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Insomnia, stress, and psychological coping among residents in a major tertiary hospital in Riyadh, Saudi Arabia

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Abstract

Background: Psychological distress is increasingly prevalent nowadays. Healthcare professionals (HCP) are highly vulnerable to stress, anxiety, and depression. Insomnia is the most frequent sleep disorder. Primary care physicians have higher prevalence rate of insomnia. Different psychological coping strategies have effective role to get rid of potential stressors.

Methods: This was a cross-sectional survey study among residents that suffer from sleep disorders. Data for this study was collected via a questionnaire that ask how a person cope with stresses in his life.

Statistical analysis: Data were analyzed statistically using the Statistical Package for Social Studies.

Results: 48.07% of the residents have a severe mental disorder, 21.03% have a moderate mental disorder. The highest prevalence of severe mental disorders was reported among Anesthesia, adult ICU residents and neurology ones.

Conclusion: A high prevalence of psychological distress and insomnia was among the participated residents. Moreover, the resident's utilization for coping strategies was low.

Keywords: Insomnia, stress, psychological coping, residents, tertiary hospital, Saudi Arabia

Introduction

Psychological distress is increasingly prevalent nowadays, particularly among physicians who are predisposed to mental disorders including anxiety, depression, and occupational burnout, most likely as a result of their high levels of occupational stress^[1, 2].

The development of mental illness is affected by several factors which are biological and psychological. Furthermore, socioeconomic and lifestyle factors are considered the main factors involved in this illness development^[3, 4]. There are multiple reasons that make Healthcare professionals (HCP) are highly vulnerable to stress, anxiety, and depression. The environment where they work is highly stressful. Additionally, the high load of patients and work for long hours are considered the main reasons that make them considerably predisposes to different types of stress, and in severe cases, some of them may become addicted^[5, 6]. About 14%-18% of psychological distress was reported among HCPs compared to the general population^[7-9]. The work performance and quality of life of Doctors who suffer from poor mental health are extremely affected, and they are likely to develop psychiatric disorder. Insomnia is the most frequent sleep disorder, its prevalence varies greatly depending on the term employed. While one-quarter to one-third of the general population has trouble falling and/or staying asleep, roughly 10% of the population has chronic insomnia and seeks medical care.^[12] A higher prevalence rate was reported among primary care physicians at 18.8%^[13].

One of the main crucial parts of human homeostasis is sleep. Several problems including medical, psychological, and social are considerably linked to sleep disorders. These days, many countries are suffering from chronic sleep deprivation, and this is attributed to the body's stress systems which are essential in adapting to changes in the environment, so it is extremely important to know if the deprivation from sleep affects these systems or not. In order to maintain homeostasis, the human body strongly makes the defensive processes, and in the case of the failure of these processes, insomnia may occur. Short-term insomnia is affected by changes in routine like psychiatric illness, disability, or stress. Insomnia can be defined as hardness initiating or maintaining sleep, and the interruption or non-restorative power of sleep. Insomnia is the most frequent sleep disorder, and its prevalence differs significantly depending on the term employed. While one-quarter to one-third of the general population has trouble falling and/or staying asleep, roughly 10% of the population has

chronic insomnia and seeks medical care [12]. A higher prevalence rate was reported among primary care physicians at 18.8% [13].

Studies have revealed that the most vulnerable people to this type of illness are junior doctors, and this is because they have to work for long hours, and consequently they lack the ability to sleep. Moreover, they find some difficult to adapt to several situations which occur in hospitals including stressful and emotional situations. In some cases, the underlying coping strategies may significantly affect the way by which different individuals deal with different stressful situations, and the three coping styles were described by Lazarus and Folkman [16].

Firstly, problem-focused coping applies mechanisms that focus on action to deal with issues related to stress, and individuals who employ this strategy would try to change the stressor. Secondly, people who use strategies based on emotion-focused coping would diminish their undesirable emotions when dealing with a stressful situation via the inevitable acceptance or trying to have support from their peers or members of the family. It was found that people who are dealing with stressors negatively, avoid coping skills strategies and focus on ignoring stressors. The negative effects of residency can be lessened by applying coping strategies effectively, and also easing the process of learning and adaptation.

All in all, it is essential to consider the effective role of different coping strategies in order to get rid of potential stressors which may result in psychological distress among the population. Based on our standing, there is a rare data on the prevalence of insomnia, psychological distress, and coping strategies in Saudi Arabia. As a result, we conducted this study in a trial to fill the literature gap in this regard.

Methods

To be included in the study, residents should suffer from waking up too early in the morning, having difficulty falling asleep in falling, and finding difficulties in maintaining sleeping. Other healthcare providers were excluded. Data for this study was collected via a questionnaire that consisted mainly of three well-known and validated questionnaires. The first one was the Brief COPE questionnaire [18] that consists of 28 questions that ask how a person has sought to cope with hardship in your life. Kessler Psychological Distress Scale (K10) was the second, which is considered a 10-item questionnaire designated in order to distress measurement based on different types of questions about anxiety and depressive symptoms that a person has faced in the most recent 4 week period. Another questionnaire assessment is the insomnia severity index which evaluates several parameters including the nature, severity, and impact of insomnia. This questionnaire is a 7-item self-report, and it is a 5-point Likert scale (0 = no problem; 4 = very severe problem), and the outcome score ranges from 0 to 28. The overall yielding score is elucidated as follows: (0-7) refers to the absence of insomnia, (8-14) interprets sub-threshold insomnia; (15-21) refers to moderate insomnia, and lastly (22-28) refers to severe insomnia. In addition to that, the data of participants' socio-demographic include average age, gender, different levels of residency, marital status, and the number of on-call per month. Prior to applying the study, the approval ethics from the institutional review board at PSMCM was obtained. All participants were provided with the aim and goals of the study, and they were voluntaries. Furthermore, they were asked to sign a consent form, and they had the right to withdraw at any time, and they were informed that the data will be kept anonymously, confidentially, and will be used for research studies only.

Statistical analysis

Data were analyzed statistically using The Statistical Package for Social Studies (SPSS 22; IBM Corp., New York, NY, USA), and were expressed the mean \pm standard deviation (SD) or percentage (%). For normality investigation, the Shapiro-Wilks test was used for numerical data, and the Chi-square test (χ^2) was used for categorical data. For continuous variables analyses, Student's t-test and one-way ANOVA were used. The total score of Insomnia, Psychological Distress, Problem Focused coping, Emotion-Focused coping, and Avoidant coping were assessed using the Pearson Correlation coefficient. A p-value <0.05 was considered statistically significant.

Results

A total of 233 residents participated in the current study, with a mean (\pm SD) age of 28.26(\pm 1.60), more than half (59.66%) of them were males, 46.35% were single, and the highest percentage (27.04%) were in R1. Internal medicine and family medicine residents represented the highest proportion of the participants at 14.59% and 14.16%, respectively. The largest proportion (90, 38.63%) of the participants reported that they have >4 on-call per month. Data are shown in table (1).

The mean total score of insomnia, psychological distress, problem-focused coping, emotion-focused coping, and avoidant coping are shown in table (2). The mean (\pm SD) of the total score of insomnia was 13.03(\pm 4.70), indicating overall Subthres hold insomnia. For the psychological distress, the mean total score was 27.90(\pm 7.45), which means that the participated residents are likely to have a moderate mental disorder. In regards to the brief- COPE, the mean total score of problem-focused coping was 19.84 (\pm 5.48), and this indicates that the participated residents have psychological weakness, a nearly non-practical approach to problem-solving, and is predictive of mild negative outcomes. For emotion-focused coping the total mean score was 29.26(\pm 7.79), which reflects an acceptable level of coping strategies that are aiming to regulate emotions associated with stressful situations. While for the avoidant coping the mean score was 18.42(\pm 5.12) which means low physical or cognitive efforts to disengage from the stressor

For the prevalence of insomnia among the studied residents, the current study data revealed that the highest percentage of them has subthres hold insomnia at 43.35%, followed by moderately severe clinical insomnia at 39.91% being the highest among neurology residents (100%), while only 2.58% showed severe clinical insomnia and it was the highest among Anaesthesia and adult ICU residents (8.33%), as shown in table (3).

The results of the current study showed that almost half (48.07%) of the residents are likely to have a severe mental disorder, 21.03% likely to have a moderate mental disorder, and 18.03% for mild mental disorders, as shown in table (4). The highest prevalence of severe mental disorders was reported among Anaesthesia and adult ICU residents as well as neurology ones at 83.33% for each .

The correlation between the total score of insomnia, psychological distress, problem-focused coping, emotion-focused coping, and avoidant coping is shown in table (5). There was a strong positive association between the psychological distress total score and insomnia total score with $r=0.813$, and a p-value of <0.001 . Similarly, a high degree of positive significant ($p < 0.001$) associations were found between problem-focused coping and each of insomnia and psychological stress, with $r=0.691$, and 0.725, respectively. In addition, emotion-focused coping and avoidant coping showed high degrees of positive association with each of insomnia, psychological distress, and problem-

focused coping.

The mean of the total insomnia score by participants' characteristics is shown in table (6). Insomnia's total mean score showed a significant association with gender, being higher among females at 13.76(4.07) compared to males at 12.53(5.04). Similarly, a significant positive association was found between the number of on-call per month and insomnia which increased by increasing the number of on-call reaching 1516(4.28) for > 4 on-call per month. On the other hand, there was no significant correlation between insomnia and any of the residence places or residency levels.

problem-focused coping differed significantly by gender, marital status, residency level, and the number of on-call, and it was significantly higher among females(21.15 vs 18.95), divorced at 22.44 vs 20.28 for married and 18.96 for singles, and those with the highest number of on-call (>4) at 21.58, as shown in table (7). For the emotion-focused coping score, it differed significantly according to the residents' gender and the number of on-call only, being higher among females at 30.70 vs. 28.29 for males, and it increased significantly by increasing the number of on-call at 21.42, 30.13, and 32.26 for <4, 4, and > 4 on-call per month respectively, as shown in table (8). By looking at the avoidant coping score, we found that it was significantly higher among the Riyadh residents at 19.00 compared to those from outside Riyadh at 17.65, with a p-value of 0.046. The total score of avoidant coping increased significantly by increasing the number of on-call as shown in table (9).

Table 1: Characteristics of the participants (N=233)

		Number	%
Gender	Male	139	59.66
	Female	94	40.34
Age (Mean, SD)		28.26	1.60
Marital Status	Single	108	46.35
	Married	107	45.92
	Divorced	18	7.73
Level of residency	R1	63	27.04
	R2	58	24.89
	R3	55	23.61
	R4	42	18.03
	R5	15	6.44
Specialty	Family medicine	33	14.16
	Internal medicine	34	14.59
	Pediatric	30	12.88
	Obs & Gyne	28	12.02
	ER	15	6.44
	Radiology	12	5.15
	Anaesthesia + Adult ICU	12	5.15
	general surgery	20	8.58
	ENT	6	2.58
	Neurology	6	2.58
	Psychiatry	10	4.29
	Urology	7	3.00
	Ophthalmology	6	2.58
	Orthopaedics	4	1.72
	Dermatology+ Plastic Surgery	10	4.29
Are you originally from Riyadh?	Yes	132	56.65
	No	101	43.35
How many on-call per month?	none	31	13.30
	<4	33	14.16
	4	79	33.91
	>4	90	38.63

Table 2: Mean of the total score for Insomnia, Psychological Distress, Problem Focused coping, Emotion Focused coping, and Avoidant coping

	Mean	SD
Total score of Insomnia (out of 28)	13.03	4.70
Total score of Psychological Distress(out of 50)	27.90	7.45
Brief-COPE		
Problem Focused coping (out of 32)	19.84	5.48
Emotion Focused coping (out of 48)	29.26	7.79
Avoidant coping (out of 32)	18.42	5.12

Table 3: Prevalence of insomnia

	Number	Prevalence (%)
No clinically significant insomnia	33	14.16
Subthreshold insomnia	101	43.35
Clinical insomnia (moderate severity)	93	39.91
Clinical insomnia (severe)	6	2.58

Table 4: Prevalence of Psychological Distress

	Number	Prevalence (%)
likely to be well	30	12.88
likely to have a mild mental disorder	42	18.03
likely to have moderate mental disorder	49	21.03
likely to have a severe mental disorder	112	48.07

Table 5: Correlation between the total score of Insomnia, Psychological Distress, Problem Focused coping, Emotion Focused coping, and Avoidant coping

		Total score Insomnia	Total score Psychological Distress	Problem Focused coping	Emotion Focused coping	Avoidant coping
Total score Insomnia	r	1	.813**	.691**	.746**	.681**
	P value		<0.001	<0.001	<0.001	<0.001
Total score Psychological Distress	r		1	.725**	.787**	.787**
	P value			<0.001	<0.001	<0.001
Problem Focused coping	r			1	.878**	.767**
	P value				<0.001	<0.001
Emotion Focused coping	r				1	.817**
	P value					<0.001
Avoidant coping	r					1
	P value					

** Correlation is significant at the 0.01 level (2-tailed), r= Pearson Correlation Coefficient

Table 6: Mean of the total score of Insomnia by the characteristics of the participants

		Mean	SD	p value
Gender	Male	12.53	5.04	0.042*
	Female	13.76	4.07	
Marital Status	Single	12.65	5.07	0.109
	Married	13.05	4.38	
	Divorced	15.17	3.76	
Level of residency	R1	12.98	4.78	0.443
	R2	13.45	5.33	
	R3	12.44	5.06	
	R4	12.64	3.55	
	R5	14.80	2.83	
Are you originally from Riyadh?	Yes	13.04	4.51	0.964
	No	13.01	4.96	
How many on-call per month?	none	11.19	5.19	<0.001*
	<4	8.64	3.72	
	4	13.15	3.75	
	>4	15.16	4.28	

* Significant p value

Table 7: Mean of the total score of Problem Focused coping by the characteristics of the participants

		Mean	SD	p value
Gender	Male	18.95	5.61	0.002*
	Female	21.15	5.02	
Marital Status	Single	18.96	5.36	0.023*
	Married	20.28	5.37	
	Divorced	22.44	5.98	
Level of residency	R1	20.16	5.38	0.001*
	R2	19.31	5.55	
	R3	17.85	5.45	
	R4	21.29	5.00	
	R5	23.73	4.04	
Are you originally from Riyadh?	Yes	20.17	5.63	0.284
	No	19.40	5.28	
How many on-call per month?	none	18.29	5.97	<0.001*
	<4	15.48	4.14	
	4	20.28	5.65	
	>4	21.58	4.58	

* Significant p value

Table 8: Mean of the total score of Emotion Focused coping by the characteristics of the participants

		Mean	SD	P value
Gender	Male	28.29	8.14	0.017*
	Female	30.70	7.04	
Marital Status	Single	28.32	7.77	0.189
	Married	29.89	7.91	
	Divorced	31.17	6.77	
Level of residency	R1	29.94	8.17	0.059
	R2	28.26	8.03	
	R3	27.65	8.24	
	R4	30.19	6.54	
	R5	33.60	4.63	
Are you originally from Riyadh?	Yes	29.80	7.92	0.226
	No	28.55	7.60	
How many on-call per month?	none	26.71	8.47	<0.001*
	<4	21.42	4.52	
	4	30.13	7.66	
	>4	32.26	6.36	

* Significant p value

Table 9: Mean of the total score of Avoidant coping by the characteristics of the participants

		Mean	SD	p value
Gender	Male	18.01	5.52	0.129
	Female	19.01	4.42	
Marital Status	Single	18.07	5.23	0.31
	Married	18.49	5.10	
	Divorced	20.06	4.43	
Level of residency	R1	18.59	5.64	0.199
	R2	18.40	5.41	
	R3	17.33	4.94	
	R4	18.76	4.27	
	R5	20.80	3.97	
Are you originally from Riyadh ?	Yes	19.00	5.12	0.046*
	No	17.65	5.04	
How many on-call per month ?	none	16.39	5.74	<0.001*
	<4	14.33	4.31	
	4	18.99	4.46	
	>4	20.11	4.72	

* Significant p value

Discussion

The current study examined the prevalence of psychological distress, insomnia and its severity, and coping strategies among residents in Saudi Arabia. The findings showed that almost half (48.07%) of the residents are likely to have a severe mental disorder, while 43.35% and 39.91% have subthreshold insomnia, and moderately severe clinical insomnia, respectively. For coping strategies, problem-focused solving coping was predictive of mild negative outcomes, the emotion-focused coping score reflects an acceptable level of coping strategies that are aiming to regulate emotions associated with stressful situations, while the score of avoidant coping revealed low physical or cognitive efforts to disengage from the stressor.

The results of the current study revealed that almost 85% of the residents have insomnia regardless of its severity, a prevalence which is far higher compared to a previously published study with an insomnia prevalence of 18.8% [13] unfortunately, the scarcity of data that addressed insomnia among residents made comparing our results difficult. Previous studies reported a high prevalence of anxiety among junior doctors was reported locally from Saudi Arabia (73%) [21], and in Australia (42.1%) [22], Pakistan (43.7%) [23] and India (56%) [24]. In addition to this far high prevalence of insomnia, an even higher prevalence of psychological distress was reported at almost 87%. A recently published study among undergraduate medical students revealed high rates of psychological distress including Anxiety at 63%, depression at 51%, and 48% of the students suffered from stress [25]. The link between insomnia and psychiatric disorders has been well established. In cross-sectional studies,

approximately 90% and 80% of individuals with anxiety and depression, respectively, had insomnia symptoms [26, 27]. Longitudinal studies confirmed the close relationship between anxiety and depression and insomnia [28, 29]. And this might explain the high prevalence of both insomnia and psychological distress in the current study.

A recent study showed that the female gender is a significant risk factor for insomnia symptoms and their subtypes, and this is in accordance with our results [30]. In epidemiological research, gender disparities in insomnia have also been reported. In adult populations, a meta-analysis integrating data from 29 research found that women had a 41% higher risk of insomnia than men [31]. One probable explanation is that women are more competitive and concerned about their performance by nature, which puts them at a higher risk of acquiring negative mental states [32].

Furthermore, it has been previously shown in the literature that acute sleep deprivation caused by long on-call hours reduces daytime alertness and has a negative impact on junior physicians' mood. This is augmented by our results which showed a significant positive correlation between the number of on-call and insomnia [33]. Another study showed that insomnia was positively associated with the number of on-call shifts per month, which is similar to our finding [34].

The knowledge and theories which have been learned by residents must be put into action in the hospital setting, if they do not handle these issues properly, they may suffer from psychological distress, and this is due to the stress they have by senior doctors who have a high expectations of them. Continuous support should be provided to all healthcare professional employers. Importantly, residents should be targeted intervention in the form of enhancement of healthy coping mechanisms during the initial grueling period. In the current study, residents were mostly using the emotion – focused coping strategy, while they did not tend to use the problem-focused and avoidance-based coping strategies. A previous similar study showed that the majority of interns used the problem-focused coping strategy, with only a few resorting to the avoidance coping style [35]. A study of primary care doctors found that talking with colleagues; humor, physical activity, family interaction, and spending time alone were effective stress-management strategies [36].

It is critical to educate residents on the effective use of positive coping behaviors in order to prevent the onset of psychological distress. Efforts to educate residents on the use of healthy coping mechanisms in stressful situations are highly recommended. Comprehensive and effective measures must be implemented to provide them with the necessary coping skills to reduce the disruptive effects of any stressors on their personal and professional lives.

As with any study, the current study has its limitation including the cross sectional design which allows only associations with no causal inferences, the small sample size, and the sample was taken from only one institution and therefore the results cannot be generalized to the whole kingdom.

Conclusion

The current study revealed a high prevalence of psychological distress and insomnia among the participated residents. Moreover, the residents utilization for coping strategies was low, and they mostly tend to the emotion-focused coping strategy. Comprehensive and effective measures must be implemented to provide residents with the necessary coping skills to reduce the disruptive effects of any stressors on their personal and professional lives.

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