



EXPLORING PERCEIVED STRESS LEVELS AND COPING STRATEGIES: AN ANALYSIS AMONG STUDENTS

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Abstract

The advent of the COVID-19 pandemic has ushered in a new educational paradigm, initially exerting a negative impact on the mental well-being of students globally, including those enrolled in Malaysian universities. It is noteworthy that conventional, face-to-face learning at Universiti Teknologi MARA resumed in September 2022, which directly forced students' transition from virtual learning during the pandemic to physical learning post pandemic. Consequently, this research project was undertaken with the objective of assessing the perceived stress levels among students pursuing a Diploma of Pharmacy at Universiti Teknologi MARA Cawangan Pulau Pinang (UiTM CPP) Bertam Campus. The study also explored into the origins of stress, encompassing both academic and non-academic factors, which students encountered in the post-pandemic era, as well as the strategies they employed to manage this stress. Data for this study were collected from 220 students through an online questionnaire, which incorporated the Perceived Stress Scale (PSS) to gauge their perceived stress levels, inquiries pertaining to academic and non-academic stressors, and investigations into the methods they adopted for stress management. Data from completed questionnaires were recorded into SPSS version 26 software for analysis. The outcomes of this research project revealed that a majority of the students reported experiencing a moderate level of stress. In summary, this study provides insights into the challenges confronted by Diploma of Pharmacy students at UiTM CPP Bertam Campus, with a specific emphasis on their perceived stress levels, the factors contributing to their stress, and the coping mechanisms they employ. These findings offer valuable information concerning the mental health of students in this context and may serve as a basis for devising strategies to support their well-being during these demanding circumstances.

Keywords: : Students; Stress; Stressors; Academic; Non-Academic; Coping Strategies

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INTRODUCTION

Indeed, the World Health Organization (WHO) officially declared the COVID-19 pandemic on March 11, 2020. In Malaysia, the government implemented the Movement Control Order (MCO) on March 18, 2020, as a crucial measure to contain the spread of COVID-19 within the country. The multiple extensions of the MCO underscore the severity of the situation and the government's dedication to curbing the virus's transmission. Although essential sectors remained operational, educational institutions, workplaces, and entertainment centers were temporarily closed, as outlined by the Ministry of Health Malaysia (2021). The repercussions of the COVID-19 pandemic have heightened stress levels in individuals as they grapple with adapting to new environments and routines (Javed et al., 2020).

Among the populations significantly affected by the COVID-19 pandemic are students, particularly due to the closure of universities. The traditional face-to-face learning in universities shifted to remote or virtual classes. This transition in the learning process during the pandemic led to increased stress levels among students. Virtual classes utilize online platforms such as Google Meet, Zoom, Microsoft Teams, and others to facilitate interaction between students and lecturers. However, the challenges arise for Pharmacy students, as some subjects necessitate practical activities and laboratory sessions. Additionally, students residing in rural areas or hailing from low-income families may encounter difficulties in adapting to virtual learning.

Although Malaysia transitioned into an endemic state in April 2022, the COVID-19 pandemic has continued to impact students' mental health. Concerns and fears for oneself and loved ones, coupled with the uncertainty of the situation, contribute to elevated stress levels among students. Furthermore, emerging adulthood are transitional periods characterised by physiological and psychological changes that includes elevated stress (Matud et al., 2020). Indeed, the transition to university life itself can be stressful, as students struggle with newfound independence and the need to adapt to a new academic and social environment (Bruffaerts et al., 2018).

Stress in university students is multi-factorial that can caused by many factors. Common stressors for students include academic demands, adjustments to new environments, personal issues like relationship problems, financial burdens, and changes in social and cultural aspects (Kalaithasan et al., 2020). Stress levels can vary, with some individuals experiencing mild, moderate, or severe stress. Moderate stress can be beneficial for students as it can enhance learning and focus. Recognising the multifacted nature of stress factors in universities settings is essential for creating efficient interventions together with support systems to encourage students' well-being.

Stress in university settings often varies based on factors such as the year of study, cumulative grade point average (CGPA), and gender. Research suggests that stress levels tend to increase as students progress through their academic journey, with higher levels reported among upperclassmen compared to freshmen (Zhang et al., 2019). This suggests that as students become more deeply immersed in their coursework, encounter more challenging academic demands, and face greater pressure related to future career prospects, their stress levels tend to increase. Additionally, academic stressors may be exacerbated for students with lower CGPAs, as they may experience heightened pressure to improve their grades or face academic probation or dismissal (Iqbal et al., 2016). Moreover, gender differences play a role in how students experience and cope with stress. Research by Kaya et al. (2020) confirms that gender differences influence the experience and management of stress among university students, with females consistently reporting higher levels of stress than males. This is because male and female students differ in their perception of stressors related to academic performance, with females more likely to experience stress due to interpersonal relationships and time management challenges (Liu and Lu., 2023). This

gender disparity in stress levels may be attributed to various factors, including societal expectations, gender roles, and differences in coping mechanisms.

Stress can have dual effects, necessitating effective coping strategies (Kostic et al., 2021), which studies show can mitigate its impact on physical and mental health (Ganesan et al., 2018). Given students' diverse coping methods, assessing their mental health and stress management post-pandemic is crucial. This study aims to identify stress levels, stressors, and coping strategies post-COVID-19. The findings from this study may provide appropriate psychological support to enhance the mental health and well-being of this student population.

METHODOLOGY

A cross-sectional online surveillance study was undertaken at Universiti Teknologi MARA Cawangan Pulau Pinang (UiTM CPP) Bertam Campus, encompassing all eligible and willing Diploma of Pharmacy students on campus. The study enlisted the participation of 220 students and aimed to evaluate stress levels among Pharmacy students at UiTM CPP Bertam Campus. It also sought to identify the common stressors they encountered and the coping strategies they employed. In the course of this research, an online questionnaire was formulated using Google Forms, comprising four distinct sections. The first section encompassed background information, encompassing demographic characteristics and academic profiles. The second section involved the Perceived Stress Scale (PSS) from Cohen et al., 1983, a well-established tool for measuring stress perception, consisting of ten statements assessing stress experiences over the past four weeks. Each item (PSS1-PSS10) was evaluated on a Likert 5-point scale, with scores ranging from 0 to 4, and positive statements were reverse-scored. The total score, ranging from 0 to 40 points, indicated the level of perceived stress, with higher scores reflecting higher stress levels. The reliability of this scale was assessed using Cronbach's alpha coefficient, yielding a satisfactory result of 0.714.

Section three addressed stressors among Pharmacy students, both academic and non-academic, with responses recorded on a Likert 5-point scale ranging from "no stress" to "severe stress." The final section focused on the coping strategies employed by students to alleviate or manage stress.

Data from completed questionnaires were recorded into SPSS version 26 software for analysis. Descriptive statistics were utilised to present demographic characteristics, while comparisons of continuous data between two groups, such as gender and year of study, were conducted using Mann-Whitney tests. For comparisons involving three or more groups, specifically current CGPA, the Kruskal-Wallis test was employed.

RESULTS AND DISCUSSION

Demographic Profile

A total of 220 students participated in the survey, yielding a response rate of 92%. The demographic characteristics of the respondents, along with their current Cumulative Grade Point Average (CGPA) and self-reported stress levels, are summarised in Table 1. The majority of participants were female (77.2%), with males accounting for the remaining 22.7%. Regarding academic year, 43.6% of respondents were in their first year, while 56.8% were in their second year. Notably, the vast majority of students (95.9%) achieved a CGPA above 3.01. Additionally, all participants were between the ages of 18 and 21 years.

Table 1: Demographic characteristics of the participants

Gender	
Male	51 (22.7)
Female	170 (77.3)
Year of study	
Year 1	96 (43.6)
Year 2	124 (56.3)
Current CGPA	
2.50-3.00	10 (4.5)
3.01-3.50	70 (31.8)
3.51-4.00	140 (63.6)
Do you feel COVID-19 pandemic makes your life as a student stressful?	
Yes	186 (84.5)
No	34 (15.4)

Perceived Stress Scale

This study investigated students' perceived stress using the Perceived Stress Scale questionnaire (Table 2). Analysis of the data revealed that the average score across the ten items was moderately high, approximately 22.3 out of maximum score of 40. This indicates that the majority of students experienced moderate stress over the preceding four weeks. Notably, female students exhibited higher stress scores compared to their male counterparts. However, there was no significant difference observed in perceived stress scores between Year 1 and Year 2 students.

To compare median PSS scores across gender and academic year, the Mann-Whitney test was utilised due to non-normal data distribution. Additionally, the Kruskal-Wallis test was employed to compare median PSS scores across different CGPA groups. A significance level of $p < 0.05$ was considered statistically significant.

For the academic year comparison, the analysis revealed that the disparity in scores between Year 1 and Year 2 groups was statistically insignificant ($p = 0.534$). Similarly, for the CGPA comparison, the results indicated that the differences in scores among the 2.50 – 3.00 group, 3.01 – 3.50 group, and 3.51 – 4.00 group were not statistically significant ($p = 0.489$). Thus, there is no notable difference in CGPA regarding the median PSS score

Table 2: Perceived stress score (Mean±standard deviation) in Diploma of Pharmacy students

		Mean ± Sd of Perceived Stress Score
All		22.34 ± 5.17
	Gender	
	Male	19.93 ± 5.78
	Female	21.79 ± 4.91
Year of study	Year 1	21.35 ± 5.29
	Year 2	21.36 ± 5.10
Academic performance (CGPA)	2.50-3.00	22.9 ± 3.81
	3.01-3.50	21.34 ± 4.93
	3.51-4.00	21.25 ± 5.39

Based on the individual PSS scores, students were categorised into three levels of stress: low stress (total score between 0 to 13), moderate stress (total score between 14 to 26), and high stress (total score of 27 to 40). The distribution of students across these stress levels, categorized by gender, academic year, and current CGPA group, is illustrated in Figure 1.

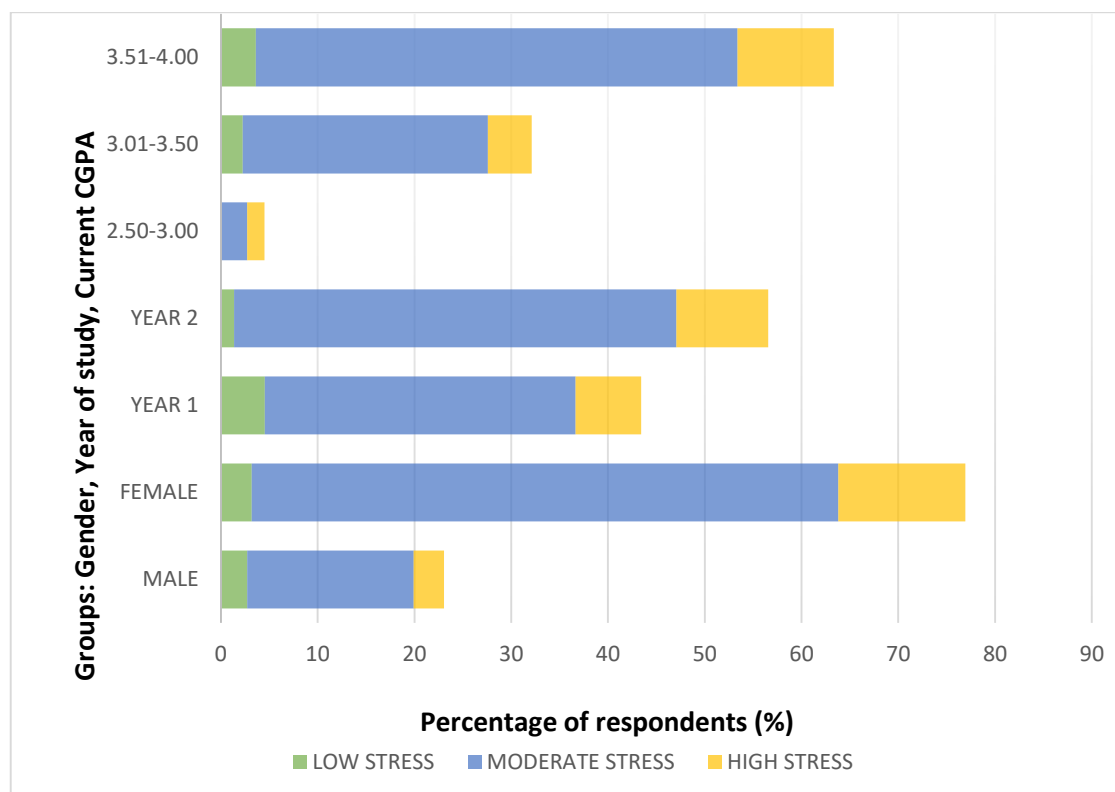


Figure 1: Perceived level of stress categories in Diploma of Pharmacy students at Universiti Teknologi MARA Cawangan, Pulau Pinang

In this study, the academic-related stressors considered included: multiple assignments (1a), difficulty in engaging in deep discussions with lecturers and peers (1b), lack of cooperation from peers in group assignments (1c), absence of access to a laptop or printer (1d), struggles with focus and motivation (1e), peer competition (1f), and concerns related to exams and grades (1g). Non-academic stressors covered in the study encompassed: social isolation (2a), financial difficulties (2b), living away from parents (2c), anxiety about family, friends, and personal health (2d), challenges in personal relationships (2e), fear of the future (2f), and poor internet connectivity (2g). Data were presented as grouped mean \pm standard deviation.

71% students reported that stress negatively impacted their academic performance, stemming from both academic and non-academic sources. Academic stressors involve challenges with coursework, fear of failure, while non-academic stressors encompass financial, social, and health concerns. The study examined various stressors: academic stressors included multiple assignments, difficulty in engaging with peers, and exam anxiety, while non-academic stressors covered social isolation, financial difficulties, and concerns about the future. Among academic stressors, Pharmacy students found focus and motivation difficulties, exam pressure, and multiple assignments particularly stressful. Conversely, fears about the future were the most stressful non-academic concern.

Figures 2, 3, and 4 summarise stressors by gender, academic year, and CGPA group, revealing gender disparities, increased stress in Year 2 students, and CGPA-related stress variations. Figure 2 illustrates that, for most stressors, female students scored higher than their male counterparts. Furthermore, Figure 3 indicates that, for most stressors, Year 2 students scored higher than Year 1 students. Additionally, Figure 4 reveals that Pharmacy students with CGPAs between 2.50 and 3.00 exhibited the highest scores among the three CGPA groups for most academic-related stressors; however, they had the lowest scores among the three groups for most non-academic stressors.

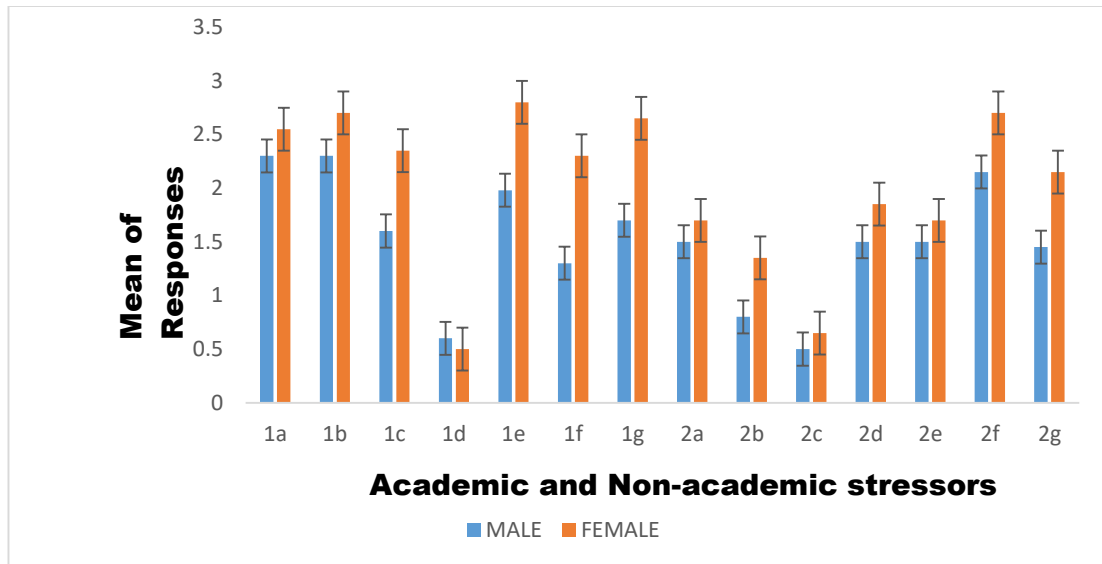


Figure 2: Academic (1a-1g) and non-academic (2a-2g) related stressors among Diploma of Pharmacy students at Universiti Teknologi MARA Cawangan Pulau Pinang

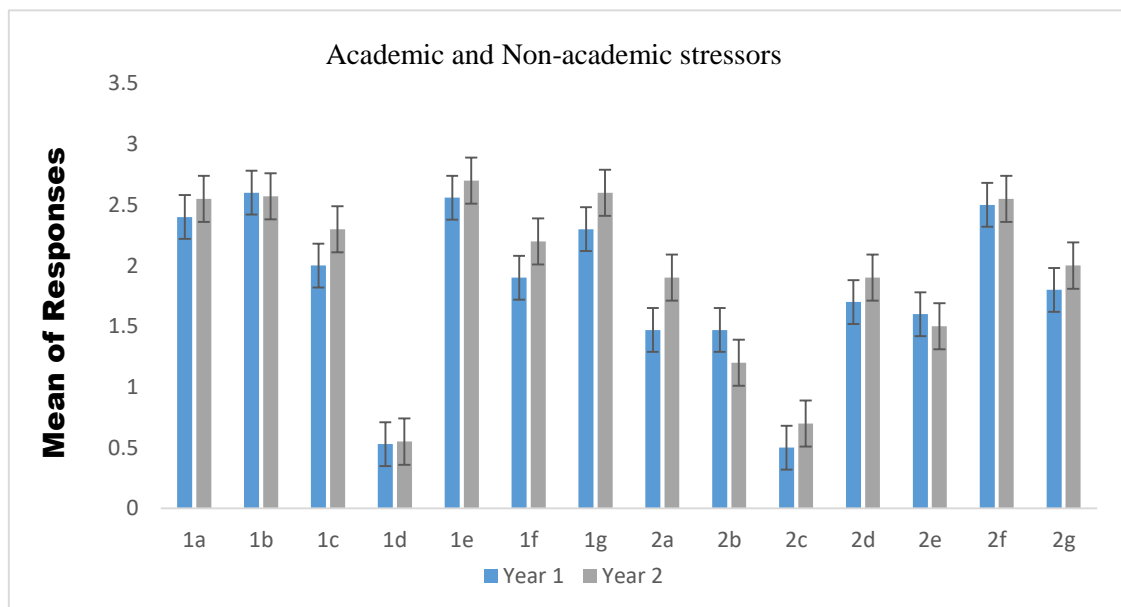


Figure 3: : Academic (1a-1g) and non-academic (2a-2g) related stressors among Diploma of Pharmacy students at Universiti Teknologi MARA Cawangan Pulau Pinang

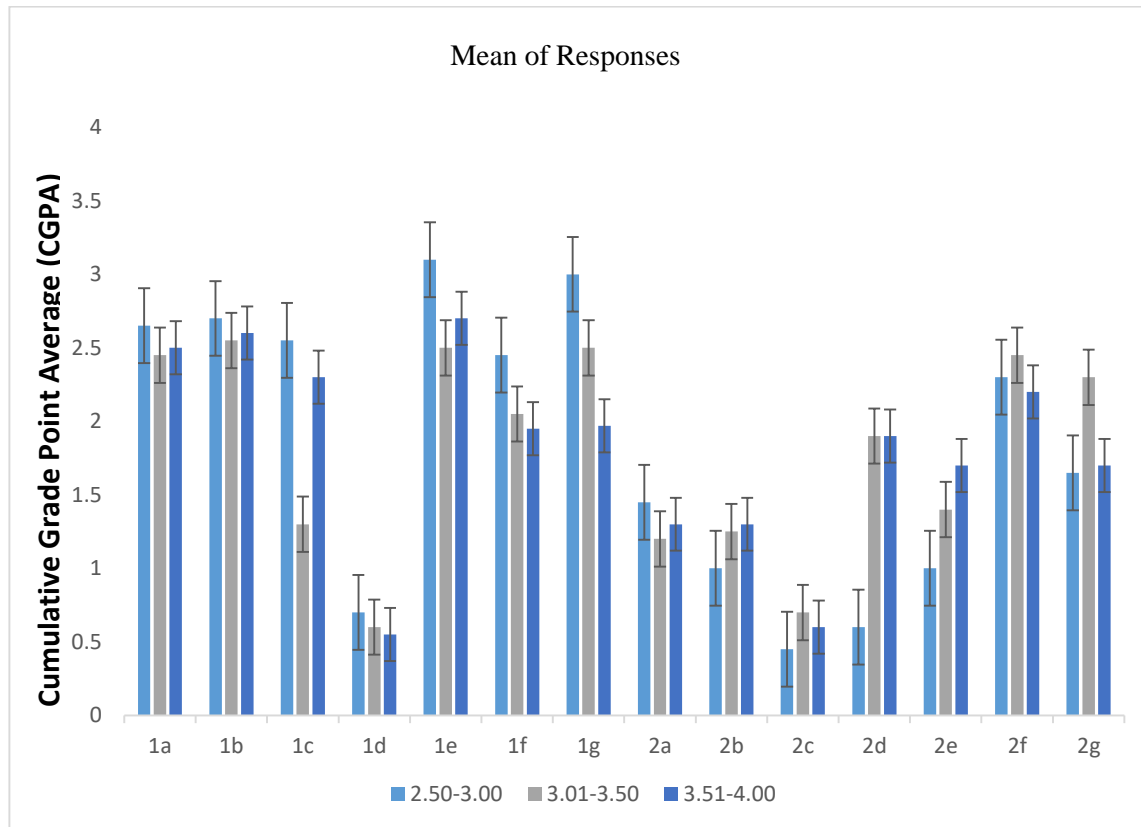


Figure 4: Academic (1a-1g) and non-academic (2a-2g) related stressors among Diploma of Pharmacy students at Universiti Teknologi MARA Cawangan Pulau Pinang

Stress Coping Strategies

Figure 5 presents the outcomes related to stress coping strategies employed by the students. As depicted, the strategies used by them encompassed various approaches, including:

- i. Seeking emotional support from family (3a)
- ii. Seeking emotional support from friends (3b)
- iii. Consulting with a healthcare professional (3c)
- iv. Engaging in discussions with university staff (3d)
- v. Self-distraction (3e)
- vi. Strategically planning how to address the situation (3f)
- vii. Finding humor in the situation (3g)
- viii. Extracting positive perspectives from it (3h)
- ix. Refusing to acknowledge it has occurred (3i)
- x. Participating in exercise or sports (3j)
- xi. Employing relaxation techniques or breathing exercises (3k)
- xii. Praying or meditating (3l)
- xiii. Involvement in university clubs or societies (3m)
- xiv. Consuming junk or comfort food (3n)
- xv. Using over-the-counter products (3o)
- xvi. Utilizing prescription-only medications (3p)
- xvii. Other methods (3q).

Among these coping strategies, students predominantly favored self-distraction, praying or meditating, and finding positive perspectives from their situations. Conversely, the three least popular stress coping strategies among them included engaging in discussions with university staff, using prescription-only medications, and resorting to over-the-counter products. Additionally, a few students provided free-response input, mentioning alternative stress coping strategies such as effective time management, adequate sleep, reading fictional books, and listening to music.

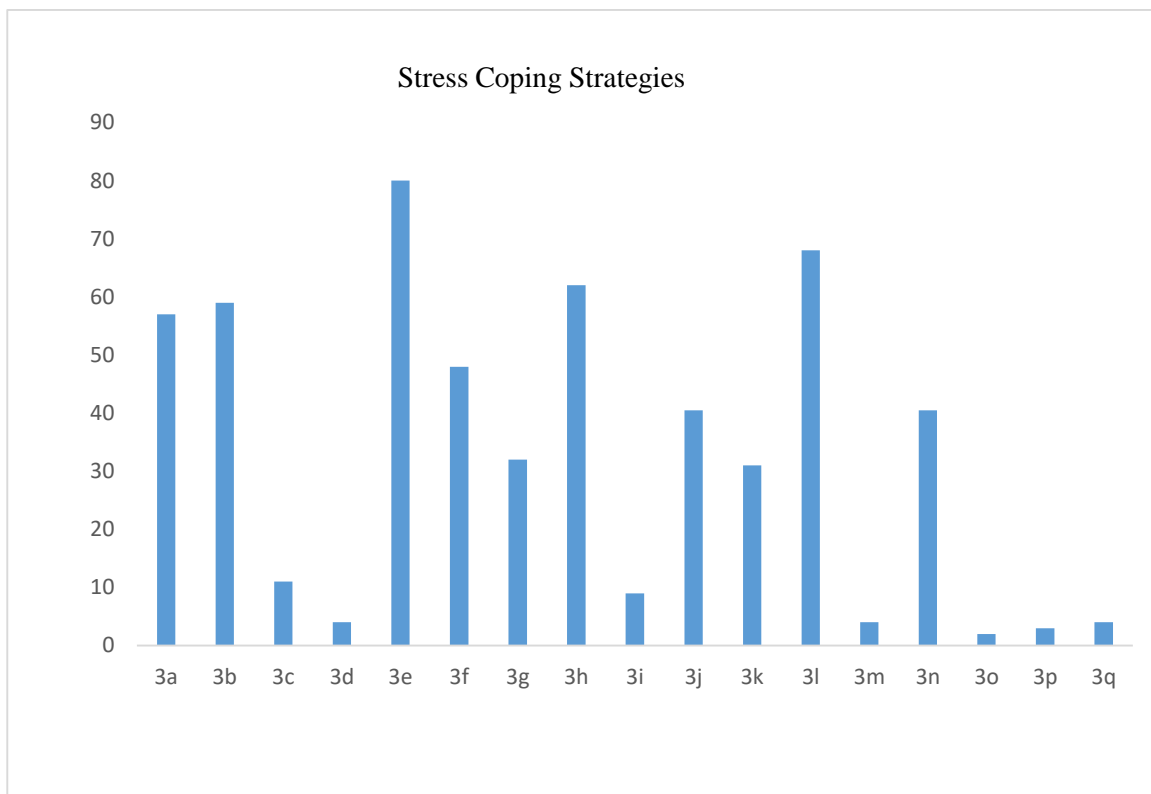


Figure 5: Different coping strategies practised by Diploma of Pharmacy students at Universiti Teknologi MARA Cawangan Pulau Pinang

DISCUSSION

Our study aimed to assess stress levels, the primary sources of stress, and stress management strategies among students at different academic stages (i.e., Year 1 and Year 2 Diploma of Pharmacy students) in the post-COVID-19 pandemic era. We utilised the Perceived Stress Scale (PSS) to gauge the students' stress levels. The survey revealed that a significant majority of Pharmacy students at UiTM CPP Bertam Campus experienced a moderate level of stress, followed by high stress and low stress. It's worth noting that the COVID-19 pandemic was responsible for elevated stress and anxiety in majority of surveyed students, as reported by Kostic et al., (2021). In contrast, Kalaithasan et al. (2020) noted that a considerable percentage of Pharmacy students (62.3%) at a public university in northern Malaysia experienced stress even during the pre-COVID 19 pandemic. Our findings indicated a higher prevalence of stress among students during the pandemic compared to findings from previous non-pandemic studies. This heightened stress level during the pandemic is expected, given the challenges associated with the middle of the semester, including numerous assignments, tests, and a commitment to academic studies.

Our study included all Pharmacy students on campus except for Year 3 Pharmacy students. It's important to mention that Year 1 and Year 2 primarily involve theoretical studies, while Year 3 students engage in practical training during hospital attachments. Discrepancies between theoretical learning at the university and real-life situations in the healthcare field can contribute to varying stress levels (Pulido-Martos et al., 2012). Students in higher academic years (second and third years) may experience elevated stress levels, particularly during specific events such as exams or increased workloads. However, in our study, we found no significant difference in stress levels between Year 1 and Year 2 students, likely due to different students experiencing stress from diverse stressors.

In our study, a notable finding is the higher stress levels reported by female students compared to their male counterparts, consistent with previous research. Studies like Liu and Lu (2023) have shown that females generally perceive higher stress levels due to emotional sensitivity and attitudes towards their environment. However, we found no significant difference in stress levels relative to CGPA among Pharmacy students at our institution, in contrast to studies involving final-year Pharmacy students in Indonesia (Kristina et al., 2020) and undergraduate Pharmacy students at the University of Malaya, Malaysia (Sue et al., 2015). These studies suggested weak negative correlations between stress levels and GPA, indicating that students with higher GPAs may experience more stress due to academic expectations.

Based on our survey, 85% participants felt that the COVID-19 pandemic had made their lives as students more stressful. These stressors were categorised into two groups: academic and non-academic stressors. The majority of students believed that the stress they experienced during the pandemic negatively affected their academic performance. Specifically, students reported stress related to difficulties in engaging in meaningful discussions with friends and lecturers, as well as struggles with focus and motivation. This is consistent with Amir et al. (2020), who reported that students preferred classroom learning for group discussions because distance learning posed communication challenges and provided less satisfaction. Challenges of online classes, such as a lack of cooperation from friends in group assignments, can increase stress among students. Moreover, students' productivity can improve with shorter lesson durations and sufficient breaks during online classes, reducing cognitive strain from prolonged electronic device use (Muthuprasad et al., 2021).

Additionally, multiple assignments with strict deadlines, exam-related stress, and peer competition were significant sources of stress for students. This trend aligns with previous research highlighting that intensive coursework, rapid succession exams, and cumulative academic and extracurricular workloads contribute to stress among Pharmacy students (Babal et al., 2020). High expectations from educators and parents, as well as peer pressure to excel in exams and academics, are linked to academic stress among students (Bedewy & Gabriel, 2015; Kumari & Jain, 2014). Interestingly, having no access to a laptop or printer did not contribute to stress among students during the COVID-19 pandemic. While a laptop is essential for online learning, alternative devices such as smartphones and tablets can facilitate online classes for those without laptops. Notably, the "Program 1 Alumni 1 Laptop" initiative by UiTM Penang Branch, in collaboration with the Research, Industry, Community, and Alumni Networking Division (PJIIM & A), successfully provided 30 B40 students with laptops to enable their participation in online classes during the pandemic.

Non-academic stressors encompass various life-related challenges, including psychosocial factors. The highest perceived stress factor reported was the fear of the future, which encompasses concerns about family, friends, personal health, virtual learning difficulties, and delays in practical healthcare attachments that could affect graduation timelines. According to Pharmacy educators and students, not all virtual activities can replace face-to-

face learning, especially in wet lab sessions and practical placements in healthcare settings (Nguyen and Brooks, 2021).

This can lead to stress due to a lack of essential skills, such as communication and hands-on skills, that are better developed through real-life activities. Social isolation, another significant stressor, negatively impacts personal and social aspects of an individual's life by reducing social interactions and leading to withdrawal from social activities (Alghraibeh & Jnied, 2018). Financial problems, exacerbated during the COVID-19 pandemic, also contribute to stress, as students struggle to cover college costs, rent, dining expenses, transportation, cell phone bills, and internet connectivity (Li et al., 2021). Slow internet connections lead to missed information during online classes, causing students to fall behind. Additionally, purchasing additional internet data can be challenging for students facing financial difficulties. However, the Malaysian government's initiatives, such as providing internet allowances, have helped B40 families and students access the internet for online learning.

A significant finding from our study reveals that 97% of participants employed stress-reduction and management techniques. Among Pharmacy students, self-distraction emerged as the most utilized coping strategy, involving activities like watching TV, movies, or listening to music to divert attention from stressors. Similarly, prayer, meditation, relaxation techniques, and breathing exercises were effective in stress management, aligning with research indicating their stress-reducing benefits (Goyal et al., 2014). Seeking emotional support from family and friends was another prevalent coping mechanism, recognized for its stress-reducing impact linked to enhanced self-efficacy and resilience (Mason et al., 2022). Focusing on positive problem-solving strategies rather than resorting to humor or denial was also common, fostering resilience against stress (Froh et al., 2020).

Engaging in physical exercise or sports, as well as consuming unhealthy or comfort foods, can influence stress levels. Physical activity, particularly cardiovascular exercises, effectively reduces psychological stress and anxiety by regulating hormones and neurotransmitter levels (Rogowska et al., 2020). Conversely, unhealthy eating habits, linked to the release of opioids, may become addictive stress coping mechanisms (Smith and Faris., 2019). Encouragingly, adopting a healthy diet has been associated with reduced stress and improved well-being (Boehm et al., 2018). Active participation in university clubs or societies plays a vital role in stress reduction by facilitating socialization, teamwork, and emotional expression (Nguyen et al., 2023).

In contrast, resorting to prescription medications and over-the-counter products is less common among students. Over-the-counter analgesics like paracetamol are often used to alleviate stress-related headaches (Wilson and Wesselmann, 2021). However, prolonged stress may necessitate medication-based treatment, as it can lead to mental health issues such as anxiety and depression. A study among undergraduate students at Western Michigan University found that antidepressants like selective serotonin reuptake inhibitors (SSRIs) were commonly prescribed for depression treatment (Hysenbegasi et al., 2005).

CONCLUSION

The observation that, generally, females reported higher levels of perceived stress compared to male students aligns with certain research findings concerning gender disparities in stress perception. It's crucial to acknowledge that stress perception can be influenced by an array of factors, including social, cultural, and individual distinctions. The notable finding that first-year and second-year Pharmacy students exhibited no divergence in their perceived stress levels presents an intriguing aspect. This outcome may suggest that these two student cohorts are

encountering similar stress-inducing factors or responding to them in analogous ways. Gaining insight into the precise stressors experienced by these students could indeed be valuable in assisting them in more effectively managing stress.

Recognising the origins of stress constitutes a pivotal step in addressing and effectively managing stress. By identifying the specific stressors that students encounter, educational institutions can offer tailored support and resources aimed at assisting students in better handling their stress. This support may encompass academic assistance, counseling services, stress management workshops, or even modifications to the curriculum or assessment methods to alleviate unnecessary stressors. Additionally, enhancing mental health awareness and teaching stress management techniques are vital components in aiding students in dealing with stress. Offering education on stress reduction, relaxation techniques, time management, and self-care strategies can empower students to cultivate healthier coping mechanisms.

In summary, comprehending the roots of stress and providing appropriate support and resources can significantly aid students, both male and female, in managing their stress levels and fostering improved mental well-being throughout their academic journey.

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