Effect of sleep quality on educational performance of paramedic students of Prince Sultan Military College of Health Sciences (PSMCHS) in the Eastern Province of Kingdom of Saudi Arabia (KSA)

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ABSTRACT

Increasing students' academic stress especially during exams may result in sleep disorders, fatigue, poor academic performance and low functional efficiency. The aim of this research is to investigate the effect of sleep quality on educational performance of paramedic students. This research depends on a cross-sectional observational study. The samples of the study were 150 individual who will be chosen randomly from Saudi PSMCHS-Dhahran paramedic students. Data related to demographic aspects, work-related information was gathered from the samples of the study. Finally, the data of the study was analyzed through SPSS program. Four sleep scales were adopted for the study like Epworth Sleepiness Scale (ESS), Insomnia Severity Index (ISI), Fatigue Severity Scale (FSS) and Kessler Psychological Distress Scale (KPDS). The level of education like diploma and bachelor had a significant relation between the ESS and FSS. Bridging level of education has relation with KPDS. Marital status and BMI were significant with ISI and KPDS respectively. Physiological distress and excessive day time sleepiness were significant with ISI, FSS and KPDS. It can be stated that sleep quality of paramedic students is affected with high ratio by the educational performance. This is because the high stress of work regarding paramedic students leads them to have less amount of sleep quality and then this affects their educational performance.

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INTRODUCTION

Sleeping is one of fundamental requirements of human and has significant part in person's well-being and life. The investigations show that 33% of grown-ups experience the ill effects of sleeping issues and 5% of overall public have concocted day by day times of taking snooze. Death rate in individuals who Sleeping more than 8.5 hours or under 3.5 hours at evenings is 15% more than individuals who are Sleeping 7 hours in normal every night [1]. Unfriendly consequences for endocrine capacities, metabolic and fiery reactions, expanded danger of cardiovascular grimness and mortality, impact on the mind capacity to handle data and

social and passionate issues revealed as impacts of lack of sleep. With regards to clinical understudies with additional scholarly burden and day by day clinical examinations movement, it comprises an issue for their scholastic presentation [2, 3]. For clinical understudies, helpless sleeping quality might be a reason for late participation in classes, helpless dynamic investment and discouraged mind-set. It additionally might be an after-effect of additional scholarly responsibilities, hazy considerations about their 2 testing future as doctors and going through numerous tests during the year whenever contrasted with different universities. Sleep assumes a vital part in an individual's wellbeing. Sleep misfortune not just causes individuals to feel tired in the daytime; it is even a potential danger factor for Alzheimer's sickness [4, 5].

Memory processing and learning are aided by adequate, high-quality sleep of the appropriate duration. It aids memory processing, executive cognitive functioning, sensorimotor integration, and concentration. Individuals' sleep patterns and habits vary depending on their age, job responsibilities, social engagements, psychiatric and somatic problems, as well as physiological factors. Adults of all ages are advised to sleep for seven to nine hours each night. However, current research indicates that the majority of young individuals sleep for less than the required amount of time. The link between sleep deprivation and stress is like a chain reaction. Sleep disruptions are sometimes caused by psychological stressors, according to studies, and psychosocial stressors lead to sleep inadequacy. In the short term, poor sleep causes impaired judgement, agitation, irritability, and difficulty to comprehend information; in the long term, it can lead to cardiometabolic problems and even higher mortality.

Students are one of the high-risk categories for being afflicted by sleep disturbances, according to the literature. Young medical students have been shown to have a high proclivity [6, 7]. Various studies have been undertaken on medical students to examine sleep disruptions, and the results differ depending on their years of study and geodemographic areas [8, 9]. Around 90% of Chinese medical students reported in-class daytime sleepiness, while 35.5 percent of Malaysian students reported the same, which was more common among clinical students [10–12]. Medical students in Hong Kong slept for an average of 6.6 1.2 hours at night, with 70% of them complaining of sleep deprivation. Poor sleep quality was indicated by 16 percent of Malaysian medical students, 40.6 percent of Iranian medical students—with the highest frequency in their interns—62.6% of Indian students, and 77

percent of Pakistani medical students [13–15]. A high prevalence of poor sleep quality has been found in the literature among medical students. However, few researchers have looked into the consequences of poor sleep quality [16–18]. Sleep deprivation has been linked to sadness, anxiety, apathy, and poor academic performance among students. Academic performance has been linked to a reduction in total sleeping hours.

Literature Review

Shockingly, very little information exists in regards to the particular impacts of deficient sleep and languor on daytime working in youngsters. Youths experience the ill effects of expanding school, family and prevalent difficulty and from a naturally actuated deferral of sleep timing, along with changes of characteristic administrative (both circadian and homeostatic) measure [19, 20]. Taken together, these adjusted sleep designs lead to a checked expansion in drowsiness that generally works with intellectual, passionate, social and scholastic disappointment [1]. By the by, some exploratory proof supports the basic conviction that disturbed or helpless sleep is generally trailed by wasteful daytime conduct and changeability in execution. Inside these exercises, scholarly execution and additionally school accomplishment ought to be painstakingly mulled over [19]. Nonetheless, barely any examinations have explored the impacts of sleep on scholarly execution utilizing college understudies as subjects rather than rudimentary or secondary school understudies [20]. Analysts have examined the connection between lack of sleep (a term meaning loss of sleep) and two factors, task execution and individual efficiency. As per previous reports [21] smoking modifies the typical dozing example and causes helpless sleep quality. Non-smokers had a preferred sleep quality over smokers [22].

METHODS

This research aims to exploring the relation between quality of sleeping and academic performance of paramedic students at PSMCHS-Dhahran, KSA and identifying the reasons behind poor sleeping quality for paramedic students. This will be a cross-sectional exploratory study design, used a questionnaire. The total number of study samples will be 150 individuals who are studying while working as paramedic students in Riyadh city. Those samples of the study will be chosen randomly through sending the questionnaire to their e-mails. EMS students in Prince Sultan Military College of Health Sciences-Dhahran, KSA, will be e-mailed with the attachment of the copy of a cover letter (explaining the purpose

Table 1: Demographic data

Demographic characters	Frequency	Percentage
Diploma Students		
Third year Level	2	1.5
Fourth Year Level	2	1.5
Fifth Year Level	10	7.3
Sixth year Level	19	13.8
Intern	5	3.6
Bachelor Students		
Fifth Level	2	1.5
Sixth Level	10	7.3
Seventh Level	2	1.5
Eighth Level	31	22.5
Intern	4	2.9
Bridging Students		
First Level	2	1.5
Second Level	9	6.5
Third Level	5	3.6
Fourth Level	35	25.4
Marital Status		
Yes	54	54
No	46	46

of the study), and questionnaires including demographic and study-related variables.

Data Analysis

The SPSS 21 was utilized for information examination. A chi-square test was utilized to test the meaning of the distinction between the unmitigated factors at a 95% degree of certainty. Fisher's accurate test was utilized when the normal worth in at least one cell was fewer than five. For quantitative factors, the t-test was utilized to test the meaning of the distinction. Measurable importance was considered at $p < 0.05$.

RESULTS AND DISCUSSION

Lack of sleep happens when deficient rest brings about diminished quality, inadequate sharpness, and wellbeing decay. People need rest that is deficiently perceived, yet a few speculations incorporate energy productivity, recovery, and information handling. Lack of sleep has a few hindering impacts on wellbeing. Inadequate rest makes a genuine and complex range of wellbeing hazards for youths. The impacts went from distractedness, diminished psychological execution, and low instructive accomplishment to the danger of corpulence and cardiovascular sickness, state of mind changes, including expanded self-destruction hazard, higher probability of wellbeing practices, like liquor, drug use, and

expanded degrees of auto collisions [1, 2] [as shown in Tables 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12].

Manifestations of rest issues are unique. Most rest issues contain at least one of the accompanying side effects: sluggishness, absence of rest around evening time, drawn out daytime drowsiness, steady wheezing or sniffing all through rest, rest assaults or compulsory dozing spells, absence of muscle capacity, or failure to move an odd propensity, for example, sleepwalking. Indications are unmistakable from those initiated by a rest issue. Most rest issues have at least one of the accompanying side effects: sluggishness, inability to rest around evening time, delayed daytime tiredness, steady wheezing or sniffing during rest, rest assaults or compulsory dozing spells, absence of muscle capacity or failure to move, and unpredictable propensities, for example, sleepwalking. A few elements can prompt a truly unpleasant climate in school. Large numbers of these elements incorporate comprehensive school educational program, numerous instructive duties and incessant, testing, and various assessments [3, 4]

CONCLUSION

It can be stated that sleep quality of paramedic students is affected with high ration by the educational performance. This is because the high stress of work regarding paramedic students leads them

Table 2: Effect of marriage on sleep indices

Sleep index			Married		Total
			Yes	No	
Epworth Sleepiness	Negative		6	3	9
			66.7%	33.3%	100.0%
	Positive		48	43	91
			52.7%	47.3%	100.0%
Chi square = 0.64; P-value = 0.42			P-value is negative and no relation of marriage with Epworth Sleepiness Scale		
Insomnia Severity Index	Mild insomnia	clinical	22	5	27
			81.5%	18.5%	100.0%
	Moderate insomnia	clinical	23	27	50
			46.0%	54.0%	100.0%
	Severe insomnia	clinical	9	14	23
			39.1%	60.9%	100.0%
Chi square = 11.55; P-value = 0.00			P-value is positive and there is relation of marriage with Insomnia Severity Index, and no normal results		
Fatigue Severity Scale	Not fatigue	suffering	40	38	78
			51.3%	48.7%	100.0%
	Suffering fatigue		14	8	22
			63.6%	36.4%	100.0%
Chi square = 1.05; P-value = 0.30			P-value is negative and no relation of marriage with Fatigue Severity Scale		
Kessler Psychological Distress Scale	Well		41	26	67
			61.2%	38.8%	100.0%
	Mild Mental Disorder		8	8	16
			50.0%	50.0%	100.0%
	Moderate Mental Disorder		1	6	7
			14.3%	85.7%	100.0%
	Severe Mental Disorder		4	6	10
			40.0%	60.0%	100.0%
Chi square = 6.73; P-value = 0.08			P-value is negative and no relation of marriage with Kessler Psychological Distress Scale		

Table 3: Effect of Diploma level of education on sleep indices

Sleep index			Diploma Level				Total	
			Third level	Fourth Level	Fifth Level	Sixth Level	Intern	
Epworth Sleepi- ness	Negative		0	0	0	0	4	4
			0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
	Positive		2	2	10	19	1	34
			5.9%	5.9%	29.4%	55.9%	2.9%	100.0%
Chi square = 29.51; P-value = 0.000			P-value is positive and there is relation of the ‘Diploma’ level of study with Epworth Sleepiness Scale					
Insomnia Severity Index	Mild clinical insomnia		0	0	5	2	4	11
			0.0%	0.0%	45.5%	18.2%	36.4%	100.0%
	Moderate clinical insomnia		2	2	4	13	1	22
			9.1%	9.1%	18.2%	59.1%	4.5%	100.0%
	Severe clinical insomnia		0	0	1	4	0	5
			0.0%	0.0%	20.0%	80.0%	0.0%	100.0%
Chi square = 14.96; P-value = 0.06			P-value is negative and no relation of Insomnia Severity Index with ‘Diploma’ Level of Study					
Fatigue Severity Scale	Not suffering fatigue		2	2	9	8	5	26
			7.7%	7.7%	34.6%	30.8%	19.2%	100.0%
	Suffering fatigue		0	0	1	11	0	12
			0.0%	0.0%	8.3%	91.7%	0.0%	100.0%
Chi square = 12.40; P-value = 0.02			P-value is positive and there is relation of Fatigue Severity Scale with ‘Diploma’ Level of Study					
Kessler Psycho- logical Distress Scale	Well		2	6	0	20	2	30
			6.7%	20.0%	0.0%	66.7%	6.7%	100.0%
	Mild Mental Disorder		0	4	0	6	2	12
			0.0%	33.3%	0.0%	50.0%	16.7%	100.0%
	Moderate Mental Disorder		0	0	0	4	0	4
			0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	Severe Mental Disorder		2	0	0	2	1	0
			5.3%	0.0%	0.0%	66.7%	33.3%	0.0%
Chi square = 7.53; P-value = 0.48			P-value is negative and no relation of Kessler Psychological Distress Scale with ‘Diploma’ Level of Study, no moderate disorder					

Table 4: Effect of Bachelor level of education on sleep indices

Sleep index			Bachelor Level				Total	
			Fifth Level	Sixth Level	Seventh Level	Eight Level	Intern	
Epworth Sleepi-ness	Negative		0	0	0	2	2	4
			0.0%	0.0%	0.0%	50.0%	50.0%	100.0%
	Positive		2	10	2	29	2	45
			4.4%	22.2%	4.4%	64.4%	4.4%	100.0%
Chi square = 10.70; P-value = 0.03			P-value is positive and there is relation of Epworth Sleepiness Scale with 'Bachelor' Level of Study					
Insomnia Severity Index	Mild clinical insom- nia		0	2	0	7	2	11
			0.0%	18.2%	0.0%	63.6%	18.2%	100.0%
	Moderate clinical insomnia		2	6	0	19	2	29
			6.9%	20.7%	0.0%	65.5%	6.9%	100.0%
	Severe clinical insomnia		0	2	2	5	0	9
			0.0%	22.2%	22.2%	55.6%	0.0%	100.0%
Chi square = 12.56; P-value = 0.13			P-value is negative and no relation of Insomnia Severity Index with 'Bachelor' Level of Study					
Fatigue Severity Scale	Not suffering fatigue		2	10	0	18	4	34
			5.9%	29.4%	0.0%	52.9%	11.8%	100.0%
	Suffering fatigue		0	0	2	13	0	15
			0.0%	0.0%	13.3%	86.7%	0.0%	100.0%
Chi square = 13.46; P-value = 0.01			P-value is positive and there is relation of Fatigue Severity Scale with 'Bachelor' Level of Study					
Kessler Psycho-logical Distress Scale	Well		2	6	0	20	2	30
			6.7%	20.0%	0.0%	66.7%	6.7%	100.0%
	Mild Mental Disor- der		0	4	0	6	2	12
			0.0%	33.3%	0.0%	50.0%	16.7%	100.0%
	Moderate Mental Disorder		0	0	0	4	0	4
			0.0%	0.0%	0.0%	100.0%	0.0%	100.0%
	Severe Mental Disor- der		0	0	2	1	0	3
			0.0%	0.0%	66.7%	33.3%	0.0%	100.0%
Chi square = 37.73; P-value = 0.000			P-value is positive and there is relation of Kessler Psychological Dis- tress Scale with 'Bachelor' Level of Study					

Table 5: Effect of Bridging level of education on sleep indices

Sleep index			Bridging Level				Total
			First Level	Second level	Third Level	Fourth Level	
Epworth Sleepiness	Negative		0	0	0	5	5
			0.0%	0.0%	0.0%	100.0%	100.0%
	Positive	2	9	5	30	46	
		4.3%	19.6%	10.9%	65.2%	100.0%	
Chi square = 2.53; P-value = 0.47			P-value is negative and no relation of Bridging Level with Epworth Sleepiness Scale				
Insomnia Severity Index	Mild insomnia	clinical	0	0	0	9	9
			0.0%	0.0%	0.0%	100.0%	100.0%
	Moderate insomnia	clinical	2	7	2	16	27
			7.4%	25.9%	7.4%	59.3%	100.0%
	Severe insomnia	clinical	0	2	3	10	15
			0.0%	13.3%	20.0%	66.7%	100.0%
Chi-square = 8.85; P-value = 0.18			P-value is negative relation of Bridging Level with Insomnia Severity Index				
Fatigue Severity Scale	Not suffering fatigue		2	6	2	24	34
			5.9%	17.6%	5.9%	70.6%	100.0%
	Suffering fatigue		0	3	3	11	17
			0.0%	17.6%	17.6%	64.7%	100.0%
Chi square = 2.66; P-value = 0.45			P-value is negative and no relation of Bridging Level with Fatigue Severity Scale				
Kessler Psychological Distress Scale	Well		2	2	2	30	36
			5.6%	5.6%	5.6%	83.3%	100.0%
	Mild Mental Disorder		0	1	2	2	5
			0.0%	20.0%	40.0%	40.0%	100.0%
	Moderate Mental Disorder		0	2	0	0	2
			0.0%	100.0%	0.0%	0.0%	100.0%
	Severe Mental Disorder		0	4	1	3	8
			0.0%	50.0%	12.5%	37.5%	100.0%
Chi square = 26.07; P-value = 0.00			P-value is positive and there is relation of Bridging Level with Kessler Psychological Distress Scale				

Table 6: Effect of BMI on sleep indices

Sleep index			BMI Classification			Total
			Normal	Over weight	Obesity	
Epworth Sleepiness	Negative		5	0	2	7
			71.4%	0.0%	28.6%	100.0%
	Positive		48	22	14	84
			57.1%	26.2%	16.7%	100.0%
Chi square = 2.58; P-value = 0.28			P-value is negative and no relation of Body Mass Index over weight with Epworth Sleepiness Scale			
Insomnia Severity Index	Mild clinical insomnia		14	5	2	21
			66.7%	23.8%	9.5%	100.0%
	Moderate clinical insomnia		29	11	9	49
			59.2%	22.4%	18.4%	100.0%
	Severe clinical insomnia		10	6	5	21
			47.6%	28.6%	23.8%	100.0%
Chi square = 2.16; P-value = 0.71			P-value is negative and there is no relation of BMI overweight with Insomnia Severity Index			
Fatigue Severity Scale	Not suffering fatigue		42	14	15	71
			59.2%	19.7%	21.1%	100.0%
	Suffering fatigue		11	8	1	20
			55.0%	40.0%	5.0%	100.0%
Chi square = 5.01; P-value = 0.08			P-value is negative and no relation of BMI over weight with Fatigue Severity Scale			
Kessler Psychological Distress Scale	Well		34	14	10	58
			58.6%	24.1%	17.2%	100.0%
	Mild Mental Disorder		14	0	2	16
			87.5%	0.0%	12.5%	100.0%
	Moderate Mental Disorder		4	2	1	7
			57.1%	28.6%	14.3%	100.0%
	Severe Mental Disorder		1	6	3	10
			10.0%	60.0%	30.0%	100.0%
Chi square = 16.74; P-value = 0.01			P-value is positive and there is relation of BMI overweight with Kessler Psychological Distress Scale			

Table 7: Prevalence of day time sleepiness inferring to sleep indices

Sleep index			Do you have Excessive Daytime Sleepiness?					Total
			1	2	3	4	5	
Epworth Sleepiness	Negative		3	1	1	4	0	9
			33.3%	11.1%	11.1%	44.4%	0.0%	100.0%
	Positive		18	24	15	19	15	91
			19.8%	26.4%	16.5%	20.9%	16.5%	100.0%
Chi square = 5.09; P-value = 0.28			P-value is negative and no relation of Excessive Daytime Sleepiness with Epworth Sleepiness Scale					
Insomnia Severity Index	Mild clinical insomnia		15	9	1	2	0	27
			55.6%	33.3%	3.7%	7.4%	0.0%	100.0%
	Moderate clinical insomnia		2	14	15	15	4	50
			4.0%	28.0%	30.0%	30.0%	8.0%	100.0%
	Severe clinical insomnia		4	2	0	6	11	23
			17.4%	8.7%	0.0%	26.1%	47.8%	100.0%
Chi square = 64.33; P-value = 0.000			P-value is positive and there is relation of Excessive Daytime Sleepiness with Insomnia Severity Index					
Fatigue Severity Scale	Not suffering fatigue		19	22	7	16	14	78
			24.4%	28.2%	9.0%	20.5%	17.9%	100.0%
	Suffering fatigue		2	3	9	7	1	22
			9.1%	13.6%	40.9%	31.8%	4.5%	100.0%
Chi square = 17.31; P-value = 0.002			P-value is positive and there is relation of Excessive Daytime Sleepiness with Fatigue Severity Scale					
Kessler Psychological Distress Scale	Well		15	15	13	16	8	67
			22.4%	22.4%	19.4%	23.9%	11.9%	100.0%
	Mild Mental Disorder		4	3	2	5	2	16
			25.0%	18.8%	12.5%	31.3%	12.5%	100.0%
	Moderate Mental Disorder		2	5	0	0	0	7
			28.6%	71.4%	0.0%	0.0%	0.0%	100.0%
	Severe Mental Disorder		0	2	1	2	5	10
			0.0%	20.0%	10.0%	20.0%	50.0%	100.0%
Chi square = 22.84; P-value = 0.03			P-value is positive and there is relation of Excessive Daytime Sleepiness with Kessler Psychological Distress Scale					

Table 8: Prevalence of Poor sleep inferring to sleep indices

Sleep index			Do you have Poor Sleep?					Total
			1	2	3	4	5	
Epworth Sleepiness	Negative		4	3	0	2	0	9
			44.4%	33.3%	0.0%	22.2%	0.0%	100.0%
	Positive		10	12	32	20	17	91
			11.0%	13.2%	35.2%	22.0%	18.7%	100.0%
Chi square = 13.61; P-value = 0.01			P-value is positive and there is relation of Poor Sleep with Epworth Sleepiness Scale					
Insomnia Severity Index	Mild clinical insomnia		6	5	6	4	6	27
			22.2%	18.5%	22.2%	14.8%	22.2%	100.0%
	Moderate clinical insomnia		8	8	19	12	3	50
			16.0%	16.0%	38.0%	24.0%	6.0%	100.0%
	Severe clinical insomnia		0	2	7	6	8	23
			0.0%	8.7%	30.4%	26.1%	34.8%	100.0%
Chi square = 16.09; P-value = 0.04			P-value is positive and there is relation of Poor Sleep with Insomnia Severity Index					
Fatigue Severity Scale	Not suffering fatigue		13	13	21	16	15	78
			16.7%	16.7%	26.9%	20.5%	19.2%	100.0%
	Suffering fatigue		1	2	11	6	2	22
			4.5%	9.1%	50.0%	27.3%	9.1%	100.0%
Chi square = 6.71; P-value = 0.15			P-value is negative and no relation of Poor Sleep with Fatigue Severity Scale					
Kessler Psychological Distress Scale	Well		9	9	21	14	14	67
			13.4%	13.4%	31.3%	20.9%	20.9%	100.0%
	Mild Mental Disorder		1	4	7	2	2	16
			6.3%	25.0%	43.8%	12.5%	12.5%	100.0%
	Moderate Mental Disorder		4	0	0	2	1	7
			57.1%	0.0%	0.0%	28.6%	14.3%	100.0%
	Severe Mental Disorder		0	2	4	4	0	10
			0.0%	20.0%	40.0%	40.0%	0.0%	100.0%
Chi square = 21.76; P-value = 0.04			P-value is positive and there is relation of Poor Sleep with Kessler Psychological Distress Scale					

Table 9: Prevalence of Physiological distress inferring to sleep indices

Sleep index			Do you have Psychological Distress?					Total
			1	2	3	4	5	
Epworth Sleepiness	Negative		3	4	0	0	2	9
			33.3%	44.4%	0.0%	0.0%	22.2%	100.0%
	Positive		14	21	28	11	17	91
			15.4%	23.1%	30.8%	12.1%	18.7%	100.0%
Chi square = 6.96; P-value = 0.14			P-value is negative and no relation of Psychological Distress with Epworth Sleepiness Scale					
Insomnia Severity Index	Mild insomnia	clinical	5	10	4	0	8	27
			18.5%	37.0%	14.8%	0.0%	29.6%	100.0%
	Moderate insomnia	clinical	10	11	22	7	0	50
			20.0%	22.0%	44.0%	14.0%	0.0%	100.0%
	Severe insomnia	clinical	2	4	2	4	11	23
			8.7%	17.4%	8.7%	17.4%	47.8%	100.0%
Chi square = 38.22; P-value = 0.000			P-value is positive and there is relation of Psychological Distress with Insomnia Severity Index					
Fatigue Severity Scale	Not fatigue	suffering	15	21	20	4	18	78
			19.2%	26.9%	25.6%	5.1%	23.1%	100.0%
	Suffering fatigue		2	4	8	7	1	22
			9.1%	18.2%	36.4%	31.8%	4.5%	100.0%
Chi square = 16.48; P-value = 0.002			P-value is positive and there is relation of Psychological Distress with Fatigue Severity Scale					
Kessler Psychological Distress Scale	Well		11	17	17	4	18	67
			16.4%	25.4%	25.4%	6.0%	26.9%	100.0%
	Mild Mental Disorder		2	3	8	3	0	16
			12.5%	18.8%	50.0%	18.8%	0.0%	100.0%
	Moderate Mental Disorder		0	4	1	2	0	7
			0.0%	57.1%	14.3%	28.6%	0.0%	100.0%
	Severe Mental Disorder		4	1	2	2	1	10
			40.0%	10.0%	20.0%	20.0%	10.0%	100.0%
Chi square = 24.28; P-value = 0.02			P-value is positive and there is relation of Psychological Distress with Kessler Psychological Distress Scale					

Table 10: Prevalence of sleep performance inferring to sleep indices

Sleep index			Did your sleep problem affect your performance?					Total
			1	2	3	4	5	
Epworth Sleepiness	Negative		3	1	3	0	2	9
			33.3%	11.1%	33.3%	0.0%	22.2%	100.0%
	Positive		9	27	26	13	16	91
			9.9%	29.7%	28.6%	14.3%	17.6%	100.0%
Chi square = 6.21; P-value = 0.18			P-value is negative and no relation of sleep problem affect your performance with Epworth Sleepiness Scale					
Insomnia Severity Index	Mild clinical insomnia		18.5%	33.3%	40.7%	0.0%	7.4%	100.0%
	Moderate clinical insomnia	6	19	12	13	0	50	
		12.0%	38.0%	24.0%	26.0%	0.0%	100.0%	
		Severe clinical insomnia	1	0	6	0	16	23
			4.3%	0.0%	26.1%	0.0%	69.6%	100.0%
Chi square = 70.02; P-value = 0.000			P-value is positive and there is relation of sleep problem affect your performance with Insomnia Severity Index					
Fatigue Severity Scale	Not suffering fatigue		10	26	19	9	14	78
			12.8%	33.3%	24.4%	11.5%	17.9%	100.0%
	Suffering fatigue		2	2	10	4	4	22
			9.1%	9.1%	45.5%	18.2%	18.2%	100.0%
Chi square = 7.02; P-value = 0.14			P-value is negative and no relation of sleep problem affect your performance with Fatigue Severity Scale					
Kessler Psychological Distress Scale	Well		10	13	21	11	12	67
			14.9%	19.4%	31.3%	16.4%	17.9%	100.0%
	Mild Mental Disorder	1	7	6	0	2	16	
		6.3%	43.8%	37.5%	0.0%	12.5%	100.0%	
	Moderate Mental Disorder	0	5	0	0	2	7	
		0.0%	71.4%	0.0%	0.0%	28.6%	100.0%	
	Severe Mental Disorder	1	3	2	2	2	10	
		10.0%	30.0%	20.0%	20.0%	20.0%	100.0%	
Chi square = 17.24; P-value = 0.14			P-value is negative and no relation of sleep problem affect your performance with Kessler Psychological Distress Scale					

Table 11: Comparison of Sleep indices

Sleep index			Epworth Sleepiness				Total	
			Negative		Positive			
			Count	% within ESS	Count	% within ESS	Count	% within ESS
Insomnia Severity Index	Mild insomnia	clinical	7	77.80%	20	22.00%	27	27.00%
	Moderate insomnia	clinical	0	0.00%	50	54.90%	50	50.00%
	Severe insomnia	clinical	2	22.20%	21	23.10%	23	23.00%
Chi square = 14.39; P-value = 0.00			P-value is positive and there is relation of Epworth Sleepiness Scale with Insomnia Severity Index					
Fatigue Severity Scale	Not suffering fatigue		9	100.00%	69	75.80%	78	78.00%
	Suffering fatigue		0	0.00%	22	24.20%	22	22.00%
	Chi square = 2.79; P-value = 0.10		P-value is negative and there is no relation of Epworth Sleepiness Scale with Fatigue Severity Index					
Kessler Psychological Distress Scale	Well		9	100.00%	58	63.70%	67	67.00%
	Mild Mental Disorder		0	0.00%	16	17.60%	16	16.00%
	Moderate Mental Disorder		0	0.00%	7	7.70%	7	7.00%
	Severe Mental Disorder		0	0.00%	10	11.00%	10	10.00%
Chi-square = 4.87; P-value = 0.18			P-value is negative and there is no relation of Epworth Sleepiness Scale with Kessler Psychological Distress Scale					

Table 12: Significance of parameters on the sleep scales

Parameter	Epworth Sleepiness Scale	Insomnia Severity Index	Fatigue Severity Scale	Kessler Psychological Distress Scale
Diploma Students	+	-	+	-
Bachelor Students	+	-	+	+
Bridging Students	-	-	-	+
Marriage	-	+	-	-
BMI (overweight)	-	-	-	+
Poor Sleep	+	+	-	+
Excessive Daytime Sleepiness	-	+	+	+
Sleep problem affect your performance	+	-	-	-
Psychological Distress	-	+	+	+

+ indicates significance; - indicates non significance where P<0.05

to have less amount of sleep quality and then this affects their educational performance. We recommend that paramedic students should make good balance between the amount of sleeping quality and their educational performance. This will help them to improve their educational life and to be ready for all their academic requirements. Further study is needed with other specialties in the same college and with the same specialty in different colleges in Saudi Arabia.

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Conflict of interest

The authors declare that they have no conflict of interest.

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