

Investigation of The Relationships Between Depressive Symptoms, Sleep Quality, Psychological Resilience, and Insomnia Catastrophizing Cognitions in Healthcare Workers

Sağlık Çalışanlarında Depresif Belirtiler, Uyku Kalitesi, Psikolojik Dayanıklılık ve Uykusuzluğu Felaketleştirme Bilişleri Arasındaki İlişkilerin İncelenmesi

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ABSTRACT

Introduction: Healthcare workers (HCWs) often face stressful situations at work. Evidence supports significant relationships between sleep quality and depressive symptoms. However, it has been observed that there is not enough study on the relationships among sleep quality, depressive symptoms, psychological resilience, and insomnia catastrophizing cognitions. We aimed to examine the relationships between sleep quality, depressive symptoms, and psychological resilience, as well as insomnia catastrophizing cognitions.

Materials and Methods: 78 HCWs with the same working hours included in the study completed the Resilience Scale for Adults (RSA), Beck Depression Inventory (BDI), Insomnia Catastrophizing Scale (ICS) and Pittsburgh Sleep Quality Index (PSQI).

Results: The study findings show that BDI scores and PSQI scores positively associated with ICS scores ($r = 0.45, p = 0.000$; $r = 0.50, p = 0.000$, respectively), and negatively related to RSA-structured style ($r = -0.34, p = 0.002$; $r = -0.38, p = 0.001$, respectively), RSA-future perception ($r = -0.45, p = 0.000$; $r = -0.24, p = 0.036$, respectively), RSA-self perception ($r = -0.37, p = 0.001$; $r = -0.23, p = 0.047$, respectively), and RSA-social resources ($r = -0.24, p = 0.034$; $r = -0.28, p = 0.012$, respectively) subdimensions of psychological resilience.

Conclusion: Comprehending psychological resilience is crucial for developing interventions to prevent or promote mental health. Also, Cognitive Behavioral Therapy (CBT) is dramatic impress for treatment of insomnia with depression. Thus, it may be necessary to detect insomnia catastrophizing cognitions, as well as resilience, depression, and sleep quality, to protect the psychological health of HCWs. Future research should examine these relationships in larger samples and prospective studies to improve the mental health of HCWs.

Keywords: healthcare worker, resilience, depression, sleep, cognition

ÖZ

Giriş: Sağlık çalışanları (ŞÇ) işlerinde sıklıkla stresli durumlara karşı karşıya kalmaktadır. Kanıtlar uyku kalitesi ve depresif semptomlar arasında bir ilişki olduğunu göstermektedir. Ancak uyku kalitesi, depresif semptomlar, psikolojik dayanıklılık ve uykusuzluğu felaketleştirici bilişler arasındaki ilişkiler ile ilgili yeterli araştırmanın olmadığı gözlemlenmiştir. Bu çalışma, uyku kalitesi, depresif belirtiler ve psikolojik dayanıklılığın yanı sıra uykusuzluğu felaketleştirici bilişler arasındaki ilişkileri incelemeyi amaçlamaktadır.

Materyal ve Metotlar: Çalışmaya dahil edilen mesai saatleri aynı 78 sağlık çalışanı, Yetişkinler İçin Dayanıklılık Ölçeği (YDÖ), Beck Depresyon Envanteri (BDE), Pittsburgh Uyku Kalitesi İndeksi (PUKİ) ve Uykusuzluğu Felaketleştirme Ölçeği'ni (UFÖ) doldurdu.

Bulgular: Araştırma bulguları, BDÖ puanları ve PUKİ puanlarının UFÖ puanlarıyla pozitif (sırasıyla $r = 0.45, p = 0.000$; $r = 0.50, p = 0.000$) ve psikolojik dayanıklılığın alt boyutları olan YDÖ-yapılandırılmış stil (sırasıyla $r = -0.34, p = 0.002$; $r = -0.38, p = 0.001$), YDÖ-gelecek algısı (sırasıyla $r = -0.45, p = 0.000$; $r = -0.24, p = 0.036$), YDÖ-kendilik algısı (sırasıyla $r = -0.37, p = 0.001$; $r = -0.23, p = 0.047$) ve YDÖ-sosyal kaynaklar (sırasıyla $r = -0.24, p = 0.034$; $r = -0.28, p = 0.012$) ile negatif ilişkili olduğunu göstermektedir.

Sonuç: Psikolojik dayanıklılığın anlaşılması, ruh sağlığını korumaya veya geliştirmeye yönelik müdahalelerin geliştirilmesi açısından büyük önem taşımaktadır. Ayrıca Bilişsel Davranışçı Terapi (BDT) depresyonla birlikte uykusuzluğun tedavisinde de etkilidir. Bu nedenle, sağlık çalışanlarının psikolojik sağlığının korunması için dayanıklılık, uyku kalitesi ve depresyonun yanı sıra uykusuzluğu felaketleştirme bilişlerinin de saptanması gerekli olabilir. Gelecekteki araştırmalar, bu ilişkileri daha büyük örneklerde ve prospektif çalışmalarla, sağlık çalışanlarının ruh sağlığını geliştirmek için incelemelidir.

Anahtar Sözcükler: sağlık çalışanı, dayanıklılık, depresyon, uyku, biliş

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Introduction

Healthcare services differ from other working environments as they involve the challenge of serving patients undergoing severe stress. Healthcare workers (HCWs) often face stressful situations in their daily working environments. The presence of various pressures elevates the possibility of experiencing many psychological problems, including burnout, depression, anxiety, post-traumatic related disorders, and sleep dysfunction (1, 2). This, poses challenges to delivering high-quality healthcare services and has a detrimental impact on patient care (3).

Insomnia, one of the sleep dysfunctions related to diminished sleep quality and quantity, can be defined as difficulty initiating, maintaining, or ensuring sleep integrity despite having a suitable sleeping environment. This leads to impairments in daytime functionality (4). HCWs confront an elevated risk of sleep problems due to unusual work schedules, night shifts, and other contextual work factors (1).

Poor sleep quality has consistently been associated with depressive symptoms, and studies indicate that sleep disturbances are considerable risk factors for the subsequent development of depression in healthy individuals (5, 6). Poor-quality sleep can also compromise cognitive functionality and decision-making processes, and heightening the probability of medical mistakes (7). Moreover, HCWs frequently contend with serious job stress and burnout, which could lead to mental health issues like anxiety and depressive symptoms, further amplifying concerns related to sleep (3). Individuals with insomnia see the possibility of negative consequences of insomnia as higher than they are, dwell on this possibility, exaggerate the consequences, and think that they cannot cope with the consequences. Psychological arousal leads to greater preoccupation with sleep, monitoring the sleep state more closely, and more physiological arousal. Physiological arousal increases insomnia, and as a result, belief in dysfunctional cognitions attributed to insomnia is reinforced. Then, supported dysfunctional cognitions restart the vicious cycle of insomnia (8). Research has found that thoughts about insomnia, dysfunctional beliefs and attitudes about sleep, and insomnia daytime worry were related to sleep quality, and thoughts about insomnia only significantly contributed to the prediction of sleep quality (9). Besides, studies have determined that insomnia catastrophizing scores were significantly related to sleep onset latency, early morning awakening, and total asleep time (10). The improvements in dysfunctional beliefs about sleep, which could be catastrophic among people with insomnia, are associated with ameliorations in sleep quality (11) and depressive symptoms (12). To treat chronic insomnia with Cognitive Behavioral Therapy (CBT), it is necessary to find out what cognitive distortions (catastrophic thoughts) are effective in maintaining insomnia and replace them with functional ones in HCWs (13).

Resilience is an individual's ability to adapt and cope with or overcome stressful situations or experiences and "bounce back" (14). Resilience was ascertained to take a partial mediating role in the relationship between depressive symptoms and personal burnout in HCWs (15). Besides, studies showed that psychological resilience significantly predicted sleep quality in Chinese medical staff (16). The concept of resilience and the potential advantages of resilience training is especially pertinent in professional vulnerable groups exposed to diverse stress resources (15, 17).

HCWs can confront significant mental problems. Although there are previous studies investigating sleep quality and depressive symptoms, explaining and understanding their relationship with insomnia catastrophizing or psychological resilience together may be necessary for HCWs to treat or prevent psychological disorders and improve mental health. However, to the best of our knowledge, no studies have tested these relationships before. Thus, defining the specific correlations that impact the mental health of HCWs could lead to the development of more targeted interventions for HCWs. Therefore, our study aims to address this gap, and we aim to evaluate the relationships between psychological resilience, depressive symptoms, sleep quality, and insomnia catastrophizing cognitions in HCWs. Our study hypothesized that 1) depressive symptoms and poor sleep quality would be positively associated with insomnia catastrophizing cognitions and negatively related to psychological resilience.

Material and Methods

This study was approved by the Yuksek Ihtisas University Non-Interventional Research Ethics Committee dated 10.07.2023 and numbered 2023/03/17 and was carried out by the ethical standards set in the Declaration of Helsinki. The patients were detailed informed, and the patients gave informed consent. Besides, necessary permissions were obtained for the use of the scale. Eighty-eight HCWs were included in the study, which is cross-sectional in 2023, consisting of individuals working in private hospital polyclinics and not on duty, only coming to work between 08.30 and 18.00, and not on annual leave in the last month. There is one doctor in each polyclinic, dietitians also work in the polyclinics, a secretary takes care of the affairs of an average of 4-5 polyclinics, one nurse takes care of the nursing operations of 2-3 polyclinics, the entire polyclinic team works 45 hours a week, and there is no night shift. Ten of them were not included in the study due to random marking, so the analyses were conducted on 78 people. Inclusion criteria for the study include HCWs who had no past psychiatric treatment and did not have any diagnostic criteria for psychological disorders after psychiatric assessment and examination, being aged over 18, being able to give informed consent, being not on annual leave in the last month and having the ability to read and write. Exclusion criteria for the study encompass schizophrenia and

psychotic disorders, mood disorders, neurological disorders, mental retardation, and substance use disorders, according to Diagnostic and Statistical Mental Disorders-5 (DSM-5) (18).

Measures

Resilience Scale for Adults (RSA; Friborg): The RSA was designed by Friborg et al. (19) and measures the severity of psychological resilience with 33-item and six dimensions, which are structures style, future perception, self-perception, family cohesion, social competence, and social resources. Basım and Çetin (20) translated into the Turkish language for RSA, and this self-reported scale's validity and reliability (all ≥ 0.70) were found to be satisfactory with the six-factor structure observed in the original version. Our study's Cronbach alpha coefficient value was 0.85 for this scale.

Insomnia Catastrophizing Scale (ICS; Jansson-Fröjmark): The ICS was developed by Jansson-Fröjmark et al. (10) and determined catastrophic thoughts related to the nocturnal symptoms of insomnia and its daytime dysfunction in the last month with 17-item and two dimensions. This self-reported scale was translated into Turkish by Uygur et al. (21), and the validity and reliability (all ≥ 0.70) of the translated questionnaire were demonstrated to be satisfactory. Our study's Cronbach alpha coefficient value was 0.85 for this scale.

Pittsburgh Sleep Quality Index (PSQI; Buysse): The PSQI was designed by Buysse et al. (22) and is a 19-item measurement for assessing subjective sleep quality over the previous month. The seven-component scores are summed and range from 0 to 21. Higher scores on this scale are indicative of poorer sleep quality, and a total score exceeding five is considered an indicator of poor sleep quality. This self-reported scale was translated into Turkish by Ağargün et al. (23), and the adapted scale's validity and reliability (all ≥ 0.70) were found to be satisfactory.

Beck Depression Inventory (BDI; Beck): It is a 21-item self-report scale designed to evaluate depressive symptoms across various domains in the last week (24). The adapted Turkish

scale, validated and tested for reliability by Hisli et al. (25), demonstrated psychometric properties comparable to the original scale.

Statistical Analysis

IBM SPSS 16 is used for statistical analyses. Descriptive statistics were defined with means and standard deviations and frequency and percentage. The Kolmogorov-Smirnov test was performed to examine whether it fits a normal distribution. Spearman correlation analysis determined the correlation between measures. A p-value of less than .05 was considered statistically significant in all analyses.

A power analysis was performed to establish the minimum sample size necessary for our study, which was 67 individuals. This calculation was analyzed using the G* power (version 3.1.9.7) package software, with an alpha level of 0.05, a correlation p H1 of 0.3, and a $1-\beta$ (power) of 0.80 in the study (26). Therefore, the number of participants in the study is 78, which seems sufficient.

Results

Clinical Characteristics

Participants (N= 78) ranged in age from 21 to 60 (M= 34.20, SD= 10.92) and had a mean of 16.41 \pm 1.96 years of education. Men (N= 31) and females (N= 47) were nonequally distributed in our study. The HCW sample mainly had married (N= 45) participants. The occupations of HCWs are a doctor (48.7 %), medical secretary (15.4 %), dietician (2.6 %), and nurse (26.6 %) (see Table 1).

Table 2 shows each scale's mean scores, standard deviations, ranges, skewness, and kurtosis values. The skewness and kurtosis values of the BDI, ICS, PSQI, and RSA subdimensions used in the present study were within the range ± 2 (27).

Table 3 shows the zero-order correlations between BDI, ICS,

Table 1. Sociodemographic characteristics of health care workers sample.

		HCWs (N= 78)
Age; year M (SD)		34.20 (10.92)
Years of education; year M (SD)		16.41 (1.96)
Sex	Female	47 (60.3 %)
	Male	31 (39.7 %)
Marital status	Single	33 (42.3 %)
	Married	45 (57.7 %)
Occupation	Doctor	38 (48.7 %)
	Medical Secretary	12 (15.4 %)
	Dietitan	2 (2.6 %)
	Nurse	20 (26.6 %)
	Other (medical technician, nurse asistant)	7 (7.7 %)

M: mean; SD: standart deviation; HCWs: health care workers.

Table 2. Descriptive statistics of the study measures (N = 78).

Variables	M	SD	Range	SK	KU
1. BDI	9.86	9.17	0-36	1.05	0.25
2. ICS	14.08	12.05	0-48	0.80	-0.08
3. PSQI	5.85	3.56	1-16	0.81	-0.11
4. RSA-structured style	14.36	3.74	4-20	-0.39	-0.49
5. RSA-future perception	15.40	3.39	7-20	-0.58	-0.32
6. RSA-family cohesion	22.85	5.15	10-30	-0.72	-0.18
7. RSA-self perception	23.58	4.64	13-30	-0.40	-0.89
8. RSA-social competence	22.91	4.32	13-30	-0.13	-0.60
9. RSA-social resources	29.18	3.81	20-35	-0.61	-0.29

BDI: Beck Depression Inventory; ICS: Insomnia Catastrophizing Scale; PSQI: Pittsburg Sleep Quality Index; RSA: Resilience Scale for Adults; M: mean; SD: standart deviation; SK: skewness; KU: kurtosis.

Table 3. Correlations among the study measures (N = 78).

Variables	1	2	3	4	5	6	7	8
1. BDI	-							
2. ICS	0.45**	-						
3. PSQI	0.48**	0.50**	-					
4. RSA-structured style	-0.34**	-0.18	-0.38**	-				
5. RSA-future perception	-0.45**	-0.21	-0.24*	0.43**	-			
6. RSA-family cohesion	-0.21	-0.27*	-0.22	0.24*	0.30**	-		
7. RSA-self perception	-0.37**	-0.22	-0.23*	0.35**	0.58**	0.32**	-	
8. RSA-social competence	-0.19	-0.18	0.02	-0.02	0.15	0.26*	0.28*	-
9. RSA-social resources	-0.24*	-0.31**	-0.28*	0.25*	0.39**	0.55**	0.42**	0.44**

BDI: Beck Depression Inventory; ICS: Insomnia Catastrophizing Scale; PSQI: Pittsburg Sleep Quality Index; RSA: Resilience Scale for Adults.

* $p < 0.05$, ** $p < 0.01$

Values are given as Spearman coefficient (P value) using the Spearman correlation test.

PSQI, and each RSA subscale. There were moderate positive correlations between the BDI and ICS ($r = 0.45$, $p = 0.000$), PSQI scores ($r = 0.48$, $p = 0.000$), and moderate negative correlations between the BDI, and RSA-structured style ($r = -0.34$, $p = 0.002$), RSA-future perception ($r = -0.45$, $p = 0.000$), RSA-self perception ($r = -0.37$, $p = 0.001$), RSA-social resources ($r = -0.24$, $p = 0.034$). ICS score is positively associated with PSQI scores ($r = 0.50$, $p = 0.000$) and negatively associated with RSA-family cohesion ($r = -0.27$, $p = 0.019$) and RSA-social resources ($r = -0.31$, $p = 0.006$). PSQI score moderately negatively correlated with RSA-structured style ($r = -0.38$, $p = 0.001$), RSA-future perception ($r = -0.24$, $p = 0.036$), RSA-self perception ($r = -0.23$, $p = 0.047$), and RSA-social resources ($r = -0.28$, $p = 0.012$) (see Table 3).

Discussion

HCWs have various psychological problems that affect their daily functionality (7, 28). The present study used a correlational analysis to examine the relationships between psychological resilience, depressive symptoms, sleep quality, and insomnia catastrophizing cognitions in HCWs. The main findings are as follows: depressive symptoms and poor sleep quality are positively associated with insomnia catastrophizing cognitions and negatively related to structured style, future perception, self-future perception, and social resources subdimensions of psychological resilience.

The sample mean scores on all scales were within the normal range determined in other Turkish samples (20, 21, 29). It was demonstrated that depressive symptoms were positively

associated with insomnia catastrophizing cognitions and poor sleep quality and negatively related to structured style, future perception, self-perception, and social resources subdimensions of psychological resilience in HCWs, consistent with our hypothesis. These findings are consistent with the growing body of evidence indicating the considerable correlations between depressive symptoms, poor sleep quality, and catastrophic worry related to insomnia (9-12). As it is known according to DSM-5, sleep disturbances have an essential role in the diagnosis of depression (18). More significantly, catastrophic thinking is a fundamental aspect and unique expression of depressive symptoms (30). So, catastrophizing about insomnia and depression relationships has been reported as expected (9), consistent with our results. Our conclusions regarding depressive symptoms and resilience relationships that was also partially consistent with our hypothesis. Studies have established that HCWs with high resilience have lower depression than those with low resilience (31) and a reduction of burnout with higher psychological resilience in HCWs (15, 32), consistent with our findings. It can be said that in an environment where working conditions are so stressful, high levels of adaptation and coping via high resilience could reduce the depressive states of HCWs and increase functionality. In our findings, a lack of negative relationships, depression scores, and family cohesion and social competence subdimensions of psychological resilience could be explained by the fact that HCWs showing not having enough time for themselves or their own family had higher levels of burnout and hopelessness and lower perceived social support levels (33). So, HCWs included in our study may be having enough time for themselves or their own family. So, the promotion of resilience and sleep quality with regarding programs is noteworthy for the promotion of mental health, especially depression.

Results from our study also determined that poor sleep quality is positively associated with insomnia catastrophizing cognitions, consistent with our hypothesis. Catastrophic dysfunctional cognitions about insomnia restart the vicious cycle, and positive associations between poor sleep quality and distorted beliefs related to sleep verify our results (34). These results might be related that HCWs frequently contend with job stress and burnout, which are associated with the development of psychiatric problems like depression, further amplifying concerns related to sleep (3). The poor sleep quality is negatively associated with structured style, future perception, self-perception, and social resources subdimensions of psychological resilience in our study, partially consistent with our hypothesis. In the general population, a positive relationship has been established between resilience and sleep quality (35). Besides, some cognitions seem to be a mediator between resilience and poor sleep quality in the lives of first responders, which defined individuals working in diverse divisions of law enforcement, rescue, healthcare, firefighters, emergency medical technicians (EMTs), and paramedics (36). These findings could be said that to mitigate and minimize the adverse effects of work-related stress and burnout

being one of its most detrimental outcomes like depression and insomnia, HCWs might necessitate high resilience. Therefore, the intervention of HCWs' distorted beliefs about sleep, together with seeking to improve resilience, could contribute to the improvement and recovery of sleep disorders as well as insomnia-related psychopathologies like depression.

Study Limitations

Our study possesses certain limitations in interpreting the findings. It was cross-sectional, lacked causal relationships, was conducted in a single center, and relied on self-report scales without night shifts in HCWs. Another limitation was that there was no data about how long the HCWs worked. The PSQI lasts one month; since the BDI was evaluated last week, our results could not be generalized as duration can also be considered a limitation. To enhance the generalizability of the results, longitudinal studies with larger sample sizes and multicenter approaches are deemed necessary. Despite these limitations, the study is a significant step toward better understanding how depression, sleep quality, and resilience are related to insomnia catastrophizing cognitions in HCWs. Thus, empirical evidence was provided for future studies whose goal is to promote the mental health of this population.

Conclusion

Our study established different degrees of relationships among sleep quality, insomnia catastrophizing cognitions, psychological resilience, and depressive symptoms. The study findings indicate that depressive symptoms and poor sleep quality are positively associated with insomnia catastrophizing cognitions and negatively related to structured style, future perception, self-perception, and social resources subdimensions of psychological resilience. Thus, comprehending resilience is crucial for developing interventions to prevent or treat psychological disorders and improve mental health. Developing psychological support during and after a crisis can markedly enhance the coping abilities of HCWs exposed to stress, fostering positive adaptations to adversity (15). Therefore, detecting catastrophic cognitions related to insomnia along with sleep quality and depression may be necessary for resilience and protecting the mental health of HCWs. So, the intervention of HCWs' distorted beliefs about sleep, together with improved resilience, could contribute to the improvement and recovery of sleep disorders as well as insomnia-related psychopathologies like depression. Future research should examine the relationships among sleep quality, insomnia-catastrophizing cognitions, psychological resilience, and depressive symptoms, including larger samples and different shifts. Such investigations can provide valuable insights into the complex interplay among these factors in HCWs, ultimately informing the development of more targeted and effective mental health prevention and intervention for this population.

Ethical Considerations: Ethics committee approval was received for this study (July 10st, 2023; 2023/03/17) which was conducted under the ethical standards set out in the 2013 Helsinki declaration.

Peer-review: Externally peer-reviewed.

Consent of Patients: The participants were informed in detail, and informed consent was obtained.

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Declaration of Interest Statement: On behalf of all authors, the corresponding author states that there is no conflict of interest.

Data Availability Statement: All relevant data are within the paper and they are available from the corresponding author on reasonable request.

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