

## COVID-19 IMPACT ON MENTAL HEALTH AND STRESS LEVELS: A STUDY TWO YEARS LATER

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**Abstract.** Amidst the contemporary challenges, the profound impact of Covid-19 on mental health and stress levels among students in Malaysia, particularly in the context of pharmacy education, requires urgent consideration. Historically marginalized, mental health issues are gaining recognition for their critical significance. This study explores the psychological repercussions of the Covid-19 pandemic on the stress and mental well-being of Diploma in Pharmacy students at Universiti Teknologi MARA (UiTM) Cawangan Pulau Pinang. The research, encompassing 116 respondents, predominantly female (85.3%), aims to elucidate students' self-awareness of their health status. Results reveal notable instances of fatigue, sleep difficulties, and heightened stress during online learning. Specifically, 50.9% of students experience occasional stress during assignments, and 16.4% report constant stress. Despite feelings of despair among 54.3% of students, no significant gender-based differences emerge. The study emphasizes the imperative to address mental health and stress levels among pharmacy students and underscores students' awareness of their well-being. In conclusion, proactive measures and support are essential for students at UiTM Cawangan Pulau Pinang, Kampus Bertam, navigating the challenges of mental health and stress in the post-Covid era.

**Keywords:** *mental, health, stress, Covid-19, students*

### Introduction

The emergence of the Covid-19 pandemic in 2020, caused by the novel coronavirus SARS-CoV-2, has significantly impacted global health (Wu et al., 2020). Originating in Wuhan, China, it quickly spread, affecting respiratory systems and leading to symptoms such as fever, cough, and breathing difficulties (Othman et al., 2022a). The World Health Organization (WHO) declared it a pandemic in March 2020, and began spreading worldwide including Malaysia (Thomas et al., 2021). Stringent measures, including Movement Control Order (MCO), were implemented to curb the virus's spread (Salman, 2021). While these measures were effective in controlling infections, they gave rise to various consequences, notably affecting mental health and stress levels, particularly among students. The pandemic prompted a swift shift to online learning, profoundly affecting higher education. Pharmacy students, accustomed to hands-on practices, faced challenges adapting to virtual classrooms (Aziz et al., 2020). The extended MCO heightened stress and mental health concerns, with anxieties related to infection fears, academic performance, and uncertain futures (Sundarasan et al., 2020). Financial constraints exacerbated these issues, hindering access to necessary technologies for online learning (Khan et al., 2020).

Numerous studies reveal a substantial psychological impact on students globally. The lockdowns, social isolation, and uncertainties surrounding academic calendars contributed to increased stress, anxiety, and depression (Rodríguez-Hidalgo et al., 2020). Quarantine experiences resulted in feelings of insecurity, boredom, and reduced well-being (Baltà-Salvador et al., 2021). Reports from Greece showed alarming rises in anxiety, depression, and suicidal thoughts among students during lockdown (Kaparounaki et al., 2020). The abrupt transition to online learning further compounded stress. Pharmacy students faced difficulties in laboratory-based courses, and the lack of physical interaction with peers and lecturers negatively affected mental health (Fischbein and Bonfine, 2019). Financial concerns, uncertainties about academic achievements, and future professional prospects were prominent stressors (Chinna et al., 2021). The absence of practical elements in health science education, such as clinical work, presented additional challenges (Dodd et al., 2021).

The prolonged quarantine led to adverse mental health outcomes, including loneliness, heightened anxiety, and insomnia (Chinna et al., 2021). Students reported suboptimal learning experiences, dissatisfaction with online interactions, and concerns about future academic plans (Dodd et al., 2021). Stress levels were particularly pronounced among final-year students facing uncertain employment prospects (Morales-Rodríguez, 2021). In the context of these unprecedented challenges, our study aims to achieve the following objectives: (1) to assess the level of students' mental health during the COVID-19 pandemic; and (2) to determine the level of perceived stress among students during the COVID-19 pandemic.

By addressing these objectives, we intend to provide comprehensive insights into the psychological impact of the COVID-19 pandemic on students' mental health and stress levels. Understanding the prevalence and severity of anxiety and depression symptoms will illuminate the extent of psychological distress experienced by students. Concurrently, evaluating the perceived stress levels will contribute to a holistic understanding of the multifaceted challenges faced by students during this global crisis.

## **Materials and Methods**

The study utilized a cross-sectional, descriptive survey design to investigate the impact of the COVID-19 pandemic on the mental health and stress levels of undergraduate students enrolled in the Diploma of Pharmacy program at Universiti Teknologi MARA, Cawangan Pulau Pinang, Kampus Bertam (Othman et al., 2024; Othman et al., 2023a; Othman et al., 2022b). The sample size, determined through the Raosoft sample size calculator, aimed for a recommended size based on a population of 200 students, incorporating a 90% confidence level, 5% margin of error, and a 50% response distribution (Othman et al., 2023b). This calculation indicated a need for 116 respondents. Convenient sampling methodology was utilized, resulting in the collection of 116 valid responses for the study. Data was collected using an online Google Form survey questionnaire that was accessible to eligible and interested participants through WhatsApp messenger for one month in May 2022.

The survey questionnaire was divided into three sections. The first section collected sociodemographic information, such as age, gender, semester of study, state, and area of residence, as well as information on students' daily social interactions and exercise habits. The second section assessed students' mental health during the COVID-19 pandemic by asking questions about their personal feelings, such as whether they feel

tired, have trouble sleeping, or have little interest in anything. The third section evaluated students' stress levels during the pandemic by asking questions about the reasons for their stress and whether it affects their ability to complete assignments or attend online classes. Respondents were asked to choose answers from a scale ranging from "never or very rarely" to "very often" in the second and third sections. All respondents were required to complete all three sections of the questionnaire. Moreover, participants were adequately briefed on the study's objectives, and steps were taken to anonymize their personal identifiable information, ensuring the utmost confidentiality. Additionally, participants were afforded the choice to withdraw from the study at any point (Othman et al., 2023b).

The data collected from the survey was analysed using IBM SPSS version 26 and Microsoft Excel. The demographic features of the respondents were examined using frequency and percentage. The data on the psychological impact of COVID-19 on students' mental health and stress levels were analysed using frequency, percentage and, mean score for each statement. The calculated mean scores were interpreted based on *Table 1*.

**Table 1.** Interpretation of calculated mean score (M).

Mean range	Interpretation
1.00-1.75	Never/very rare
1.76-2.59	Sometimes
2.60-3.25	Often
3.26-4.00	Very often

## Results and Discussion

### *Sociodemographic characteristics of respondents*

*Table 2* summarizes key sociodemographic data from 116 respondents participating in the study. The majority were female (85.3%), with the remaining 14.7% being male. Participants were from various semesters: second (20.7%), third (4.3%), fourth (39.7%), and sixth (35.3%) of the Diploma of Pharmacy program. Ages ranged from 18 to 23 years, with a significant portion between 20 (44.8%) and 21 (33.6%) years old. Residential distribution included suburban (44%), rural (24.1%), and urban (31.9%) areas. During the Covid-19 pandemic, 49.1% resided on-campus, 41.4% with their families, and 9.5% outside the campus. Regarding social interactions, 49.1% preferred 1 to 5 hours, 42.2% opted for 6 to 10 hours, and 8.6% had interactions exceeding 11 hours daily. In terms of exercise, 73.3% reported irregular activity, 17.2% none, and 9.5% regular exercise.

**Table 2.** Sociodemographic of respondents.

Variables: Category	Frequency (N)	Percentage (%)
Ages (years)		
18	1	0.9
19	19	16.4
20	52	44.8
21	39	33.6
22	3	2.6
23	2	1.7
Gender		

Male	17	14.7
Female	99	85.3
Part/Semeter		
2	24	20.7
3	5	4.3
4	46	39.7
6	41	35.3
Area of residence		
Rural	28	24.1
Suburban	61	44
Urban	37	31.9
Residence		
Living with family	48	41.4
Outside campus	11	9.5
University college	57	49.1
Social hours		
1-5 hours	57	49.1
6-10 hours	49	42.2
>11 hours	10	8.6
Exercise		
Irregular	85	73.3
Not at all	20	17.2
Regular	11	9.5s

### ***Impact of Covid-19 on students' mental health***

Table 3 summarizes data from 116 respondents regarding their awareness of the COVID-19 pandemic's impact on mental health. When asked about feeling tired, 3.4% (n=4) responded "never or very rarely," 64.7% (n=75) said "sometimes," 20.7% (n=24) chose "often," and 11.2% (n=13) experienced weariness "very often." Regarding trouble falling asleep, 25% (n=29) claimed "never or very rarely," 48.3% (n=56) chose "sometimes," 13.8% (n=16) said "often," and 12.9% reported having a night of poor sleep "very often." For the third statement about losing interest, 26.7% (n=31) responded "never or rarely," 12.9% (n=15) indicated "often," 55.2% (n=64) claimed "sometimes," and 5.2% (n=6) demonstrated feeling that way "very often". In the fourth statement, participants were asked about feeling down and hopeless, with 23.3% (n=27) responding "never or rarely," 16.4% (n=19) often feeling this way, 54.3% (n=63) experiencing it sometimes, and 6% (n=7) thinking of it very frequently. Moving to the fifth statement on perceived life failures, 34.5% (n=40) said "never or very rare," 12.1% (n=14) often think this way, 50% (n=58) feel it sometimes, and 3.4% (n=4) believe it very often. For the sixth statement about competence compared to peers, 12.1% (n=14) rarely thought about it, 28.4% (n=33) often believed this, 50.9% (n=59) thought it sometimes, and 8.6% (n=10) believed it very often.

***Table 3. Impact of Covid-19 pandemic on students' mental health.***

Statement	Never/very rare (1) N (%)	Sometimes (2) N (%)	Often (3) N (%)	Very often (4) N (%)	Mean (M)
I feel tired/lethargic.	4 (3.4)	75 (64.7)	24 (20.7)	13 (11.2)	2.40
I have trouble in failling or staying asleep.	29 (25.0)	56 (48.3)	16 (13.8)	15 (12.9)	2.15
I have a little or no interest in anything.	31 (26.7)	64 (55.2)	15 (12.9)	6 (5.2)	1.97
I feel down and hopeless.	27 (23.3)	63 (54.3)	19 (16.4)	7 (6.0)	2.05

I think I am a failure.	40 (34.5)	58 (50.0)	14 (12.1)	4 (3.4)	1.84
I think I am a less competent than other people in my age.	14 (12.1)	59 (50.9)	33 (28.4)	10 (8.6)	2.34
I have trouble with my concentration on doing things.	21 (18.1)	64 (55.2)	18 (15.5)	13 (11.2)	2.20
I have poor appetite the whole day.	48 (41.4)	58 (50.0)	7 (6.0)	3 (2.6)	1.70
I prefer to be alone.	48 (41.4)	58 (50.0)	7 (6.0)	3 (2.6)	2.53
I speak softly so that people will not hear me.	13 (11.2)	49 (42.2)	33 (28.4)	21 (18.1)	1.90

The seventh statement addressed respondents' concentration difficulties, with 18.1% (n=21) rarely experiencing it, 15.5% (n=18) often struggling, 55.2% (n=64) sometimes losing focus, and 11.2% (n=13) very frequently working to concentrate. Moving to the eighth statement about appetite, 41.4% (n=48) rarely lost their appetite, 6% (n=7) often did, 50% (n=58) experienced it sometimes, and 2.6% (n=3) very often had a poor appetite. The ninth statement explored preferences for being alone, with 11.2% (n=13) rarely wanting solitude, 28.4% (n=33) often preferring to be alone, 42.2% (n=49) sometimes needing their own space, and 18.1% (n=21) feeling it very often. In the final statement, 37.9% (n=44) rarely spoke softly, 12.1% (n=14) often did, 42.2% (n=49) sometimes used a hushed tone, and 7.8% (n=9) very often communicated that way. In analysing the overall results, a notable trend emerges-the predominant response for each survey statement was 'sometimes,' indicating a commonality in the experiences reported by the respondents. This consistency suggests that the psychological impact of the Covid-19 pandemic on students' mental health is characterized by a nuanced and fluctuating nature. The diversity in mean values across different statements underscores the multifaceted ways in which students navigated these challenges. While 'sometimes' was the prevailing response, the variations in mean values highlight those certain aspects of the psychological impact exhibited more consistent patterns than others.

It is crucial to highlight an exception in the pattern: the statement regarding appetite changes scored predominantly as 'never or very rarely.' This implies that, unlike other aspects measured, alterations in appetite were infrequent among the respondents, signifying a distinct facet of their mental health experience during the pandemic. In essence, these findings illuminate the complex and individualized nature of the psychological effects induced by the Covid-19 pandemic on students. The diverse responses underscore the need for targeted and adaptable support systems to address the varying challenges posed to students' mental well-being.

### ***Impact of Covid-19 on students' stress levels***

Table 4 summarizes respondents' perceptions of the impact of the Covid-19 pandemic on their stress levels. The initial question asked respondents if they felt stressed for no reason, with 33.6% (n=39) responding rarely or never, 12.1% (n=14) often, 44% (n=51) sometimes, and 10.3% (n=12) very often. The following inquiry focused on the stress associated with online courses, revealing that 7.8% (n=9) rarely or never found online classes stressful, 28.4% (n=33) often did, 54.3% (n=63) sometimes felt stressed during online classes, and 9.5% (n=11) very often experienced stress in this context. The survey explored various claims regarding the impact of stress on students' engagement with online classes and academic responsibilities. For the assertion that stress might lead to missing online classes, 56% (n=65) rarely or never considered it, 9.5% (n=11) often did, 31% (n=36) sometimes thought about it, and 3.4% (n=4) very often believed stress led to missed classes. Regarding stress related to study time, 7.8% (n=9) rarely or never felt anxious, 16.4% (n=19) often experienced stress, 63.8% (n=74)

sometimes felt pressured, and 12.1% (n=14) very often felt stressed. Concerning stress while completing assignments, 6% (n=7) rarely or never experienced stress, 26.7% (n=31) often felt stressed, 50.9% (n=59) sometimes experienced stress, and 16.4% (n=19) very often felt stressed.

**Table 4.** *Impact of Covid-19 pandemic on students' stress levels.*

Statement	Never/very rare (1) N (%)	Sometimes (2) N (%)	Often (3) N (%)	Very often (4) N (%)	Mean (M)
I am stressed for no reason.	39 (33.6)	51 (44.0)	14 (12.1)	12 (10.3)	1.99
Online classes are stressful.	9 (7.8)	63 (54.3)	33 (28.4)	11 (9.5)	2.40
Stress can make me miss my online class.	65 (56)	36 (31.0)	11 (9.5)	4 (3.4)	1.60
I am stressed studying for courses.	9 (7.8)	74 (63.8)	19 (16.4)	14 (12.2)	2.33
I am stressed to complete my assignment.	7 (6.0)	59 (50.9)	31 (26.7)	19 (16.4)	2.53
When I am stressed, I shared with people around me.	38 (32.8)	47 (40.5)	20 (17.2)	11 (9.5)	2.03
I can notice when people struggle with stress.	6 (5.2)	61 (52.6)	37 (31.9)	12 (10.3)	2.47
I know how to manage my stress very well.	7 (6.0)	67 (57.8)	34 (29.3)	8 (6.9)	2.37

The survey delved into how students perceive and handle stress. Regarding the inclination to share stress, 32.8% (n=38) rarely or never did, 40.5% (n=47) did so sometimes, while 17.2% (n=20) and 9.5% (n=11) often and very often shared, respectively. Assessing the ability to recognize stress in others, 5.2% (n=6) rarely or never identified it, 52.6% (n=61) sometimes could, 31.9% (n=37) could frequently, and 10.3% (n=12) could always detect stress in others. Regarding stress control, 57.8% (n=67) could occasionally manage stress effectively, 6% (n=7) rarely or never did, and 6.9% (n=8) and 29.3% (n=34) could very often and often control stress, respectively. The overall interpretation of the results highlights a consistent trend, with 'sometimes' being the predominant response across survey statements, except for the statement about stress causing students to miss online classes, where 'very rare or never' emerged as the prevalent response. This pattern underscores the nuanced and fluctuating nature of the psychological impact of the Covid-19 pandemic on students' stress levels. The diverse range of mean values signifies that student experienced these challenges in various ways, with certain aspects demonstrating more consistent patterns than others.

### ***Students' mental health levels***

The descriptive statistics presented in Table 3 offer insights into the mental health status of university students, particularly those enrolled in the pharmacy program, amidst the challenges posed by the Covid-19 pandemic. The data indicates a prevalent preference among students to be alone, as highlighted by the highest mean (M=2.53). Additionally, a substantial number of students reported feeling burnt out and tired (M=2.40) and perceiving themselves as inferior to peers of the same age (M=2.34). These findings align with existing literature, such as the work of Gould et al. (2004), which associates a reluctance to seek assistance with higher levels of self-reliance. Pharmacy students, known for the demanding nature of their curriculum, face heightened stress, exacerbated by the shift to online learning during the pandemic (Opoku-Acheampong et al., 2017). The struggle to maintain academic performance, traditionally achieved through face-to-face learning, has likely contributed to increased stress levels among students. The survey findings reveal challenges related to concentration (M=2.20), sleep disorders (M=2.15), feelings of inferiority (M=2.05), and

loss of interest (M=1.97). These experiences align with symptoms commonly associated with depression, as noted by Kaur et al. (2014) and Baglioni et al. (2011). The disruptions caused by the pandemic, akin to those seen in major life changes, have likely impacted both mental health and sleep quality (Altena et al., 2020).

While a minority of students reported feelings of failure (M=1.8448) and speaking softly to avoid notice (M=1.8966), the lowest mean was associated with having a poor appetite (M=1.6983). These findings suggest that, although some students may experience mental health challenges, a significant portion falls within the range of 'Sometimes,' indicating a moderate impact rather than severe distress. The observed decrease in the lack of appetite, with 8.6% reporting "often" or "very often," alongside 41.1% reporting a good appetite, underscores the diverse responses to stressors during the pandemic. Students' relocation to their parents' homes during lockdown may have influenced their psychological well-being, with changes in appetite reflecting the variability in stress experiences (Epel et al., 2004).

### ***Students' stress levels***

Turning to *Table 4*, which outlines the frequency of students' stress levels, the data highlights key stressors experienced by these pharmacy students during the pandemic. The majority of respondents expressed stress in accomplishing tasks assigned by lecturers (M=2.53), detecting peers struggling with mental pressure (M=2.48), and finding online classes stressful (M=2.40). Challenges in accessing technology effectively and proficiency issues in online classes align with prior research findings (Rasheed et al., 2020). Notably, students indicated adequate self-awareness in managing their stress (M=2.37). However, stress was reported in studying for courses (M=2.33) and fretting without reason (M=1.99), suggesting that academic pressures contribute to stress levels. The demanding nature of pharmaceutical sciences, including rigorous coursework and extensive lab report writing, likely contributes to stress (Opoku-Acheampong et al., 2017). The transition to college life, especially for those away from home, further adds to stress, a phenomenon observed in the first weeks of university life (Rai, 2016).

The lowest stress outcome in the survey was associated with students overlooking their online classes (M=1.60). This may be linked to personal anxieties and the stress of fellow peers, highlighting the complex interplay of stressors in students' lives (Rai, 2016). In conclusion, while the survey reveals varying degrees of mental health challenges and stress among pharmacy students, it is crucial to emphasize the need for holistic support mechanisms. Acknowledging the unique stressors faced by students during the pandemic and promoting a balanced approach to academic expectations can contribute to a more supportive and resilient academic environment.

### ***Gender and semester-based differences in students' mental health and stress levels***

Subsequent to in-depth statistical analysis (results not displayed), it was discerned that there exists no statistically significant difference in mental health and stress levels between male and female students, as well as across various semesters of study. This finding aligns with the conclusions drawn by Smith (2000), who reported a lack of correlation between gender and stress and self-esteem measures, thereby corroborating a prevailing trend in research (Farhan and Khan, 2015). A comprehensive review of the literature further underscores this, with numerous studies spanning different epochs

consistently indicating the absence of gender-based disparities in stress and self-esteem scores (Bosacki et al., 1997; Bohan, 1993). The understanding derived from these findings is that mental health does not discriminate; it has the potential to impact individuals irrespective of their age, gender, geographical location, income, social standing, race or ethnicity, religion or spirituality, sexual orientation, or any other facet of cultural identity (Hassan et al., 2018). A robust mental state is intricately linked to the positive correlation between emotional development and effective coping mechanisms. Emotional maturity, characterized by the ability to manage emotions and refrain from attributing them to external factors, plays a pivotal role in maintaining a healthy mentality. Individuals with high emotional intelligence (EQ) exhibit composure in the face of stress, adversity, or perceived failure, signifying emotional maturity (Wagde and Ganaie, 2013). The survey results corroborate the respondents' adeptness in managing stress and mental health.

Efficient time management emerges as a potent tool for stress reduction. According to Macan et al. (1990), proper utilization of time, whether for work, leisure, or study, is paramount. Students are encouraged to craft and adhere to schedules, allocating enjoyable breaks to refresh. Effective time management not only reflects one's priorities and aspirations but also contributes to stress alleviation. Proactive measures such as planning ahead, steering clear of procrastination, and cultivating the ability to decline additional commitments are strategies highlighted in the literature and echoed in the survey results (Rai, 2016). These insights underscore the universality of mental health challenges while emphasizing the significance of emotional intelligence and effective time management as instrumental tools for students to navigate stress and uphold their well-being. While this study offers valuable insights into the psychological impact of the Covid-19 pandemic on the mental health and stress levels of pharmacy students at UiTM Cawangan Pulau Pinang, several limitations should be noted. Firstly, the research relies on self-reported data, which may be subject to response bias. The cross-sectional design limits the establishment of causation, capturing only a snapshot of the participants' experiences. Furthermore, the study primarily focuses on one academic institution and may not be fully representative of the broader student population. To enhance future research, a longitudinal approach and the inclusion of diverse educational settings are recommended. Additionally, incorporating qualitative methods could provide a more nuanced understanding of students' experiences.

## Conclusion

This study sheds light on the profound psychological impact experienced by these pharmacy students, amid the challenges imposed by the Covid-19 pandemic. The findings underscore the pervasive influence of mental health and stress levels on various facets of students' lives, encompassing physical well-being, academic pursuits, familial and social interactions, and personal spheres. The evidence presented in this study indicates a discernible albeit moderate impact on mental health and stress levels during the lockdown. The transition to remote learning, a novel experience for many students, contributed to heightened uneasiness and tension as they grappled with adapting to new educational paradigms. Crucially, the majority of respondents demonstrated a keen awareness of their mental health and stress levels. This awareness is reflected in their ability to navigate the complex interplay of academic responsibilities, social engagements, and family obligations. The acknowledgment of these challenges signifies



a proactive approach among students towards understanding and managing their psychological well-being.

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### **Conflict of interest**

The authors confirm that there is no conflict of interest involve with any parties in this research study.

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