

Prevalence of Stress and the Stressor During the COVID-19 Endemic Era Among Healthcare Students at International Islamic University Malaysia (IIUM)

Nor Athirah Hassan¹ & Rusila Ruslan^{2*}

¹Sunway Medical Centre, Selangor, Malaysia.

²Department of Critical Care Nursing, Kulliyyah of Nursing, International Islamic University Malaysia, Pahang, Malaysia.

ABSTRACT

Introduction: The COVID-19 pandemic has introduced challenges across diverse facets of human life, profoundly affecting the mental health of individuals, including students, regardless of their fields. This study delves into the intricate relationship between socio-demographic factors and stress among undergraduate healthcare students at IIUM during the endemic phase of COVID-19. Factors such as gender, race, academic year, kulliyyah, study support, family financial status, and psychological history are examined in connection to stress incidence. The motivation for this investigation stems from the limited and scattered data available for this specific pandemic phase.

Method: Employing a cross-sectional design, the study utilized random stratified sampling, focusing exclusively on active undergraduate healthcare students who underwent clinical postings during the pandemic. The analysis included students from the Kulliyyah of Medicine, Nursing, Dentistry, Pharmacy, and Allied Health Sciences. Data collection involved an online Google Form questionnaire encompassing the PSS-10, Undergraduate Source of Stress questionnaire, and an open-ended question.

Results: Within the study participants, 26 individuals (14.7%) indicated experiencing low stress levels, while 126 students (71.2%) reported moderate stress, and 25 students (14.1%) expressed high perceived stress. Analyzing the distribution of stress among healthcare students at IIUM, it was observed that KON students had the highest proportion at 49.2%, followed by KAHS at 18.1%, KOM and KOD both at 11.3%, and KOP at 10.2%. SPSS version 27.0 facilitated data analysis, revealing no significant association between socio-demographic factors and stress levels. Contributing factors to stress included course material volume, time demands, uncertainty about course expectations, intellectual demands, and university fees.

Conclusion: Despite the challenges, most healthcare students exhibited controlled, moderate stress levels during the transition from pandemic to endemic phases.

Keywords: Stress; Contributing factors; Undergraduate students; COVID-19; Endemic phase.

*Corresponding author

Dr. Rusila Ruslan
Department of Critical Care Nursing
Kulliyyah of Nursing
International Islamic University Malaysia
Jalan Sultan Ahmad Shah, Bandar Indera Mahkota
25200 Kuantan, Pahang, Malaysia
Email:rusilaruslan@iium.edu.my

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INTRODUCTION

Stress is a subjective term with broad definitions encompassing various forms and manifestations. The World Health Organization (WHO) characterizes stress as any alteration that imposes physical, mental, or psychological strain on an individual. It is the body's response to situations demanding focus or action and is categorized into three types: physical, mental, and psychological. Perceived psychological distress is a common experience among undergraduate students.

As highlighted by Fawaz & Samaha (1), the COVID-19 pandemic led to global lockdowns, causing both public and private institutions, including higher education establishments, to suspend on-site operations and shift to virtual teaching. Prolonged home isolation, online learning, closed facilities, graduation pressures, and employment uncertainties have significantly contributed to psychological stress among students (2).

Healthcare students at the International Islamic University Malaysia (IIUM) typically engage in clinical placements at hospitals for their clinical practice during study period. Before the onset of the COVID-19 pandemic, hospitals were welcoming playground for the students to explore and practice their learned skills from the class. However, during the pandemic, due to some restriction, those students have limitation in practicing their skills. Thus, this has impacted the psychological well-being of healthcare students, as evidenced by recent studies.

During the COVID-19 pandemic, 49.3% of undergraduate students enrolled in health programs at a Malaysian university reported experiencing psychological stress(3). Another study noted that neuropsychiatric diseases constitute 28% of the global burden of non-communicable diseases, with mood disorders being the most prevalent. Individuals with such conditions may endure significant suffering, perform below their potential in work and school, experience impaired social interactions, and, in extreme cases, face the risk of suicide (4).

Most prior research has primarily focused on examining stress prevalence among medical students (5) with limited attention given to

other healthcare student populations, including nursing students, allied health sciences students, pharmacy students, and dentist students. Considering the observed rise in stress prevalence during the COVID-19 pandemic compared to the preceding years, this study was undertaken to investigate the prevalence of stress during the endemic phase of COVID-19. The aim was to identify contributing factors among healthcare students at the International Islamic University Malaysia (IIUM), encompassing the Kulliyyah of Medicine (KOM), Kulliyyah of Nursing (KON), Kulliyyah of Pharmacy (KOP), Kulliyyah of Dentistry (KOD), and Kulliyyah of Allied Health Sciences (KAHS).

METHODS

A cross-sectional study was carried out between December 2022 and June 2023 utilizing and adapting the Perceived Stress Scale (PSS-10), the Undergraduate Source of Stress (USOS) questionnaire, and a single open-ended question. The Perceived Stress Scale (PSS-10) (6) is reliable and popular tool for measuring psychological stress. The purpose was to assess the influence of the transition from one phase of COVID-19 to another on the stress levels of healthcare students at the International Islamic University Malaysia (IIUM).

The study involved a sample size of 244 students out of 2330 total students ($CI: 95\%$, $p < 0.05$), determined through both single-proportion sample size calculation and Raosoft sample size calculation. Employing a random sampling approach, the author collected the data among students that the study status is active only during the pandemic occur. Therefore, only student in year 2 till 5 are involved in the study.

Data collection transpired from February 2023 to June 2023 via an online questionnaire distributed within WhatsApp groups by the author to representatives of five healthcare programs: Kulliyyah of Medicine (KOM), Kulliyyah of Nursing (KON), Kulliyyah of Dentistry (KOD), Kulliyyah of Pharmacy (KOP), and Kulliyyah of Allied Health Sciences (KAHS). Excluded from the study were Year 1 students, Postgraduate students, and those in the Kulliyyah of Science, as they did not undergo clinical placement during the COVID-

19 pandemic. The online questionnaire permitted only one-time access to prevent data redundancy.

The data underwent analysis using SPSS version 27.0. Descriptive analysis was employed to identify major stressors affecting the stress levels of IIUM healthcare students. Pearson Chi-square analysis was utilized to ascertain associations between socio-demographic profiles (gender, race, year of study, Kulliyah, study loan/sponsorship, family financial status, history of psychological diagnosis) and stress prevalence among healthcare students during the COVID-19 endemic phase. Thematic analysis was applied to categorize themes from responses to the open-ended question: "Does the transition from the pandemic phase to the endemic phase of COVID-19 impact your psychological well-being? Please elaborate." This open-ended question aimed to explore the extent of the psychological impact resulting from the transition in COVID-19 phases on the well-being of the respondents.

RESULTS

The study recorded a response rate of 72.5%, comprising 177 participants out of 244 students. The respondents, drawn from various healthcare programs (KOM, KON, KOD, KOP, and KAHS), were categorized by gender. Among the programs, KON had the highest respondent count at 49.2%, followed by KAHS at 18.1%, KOM and KOD at 11.3%, and KOP at 10.2%. Regarding gender distribution, the majority were female, constituting 83.1% of respondents, while males accounted for 16.9%. Ethnicity-wise, 98.9% of respondents identified as Malay, with 1.1% belonging to unspecified other races.

Analysing the students' academic years, Year 4 had the highest response rate at 37.9%, trailed by Year 3 (32.2%), Year 2 (26.0%), and Year 5 (4.0%). In terms of CGPA distribution, half of the students (50.8%) fell within the 2.80-3.50 range, while the remaining 49.2% achieved dean's list CGPA (3.50-4.00). Notably, 40.1% of students availed study loans from PTPTN, with 28.2% and 17.5% obtaining sponsorship from *Majlis Amanah Rakyat* (MARA) and *Jabatan Perkhidmatan Awam* (JPA), respectively. Additionally, 14.1% were self-sponsored.

Examining family financial backgrounds, the majority hailed from B40 status (55.4%), followed by M40 (33.3%), and a smaller proportion from T20 (11.3%). Concerning mental health, 79.7% of respondents had no history of psychological diagnosis, 13.6% exhibited symptoms without formal diagnosis, and 6.8% had a documented history of psychological diagnosis. The socio-demographic profile distribution is presented in Table 1.

Table 1: Summary of Distribution of Socio Demographic Profile

Variables	n	%
Gender		
Male	30	16.9
Female	147	83.1
Race		
Malay	175	98.9
Others	2	1.1
Kulliyah		
KOM	20	11.3
KON	87	49.2
KOD	20	11.3
KOP	18	10.2
KAHS	32	18.1
Year of Study		
Year 2	46	26.0
Year 3	57	32.2
Year 4	67	37.9
Year 5	7	4.0
CGPA		
3.50-4.00	87	49.2
2.80-3.50	90	50.8
Study Loan/Sponsorship		
PTPTN	71	40.1
MARA	50	28.2
JPA	31	17.5
Self-Sponsored	25	14.1
Family Financial Status		
B40	98	55.4
M40	59	33.3
T20	20	11.3
History of Psychological Diagnosis		
Yes	12	6.8
No	141	79.7
Have symptoms but not diagnosed	24	13.6

Distribution Of Stress Level

Table 2, presented below, outlines the prevalence of stress, categorized into three groups: 12.7% classified as experiencing a low level of stress, 61.5% classified as having a moderate level of stress, and 12.2% classified as facing high perceived stress.

Table 2: Distribution of Stress level

Stress level	n	%	Mean	SD
Low Stress	26	12.7		
Moderate stress	126	61.5	1.994	0.5383
High Perceived Stress	25	12.2		

Association Between Socio Demographic Profile and Stress Level

The outcomes depicted in **Table 3** below indicate that there is no correlation between the socio-demographic profile and stress levels, despite the presence of a history of psychological diagnosis in some individuals.

The analysis of stressors associated with stress prevalence utilized descriptive methods, and the principal stressors were identified based on the mean (SD±) values (refer to **Table 4**). The study revealed that the foremost contributing factor was the volume of material to be learned in the course (*Mean: 2.339; SD± 1.1958*), followed by the time demands of the course (*Mean: 2.294; SD± 1.1597*), uncertainty about course expectations (*Mean: 2.260; SD± 1.1482*), intellectual demands of the course (*Mean: 2.220; SD± 1.1784*), and university fees (*Mean: 2.164; SD± 1.308*).

Effect of Transition from Pandemic to Endemic Phase of COVID-19

Given the scattered nature of stress level data during the COVID-19 endemic phase, we introduced an open-ended question: "How does the transition from the pandemic to the endemic phase of COVID-19 impact your psychological well-being? Please provide further details." Among the respondents, 64% indicated that the transition had minimal effect on their mental health, while the remaining

46% expressed concerns, noting an improvement in their mental well-being upon entering the endemic phase compared to the pandemic phase. These concerns were analysed and categorized into six themes, encompassing academic, environmental, financial, social, and psychological factors.

Table 3: Summary of Association between Socio Demographic Profile and Stress Level

Variables	Level of stress (n=177)			value	
	Low n (%)	moderate n (%)	high n (%)	χ^2	p
Gender					
Male	3.4	11.3	2.3	0.813	0.666
Female	11.3	59.9	11.9		
Race					
Malay	14.1	71.2	13.6	5.000	0.082
Others	0.6	0.0	0.6		
Kulliyah					
KOM	1.7	7.3	2.3	7.384	0.496
KON	8.5	36.2	4.5		
KOD	1.7	7.9	1.7		
KOP	0.0	8.5	1.7		
KAHS	2.8	11.3	4.0		
Year of Study					
Year 2	4.0	18.1	4.0	5.947	0.429
Year 3	4.5	23.7	4.0		
Year 4	6.2	27.1	4.5		
Year 5	0.0	2.3	1.7		
CGPA					
3.50-4.00	8.5	36.7	5.1	2.697	0.260
2.80-3.50	6.2	34.5	9.0		
Study Loan/Sponsorship					
PTPTN	5.6	27.7	6.8	8.044	0.235
MARA	5.1	20.9	2.3		
JPA	1.7	11.3	4.5		
Self-sponsored	2.3	11.3	0.6		
Family Financial Status					
B40	10.2	38.4	6.8	2.721	0.606
M40	3.4	34.3	5.6		
T20	1.1	8.5	1.7		
History of Psychological diagnosis					
Yes	5.1	24.9	4.0	5.547	0.236
No	8.5	37.9	6.2		
Have symptom but not diagnosed	1.1	8.5	4.0		

*Significant level $p < 0.05$

Table 4: Contributing factors of stress level during COVID-19 endemic phase

Contributing factors	N	Mean	SD±
1. Personal finances	177	2.000	1.1580
2. Accommodation	177	1.203	1.1399
3. Transport	177	1.452	1.2010
4. Cost of books/equipment	177	1.565	1.2466
5. University fees	177	2.164	1.3018
6. Relationship with parents	177	1.119	1.2166
7. Relationship with partner /friends	177	1.542	1.2012
8. Loneliness	177	1.768	1.2736
9. Physical health	177	1.458	1.2012
10. Psychological health	177	1.893	1.2083
11. Stressful events	177	1.740	1.2614
12. Mood	177	2.056	1.1115
13. Intellectual demand of the course	177	2.220	1.1784
14. Physical demands of the course	177	2.011	1.1381
15. Time demands of the course	177	2.294	1.1597
16. Uncertainty about the expectation in the course	177	2.260	1.1482
17. Amount of material to be learned in the course	177	2.339	1.1958
18. Overall level of stress	177	2.119	1.0127

In terms of the academic factor, 28 out of 177 students acknowledged that the transition influenced their stress levels. Specifically, respondents R132, R139, R140, and R150 concurred that the COVID-19 pandemic exerted more pressure compared to the endemic phase.

"I usually need to study with my friends, but during covid era, I had to learn by myself. So, it stresses me out." (R132)

"It stressed me out a little bit for my education as to be honest I didn't really focus a lot and fully understand what is being taught during pandemic." (R139)

"It's hard to catch up when the basic is not strong as early degree years was during the pandemic." (R140)

"Yes, because being a clinical student that requires me to fulfil my requirements in a limited amount of time somewhat putting pressure on me." (R150)

Regarding the environmental factor, six respondents detailed the impact of the transition on their stress levels. Notably, respondent R136 and R169 mentioned feeling

less stressed during the endemic phase compared to the pandemic phase, attributing this change to challenges related to their home environment, which was deemed unsuitable for prolonged study.

"It gives some effect where learning at home a bit was stressful due to the responsibility as a daughter and a student, whereas I can be more comfortable in learning on campus. However, other stressful events might occur when in campus such as financial difficulties." (R136)

"Yes. During COVID-19, we ran the class online and I had a problem with the internet, the environment at home, lack of motivation because everything needed to be handled online. Besides, I am still year 1 (when the pandemic started) so there are a lot of things that I need to catch up." (R169)

Concerning the financial factor, three individuals (R124, R128, R135) concurred that the transition to the endemic phase resulted in an escalation of their family's financial requirements. This was due to their re-enrolment in university, necessitating the payment of tuition and hostel fees.

"A little bit in term of financial." (R124)

"Family finances got affected which gave burden then led to misunderstanding which affects the whole family then." (R128)

"It gives me a lot of stress since I have to think about all the new fees that I have to pay since I have to stay at the university." (R135)

In terms of the social factor, 16 students acknowledged that the pandemic phase elevated their stress levels due to prolonged isolation, resulting in limited activities at home and a decrease in self-confidence when interacting with people during the endemic phase. This social aspect is closely linked to psychological factors, manifesting as increased introversion and anxiety about socializing, and communicating with others upon returning to university.

"COVID-19 requires people to isolate themselves. For me, one of my coping mechanisms is through socializing. So, I felt quite lonely as I could not mix with the people surrounding me. Unable to engage with community slightly decreased my mood." (R127)

"Yes. During the pandemic, I barely went out to interact with other people but when Malaysia entered the endemic phase, I must interact with other people and I tried so hard to cooperate with other's emotions and attitude, but sometimes it really disturbed my mental health." (R151)

"Yes, because it increased my anxiety to meet other people face to face." (R156)

"Yes, because when pandemic happens, we stay away from others, so now I feel like I lost a bit myself confidence when in front of people." (R165)

DISCUSSION

Stress is a prevalent psychological condition among university students, irrespective of their socio-demographic profiles. A previous study indicated an increase in stress prevalence during the COVID-19 pandemic, with associated factors such as prolonged isolation, concerns about infection, financial strain, adaptation to online learning, and delayed clinical placements (7).

This cross-sectional study focused on healthcare students at IIUM during the

endemic phase of COVID-19, revealing various contributing factors to stress prevalence. Notably, the primary factors included the volume of course materials to be learned (*Mean: 2.339; SD± 1.1958*), time demands of the course (*Mean: 2.294; SD± 1.1597*), uncertainty about course expectations (*Mean: 2.260; SD± 1.1482*), intellectual demands of the course (*Mean: 2.220; SD± 1.1784*), and university fees (*Mean: 2.164; SD± 1.308*).

The global economy has been significantly impacted by the increase in COVID-19 outbreaks, affecting various sectors such as transportation, tourism, trade, and health. Household sectors have experienced the most substantial negative effects (8). Additionally, in the U.S., educational conferences were either cancelled or shifted online during the pandemic, limiting students' access to networking opportunities for scientific communication and job-seeking (9).

This study found that the majority of IIUM healthcare students experienced a moderate level of stress during the transition from the pandemic to the endemic phase of COVID-19. With stress level data during the endemic phase being limited, an open-ended question was posed, revealing that 64% of respondents felt the transition had minimal impact on their mental distress, while the remaining 46% expressed concerns about increased stress levels. These concerns were analysed and categorized into six themes: financial, environmental, academic, social, psychological, and time management factors.

CONCLUSION

The COVID-19 pandemic has had a substantial impact on the academic and mental well-being of students, with various factors, particularly stress levels, significantly influencing psychological health. The transition of COVID-19 from a pandemic to an endemic phase has been widely welcomed globally. Notably, this study reflects positive outcomes in managing stress levels among IIUM healthcare students, with the majority experiencing moderate stress levels.

In summary, this research has shed light on the repercussions of COVID-19 on the psychological well-being of healthcare

students, providing an avenue for them to express concerns regarding factors affecting their stress levels. Furthermore, it contributes valuable information for future studies on the prevalence of stress among medical and healthcare students during the endemic phase of COVID-19, given the current scarcity of comprehensive and published studies in this area.

LIMITATION

While the study encompassed about two-thirds of the total student population at IIUM, it achieved a response rate of only 72.5%. This suggests that the complete spectrum of impacts and concerns associated with the pandemic may not have been thoroughly examined. In the beginning, the researcher has problem in recruiting the potential respondent. Thus, several methods were applied to recruited them such as seek help from the student representative to distribute the questionnaire.

RECOMMENDATION

This study took place at the International Islamic University Malaysia and focused on healthcare students. It is suggested that future research explore different settings and populations to provide insights into the prevalence of stress during the endemic phase of COVID-19 among undergraduate students in other Malaysian universities. Additionally, employing varied approaches to data collection is recommended to enhance response rates from participants.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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AUTHOR CONTRIBUTIONS

NAH: drafted the manuscript, design the article through data collection, analysis and data interpretation for the article.

RR: revised and finalised the manuscript and contributed to the concept development and design of the article through data collection, analysis and data interpretation for the article.

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