

Time management and its associated factors among medical students

Jahni Chatar Kaur¹, Ng Wen Syuen¹, Wong Kok Yi¹, Muhammad Adlan bin Amran¹,
Htoo Htoo Kyaw Soe², Chong Sook Vui³, Mila Nu Nu Htay^{2*}

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Corresponding Author: Mila Nu Nu Htay

Email: drmlnnh@gmail.com

¹ Faculty of Medicine, Manipal University College Malaysia, Melaka, Malaysia,

² Department of Community Medicine, Faculty of Medicine, Manipal University College Malaysia, Melaka, Malaysia,

³ Department of Medicine, Faculty of Medicine, Manipal University College Malaysia, Melaka, Malaysia

ABSTRACT

Introduction: Time management is a set of principles, practices, and skills that enable individuals to complete tasks by working more efficiently rather than more complexly. This study aimed to identify time management patterns and associated factors among medical students in a private medical institution in Malaysia.

Methods: This cross-sectional study was conducted in 2022 among medical students at a private medical institution in Malaysia. Respondents were recruited using convenience sampling, and data was collected via an online Google form. The questionnaire consisted of three sections: demographics, time management practices, and the influence of time management on respondents' behavior and performance. Data were analyzed using Epi Info version 7.2 software.

Results: A total of 137 students participated in the study. The mean scores indicated that respondents had good to moderate abilities in time planning. Chinese students were reported to have higher time management scores compared to other ethnicities ($p=0.024$). Respondents living in rented housing or rooms had significantly higher time management scores than those living in hostels or with parents ($p<0.001$). Additionally, respondents without a habit of procrastination had significantly higher time management scores than their counterparts ($p<0.001$).

Conclusion: In our study, students generally exhibited moderate to good time management skills, with particularly strong performance in the time attitude component. Individuals should be trained to cultivate good time management and reduce procrastination to develop more resilient and adaptive approaches in the future.

Keywords:

Time Management, Time Planning, Medical Students, Malaysia

INTRODUCTION

Time is priceless and passes by without turning back. The practice of time management is often equated with life management. Thus, the ability to manage time wisely helps individuals live a more balanced, efficient, and fulfilling life. Time management is often described as a set of principles, practices, and

skills that enable a person to complete tasks by working more intelligently rather than more complexly (Alshaya et al., 2017). Effective time management allows us to organize and plan the time spent on various activities judiciously, increasing productivity and enhancing the quality of life, even in “high-pressure, less-time” situations (Jackson, 2017). Time management involves setting goals, careful planning, and prioritizing tasks (Chase et al., 2013). These skills are especially important for health science students, who are required to multitask, acquire discipline-based knowledge and skills, and engage in various academic activities and research (Covic et al., 2003; Ghiasvand et al., 2017).

Several factors are associated with time management. Many studies have focused on its relationship with academic performance. However, non-academic factors are also crucial in shaping future generations. Time management practices are critical for university students to achieve academic success (Swart, Lombard and Jager, 2010). Britton and Tesser (1991) reported that a positive attitude towards time and short-term planning skills significantly correlates with grade point average (GPA), whereas long-term planning showed no association with GPA (Britton and Tesser, 1991). Similarly, Adams and Blair (2019) found that effective time management correlated with higher academic performance (Adams and Blair, 2019). A study by Aggar et al. suggested that no significant correlation exists between time management and preparedness for medication administration among nursing students in aged care. However, it did enhance overall performance in clinical settings by enabling students to clarify confusing instructions, assess medication effectiveness, and monitor post-medication patients (Aggar et al., 2017). Another study by Meenal Kulkarni reviewed that there is only a weak positive correlation ($\gamma=0.21$) between time management scores and academic performance (Kulkarni, 2020).

Good time management skills are linked to higher academic performance and reduced stress. Khatib (2014) opined that effective time management is associated with higher academic performance, while poor time management in students is linked to higher levels of perceived stress (Khatib, 2014). Additionally, Misra et al. found that effective time management negatively affects academic stress (Misra and McKean, 2000). Factors such as an inability to plan or manage time effectively and last-minute studying for exams can increase stress among students, leading to poor academic performance (Britton and Tesser, 1991). Time constraints may also make it difficult for students to digest information, resulting in challenges when recalling or applying knowledge when needed (Afzal et al., 2012). However, students who manage their time well tend to feel more satisfied with online learning (Md Zalli, Nordin and Awang-Hashim, 2019).

Effective time management has also been found to positively correlate with conscientiousness (Kelly and Johnson, 2006). Conscientiousness refers to being self-controlled, goal-oriented, hardworking, and capable of delaying gratification (Widiger, 2017). People with conscientious personalities tend to adopt healthier lifestyles by consuming low-fat foods, drinking less caffeine, avoiding smoking (O'Connor et al., 2009), and achieving better academic results (Heaven and Ciarrochi, 2008; Poropat, 2009; Wagerman and Funder, 2007). Furthermore, Claessens et al. (2007) noted that good time management fosters a sense of control over time, resulting in greater job satisfaction, improved health, and reduced stress (Claessens et al., 2007). Similarly, Häfner and Stock (2010) found that perceived control over time increased, while perceived stress decreased (Häfner and Stock, 2010). In Taiwan, Wang WC et al. reported that effective management of free time improved the quality of life of undergraduate students (Wang et al., 2011). In Ethiopia, Chanie et al. (2020) found that time management was practiced by 56.4% of primary hospital employees in North Gondar. Their study revealed a negative association between time management and unfair organizational policies, whereas positive associations were found with satisfaction in appraisal systems, good planning, compensation, and a favorable working environment (Chanie, Amsalu and Ewunetie, 2020).

Time management is an antidote to procrastination and distraction, which are common among students. Empirical evidence suggests that 30-35% of African-American college students procrastinate in exam

preparation, writing term papers, and completing weekly assignments, and 55-60% aim to eliminate this habit (Mahasneh, Bataineh and Al-Zoubi, 2016). Students may feel overwhelmed by their tasks and tend to procrastinate. Distractions can cause students to focus on less important activities rather than prioritizing more urgent tasks (Sirois, 2023). Ineffective time management, particularly when interrupted by unexpected or unforeseen circumstances, can lead to poor academic performance (Kayode and Ayodele, 2015).

Medical students, in particular, have tight schedules filled with classes, assignments, readings, and skills training, making time a scarce resource. A study by Abraham et al. (2018) showed that time management among first-year undergraduate students and allied health science students were moderate (Abraham et al., 2018). Students who do not use their time wisely often feel overwhelmed by their studies, exams, and deadlines, which they struggle to meet. As a result, medical students are more likely to experience a poorer health-related quality of life (HRQOL) (Lins et al., 2015), including poorer sleep quality, decreased physical activity, strained relationships with roommates, and lower satisfaction with family (Qiu et al., 2019).

There is limited research on time management and its associated factors among the medical student population in Malaysia. Therefore, this study aimed to identify the time management patterns and associated factors among medical students in a private medical institution in Malaysia. Addressing these factors could improve time management skills, enhance academic performance, and ultimately improve the quality of life for medical students.

METHODS

Study design and population

This cross-sectional study was conducted in 2022 among medical students at a private medical institution in Malaysia.

Sample size and sampling

The sample size was calculated using the Excel Sample Size calculator. The study population at the institution was 800. With an expected frequency of 50%, 8% margin of error, a 95% confidence interval, and accounting for a 10% non-response rate, the final estimated sample size was 145 students.

Respondents were recruited using a convenience sampling method. An online questionnaire was distributed via social media platforms such as WhatsApp and Instagram, and those who completed the form were included in the sample. Medical students (MBBS) at the institution, aged 18 and above, who voluntarily participated and completed all required sections of the questionnaire after providing informed consent, were included in the study. Undergraduate students from other programs at the institution, as well as those who did not provide informed consent, were excluded from the study.

Data collection

Data was collected through a self-reported survey using a structured questionnaire. The questionnaire consisted of three sections: demographics, time management, and the influence of time management on respondents' behavior and performance.

Section 1: Demographics included participants' gender, age, ethnicity, year of study, and residence.

Section 2: The time management questionnaire developed by Britton and Tesser (1991) (Britton and Tesser, 1991) was employed. Alay and Kocak previously validated this questionnaire (Alay and Koçak, 2002). This section assessed time planning (TP), time attitude (TA), and time wasters (TW). Time planning was further divided into short-term planning (SP) and long-term planning (LP). Long-term planning refers to handling tasks over an extended period while keeping up with set objectives, while short-term planning involves day-to-day activities (Mohd Razali et al., 2018). Time attitude reflects a person's positive or negative outlook toward the present, future, and past, which is directly linked to academic performance (Nieuwoudt, 2017). Time wasters include behaviors or obligations that consume time inefficiently, such as poor prioritization, procrastination, and engaging in unproductive activities like gossip or unnecessary events (Darden et al., 2015). The TMQ was scored on a five-point Likert scale (5 = always, 4 = frequently, 3 = sometimes, 2 = infrequently, 1 = never). Items TA6, TA7, TW1, TW2, TW3, and TW4 were negatively worded and therefore reverse-scored.

Section 3: This section assessed the influence of time management on respondents' behavior and performance. Punctuality was measured using two items, implementation using two items, productivity using one item, responsibility using two items, and perceived academic performance using five items. Each item was in a "yes" or "no" format, except for the final academic performance question, which was rated as excellent, good, average, or poor.

Data analysis

The data were analyzed using the Epi Info version 7.2 software. Demographics (age, gender, ethnicity, nationality, study year, and residence) and associated factors of time management (punctuality, implementation, productivity, responsibility, and perceived academic performance) of the respondents were presented through frequency counts and percentages while time management questionnaire score was presented through mean and standard deviation and graded based on the mean values. The association between time management and its factors were assessed via Unpaired t test, One-way ANOVA, and simple logistic regression. The measure of association used in the study was odds ratio. The significant level (p-value) was set up at 0.05 with 95% confidence interval.

Ethical consideration

A written informed consent was obtained from the participants. The participation was voluntary participation, and they were free to choose whether to participate or not participate in this study. The information of the participants was kept confidential in this study. This research study was approved by the Research Ethics Committee, Manipal University College Malaysia (MUCM), Malaysia.

RESULTS

A total of 137 students participated in this study. Table 1 presents the sociodemographic characteristics of the respondents. The age of participants was classified into two groups, with the majority (71.5%) being 22 years old or younger. Among the participants, 33.6% were male, while the remaining 66.4% were female. In terms of ethnicity, 40.9% of the participants were Chinese, followed by 31.2% Indian students, 19% from other ethnicities such as Kadazan, Punjabi, and Sri Lankan (Sinhalese, Indian-Malay), and 8% Malay students. A large proportion of participants were in their clinical years (85.4%), while the remaining 14.6% were in their pre-clinical years. 66.4% of participants were staying in hostels, 29.9% in rented houses, and 3.6% were living with their parents (Table 1).

Table 1. Demographic characteristics of the respondents (n=137)

Variables	Frequency (%)
Age	
≤ 22 years	98 (71.5%)
>22 years	39 (28.5%)
Gender	
Male	46 (33.6%)
Female	91 (66.4%)
Ethnicity	
Malay	11 (8.0%)
Chinese	56 (40.9%)
Indian	44 (32.1%)
Others *	26 (19.0%)
Nationality	
Malaysian	119 (86.9%)
International	18 (13.1%)
Study year	
Pre-clinical years	20 (14.6%)
Clinical years (or) you may consider according to semester	117 (85.4%)
Residence	
In hostel	91 (66.4%)
In rented house	41 (29.9%)
With parents	5 (3.6%)

*Others includes Kadazan, Punjabi and Sri lankan

Table 2 presents scores of various aspects of time management items, which was divided into three categories: Time Planning, Time Attitude, and Time Wasters. The mean scores suggest that respondents had good to moderate ability in time planning, with most items scoring between 3.0 and 3.7. Respondents had the highest mean scores for setting deadlines (TP item 8) (3.66) and scheduling demanding tasks during their best hours (TP item 9) (3.64) showed higher levels of adherence to time management practices. While lower mean scores were observed for using a single calendar for important dates (TP item 10) (1.72). Regarding time attitudes, the respondents generally believed that they had room for improvement in managing their time (TA item 2) (4.36), felt in charge of your own time (TA item 3) (3.73), and able to make minor decisions quickly (TA item 5) (3.64). Engaging in time wasting activities were reversely scored, and highest tendency of keep working at night before a major assignment (TW item 4) (2.61). Meanwhile, smoking (TW item 3) (4.63) and personal grooming (TW item 1) (3.61) were less common among respondents (Table 2).

Table 2. Time management items among the respondents (n=137)

Time Management Items	Mean (SD)
Time planning (Short-range planning & Long-range planning)	
Time planning Item 1	3.44 (1.12)
Time planning Item 2	3.20 (1.16)
Time planning Item 3	3.09 (1.19)
Time planning Item 4	2.90 (1.29)
Time planning Item 5	3.25 (1.19)
Time planning Item 6	3.26 (1.23)
Time planning Item 7	3.47 (1.12)
Time planning Item 8	3.66 (1.03)
Time planning Item 9	3.64 (1.01)
Time planning Item 10	1.72 (1.28)
Time planning Item 11	3.33 (1.16)
Time planning Item 12	3.12 (1.15)
Time planning Item 13	3.20 (1.06)
Time planning Item 14	3.60 (1.00)
Time planning Item 15	3.58 (1.06)
Time planning Item 16	3.53 (0.92)
Time attitude	
Time attitude item 1	3.41 (0.85)
Time attitude item 2	4.36 (0.81)
Time attitude item 3	3.73 (1.04)
Time attitude item 4	3.35 (1.04)
Time attitude item 5	3.64 (0.96)
Time attitude item 6*	2.87 (1.18)
Time attitude item 7*	3.09 (1.04)
Time waster	
Time waster item 1*	3.61 (1.13)
Time waster item 2*	3.03 (1.16)
Time waster item 3*	4.63 (0.93)
Time waster item 4*	2.61 (1.20)

*items are reversely scaled

Note: Table 2. Time management questionnaire developed by Britton and Tesser (Britton and Tesser, 1991) and validated by Alay and Kocak (Alay and Koçak, 2002)

Table 3 presents the factors associated with time management among the respondents. Ethnicity, type of residents and habit of procrastination were found to be significantly associated with the difference in time management. In terms of ethnicity, Chinese were reported to have higher time management score compared to the other ethnicities ($p=0.024$). Respondents living in rented house/room had significantly higher time management score compared to those who are living in hostel and with parents ($p<0.001$). Respondents without having the habit of procrastination were significantly better time management score compared to their counterparts ($p<0.001$) (Table 3).

Table 3. Factors associated with time management among respondents (n=137)

Independent variables	Time management scores mean (SD)	Min	Max	Mean difference (95% CI)	P
Gender					
Female	88.96 (16.53)	51.00	130.00	-2.67 (-8.33, 2.98)	0.3512*
Male	91.63 (14.24)	64.00	129.00		
Ethnicity					
Chinese	94.59 (17.48)	51.00	130.00		0.024†
Indian	87.25 (14.51)	51.00	120.00		
Malay	88.82 (17.28)	64.00	120.00		
Others	84.50 (10.55)	68.00	114.00		
Age					
> 22 Years	90.67 (18.46)	51.00	130.00	1.14 (-4.80, 7.07)	0.706*
< 22 Years	89.53 (14.69)	51.00	130.00		
Study year					
Clinical	89.62 (15.96)	51.00	130.00	-1.58 (-9.16, 6.01)	0.682*
Pre-clinical	91.20 (15.13)	69.00	130.00		
Nationality					
International	84.06 (11.92)	65.00	114.00	-6.68 (-14.52, 1.17)	0.095*
Malaysian	90.73 (16.16)	51.00	130.00		
Residence					
Living in hostel	87.19 (15.21)	51.00	130.00		<0.001†
Living in rented house/room (without parents)	97.07 (15.48)	69.00	130.00		
Living with parents	79.20 (6.34)	73.00	87.00		
Procrastination					
Non-Procrastination	95.51 (14.28)	66.00	130.00	14.70 (9.94, 19.46)	<0.001*
Procrastination	81.81 (13.74)	51.00	120.00		

*Independent sample t test, † One way ANOVA

Table 4 reports the association between time management and productivity, academic performance among the respondents. However, there was not significant association between time management and productivity, academic performance.

Table 4. Association between time management, productivity, and academic performance (n=137)

Term	OR	95% CI		P
		Lower limit	Upper limit	
Productivity	1.14	0.58	2.25	0.705
Academic performance	0.96	0.49	1.90	0.910

DISCUSSION

This study aimed to identify the time management patterns and associated factors among medical students. In analyzing the scores of the Time Management Questionnaire (TMQ), we found that students in our study generally practice moderate to good time management.

In the time planning component, students scored higher in long-range planning. These are essential habits for students committed to lifelong learning. A study highlighted that students who set deadlines and submit assignments earlier tend to be more successful in life (Wang and Pilarzyk, 2007). However, most students did not set daily goals or keep track of important dates. This could explain why many find themselves working on assignments at the last minute, despite having ample time. Students often struggle to accurately estimate the time required for various tasks. They tend to overestimate the time needed for essential tasks (such as assignments and studying) and underestimate the time spent on less important activities (such as browsing social media) (Barre, 2021). The University of Georgia suggests breaking larger tasks into smaller ones and starting with smaller tasks to avoid last-minute stress (UGAToday, 2014). This approach can improve students' concentration and confidence while fostering a sense of accomplishment, ultimately leading to better productivity and time management.

Students scored well in other time-wasting (TW) components. However, most students displayed a positive attitude towards time management, particularly in recognizing the potential for improvement. Nevertheless, they struggled with the ability to decline requests, often giving away their time to help others. According to Forbes, learning to say "no" is an important way of valuing and managing one's own time (Booth, 2014). Therefore, students should practice saying "no" to reduce stress and create time for what truly matters. Interestingly, no age differences were found in the ability to say "no."

Our study indicated that ethnicity, procrastination, and residence have significant associations with time management. Ethnicity is significantly related to time management, with Chinese students demonstrating better time management skills. This may be attributed to the upbringing patterns, and parenting of different ethnicities. Our findings could be related to another study conducted in Croatia,

where Chinese students delegate tasks and eliminate time wasting activities compared to their Croatian counterparts (Črnjar and Čikeš, 2019). However, a cross-sectional study among university students in Bangkok and Beijing reported no significant differences between ethnicity and time management (Chen, Rau and Suriyalaksh, 2017). The disparity in findings may be due to selection bias in our study, which comprises primarily Chinese participants (40.9%).

In our study, female respondents comprised 66.4% of the sample, while male respondents were 33.6%. However, there was no significant difference in time management scores between genders. Similarly, a previous study by Saxena, et al reported no significant differences between males and females in time management, concentration, and motivation. (Saxena, Wright and Khalil, 2024). Future research should aim to recruit a more balanced gender representation to enhance the generalizability of the results across genders.

Non-procrastinating students exhibited a positive association with good time management skills compared to those who procrastinated. Lay and Schouwenburg (1993) observed similar findings in an experimental study involving university students, where trait procrastination was highly negatively associated with perceived control over time (Lay and Schouwenburg, 1993). A study among university students in the United States conducted by Wolters, Won, and Hussain (2017) reported that effective time management can lower levels of procrastination, further validating the findings of Lay and Schouwenburg (Wolters, Won and Hussain, 2017).

There have been no studies examining the relationship between participants' place of residence and their time management skills. Our study pioneers this area by highlighting a significant association between living arrangements and time management abilities. Specifically, students living outside of the hostel without their parents demonstrated better time management skills than those residing in hostels or those who live with their parents. This may be attributed to the increased independence of the participants. Those living independently generally have more space, privacy, and fewer rules to follow, which compels them to plan their days themselves (Ajmal and Iftikhar, 2020). Students in the privately rented sectors might also face unique challenges, such as balancing household responsibilities, academic commitments, etc, which may in turn develop their effective time management strategies (Cotter, 2009). Additionally, the independence associated with living away from family can foster self-discipline and organizational skills, further enhancing time management skills. Understanding these dynamics is crucial for designing targeted interventions for the students. Future programs could focus on providing time management training and resources tailored to students in different living situations, ensuring that support mechanisms address the specific needs of each group to promote academic success and well-being.

Our study indicated that there was no significant relationship between gender and time management. This finding was different from existing research. For instance, cross-sectional studies conducted in Thailand and Turkey between undergraduate students found that gender is significantly associated with time management scores with female students scoring higher in TMQ on average (Chanpisut, 2018; Kaya *et al.*, 2012). The discrepancy between your findings and those of previous studies could be attributed to factors such as sample composition, cultural differences, or methodological variations.

The findings of our study indicated that time management was not significantly associated with academic performance among the respondents. This finding sharply contrasts with numerous previous studies that have demonstrated a significant association between time management and academic success (Britton and Tesser, 1991; Adams and Blair, 2019; Aggar *et al.*, 2017; Kulkarni, 2020). This discrepancy may be attributed to our data collection method, which relied solely on self-reported data dependent on the participants' honesty and self-reflection. Students may misperceive their academic performance and report it as average, despite having effective time management practices. To enhance the validity and reliability of our findings, future research could incorporate objective measures, such

as examining students' examination scores and categorizing them accordingly. This approach would provide a clearer picture of the relationship between time management and academic performance. This relationship has been explored in various studies, indicating that effective time management typically correlates with higher academic achievement (Khatib, 2014; Misra and McKean, 2000).

Limitations

The study was conducted at a private medical institution in Malaysia with a limited number of respondents, which may restrict the generalizability of the findings to other institutions with different environments. Future studies could address this limitation by recruiting a larger sample size from diverse institutions to enhance the robustness and generalizability of the results. The responses in that study were based on self-reported answers, which may introduce self-report bias. Additionally, being a cross-sectional study, we were unable to establish any temporal relationships between cause and effect. Moreover, the reliance on self-reporting may introduce bias, as students often present socially acceptable responses rather than accurate assessments of their abilities (Afzal *et al.*, 2012). Addressing these methodological limitations could lead to more consistent findings regarding the impact of time management on academic performance in the future.

Conclusion and recommendation

In our study, students generally exhibited moderate to good time management skills, showing particularly strong performance in the time attitude component. This aspect is crucial for health and well-being outcomes, as an optimistic attitude towards time enhances motivation and helps individuals manage daily responsibilities effectively (McKay *et al.*, 2018). However, the students fell short in time planning. Parents, guardians, and educators should implement a comprehensive and well-structured time planning component to support the development of future generations from an early age. By doing so, students will be less likely to struggle with overwhelming workloads, particularly in today's fast-paced world. Instead, they will be able to complete tasks earlier with greater focus and commitment, leading to maximum productivity in their lives.

Our study also noted that ethnic variation significantly influenced time management practices. Future research could further explore the impact of different parenting styles on time management and task performance across various ethnic groups. Moreover, students need to be more self-aware regarding procrastination and should learn to adopt a more proactive approach. To overcome procrastination, they should consider how, where, when, and with whom they study. For example, students can break larger tasks into smaller, manageable parts (how), work in minimal-distraction environments (where), choose their most productive hours (when), and collaborate with study buddies (who).

In conclusion, individuals should be trained to cultivate good time management, to cultivate more resilient and adaptive approaches to managing time in an increasingly demanding world.

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