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Prevalence of insomnia and related psychological factors with coping strategies among medical students in clinical years during the COVID-19 pandemic



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ABSTRACT

We explored the prevalence of insomnia, confirm the associated psychological factors and current coping strategies among undergraduate medical during their clinical years. This cross-sectional, quantitative, descriptive study was conducted at the department of medical education, college of medicine, King Saud University (KSU), Riyadh, Saudi Arabia. The participants (n = 463) were the 3rd to 5th year, and intern medical clinical students. We collected responses about sleep, using the Insomnia Severity Index (ISI). We also used Kessler-10 (K10), Psychological Distress and the Patient Health Questionnaire (PHQ-9). Items related to Coping strategies were also used from our previously published study and COVID-19 issues were explored using a self-developed questionnaire. According to the ISI ranking, 162 (34.9 %) of the participants had insomnia, among them 57.4% of females and 42.6% were males. Age groups between 22 and 25 have more sleeping disorder (43.2%) as compared to other age groups. 3rd-year students have more insomnia 36.41% as compared to other years. Individuals with insomnia symptoms were more likely (1.67 times higher) to be female students (OR = 1.67; P = 0.005) as compared to male students. A significantly high prevalence (3.37 times high) of insomnia was noted for those students or interns who have attended their clinical training irregularly as compare to regularly attending participants (OR = 2.32; P = 0.12) during COVID-19. Transition time i.e. year 3 of medical program was more stressful for the students and female students perceived stress and insomnia more than their male counterparts. It is important to address identified disorder early in order to reduce psychological morbidity and its harmful implications for medical students and young physicians.

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1. Introduction

COVID-19, a novel coronavirus initially recognized in late 2019 in Wuhan, China, has quickly spread across the world, becoming a pandemic. This brought significant disruption globally, and to individuals, families, communities and countries. In the face of such a

rapid changing situation, life of medical students couldn't remain unchanged. An effective training structure is an essential element in medical teaching (Abdulghani et al., 2021), but currently, or medical schools, the COVID-19 pandemic has manifested significant changes in teaching and assessment (O'Byrne et al., 2020).

Although clinical year training for the medical students is beneficial due to an active involvement in patient care (Khamees et al., 2020, Abdulghani et al., 2018). Medical students have characterized the shift from pre-clinical to clinical training as an stimulating phase of education and learning because of the shifts in meaning and responsibilities (Atherley et al., 2019). However, it has been proposed that this adjustment period is a potential cause of stress and anxiety for medical students, which may be linked to their expectations of their readiness for clinical training (Van Hell

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et al., 2011). In acknowledgement of the challenge of transforming, medical student from an assisted learning phase to an independent practice phase, the General Medical Council (GMC), the UK doctors' statutory regulator, released Tomorrow's Doctors (now referred to as fostering excellence: requirements for medical education and training) in appreciation of this, stressing the value of preparing students for their first year of clinical practice as a doctor (Teagle et al., 2017). The changeover from pre-clinical to clinical medical education is frequently manifested by a number of obstacles, each of which can have a different effect on students' mental well-being and learning outcomes.

Among many mental health concerns, insomnia is also widespread in the general population, with around a third of adults experiencing some form of insomnia (Mellinger et al., 1985). Insomnia is a frequent clinical disorder marked by difficulties falling asleep or staying asleep, as well as symptoms such as irritability or exhaustion during waking hours (Buysse, 2013). Medical student tends to be one subgroup of the general population that is predominantly exposed to insufficient sleep, likely as a result of the long length and high intensity of study, clinical duties and emotionally stressful lifestyle. Medical students who were already loaded with workload in the pre-pandemic era, having poorer psychological wellbeing standing than that of the general population (O'Byrne et al., 2020), become the direct target at this disastrous time due to COVID-19 pandemic (Abdulghani et al., 2020). Such workload issues may also lead to poor sleep quality (Saravanan and Wilks, 2014). Insomnia is thought to be caused mostly by stress (Abdulghani et al., 2011). While much research has been published on the effects of functioning in hospitals throughout the previous SARS epidemic on insomnia and related psychological effects (Brooks et al., 2018).

Coping tactics are a series of actions or a way of thinking used to deal with or alter one's reaction to a stressful or unpleasant situation. The current pandemic situation has had an effect on educational activities. Furthermore, students' daily lives as well as their mental health could not remain unaffected (Abdulghani

et al., 2020), hence the role of coping emerged as a non-pharmacological intervention to treat insomnia (Keogh et al., 2019).

As it has been a practice in the past pandemics (Khamees et al., 2020) the current (COVID-19) also restricted medical students to continue their regular teaching and learning sessions. Health education is viewed as difficult and is currently disrupted (Rose, 2020). Among the most substantial changes was the elimination of in-person (face to face) teaching sessions, which were mostly replaced by video lectures. (Ahmad et al., 2020) or live streams (Ferrel and Ryan, 2020). This has upset students' learning for vital areas like, professional socialisation; workload; patient contact; knowledge and skills; and learning and education (Prince et al., 2005).

There is no doubt that COVID-19 has shown a wide-ranging effect, hence, many schools have cancelled clinical teaching. One purpose is to flatten the curve in order to minimize personal interactions and thereby mitigate and contain COVID-19 spread (Ferrel and Ryan, 2020). As a result of these interventions, students' lives have been affected in various ways, depending not only on their level and course of study, but also on where they are in their programs.

The college of medicine's undergraduate medical curriculum is 5-year long and is divided into basic science years (year 1 & 2), a preclinical year (third year) and clinical years (year 4 &5). The first 2 years are dedicated to cover basic medical sciences subjects. The third year is the preclinical year, during which students cover different aspects of medicine and surgery in addition to research and community medicine. The clinical years (year 4 &5) are for rotations through the clinical departments: surgery, medicine, pediatrics, obstetrics and gynecology, ophthalmology, ENT, psychiatry and orthopedics.

During the recent COVID-19 pandemic, clinical training was directed to be halted in several teaching hospitals around the world (He et al., 2021). Similarly, current pandemic is a huge learning obstacle for medical students, as well as a possible stressor that

Table 1
Demographic information with comparison between students for insomnia.

items	categories		Insomnia 162(34.9)	Non-insomnia 301(65.01)	P-value
Gender	Male	256(55.3)	69(42.6)	187(62.12)	<0.0001
	Female	207(44.7)	93(57.4)	114(37.87)	
Age	18–21	98(21.1)	31(19.13)	67(22.2)	0.052
	22–25	231(49.9)	70(43.2)	161(53.5)	
	26–29	117(25.2)	52(32.09)	65(22.0)	
	30 or above	17(3.7)	9(5.6)	8(2.65)	
Marital status	Single	378(81.64)	122(75.3)	256(85.0)	0.091
	Married	82(17.7)	37(22.83)	45(15.0)	
	Divorced/widow	3(0.64)	3(1.85)	0(0.0)	
Year of study	3rd year	231(49.9)	59(36.41)	172(57.1)	0.26
	4th year	118(25.9)	42(28.92)	76(25.2)	
	5th year	71(15.4)	27(16.7)	44(14.6)	
	intern	43(9.2)	34(20.9)	9(2.9)	
Residences	Urban	419(90.7)	143(88.3)	276(91.69)	0.13
	Rural	43(9.3)	19(11.7)	24(7.97)	
Living	With family	382(82.5)	119(73.45)	263(87.37)	0.002
	Hostel	61(13.1)	34(20.9)	27(8.9)	
	Others	20(4.31)	9(5.6)	11(3.65)	
Visited any clinic during COVID-19	Yes	398(85.9)	137(84.6)	261(86.7)	0.09
	Sometime	38(8.2)	21(12.9)	17(5.6)	
	No	27(5.83)	4(2.46)	23(7.6)	
Stress level	No	184(39.7)	43(26.5)	141(46.84)	0.007
	Mild	167(36.0)	68(41.9)	99(32.8)	
	Moderate	74(15.9)	26(16.0)	48(15.94)	
	Severe	38(8.2)	25(15.4)	13(4.31)	
Depression level	No	214(46.2)	46(28.39)	168(55.81)	<0.0001
	Mild	154(33.2)	59(36.41)	95(31.5)	
	Moderate	68(14.7)	39(24.0)	29(9.63)	
	Severe	27(5.83)	18(11.2)	9(2.99)	

has a significant impact on their psychological well-being (Abdulghani et al., 2020). There has been no research to date on the different risk factors that could make medical clinical students more vulnerable to insomnia throughout the COVID-19 pandemic. It is important to know whether the clinical students have a insomnia and identify the extent of the problem, with its associated factors and the coping strategies used. Therefore, during the COVID-19 pandemic, we wanted to look into the occurrence of insomnia symptoms, explore the associated psychological factors and current coping strategies among medical clinical students.

2. Materials and methods

2.1. Study design and setting

We carried out this cross-sectional, quantitative, descriptive study, at the department of medical education, college of medicine, King Saud University (KSU), Riyadh, Saudi Arabia, during the academic year 2020–2021.

2.2. Participants

The total number of participants was 453 from 3rd to 5th medical year, and intern medical students. The involvement was completely on volunteer basis, and the respondents were able to answer according to their ease and available time. Complete confidentiality was safeguarded through anonymity during the complete course of study.

2.3. Instrument

We collected responses about sleep, using the Insomnia Severity Index (ISI) (Bastien et al., 2001). ISI has 7 items with 5 point Lik-

ert scale. Each respondent was recorded on a scale of 0–4, with a total score ranging from 0 to 28. A higher score means that the insomnia symptoms are more severe. A cumulative score of ≥ 8 indicates that 'you (participant) are experiencing insomnia symptoms' (Bastien et al., 2001, Morin et al., 2011). We also used Kessler-10 (K10), a validated Psychological Distress instrument developed by Kessler et al (Kessler et al., 2002), for exploring the stress level. This instrument has been widely used in population-based epidemiological studies to calculate stress, and it has been translated into several languages, including Arabic, for use in population surveys to assess the extent of stress and psychological symptoms (Abdulghani et al., 2011, Abdulghani et al., 2014). The K10 consists of ten questions in the form of "how much in the last month did you feel," with overt side effects ranging from "none of the time" to "all of the time," and was counted from 1 to 5. The questions were arranged in order to obtain an absolute score. The absolute scores were determined as follows: a score of 20 indicates no stress, a score of 20–24 indicates mild stress, a score of 25–29 indicates moderate stress, and a score of 30–50 indicates extreme stress.

Additionally, another questioner used was a 9-item depression module of the Patient Health Questionnaire (PHQ-9) to assess depressive symptoms. On a scale of 0–3, each of the nine elements is graded. No depression (0–4), mild (5–9), moderate (10–14), or extreme (15–21) depressive symptoms are indicated by the total ranking (Kocalevent et al., 2013, Pinto-Meza et al., 2005). Furthermore, A total of 7 items concerning the coping strategies were utilized. These items were taken from our previously used questionnaire in another study. We also utilized, a 5 items, self-administered questionnaire to inquire about clinical students' training and their self-protection during COVID-19. This was designed after an exhaustive literature review by a panel of 3 expert from the department of medical education. During the first meeting this panel agreed upon a list of 8 items but in the

Table 2
Associations (logistic regression) of insomnia level between different variables.

items	categories		Insomnia 162(34.9)	OR, 95% CI	P-value	Non-insomnia 301(65.01)	OR, 95% CI	P-value
Gender	Male	256(55.3)	69(42.6)			187(62.12)		
	Female	207(44.7)	93(57.4)	1.67(1.16–2.39)	0.005	114(37.87)	0.75(0.56–1.01)	0.06
Age	18–21	98(21.1)	31(19.13)			67(22.2)		
	22–25	231(49.9)	70(43.2)	0.95(0.59–1.55)	0.86	161(53.5)	1.01(0.70–1.47)	0.91
	26–29	117(25.2)	52(32.09)	1.40(0.83–2.36)	0.19	65(22.0)	0.81(0.52–1.25)	0.34
	30 or above	17(3.7)	9(5.6)	1.67(0.67–4.13)	0.26	8(2.65)	0.68(0.28–1.68)	0.41
Marital status	Single	378(81.64)	122(75.3)			256(85.0)		
	Married	82(17.7)	37(22.83)	1.39(0.90–2.16)	0.13	45(15.0)	0.81(0.54–1.20)	0.29
	Divorced/widow	3(0.64)	3(1.85)	3.09(0.61–15.5)	0.16	0(0.0)	0.2(0.01–4.09)	0.3
Year of study	3rd year	231(49.9)	59(36.41)			172(57.1)		
	4th year	118(25.9)	42(28.92)	1.39(0.88–2.19)	0.15	76(25.2)	0.86(0.60–1.22)	0.41
	5th year	71(15.4)	27(16.7)	1.48(0.87–2.52)	0.13	44(14.6)	0.83(0.54–1.27)	0.39
	intern	43(9.2)	34(20.9)	3.0(1.81–5.27)	<0.0001	9(2.9)	0.28(0.13–0.59)	0.0008
Residences	Urban	419(90.7)	143(88.3)			276(91.69)		
	Rural	43(9.3)	19(11.7)	1.29(0.73–2.29)	0.37	24(7.97)	1.63(0.95–2.79)	0.07
Living	With family	382(82.5)	119(73.45)	0.69(0.30–1.56)	0.37	263(87.37)	1.25(0.58–2.65)	0.55
	Hostel	61(13.1)	34(20.9)	1.23(0.50–3.02)	0.63	27(8.9)	0.80(0.33–1.90)	0.622
	Others	20(4.31)	9(5.6)			11(3.65)		
Visited any clinic during COVID-19	Yes	398(85.9)	137(84.6)	2.32(0.79–6.75)	0.12	261(86.7)	0.76(0.43–1.37)	0.37
	Sometime	38(8.2)	21(12.9)	3.73(1.14–12.1)	0.02	17(5.6)	0.52(0.23–1.16)	0.11
Stress level	No	27(5.83)	4(2.46)			23(7.6)		
	Yes	184(39.7)	43(26.5)			141(46.84)		
	Mild	167(36.0)	68(41.9)	1.74(1.12–2.69)	0.012	99(32.8)	0.77(0.55–1.07)	0.12
	Moderate	74(15.9)	26(16.0)	1.50(0.86–2.62)	0.15	48(15.94)	0.84(0.55–1.29)	0.44
Depression level	Severe	38(8.2)	25(15.4)	2.81(1.53–5.15)	0.0008	13(4.31)	0.44(0.22–0.86)	0.01
	No	214(46.2)	46(28.39)			168(55.81)		
	Mild	154(33.2)	59(36.41)	1.78(1.15–2.76)	0.009	95(31.5)	0.78(0.56–1.08)	0.14
Depression level	Moderate	68(14.7)	39(24.0)	2.66(1.60–4.42)	0.001	29(9.63)	0.54(0.33–0.87)	0.012
	Severe	27(5.83)	18(11.2)	3.10(1.57–6.09)	0.001	9(2.99)	0.42(0.19–0.92)	0.03

subsequent meeting, 3 items were deleted as found to be duplicated or having ambiguous meaning. The content validity (Cronbach alpha = 0.78) of the finalized 5 items was achieved by carrying out a pilot testing with 10 faculty members from the department of medical education.

2.4. Statistical analysis

SPSS Statistics, version 22.0 (IBM Corporation, Armonk, NY, USA), was used to enter and evaluate numerical data, and Microsoft excel was used for data entry. A 95 % confidence interval was used to estimate the prevalence of a result variable. The correlations between a definite outcome and the variables under contemplation were determined and quantified using Pearson's chi-square test and odds ratios (ORs). Microsoft excel was used for data entry.

3. Results

A total of 463 medical students and interns took part in our study. According to the ISI ranking, 162 (34.9%) of the participants had insomnia symptoms, among them 57.4% of females and 42.6% of males have insomnia. Participants with an age group between 22 and 25 have more sleep issues (43.2%) as compared to other age groups. 3rd-year students have more insomnia 36.41% as compared to other years. Most of the clinical year students and intern (85.9%) reported in the study that they attended the clinical rotation during COVID-19. Depressive symptoms were observed in 53.7% based on PHQ-5 (Mild-33.2%, Moderate- 14.7%, and severe-5.83%), and stress symptoms were observed in 60.1% based on Kessler-10 (Mild-36.0%, Moderate- 15.9%, and Severe- 8.2%) of medical students and intern respectively (Table 1).

Table 2 shows the logistic regression and their associations between insomnia with different variables. Individuals with insomnia symptoms were more likely (1.67 times higher) to be female students (OR = 1.67; P = 0.005) as compared to male students. The age group 30 and above have a high prevalence of insomnia (OR = 1.67; P = 0.26), followed by the age group 26–29 (OR = 1.40; P = 0.19). High insomnia (3.09 times high) was reported in the divorced/widow participants (OR = 3.09; P = 0.16). Prevalence of insomnia was significantly high in the intern students (OR = 3.0; P = <0.0001), followed by 5th-year students (OR = 1.48; P = 0.13), and 4th year (OR = 1.39; P = 0.15). According to the current study, those who have resided in the hostel had a high rate of sleeplessness (OR = 1.23; P = 0.63). A significantly high prevalence (3.37 times high) of insomnia was noted for those students or interns who have attended their clinical rotation irregularly (OR = 3.37; P = 0.02) as compared to regularly attending participants (OR = 2.32; P = 0.12). Moreover, those who have a severe level of stress have ~3 times higher prevalence of insomnia (OR = 2.81; P = 0.0008), followed by a moderate level of stress (OR = 1.50; P = 0.15). In the current study, there were 27 (5.83%) severe and 68 (14.7%) moderate levels of depression reported, with severe level depressed participants having considerably greater sleeplessness (OR = 3.10; P = 0.001), and moderate level depressed students having similarly high (OR = 2.66; P = 0.001).

Table 3 shows the association for participants with or without insomnia, recording the responses on COVID-19 related questions, and participants' best coping strategies. Most of the students (92.0%) reported that their training did not require to involve the COVID-19 infected patients, only 7.99% of participants have such exposure to such patients, and among these 7.99% students, have insomnia. Furthermore, 94.38% of students reported that they have adequate clinical training during COVID-19. Similarly, 88.3 percent of students reported they have adequate protection to prevent the

virus from spreading, with non-insomnia community students reporting considerably higher (P = 0.009) levels of protection. "Regular exercise" was among the coping strategies with mild effect (P = 0.15) when participants used it to deal with current insomnia, stress, and depression problem, as and "fun with friends & family" (P = 0.06). Most effective coping strategies by students was found to be as "religious activities" (P = <0.0001). Those who were involved in religious practices have less sleep problems. Similarly, those who have mentally accepted the current COVID situation also have less sleep problem (P = 0.0001) as compared to those who did not accept the current situation.

4. Discussion

Higher education is well known to be stressful, and medical students are more prone to be stressful than student in other professions (Abdus et al., 2013). Medical education is always considered an attractive domain in most of the cultures worldwide, yet, is stressful domain too due to high academic demands. In addition, there are long occupied hours, lack of peer care, privation of leisure activities, dealings related to life and death situations, which are all reasons for stress associated with medical education and training in general and during clinical years in particular (Mahajan, 2010).

During the present COVID-19 pandemic, many schools and universities have deferred regular teaching activities (Abdulghani et al., 2020). Although, the current COVID-19 pandemic has led to extraordinary interruptions to medical training (Yuen and Xie, 2020) yet, In our study, the majority of the students reported that they have adequate clinical training during COVID-19. The reason behind this was timing of our study. This was the time when the regular education and training was somehow back to normal. This results in an opportunity of an impactful learning for our students. Moreover, with the growing extent of literature on COVID-19, there are generous prospects for the learners get trained by practicing evidence-based medicine (Yuen and Xie, 2020).

This is the first study of insomnia symptoms among undergraduate medical (clinical) students during the COVID-19 pandemic that we are aware of being conducted in the region. Among the 463 participants in our research, 34.9% of medical clinical students suffered from insomnia. Which was consistent the insomnia rate among medical workers in Wuhan as was found to be as high as 38.4%, which is close to the 34% found by another research team (Zhang et al., 2020). Our study focused on medical students during transitional time, when they must adapt to a hospital setting, where they must conduct clinical exams on patients. We found that 3rd-year students have more insomnia as compared to other years. This could be due to the extra burden created by extra load of academic activities with increased real-life incidents with real patients. Similar finding were also reported in one of international study stating 3rd year students have more insomnia problem (Alqudah et al., 2019). The triggered hypothalamus-pituitary-adrenal (HPA) system is discordant with usual sleep. Stress causes increased psychological and physical activation in response to demand (Akerstedt, 2006). The resulting sleep disturbances can tend to cause further HPA system activation, perpetuating a stress-inducing and insomnia-inducing cycle (Akerstedt, 2006). Similarly, according to surveys, 56% of Malaysian (Abdus et al., 2013), and 48% Saudi (Abdulghani et al., 2020) medical students were found to be stressed, during transition from preclinical to clinical year. This transition was a critical stage for increase in their stress levels (MOHD SIDIK et al., 2003). This increase in severity of stress might be because while entering clinical year, students are more likely to become overwhelmed due to the new climate. Higher levels of stress were also found in other study (Supe, 1998) and this backs up the results of our research.

Table 3
Association between insomnia and non-insomnia students in context to COVID-19 and preferred coping strategies.

Items	Categories	N(%)	Insomnia 162 (34.9)	Non-Insomnia 301 (65.01)	P-value
COVID-19 effect					
Your training involves interaction with COVID-19 infected patients	Yes	37(7.99)	27(16.67)	10(3.32)	0.001
	No	426(92.0)	135(83.34)	291(96.67)	
You were provided adequate training for COVID-19 protection	Yes	437 (94.38)	149(91.97)	288(95.68)	0.1
	No	26(5.61)	13(8.02)	13(4.31)	
You followed stringent self-protection for COVID- 19	Yes	455 (98.27)	157(96.9))	298(99.01)	0.27
	No	8(1.7)	5(3.0)	3(0.99)	
Your existing self-protection is sufficient to stop the infection from spreading	Yes	409 (88.33)	134(82.71)	275(91.36)	0.009
	No	54(11.67)	28(17.28)	26(8.63)	
You are concerned about getting infected during your training	Yes	205 (44.27)	73(45.06)	132(43.85)	0.36
	No	258 (55.72)	89(54.9)	169(56.14)	
Coping strategies					
Regular exercise	Yes	117(25.2)	44(27.16)	73(24.25)	0.15
	No	346 (74.73)	118(72.83)	228(75.7)	
Movie, play game	Yes	91(19.65)	62(38.3)	29(31.86)	0.03
	No	372 (80.34)	100(61.7)	272(90.4)	
Fun with friends & family	Yes	171(36.9)	53(32.71)	118(39.20)	0.06
	No	292 (63.06)	109(67.28)	183(60.79)	
Religious activities	Yes	349 (75.37)	57(35.18)	292(97.00)	<0.0001
	No	114(24.6)	105(64.81)	9(2.99)	
Learn to live current COVID situation and accept it	Yes	381(82.3)	95(58.64)	286(95.01)	0.0001
	No	82(17.7)	67(41.3)	15(4.98)	
Refusing to believe current COVID situation	Yes	113(24.4)	87(53.70)	26(8.63)	<0.0001
	No	350 (75.59)	75(46.29)	275(91.36)	
Online help advice friend and experts to feel good	Yes	71(15.33)	48(29.62)	23(7.64)	0.004
	No	392 (84.67)	114(70.37)	278(92.35)	

Though we found that sleep problems were reported both in males and females, we found that females were more vulnerable to sleep disturbances than male participants. According to a regression-analysis we found that the females were 1.67 times higher risk of insomnia as compared to male's medical clinical students. Our finding was congruent with another study's findings where female students, were reported to be having insomnia (Abdelmoaty Goweda et al., 2020). Another study reported similar findings as stated that here is a greater risk of stress and insomnia in females compared to male (Bamuhair et al., 2015).

Higher stress was reported in female students in a study from Saudi Arabia (Abdulghani et al., 2020). Among other reasons behind females to be more stressed, was that female students remain more concerned about their body image, and academic performance (Sahraian and Javadpour, 2010). Furthermore, in the current study the participants who were divorced/widowed they have 3.09 times higher risk or probability of experiencing insomnia. This results support with many publish research (Necho et al., 2020, Alkhatatbeh et al., 2020, Al Karaki et al., 2020). Our study also reported that those medical clinical students living in hostels during the COVID pandemic they have more insomnia (1.23 times higher) as compared to others variables. Previous research has found the same (Yadav et al., 2021). Moreover, the medical clinical students are in a position where they are involved in training, assisting and caring for others while still being at risk to be infected with the disease. Medical clinical staff were integrated into the frontline combat against COVID-19 after a short training session. Medical staff or medical students operating in the quarantine area must keep close contact with patients at all times. This

might have rendered them to be anxious, stress and depressed. Our study also reported that those medical clinical students visited any COVID-19 clinic, either regularly or irregularly both have high insomnia. Other studies also reported the similar finding (Kontoangelos et al., 2020). Medical clinical students can experience insomnia symptoms as a result of circadian disruption, in addition to stress. Other studies reported similar findings as medical students were exposed to consistent burden with overload of academic responsibilities and examination resulting in lack of sleep (Abdus et al., 2013, Sahraian and Javadpour, 2010).

Participants with younger age group reported more sleep problems than those in other age groups. Similar finding was reported in a study conducted in china (Cui et al., 2021). These findings highlight the significance of support and intervention, particularly for vulnerable populations such as front-line epidemic workers and the younger generation. For the vast majority of surveyed participants, the circadian misalignment is just temporary, and they quickly recover after returning to a regular sleep-wake routine. During the epidemic, however, medical healthcare staff worked around the clock to save people's lives. In our study found that those who have severe stress level they have 2.81 times higher chances of insomnia as compared to others. Approximately one out of every six medical staff members experienced severe stress symptoms during and after a pandemic (Abdulghani et al., 2020, Lu et al., 2006). Mental wellbeing tends to be compromised in the presence of stress and depression. Moreover, the increase in depression was greatly interconnected with deteriorated sleep quality (Evans et al., 2021b). During the COVID-19 pandemic, our research revealed that depressive medical clinical students have

3.10 times higher insomnia problem. Previous research study also found the same (Chen et al., 2018).

There is a clear correlation between depression and insomnia. For example, nearly three-quarters of people with clinical depression have insomnia symptoms, and insomnia is a strong risk factor for depression later on (Nutt et al., 2008). Therefore, it's important to note that poor insomnia and depression go hand in hand. Another study stated that 73.1% of poor sleep quality and 75.8% of depressive symptoms were recorded among the participants (Brito-Marques et al., 2021). It appeared to be a vicious cycle, starting from over load of academic tasks, rendering students to be stressed and depressed resulting in sleep deprivation (Evans et al., 2021a). This still continues as sleep disturbance are allied with frequent negative psychosocial consequences (e.g., depression and poor academic performance) (Wheaton et al., 2015, Carskadon and Acebo, 2002).

5. Conclusion

This study delivers valued data on undergraduate medical (clinical year) students' mental health and other related variables e.g. depression and sleep disturbances. The findings of this study led us to accomplish that transition time i.e. year 3 of medical program was more stressful for the students and female students perceived stress and insomnia more than their male counterparts. It is important to address identified disorder early in order to reduce psychological morbidity and its harmful implications for medical students and young physicians.

6. Limitations

Some key limits were encountered. The study subjects were comprised of chiefly undergraduate medical students (clinical) from a single university. If possible, further studies are needed to determine whether the current findings are broadly generalizable to other students, including other universities in the region and abroad.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Ethics Approval and Consent to Participate

The study protocol was approved by the institutional review board, college of medicine, King Saud University. All participants were provided with a written consent at the start of the study.

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