



Determination of Anxiety Levels by Beck Anxiety Inventory in Emergency Medicine Residents Before and After Night Duties

Acil Asistalarının Nöbet Öncesi ve Nöbet Sonrası Anksiyetesinin Beck Anksiyete Skoru ile Karşılaştırılması

Levels by Beck Anxiety Inventory

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Özet

Amaç: Anksiyete; içten gelen, sebebi bilinmeyen korku, kaygı, sıkıntı, kötü bir şey olacaktı endişesi ile yaşanan negative bir duygudur. Doktorlarda yüksek oranda görülen, iş ve aile hayatını olumsuz yönde etkileyen anksiyetenin acil tıp asistanlarındaki düzeyinin saptanması amaçlanmıştır. Acilservis gece nöbetlerinin, cinsiyetin, medenidurumun, madde kullanımının, asistanlık süresinin, çalışılan kurum ve çalışma sisteminin anksiyete ile ilişkili olup olmadığı araştırmak ve önlenilebilir faktörleri düzeltmek amaçlı bu çalışma yapılmıştır. **Gereç ve Yöntem:** Bu çalışma ile acil tıp kliniği asistanlarının nöbet öncesi ve nöbet sonrası anksiyete skorunun saptanması planlanmaktadır. Beck anksiyete skoru hesaplanarak ülkemizin 3 farklı bölgesinde görev yapan hekimlerin anksiyete düzeyi hesaplanmıştır. **Bulgular:** Araştırmaya %63 erkek, %37'si kadın olmak üzere toplam 106 acil tıp asistanı çalışmaya dahil edildi. Katılımcıların nöbet öncesi anksiyete skoru, nöbet sonrası anksiyete skoruna göre anlamlı bulunmuştur ($p<0.05$). Sigara içenlerin nöbet öncesi beck anksiyete skoru, nöbet sonrasında anlamlı olarak artmıştır ($p<0.05$). Üniversite hastanelerinde çalışan aciltıpasistanlarınınnöbetöncesibeckanksiyeteskoru, nöbet-sonrasında anlamlı olarak arttığı saptanmıştır($p<0.05$). Shift şeklinde çalışan acil tıp asistanlarının nöbet öncesi beck anksiyete skor, nöbet sonrasında anlamlı olarak arttığı saptanmıştır. **Tartışma:** Acil tıp asistanlarının nöbet öncesi anksiyete skorlarının çok yüksek olmadığı ancak anksiyete skorlarının nöbetten sonrası ise arttığı bulunmuştur.

Anahtar Kelimeler

Acil Tıp Asistanı; Anksiyete Düzeyi; Gece Nöbeti

Abstract

Aim: Anxiety is a negative feeling accompanied with fear of the worst happening, worries, and stress of unknown origin. This study analyzes the relationship between anxiety and night shifts in emergency service, sex, marital status, substance use, working period as a resident, the institution where physicians work, and working system, with the goal of improving the preventable factors. **Material and Method:** In this study, we measured the anxiety scores of residents in the Emergency Service before and after shifts using the Beck Anxiety Inventory. The anxiety levels of the residents in three different regions of our country were analyzed. **Results:** 106 emergency medicine residents in total (63% male, 37% female) were included in this study. The anxiety score of the participants was found to be 9.32 ± 10.42 before shifts but 11.51 ± 11.07 after shifts ($p<0.05$). The Beck anxiety score (B.A.S) of smokers was 9.35 ± 11.82 before shifts, compared to 13.41 ± 11.80 after shifts ($p<0.05$). The Beck anxiety score of the emergency medicine residents working in university hospitals was measured as 10.00 ± 11.22 before shifts and 14.78 ± 14.04 after shifts ($p<0.05$). The Beck anxiety score of the emergency medicine residents working in shifts was found to be 8.93 ± 10.33 before shifts and 11.47 ± 11.16 after shifts ($p=0.019$). **Discussion:** We found that the anxiety scores of the emergency medicine residents were not quite high before shifts, but that an increase was observed in those scores after shifts.

Keywords

Emergency Medicine Resident; Anxiety Level; Night Shift

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Introduction

Anxiety is different from fear, which arises due to a particular reason[1]. Many problems and difficulties may occur in professional life. The struggle against problems is an increasingly difficult process for emergency medicine residents. Resident physicians spend most of their time in hospitals together with their colleagues. For this reason, the anxiety level in the working environment has gained importance.

Depression and anxiety are known to be the most common health problems in physicians and medical students [2-3].

Beck Anxiety Inventory (BAI) is a self-report scale of anxiety. It consists of 21 questions regarding symptoms of anxiety that week, rated in a Likert scale ranging from 0 to 3. According to the scores obtained from the BAI, the anxiety levels of the patients were grouped as low anxiety level for scores from 0-17, medium anxiety level for scores from 18-24, and high anxiety level in scores of 25 or more. High scores in this scale demonstrate the severity of depression and anxiety.

This study aimed to determine the anxiety level in the emergency medicine department. It has been carried out in order to analyze the relationship between anxiety level and night duties, sex, marital status, substance use, duration of assistantship, the institution, and the working system, with the goal of improving the preventable factors.

Material and Method

The study was approved by the Ethics Committee of Kahramanmaraş Sütçü İmam University Faculty of Medicine.

All of the participants were emergency medicine residents who were working on night duties and who signed the informed consent forms. Simple random sampling was applied to the emergency medicine residents included in the survey. The study consisted of 106 emergency medicine residents in total. Since the participation of the patients in the study was voluntary, the participation rate was calculated to be 100%. The main acceptance criteria of the study have been determined as active work in emergency service and night duties. The emergency medicine residents who did not work on night duties were excluded from the study.

After the calculation of BAI scores, the relationship between the aforementioned scores and other variables were evaluated [3].

Statistical Analysis

The data obtained in the study were entered into, and analyzed by, the Statistical Package for Social Sciences (SPSS) 17.0. The results were given as n (%) and average \pm standard deviation. Significance of the difference among the estimation rates of the anxiety scores in emergency medicine residents before and after night duties was analyzed via Paired T test and Wilcoxon test. $P \leq 0.05$ was accepted as statistically significant.

Results

The study included 106 emergency medicine residents in total (63% female, 37% male doctors) (Table 1). Monthly working hours were lower than 200 hours in 9.4% of the participants, between 200-239 in 16.1%, and more than 240 hours in 74.5% of the participants. It was found that the anxiety score of the participants before their shift was 9.32 ± 10.42 , and this score

rose to 11.51 ± 11.07 after night duties ($p < 0.05$) (Table 2).

When the Beck anxiety score before night duties was statistically compared based on age, duration of assistantship, and monthly working hours, no relationship was found. Neither was a significant relationship detected between age, duration of assistantship, monthly working hours, and Beck anxiety score after night duties.

29.2% of the participants were smokers while 70.8% of them were non-smokers. 16% of 106 subjects drank alcohol while 84% did not use alcohol. The Beck anxiety score of non-smokers before night duties increased after the duties; however, this increase was not statistically significant (Table 3).

According to this study, the Beck anxiety score was found to be higher in the residents working at university hospitals, and this increase was significant ($p < 0.05$) (Table 4).

Table 1. Gender, marital status, working system and duration of assistantship of the participants

	N	%
Female	67	63
Male	39	37
Married	63	59
Bachelor	43	41
Training and Research Hospital	64	60
University	42	40
24 hours	9	0.8
Shift	97	99.2
1 st year assistant	60	56.6
2 nd year assistant	16	15
3 rd year assistant	12	11.3
4 th year assistant	15	14.1
5 th year assistant	3	0.3

Table 2. Beck Anxiety Scores (B.A.S) of the participants before night duties (B.N.D) and after night duties (A.N.D) according to gender and marital status

	B.N.D. B.A.S	A.N.D. B.A.S	p value
Total group	9.32 ± 10.42	11.51 ± 11.07	0.035
Male	8.19 ± 8.98	10.55 ± 9.66	0.089
Female	11.25 ± 12.40	13.17 ± 13.12	0.220
Married	10.93 ± 11.64	12.34 ± 12.13	0.352
Bachelor	6.95 ± 7.85	10.30 ± 9.31	0.011

Table 3. Comparison of anxiety scores before and after night duties together with alcohol use and smoking observed in the subjects

	B.N.D. B.A.S	A.N.D. B.A.S	p value
Smoking (+)	9.35 ± 11.82	13.41 ± 11.80	0.018
Smoking (-)	9.30 ± 9.87	10.73 ± 10.74	0.271
Alcohol (+)	6.05 ± 6.67	10.82 ± 7.85	0.53
Alcohol (-)	9.94 ± 10.91	11.65 ± 11.61	0.139

Table 4. Comparison of anxiety scores of the subjects in accordance with the institutions and working systems

	B.N.D. B.A.S	A.N.D. B.A.S	p value
Training and Research Hospitals	8.87 ± 9.93	9.37 ± 8.01	0.709
University Hospitals	10.00 ± 11.22	14.78 ± 14.04	0.004
24 hours	13.44 ± 11.13	12.00 ± 10.61	0.859
Shift	8.93 ± 10.33	11.47 ± 11.16	0.019

Discussion

In this study, it was found that anxiety levels were low before night duties in emergency medicine residents and that the above-mentioned levels increased after night duties. Anxiety level before night duties was low in both genders; however, the increase in Beck anxiety score after night duties was greater in men than in women.

Roberts et al. reported in their study that anxiety and depressive disorders were more commonly encountered in women when compared to men although there was no statistically significant difference among the Beck anxiety scores of men and women [4]. In our study, the Beck anxiety score of female subjects before night duties was recorded to be 11.25 ± 12.40 , while this score was found to be 8.19 ± 8.98 in male subjects. When the anxiety scores after night duties were compared, it was seen that the Beck anxiety score was 13.17 ± 13.12 in women and 10.55 ± 9.66 in men. It was found that anxiety scores both before and after night duties were low in both men and women, although they were higher in women than in men. An increase in the Beck anxiety score was detected in both genders after night duties. Most notably, it was found that the increase in B.A.S was higher in men than in women. Nevertheless, the above-mentioned increase was not statistically significant.

In a study performed on patients applying to a periodontology clinic, it was reported that continuous anxiety values were significantly higher in married people than in bachelors [5]. Various studies demonstrated different results. In the study carried out by Oğuz et al. [6], it was stated that there was no significant relationship between anxiety levels and marital status. The study of Hunt [7] showed that anxiety levels of bachelors were higher than the levels recorded in married people. Burnout syndrome of individuals is also considered to be one of the reasons for increasing anxiety level. Özyurt et al. [8] reported that emotional burnout was more prominent in bachelor physicians when compared to married ones. Contrary to other studies, in our study we found that the Beck anxiety score of the married, both before and after night duties, was higher than the corresponding scores of bachelors. This situation may result from certain factors such as familial relations, inquietude of subsistence, sense of responsibility to the family, and separation from his/her child or partner during night duties. The anxiety score after night duties was higher in both groups; however, the increase was not significant in married physicians while it was found to be significant in bachelors. It may be concluded that the higher increase in the anxiety score of bachelors after night duties arose from solitude, lack of contact with people to talk about personal problems, and irregular lifestyle.

Another study reported that chronic exposure to nicotine increased the risk of depression and anxiety by desensitizing nicotinic acetylcholine receptors located in the cerebral limbic system [9]. In the study carried out by Fidan et al. [10], it was stated that both anxiety and depression scores were significantly higher in smokers than in the subjects giving up smoking. Another study demonstrated that the anxiety rate was higher in smokers and that anxiety was more commonly observed in women than in men [11]. It was also reported that alcohol and drug use were also related to anxiety and depression [12].

In a study, Sevi et al. reported that the frequency of anxiety and

attention deficit was significantly more prominent in individuals using alcohol [13]. Another study showed that alcohol-use disorder was most frequently observed in depressive attacks, and that depressive attacks could even result from alcohol use [14]. In our study, it was found that the anxiety score of non-smokers increased after night duties; nevertheless, this increase was not statistically significant. On the other hand, the Beck anxiety score of smokers before night duties was 9.35 ± 11.82 ; this score became 13.41 ± 11.80 after night duties, and this increase was considered to be significant ($p=0.018$). It can also be asserted that anxiety levels more prominently escalated in smoking physicians as a result of their not being able to smoke during night duties because of workload and having withdrawal syndrome during shifts. Moreover, it was detected that the Beck anxiety score of the subjects using alcohol was lower than the subjects not consuming it. An increase was found in Beck anxiety scores of both alcohol users and non-users after night duties. However, this increase was not statistically significant.

Numerous physical and psychological problems may be encountered in individuals working shifts as a consequence of deterioration in sleep-wakefulness order and abandonment of usual working system and social lifestyle. According to the analyses, depression and anxiety disorders were commonly detected in individuals working shifts, and those psychopathologies were accompanied with certain cognitive impairments such as somnolence, fatigue, and memory and concentration disorders [15]. Another study has demonstrated that night duties in shifts deteriorate the quality of life as a result of chronic fatigue, somnolence, and somatic symptoms and represent an obstacle to fulfilling the requirements of daily social life. Irritability is prominent in individuals with a high anxiety level, and a regression is observed in skills related to fight against stress. As a consequence of this situation, various psychopathological disorders are seen in people such as anxiety and depression [16]. In the study performed by Sarıcaoğlu et al. [17], 15 anesthesia assistants working day shifts were compared with 18 assistants working night shifts in terms of cognitive functions and anxiety levels, and a significant decrease was detected in cognitive functions after night shifts. In another study showing that anxiety level is higher in the group working night shifts, Kubo et al. [18] reported that high anxiety level was related to sleep disorders. Bartel et al. [19] found a 52% decrease in psychomotor behaviors and an increase in anxiety level after night duties in their analyses carried out on 33 anesthesia assistants. Halbach et al. [20] remarked that significant decrease was observed in the psychomotor performance of 30 gynecology assistants and medical students after night duties and that the aforementioned situation triggered depression and anxiety in assistants. When neurocognitive sub-domains were evaluated by means of psychological tests, it was detected that attention decreased whereas the anxiety increased after night duties, that the calculation period extended whereas the depressive mode became more prominent, and that the calculation period also extended even into the days without night duties, whereas stress level and depressive mode increased. This situation demonstrates that anxiety and stress are parts of the medical profession. In another study, it was expressed that working environment and conditions were the main factors determining exhaustion and

anxiety in individuals [21].

We could not find any study comparing anxiety levels before and after night duties, shift system, and 24-hour working system of emergency medicine residents in the literature. In our study, the relationship between the working systems of emergency medicine residents and their anxiety levels has been analyzed, and a decrease has been observed in the anxiety level of the group working in 24-hour format subsequent to the completion of the duty. On the other hand, an increase has been seen in the anxiety levels of the group working in shift format after the duty. This difference results from the longer rest periods between two duties allowed for the residents working in a 24-hour system when compared to the group working in a shift system. Accordingly, it may be asserted that the individuals benefit from both physical and psychological rests when at increased anxiety levels, and that this situation positively influences their anxiety levels.

According to a study carried out on nurses, the exhaustion level of the nurses working night duties was higher than that of their colleagues working regular working hours [22]. The anxiety score of the emergency medicine residents working for 24 hours was lower after duties. However, this decrease was not statistically significant. The reasons for low anxiety level after duties in the group working for 24 hours may be the long resting period after duties, opportunity to spend more time by themselves or with their acquaintances, and no professional stress for a longer period. On the other hand, the increase in anxiety rate before duties may be explained by longer working hours in a 24-hour shift, excessive tiredness, and exposure to stressors for a long time. The Beck anxiety score before duties was found to be 8.93 ± 10.33 in the emergency medicine residents working shifts while their Beck anxiety score after duties was detected to be 11.47 ± 11.16 ($p=0.019$). Working in shifts may cause anxiety in individuals as a result of irregular sleep and disorganized social lives arising from this working system. There are various studies analyzing the relationship between age and professional satisfaction, and accordingly between anxiety and depression. In a study performed on research assistants, it was reported that there was no significant relationship between age, gender, marital status, monthly income, and smoking status of residents, and exhaustion parameters [23]. In our study, 61 out of 106 subjects were 24-29 years old, 41 subjects were 30-39 years old, and 4 subjects were over 40. When Beck anxiety scores before and after night duties were compared in different age groups, no significant relationship was found between age and anxiety. An increase in anxiety scores of the subjects was expected at advanced ages as a consequence of the physical fatigue of night shifts for the older residents, boredom related to the long professional period, and difficulties encountered during adaptation to the quick and busy pace of the emergency medicine department. However, our study demonstrated that there was no relationship between anxiety and age groups. This result is interpreted as the professional satisfaction of emergency physicians with their experiences and the fact that they voluntarily choose to work in the emergency medicine department.

In a study of nurses, it was reported that professional satisfaction was lower in young nurses and in the early years of their

professional lives [24]. Bozkurt et al. stated in their study that professional satisfaction increased in direct proportion to the number of years spent in the profession [25]. In the literature, there are various studies stating that professional satisfaction increases in direct proportion to the number of years spent in the profession [26]. Contrary to other studies, our study demonstrated that first-year residents had lower anxiety scores than their senior peers.

In another study, adverse events occurring during the shift after shift with time spent stress leads to an increase in emergency room assistant [27]. The increase in anxiety levels of nurses working in the emergency department has been reported to be associated with emotional exhaustion and depersonalization [28].

Conclusion

It was found that anxiety scores before night duties were lower in emergency medicine residents and that the above-mentioned scores increased after the duties. Necessary precautions should be taken against anxiety since this problem negatively influences the professional and social lives of individuals. In addition, it is necessary to carry out prospective studies with a larger population aimed at reducing anxiety rates of physicians.

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Competing interests

The authors declare that they have no competing interests.

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