Post Traumatic (COVID-19) Psychological Impact on Mental Health Issues Among the Applied Medical Science Under Graduate Students: A Cross-sectional Study.

D.S. Veerabhadra Swamy

Assistant Professor, College of Applied Medical Sciences, Nursing Department, University of Bisha, Bisha, Saudi Arabia.

KEYWORDS
Post-Traumatic, Psychological Impact, Mental health, Post pandemic, University students, Academic pressure, Coping mechanisms.

ABSTRACT
As we deal with the effects of the pandemic in the years to come, mental health may be the biggest problem we encounter. This study seeks to concentrate on the mental health problems of undergraduates since psychological impairments may persist long after the epidemic is over.

Objectives: Find out the incidence of the Impact of post-pandemic (COVID-19) on mental health issues among university students and find out the association between the Impact of post-pandemic (COVID-19) on mental health issues with demographic variables.

Materials and Methods: A descriptive research design was used, and the data were collected from 150 students in various departments at the University of Saudi Arabia using a demographic proforma and psychological impact scale. Data analysis was done using descriptive and inferential statistics.

Results: Severe symptoms of - anxiety, depression, sleep disturbance, stress, and well-being symptoms – 12%, 7.3%, 4%, 15.3%, and 7.3% respectively among participants. The associations between demographic variables, i.e., Age, the branch of studies, mother's educational level, type of family, family income, extracurricular activities, and leisure time activities with psychological symptoms.

Conclusion: During the pandemic period with restricted lifestyle changes, youths were more susceptible to many issues in all dimensions of life, we investigated to assess for the presence of psychological signs after the full pledge reopening of the university followed by a post-pandemic period and studied many factors which influence undergraduates 'psychological issues.

Funding:
This research did not receive any specific grant from funding agencies of the public, commercial, or not-for-profit sectors.

Conflict of interest:
The author declares no conflict of interest, financial or otherwise.

Acknowledgments:
The author is thankful to the Deanship of Graduate Studies and Scientific Research at the University of Bisha for supporting this work through the Fast-Track Research Support Program.
I would like to extend our sincere thanks to all respondents and participants who helped to conduct this survey during the process of data collection.

1. INTRODUCTION

The WHO classified COVID-19 as a Public Health Emergency of International Concern, causing global alarm. Though controlled, it led to high mortality, morbidity, and lasting psychological effects. Precautionary measures left students feeling helpless, lonely, and uncertain about academics due to their limited emotional resilience [1]. Research indicates that unexpected public health events challenge college students' psychological adaptability. A study found that 14-50% of Saudi students experienced depression and anxiety during the COVID-19 outbreak, compared to 69.31% in Bangladeshi students. The pandemic increased both physical health risks and psychological distress.[2, 3]. The first case in Saudi Arabia was reported on March 2020 [4] and the government responded quickly and immediately [5] by imposing many restrictions and severe limitations on their daily activities, this

time was seen as an indelible mark by the students of today [6]. A comprehensive review study found that between 34.9% and 65% of students reported having mental health issues during the pandemic, primarily because of the fear of the unknown virus and anxiety about the days to come, especially for the youth group, and the mental health-related issues are the main barrier to academic success [7].

Post-COVID-19, university students refocused on career goals but remained concerned about lingering effects. Universities restructured learning, expanded support, but many lacked digital readiness for the shift. Some adopted updated regulations due to ongoing transmission and emerging variants.

Research shows that young people felt less resilient during COVID-19 emergencies, experiencing greater loneliness and depression than older age groups, with mental health issues more likely to manifest [8]. Students with medical and psychiatric comorbidities were at higher risk, while certain lifestyle factors also increased the likelihood of developing mental health issues. [2].

A survey report of 46, 071 students at the University of California-Berkeley and Minnesota (SERU) Consortium found that between May and July 2020, 35% of undergraduates and 32% of graduate and professional students experienced depression, while 39% of both groups experienced generalized anxiety [16]. They concluded by pointing out that pandemics and other public health emergencies have a significant psychological impact on college students.

Early-pandemic studies showed university students experienced psychological distress during strict restrictions, but few examined post-traumatic mental health and coping during eased lockdowns [7]. Psychologists and psychiatrists now emphasize the importance of addressing depression and post-traumatic anxiety following this challenging event[18].Researchers recommend studying post-pandemic mental health, as few have explored its impact after universities reopened.

2. MATERIALS AND METHODS:

A descriptive cross-sectional survey was conducted in Saudi Arabia, with a total of 150 undergraduate students, who were recruited by adopting a convenient sampling technique. Demographic Proforma and Psychological impact scale (4-point rating scale with 5 Axis - anxiety, depression, sleeping, stress, and well-being rating scale) were used for this study. The reliability of the scale was obtained by Crohnbach's Alpha method (r=0. 87). The data was collected by online survey technique after obtaining informed consent and assurance was given to the subjects about anonymity and confidentiality. This study got ethical approval from the institutional ethical clearance committee of the university. The data was analyzed based on objectives by using the EZR (version 2.4-0) statistical package.

3. RESULTS

Table .1. Distribution of subjects according to Demographic Characteristics.

(n=150)

Sl.No.	Demographic factor	Characteristics	f	%
1	Gender	Male	61	40.7
		Female	89	59.3
2	Age Group in years.	17 – 19	02	1.3
		19 – 21	87	58.0
		21 – 23	55	36.7

		Above 23 years	06	4.0
3	Branch of studies	Nursing.	60	40
		Engineering	19	12.7
		Medical	37	24.7
		General college	19	12.7
		Laboratory Science	15	10
4	Father's education level	Basic education.	71	47.3
		Graduation.	69	46
		Post-graduation.	4	2.7
		Professional Degree	6	4
5	Mother's education level	Basic education.	92	61.3
		Graduation.	56	37.3
		Post-graduation.	1	0.7
		Professional Degree	1	0.7
6	Type of family	Nuclear family.	69	46
		Joint family.	46	30.7
		Extended family.	35	23.3
7	Monthly income of the family.	≤10,000 SR	71	47.3
		10,001 – 20,000 SR	45	30
		2, 0001 – 30,000 SR	25	16.7
		≥ 30,001 SR	9	6
8	Residential background.	Rural	99	66
		Urban	51	34
9		Yes.	93	62

	My family members were affected by Corona	No.	57	38
10	I was infected by COVID	Yes.	41	27.3
		No.	109	72.7
12	Physical Health status of family members (Hypertension, diabetes, Asthma, Bronchitis & others).	Father is suffering from physical illness.	41	27.3
		Mother is suffering from physical illness	12	8
		Father and mother both are suffering from physical illness	60	40
		My siblings are suffering from physical illness.	21	21
		I am suffering from physical illness	16	16
13	Family history of psychiatric illness.	Present	15	10
		Absent	135	90
14	Current academic position in the class.	A	42	28
		B	62	41.3
		C	38	25.3
		D	8	5.3
15	Involvement in extracurricular activities.	Yes.	23	15.3
		No	43	28.7
		Sometimes	84	56
16	The habit of using substances.	Yes.	18	12
		No	123	82
		Sometimes	09	6
17	Leisure time activities.	Watching TV	16	10.7
		Reading books	18	12

		Playing games.	15	10
		Using computers	16	10.7
		Chatting with friends by phone.	56	37.3
		Sleeping	11	7.3
		Practicing gym and others	18	12

Table 2: Distribution of participants based on the incidence of mental health issues due to the post-pandemic Covid-19 effect.
n=150

Anxiety symptoms among the students.		
1. Anxiety Symptoms:	**Frequency(f)**	**Percentage (%)**
Asymptomatic	13	8.6
Mild symptoms	82	54.7
Moderate symptoms	37	24.7
Severe symptoms	18	12.0
Total	150	100%
2. **Depressive symptoms among the students.**		
Depressive Symptoms:	**Frequency(f)**	**Percentage (%)**
Asymptomatic	15	10.0
Mild symptoms	76	50.7
Moderate symptoms	48	32.0
Severe symptoms	11	7.3
Total	150	100%
3. **Sleep disturbance symptoms among the students.**		
Sleep Disturbance:	**Frequency (f)**	**Percentage (%)**
Asymptomatic	11	7.3
Mild symptoms	89	59.3
Moderate symptoms	44	29.3
Severe symptoms	6	4.1

Total	150	100%
4. **Stress symptoms among the students.**		
Stress Symptoms:	**Frequency(f)**	**Percentage (%)**
Asymptomatic	16	10.7
Mild symptoms	75	50.0
Moderate symptoms	36	24.0
Severe symptoms	23	15.3
Total	150	100%
5. **Well-being symptoms among the students.**		
Wellbeing Symptoms:	**Frequency(f)**	**Percentage (%)**
Extremely happy	21	14.1
Happy	68	45.3
Unhappy	50	33.3
Extremely unhappy	11	7.3
Total	150	100%

Table 3: Association Between the Psychological Impact and Selected Demographic Variables: (n=150).

Sl.No.	Demographic variables	Chi-square value	P value
1	Age and depressive symptoms	.018	P<0.05 (S)
2	Age and stress symptoms	.002	P<0.05 (S)
3	Branch of studies and anxiety symptoms	.046	P<0.05 (S)
4	Mother's education level and anxiety symptoms	.002	P<0.05 (S)
5	Mother's education level and depressive symptoms	.015	P<0.05 (S)
6	Mother's education level and category of well-being	.029	P<0.05 (S)
7	Type of family and anxiety symptoms	.006	P<0.05 (S)
8	Family income and anxiety	.002	P<0.05 (S)
9	Family Income and depression	.001	P<0.05 (S)
10	Family income and stress	.023	P<0.05 (S)

11	Family income and well-being	.004	P<0.05 (S)
12	Extracurricular activities and sleep disturbance	.026	P<0.05 (S)
13	Leisure time activities and depressive symptoms.	.047	P<0.05 (S)

(p<0.05 significant level, S: Significant).

Table 3 shows that there was a statistically significant association found between the incidence of mental health issues and the above-mentioned demographic variables (P<0.05) and for all other demographic variables there was no statistically significant association (P>0.05).

4. DISCUSSION:

This study found that over half of the students showed clinically significant levels of depression, anxiety, stress, insomnia, and low well-being, indicating severe psychological distress at the time of the survey.These findings have been positively compared to diagnostic interviews [14] even though they are not diagnostic. Undergraduate students are more likely to experience psychological effects from the COVID-19 pandemic, negatively impacting their overall development and interaction with the educational system [9, 10, 12]. The study found that mental health issues persist post-COVID-19, with national and international research confirming that undergraduate students are particularly vulnerable, consistent with our findings.[21, 20.]

The current study found 12% of students experienced severe anxiety, similar to findings by Ren Z et al. (2021) and Abdul Majeed A. et al. (2021). A review of 37 studies showed about one-third of students had anxiety during the pandemic's early stages, with a meta-analysis of 36 studies reporting a 41% prevalence, highest in the USA (56%), Europe (51%), and Asia (33%).[1, 7, 10]. The study highlighted a link between mental health issues and sociodemographic factors. University students globally experience depression and anxiety due to future concerns, academic pressure, and performance anxiety[15, 19].

The study found 7.3% of students experienced severe depressive symptoms, similar to Ren Z et al. (2021), which reported 5.4%. A study among nursing students showed 67.08% had mild to moderate depressive symptoms in the non-COVID-19 period, with academic stress being a common cause.[8]. Other studies during Covid and other periods reported that; 35%, 41%, 48.8%, 52.7%, and 41%, of mild to moderate symptoms [2, 13, 17].

In this study, 59.3% of students had mild, 29.3% moderate, and 4% severe sleep disturbances. Another study found 34.5% of university students experienced sleep disturbances during the pandemic [11]. A study found over half of students experienced sleep disruption, with 1.4% using melatonin supplements. Another study reported 16% with mild, 21.8% with moderate, 9.3% with severe, and 1.2% with very severe sleep problems [21]. Researchers have reported elevated emotional distress and psychological issues, including stress, anxiety, depression, and insomnia, both before and after COVID-19 infection [11].

The current study found 15.3% of participants had severe stress symptoms. A similar study in Saudi Arabia reported 23.8% with severe and 10.7% with extremely severe PTSD symptoms [2]. In the current research, it is recorded that; the highest percentage (59.4%) were happy state of well-being. An Indian researcher reported that; 71.7% of the sample reported poor well-being [11],these differing findings may be due to the timing of data collection, as our study began after strict preventive measures were relaxed.

The study found significant associations between mental health issues and demographic factors (P<0.05), such as age, mother's education, family income, and leisure activities. Depression and stress were linked to age and family income, while anxiety was associated with study branch, family type, and income. Sleep disturbances related to extracurricular activities, and well-being was linked to family income and mother's education. These findings align with similar studies on the impact of age, gender, study branch, residence, and medical comorbidities on mental health [13, 14, 20].

The probable clarification for these results: The main testified contrary psychological impacts and psychological symptoms to date at both pre – Intra and post-pandemic periods are elevated rates of

various psychological disturbances [11]. The time of COVID-19 pandemic can be emotionally challenging and stressful to all persons affected, and, those groups of the population that are at an increased risk of mental health problems, such as university students [4]. Many recent studies found that throughout the early stage of the COVID-19 outbreak in Saudi Arabia showed that; nearly one-fourth of the general population experienced moderate to severe psychological impact [11]. Comparing our results with international studies is challenging due to differences in sampling, sociodemographics, and data collection methods. However, similar studies in Saudi Arabia also highlight global psychological issues in college students, often driven by future concerns and academic pressure.

5. STUDY LIMITATIONS

This study has some limitations, including its cross-sectional design, single population sample, and lack of clinical diagnoses based on DSM-V or ICD-11 criteria. Severe symptom cases could not be referred for evaluation due to the anonymized self-report method. Despite these limitations, the study provides valuable insights into the psychological health of higher education students.

6. IMPLICATIONS FOR FUTURE RESEARCH AND PRACTICE

Our study highlights the need for immediate support for students with mental health issues and calls for large-scale assessments to implement effective support mechanisms in future crises. Academic institutions should regularly screen students for psychological disorders and adopt flexible teaching approaches. Future research should focus on long-term follow-ups of students with mental disorders and their impact on learning experiences.

7. CONCLUSION

Currently, the pandemic's control status varies worldwide. The situation of COVID-19 in Saudi Arabia significantly improved and the colleges reopened completely. However, in some other countries, the colleges might reopen with some restrictions. To the best of our knowledge, this is the seldomly published article examining college students 'mental status after the reopening of the university in Saudi Arabia. Therefore, we evaluated the college regulation measures based on college student's mental health, which could provide sensitive suggestions for university management nationwide. To conclude, during the pandemic period with restricted lifestyle changes, youths were more susceptible to many issues in all dimensions of life, we investigated to assess for the presence of psychological signs after the full pledge reopening of the university followed by a post-pandemic period, and studied many factors which influence undergraduates 'psychological issues.

8. ETHICS STATEMENT

The study protocol was submitted to the "Researches Ethical Committee" and brought to their notice the study process in the year 2021 and there were NO objections to the same.

9. REFERENCES

1. Abdulmajeed A. Alkhamees and Moath S. Aljohani, The Open Public Health Journal. 2021, 14, 12-23. DOI: 10.2174/1874944502114010012.
2. D S V Swamy, Rao S, Ancheril A, et al. Prevalence of Emotional Maturity and Effectiveness of Counselling on Emotional Maturity among Professional Students of selected Institutions at Mangalore, South India, Journal of Biology Agriculture and Healthcare, 2014, 4 (6), 33-37.
3. Mona Alanazi. Advances in Medical Education and Practice, Psychological Status of College Students During COVID-19 Pandemic: A Cross-Sectional Study in Saudi Arabia. 2022:13 1443–1451.
4. Naser AY, Dahmash EZ, Al-Rousan R, et al. Mental health status of the general population, healthcare professionals, and university students during 2019 coronavirus disease outbreak in Jordan: A cross-sectional study. Brain Behav. (2020) 10: e01730. doi: 10.1002/brb3.1730.
5. Ma T, Heywood A, MacIntyre CR. Travel health risk perceptions of Chinese international students in Australia - implications for COVID-19. Infect Dis Health. (2020) 25:30018–3.

Doi: 10.1016/j.idh.2020.03.002.

6. Zhai Y, Du X. Mental health care for international Chinese students affected by the COVID-19 outbreak. Lancet Psychiatry. (2020) 7: e22. doi: 10.1016/S2215-0366(20)30089-4.

7. Tauqeer H M, Naveed A, Muhammad S. et al Estimation of Psychological Impairment and Coping Strategies during COVID-19 Pandemic among University Students in Saudi Arabia: A Large Regional Analysis. Int. J. Environ. Res. Public Health 2022, 19, 14282. https://doi.org/10.3390/ijerph192114282
8. D S V Swamy, Rao S, Ancheril A, et al. Prevalence of Depressive Symptoms and Effectiveness of Yoga on Depressive Symptoms among Professional Students of Selected Institutions at Mangalore, South India, Journal of Biology Agriculture and Healthcare 2014, Vol.4, No.6, 1-5.
9. Chirikov, I., Soria, K. M., Horgos, B., & Jones-White, D. Undergraduate and graduate students 'mental health during the COVID-19 pandemic - SERU Consortium, University of California – Berkeley, and the University of Minnesota. (2020-8-17).
(https://cshe.berkeley.edu/seru-covid-survey-reports).
10. Ren Z, Xin Y, Ge J, Zhao Z, Liu D, Ho RCM, and Ho CSH, Psychological Impact of COVID-19 on College Students After School Reopening: A Cross-Sectional Study Based on Machine Learning. Front. Psychol. 12:641806. doi: 10.3389/fpsyg.2021.641806.
11. Chen T and Lucock M, The mental health of university students during the COVID-19 pandemic: An online survey in the UK. PLoS ONE. 2022, 17(1): e0262562. https://doi.org/10.1371/journal.pone.0262562.
12. Qanash S, Al-Husayni F, Alemam S, et al. Psychological Effects on Health Science Students After Implementation of COVID-19 Quarantine and Distance Learning in Saudi Arabia. 29-9-2020, 12(11): e11767. DOI 10.7759/cureus.11767.
13. Zeinab M, Arafa1 A, El-Sayed A, et al. Psychological problems among university students in Saudi Arabia during the COVID-19 pandemic. The international of clinical practice, John Wiley & Sons Ltd, 2021;75: e14853. 1-7.
14. Alyoubi A, Halstead E.J, Zambelli Z and Dimitriou D. The Impact of the COVID-19 Pandemic on Students 'Mental Health and Sleep in Saudi Arabia. Int. J. Environ. Res. Public Health 2021, 18, 9344. https:// doi.org/10.3390/ijerph18179344.
15. Khoshaim HB, Al-Sukayt A, Chinna K, Nurunnabi M, Sundarasen S, Kamaludin K, Baloch GM and Hossain SFA. Anxiety Level of University Students During COVID-19 in Saudi Arabia. Front. Psychiatry, 2020, 11:579750. doi: 10.3389/fpsyt.2020.579750.
16. Sahu P. Closure of universities due to Coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff. Cureus. 2020. 12: e7541. doi: 10.7759/cureus. 7541.
17. Mona A, Psychological Status of College Students During COVID-19 Pandemic: A Cross-Sectional Study in Saudi Arabia, Advances in Medical Education and Practice 2022:13 1443–1451.
18. Grover S, Sahoo S, Mehra A, Avasthi A, Tripathi A, Subramanyan A, et al. The psychological impact of COVID-19 lockdown: An online survey from India. Indian J Psychiatry 2020; 62:354-62.
19. Hodes GE, Epperson CN. Sex differences in vulnerability and resilience to stress across the life span. Biol Psychiatry. 2019, 86:421–32. Doi: 10.1016/j.biopsych.2019.04.028.
20. Debowska A, Horeczy B, Boduszek D, Dolinski D. A repeated cross-sectional survey assessing university students 'stress, depression, anxiety, and suicidality in the early stages of the COVID-19 pandemic in Poland. Psychological Medicine. 2020:1-4.
21. Dantzer R. Depression and inflammation: an intricate relationship. Biol Psychiatry. 2012, 71:4–5. Doi: 10.1016/j.biopsych.2011.10.025.