of emotional exhaustion and desensitization among individuals parenting a child. The present study demonstrated significant decreases in emotional exhaustion and desensitization scores, as well as internet addiction scores of the participants with increasing number of children they parented, but we cannot compare our data with previous studies as no study in the literature addressed internet addiction in this context. This study suggested that having children may be a factor protecting individuals from burnout and internet addiction.

In a Turkish study performed by Sayil et al. (36), a significant level of emotional burnout was reported among individuals who unintentionally preferred their occupation randomly or under influence of their closed ones. *Similarly, the present study demonstrated* decreased emotional burnout among individuals who intentionally preferred their occupation, compared to those who preferred randomly or under influence of others.

While Beyhan et al. (21) reported that chronic diseases and alcohol consumption or smoking had no effect on burnout; Girgin et al. (37) found that smoking and sleeplessness increased burnout and burnout was less common among physicians who have hobbies.

In the present study, smoking, alcohol consumption or having a chronic disease did not have any significant effect on burnout, while emotional exhaustion and desensitization were significantly more common among those with sleep irregularity. Moreover, individuals having hobbies had increased diminished self-accomplishment scores, meaning that they experienced less burnout.

A review of the previous studies showed that burnout and internet addiction have been separately investigated in different groups, and their relations with factors such as depression and loneliness have been analyzed. However, no study in the literature investigated the potential relation between burnout and internet addiction. In the present study, internet addiction was found to have a positive correlation with emotional exhaustion and desensitization sub-dimensions of burnout, and a negative correlation with self-accomplishment sub-dimension.

Thus, individuals with burnout were under higher risk of becoming internet addicts (or vice versa).

The study sample was limited as the present study included individuals working at a university

hospital in Turkey and this represents a limitation to the present study.

CONCLUSION

In conclusion, the present study is invaluable, as it is the first to simultaneously assess burnout and internet addiction in Turkish population. Moreover, the findings of this study are important, as they shows the increasing levels of burnout and internet addiction among physicians, as well as nurses and the other healthcare employees, and highlighted the relation between these two factors.

This study suggests that factors such as method of preferring jobs, workload, and regular sleep, having hobbies, marriage and having children have significant effects on burnout and internet addiction. Appropriate working conditions should be established and trainings should be planned to prevent burnout and internet addiction among individuals, and to increase their knowledge and awareness on this subject. We believe that further multidisciplinary studies are required to establish a conclusion.

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