TIME MANAGEMENT SKILLS AND STRESS LEVEL AMONG UNDERGRADUATE NURSING STUDENTS AT UNIVERSITI SAINS MALAYSIA

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UNIVERSITI SAINS MALAYSIA

2024

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By

LEE SHING LOON

Dissertation submitted in partial fulfilment of
the requirements for the degree of
Bachelor in Nursing with Honours

June 2024

CERTIFICATE

I certified that the dissertation entitled "Time Management Skills And Stress Levels Among Undergraduate Nursing Students At Universiti Sains Malaysia (USM)." is a bona fide record of research work done by Mr Lee Shing Loon during the period from September 2023 to June 2024 under my supervision. Accordingly, I have read this dissertation, which, in my opinion, conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation to be submitted in partial fulfilment for the degree of Bachelor of Nursing (Honours).

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DECLARATION

I hereby declare that this dissertation is the result of my study and own investigations, except where otherwise stated and duly acknowledged. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at Universiti Sains Malaysia or other institutions. Finally, I grant Universiti Sains Malaysia the right to use the dissertation for teaching, research, and promotional purposes.

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ACKNOWLEDGEMENT

I want to express my deepest appreciation to my supervisor, Associate Professor Dr Soon Lean Keng, for her invaluable guidance and feedback. I also could not have undertaken this journey without her knowledge and expertise sharing with me. Without her assistance and dedicated involvement throughout the process, this dissertation would have never been accomplished.

Special thanks to my course coordinator, Dr Norhasmah Mohd Zain, for her support and teaching during my dissertation and degree nursing journey. Mere words could never express my gratitude for her truly caring for me. Additionally, I sincerely thank my friend, Abdul Halim, who motivated and taught me throughout the research process, which I greatly appreciate.

Finally, I'd like to mention my family and my wife, Rebecca Soh Siew Yen, who always provided me with unconditional support, such as emotional and financial support, to overcome the challenges. Thank you for lending a helping hand. Words can barely express how thankful I am that they are in my life. Also, they believe in me, encouraging me to work smart and hard to reach my goals. I want to thank all the participants for their cooperation and willingness to participate in this research and make this study a reality. Without all of you, this dissertation would not have been completed in a timely manner.

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LIST OF ABBREVIATIONS

APEX   -   Accelerated Programme for Excellence

USM   -   Universiti Sains Malaysia

SNSI   -   Student Nursing Stress Index

TMI   -   Time Management Inventory

WHO   -   World Health Organisation

KEMAHIRAN PENGURUSAN MASA DAN TAHAP STRES DALAM KALANGAN PELAJAR SARJANA MUDA KEJURURAWATAN DI UNIVERSITI SAINS MALAYSIA

ABSTRAK

Dalam dunia yang kompetitif hari ini, pelajar kejururawatan menghadapi tahap tekanan yang tinggi disebabkan oleh pengajian mereka yang mencabar dan peperiksaan yang berterusan. Komponen klinikal juga menambah tekanan. Kajian ini bertujuan untuk mengetahui kemahiran pengurusan masa dan tahap tekanan dalam kalangan pelajar sarjana muda kejururawatan di Universiti Sains Malaysia (USM). Kajian keratan rentas telah dijalankan menggunakan tinjauan dalam talian dalam kalangan 116 pelajar kejururawatan yang dipilih melalui kaedah rawak mudah antara Januari 2024 hingga Februari 2024. Instrumen tinjauan terdiri daripada ciri sosio-demografi, 27 item mengenai Inventori Pengurusan Masa dan 22 item mengenai Kejururawatan Pelajar Indeks Tekanan. Data dianalisis menggunakan perisian *Statistical Package Social Sciences* versi 28.0. Statistik deskriptif, ujian One-way ANOVA dan Pearson Chi-square telah dijalankan. Keputusan kajian ini menunjukkan bahawa 82.8% pelajar kejururawatan mempunyai kemahiran pengurusan masa yang sederhana, manakala 5.2% mempunyai kemahiran yang rendah, dan hanya 12.1% mempunyai kemahiran pengurusan yang tinggi. Daripada jumlah peserta, 19.8% mengalami tahap tekanan rendah, 80.0% mengalami tekanan sederhana dan 11.2% mengalami tekanan tinggi. Manakala umur, jantina, etnik, tahun pengajian dan purata nilai gred kumulatif (PNGK) yang tidak mempunyai kaitan yang signifikan dengan kemahiran pengurusan masa dan tahap tekanan. Walau bagaimanapun, kemahiran pengurusan masa dikaitkan secara signifikan

dengan tahap tekanan (*p*=0.006). Kajian ini merumuskan bahawa pelajar kejururawatan mempunyai kemahiran pengurusan masa yang sederhana dan tahap tekanan yang sederhana, dengan kemahiran pengurusan masa yang dikaitkan secara signifikan dengan tahap tekanan, mencadangkan keperluan untuk program intervensi untuk meningkatkan kemahiran ini.

TIME MANAGEMENT SKILLS AND STRESS LEVEL AMONG UNDERGRADUATE NURSING STUDENTS AT UNIVERSITI SAINS MALAYSIA

ABSTRACT

In today's competitive world, nursing students face high-stress levels due to their demanding studies and continuous examinations. The clinical component also adds to the stress. Thus, good time management can reduce their stress level. This study aimed to determine the time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM). A cross-sectional study was conducted using an online survey among 116 nursing students selected via a simple random method between January 2024 to February 2024. The survey instruments consisted of socio-demographic characteristics, 27 items on the Time Management Inventory and 22 items on the Student Nursing Stress Index. Data were analyzed using Statistical Package Social Sciences version 28.0 software. Descriptive statistics, One-Way Analysis of Variance and Pearson Chi-square tests were conducted. Findings revealed that 82.8% of participants had moderate time management skills, while 5.2% had low skills, and only 12.1% had high time management skills. Of the total participants, 19.8% experienced low stress levels, 80.0% experienced moderate stress, and 11.2% experienced high stress. While age, gender, ethnicity, year of study, and Cumulative Grade Point Average (CGPA) have no significant association with time management skills and stress levels. However, time management skills were significantly associated with stress levels (p=0.006). This study concludes that nursing students have moderate time management skills and moderate stress levels, with time management skills being significantly associated with stress levels, suggesting the need for intervention programs to improve these skills.

CHAPTER 1
INTRODUCTION

1.1 Introduction

The rise in stress levels among university students has been identified as a significant threat linked to their time management skills in recent years. Rashid, Sharif, Khan, and Malik (2020) assert that effective time management improves academic achievement and reduces stress and anxiety. Nursing students are no exception. Nursing students face academic responsibilities, including assignments, practical training, and continuous examinations. Due to their demanding studies, 24 hours a day may seem insufficient (Shimadaaa, Sanaa & Ebtsam, 2019). This thesis presents a cross-sectional study determining the time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM).

1.2 Background of the Study

Higher education is a stressful period in the lives of university students due to various reasons, such as a heavy curriculum, ineffectiveness in higher education programs or living away from families (Bhujade, 2017). When an individual enters university, they face various demands, especially academic ones, which will demand effort and sacrifice. The university stage entails challenges, goals, and responsibilities that must be overcome and achieved over the years; all of this involves submitting to stress. Students are particularly vulnerable to problems associated with academic stress since transitions occur at individual and social levels.

Good time management techniques lead to increased productivity, reduced stress, improved efficiency, professional advancement opportunities, and greater achievement of career and life goals. Nursing students should develop effective time management

skills and other life skills to transition smoothly into graduate nursing. Time management is crucial for nursing students, as it allows them to prioritize their activities and allocate more time for important ones (Nayak, 2018; Eid, Safan & Diab, 2015). Good time management, including setting goals and monitoring usage, can enhance productivity and reduce stress, contributing to work effectiveness (Al-Khatib, 2014). However, the difficulty of time management can cause physical and psychological stress, making it essential to learn and practice high-valued time management techniques to reduce negative psychological impacts and promote effective time management (Souza et al., 2016).

Stress is a significant issue in students' academic lives, influenced by both internal and external expectations (Reddy et al., 2018), and is particularly prevalent in nursing education, as highlighted by Labrague (2014). Sagredo et al. (2020) suggest that time management can reduce stress associated with academic activities by improving academic efficiency and productivity. Comprehending their time management skills and stress levels is crucial to designing appropriate and efficient intervention strategies (Reddy, Menon & Thattil, 2018).

1.3 Problem Statement

In today's competitive society, nursing students face high stress due to the continuous examination and clinical training involved in their studies (Shimaaa *et al*., 2019). Nursing education is crucial for enhancing the professional identity of aspiring nurses (Shalaby & Aldilh, 2015), as it forms the foundation of future frontline professional nurses. These students are burdened with academic studies, assignments, clinical training, and formative and summative assessments, making them the foundation

of tomorrow's frontline professionals (Shimaaa *et al*., 2019; Eldeeb, Eid & Eldosoky, 2014).

According to Quiliano and Quiliano's (2020) report, 14% of youth suicides had an academic stress factor. In North America, suicide is the second leading cause of death for university students, and 40 per cent have severe depression. These concerning statistics have been linked mostly to academic stress (Reddy *et al*., 2018). As Sivaa (2022) mentioned in the Sun Daily, undoubtedly, stress has become the number one reported impediment to academic performance, as fellow students now report being stressed out more than ever. University students' poor time management skills and procrastination concerns in Malaysia, which include too many assignments pushing them into depression, with some wishing to commit suicide, have garnered the attention of tertiary institution educators. Hence, to inform this research study, the transactional model of stress by Lazarus and Folkman (1984) was applied to understand the relationship between nursing demographic characteristics, time management skills and stress levels among the nursing students at Universiti Sains Malaysia (USM).

1.4 Research Questions

Generating research questions is important as the research question gives focus, sets boundaries, and provides direction (Polit & Beck, 2020). For this study, the following research questions served as a guide to achieving the research study's objectives. The research questions are as follows:

i. What are the time management skills among undergraduate nursing students at Universiti Sains Malaysia (USM)?

ii. What is the stress level among undergraduate nursing students at Universiti Sains Malaysia (USM)?

iii. Is there a relationship between time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM)?

iv. Is there any association between socio-demographic characteristics, time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM)?

1.5 Research Objectives

Research objectives concisely describe what the research aims to achieve (Polit & Beck, 2020).

1.5.1 General Objective

The general objective of this study was to determine the time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM).

1.5.2 Specific Objectives

i. To determine the time management skills among undergraduate nursing students at Universiti Sains Malaysia (USM).

ii. To determine the stress level among undergraduate nursing students at Universiti Sains Malaysia (USM).

iii. To determine the association between time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM).

iv. To determine the association between socio-demographic characteristics, time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM).

1.6 Research Hypotheses

A research hypothesis is a statement of expectation or prediction that research will test (Polit & Beck, 2020). Following are the alternative and null research hypotheses of this study:

Hypothesis 1	:	There is a significant association between time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM). (H_A).
	:	There is no significant association between time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM). (H_O)
Hypothesis 2	:	There is a significant association between selected socio-demographic characteristics (age, gender, ethnicity, year in nursing study and last CGPA), time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM). (H_A).
	:	There is no significant association between selected socio-demographic characteristics (age, gender, ethnicity, year in nursing study and last CGPA), time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM). (H_O)

1.7 Significance of the Study

Time management is a major issue among nursing students in the university. It can affect how they view and use the available time and adjust to their academic and clinical training responsibilities. As mentioned by Shimaaa *et al.* (2019), nursing students are stressed by busy academic and clinical training schedules, formative and summative assessments, and research projects, a fulfilment of nursing curricula to graduate. All these combined can lead to unnecessary stress. Time management skills buffered students' stress levels, a main factor that can contribute to a sense of well-being and reduce stress levels.

According to Gallardo-Lolandes *et al.* (2020), it should be highlighted that the pressure to complete a certain academic programme linked to a specific curriculum increases the difficulties of academic life. Additionally, students must focus on getting good grades. Hence, causes stress in their academic lives, primarily due to a lack of or nonexistent impression of time management techniques during university life. The burdensome task of separating study time from personal and social activities falls to students. In recent decades, the increase in stress levels of university students has been seen as a serious threat.

Given that every individual has the same amount of time available to them, many claim they do not have enough time. However, some management accomplish more in the same period than others. Furthermore, little is known about the time management skills and stress levels among nursing students at Universiti Sains Malaysia (USM), as most empirical evidence is associated with Western cultures. Therefore, studying the relationship between time management skills and stress levels among nursing students at Universiti Sains Malaysia (USM), focusing on the cultural aspects of time management and stress levels in a developing country like Malaysia, is warranted. The research aims

to contribute to the growing literature on the relationship between time management skills and stress levels among nursing students, highlighting the importance of understanding these factors.

1.8 Conceptual and Operational Definitions

The following conceptual and operational definitions specific to this research study are as follows:

Term	Conceptual Definition	Operational Definitions
Time management	Time management is defined as the completion of tasks or activities in a given time, obtaining quality results through procedures such as planning, organization or prioritization (Sagredo, Bizama and Careaga, 2020).	This study refers to the Time Management Inventory (TMI) by Alay and Kocak (2002) with the following domains: Time planning, time attitudes and time consumers. The TMI uses a 5-point Likert scale: always, often, sometimes, rarely and never will be adopted. Categorized as 0% to 49% (low management skills), 50% to 74% (moderate management skills) and 75% to 100% (high management skills) (see Measurement of Variables 3.6.1). As students' time management skills rise, their stress level decreases, i.e., they

		are inversely correlated (Alay & Kocak, 2002; Alpturk, 2015).
Stress	Stress can be defined as a state of worry or mental tension caused by a difficult situation (WHO, 2023).	This study refers to undergraduate nursing student stress levels measured using Jones and Johnston's Student Nursing Stress Index (SNSI) (1999), clustered by four factors (academic load, clinical concerns, personal problems, and interface worries), which uses a 5-point Likert scale ranging from 1 (not stressful) to 5 (extremely stressful) to determine the stress level. The stress levels are categorized as high (75 – 100), moderate (50 – 74) and low (less than 50) (Shimaaa *et al.*, 2020). Higher scores demonstrate a higher level of demand or sources of stress (see Measurement of Variable 3.6.1).
Undergraduate	A nursing student is an	This study refers to Year 1, 2, 3

nursing student	individual enrolled in a professional nursing educational program.	and 4 undergraduate nursing students at the School of Health Sciences, USM, leading to a Bachelor of Nursing (Honours).

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

Chapter 2 details the literature review on scholarly articles and other sources relevant to the research being investigated. A combination of keywords used to search these articles includes time management skills, stress levels, nursing faculty, nurse students and Malaysia. The literature review of this chapter was depicted into various sub-headings, namely time management, time management in nursing education, stress in nursing education and time management, with the final sub-heading describing the study's conceptual framework underpinning the research study.

2.2 Time Management

Time management refers to a set of behaviours for the optimal organization and division of time (Janeslatt *et al.*, 2018). According to Gerald (2017), time management is a set of principles, practices, skills, tools and systems that work together to help individuals get more value out of their time to improve their quality of life. Time management is a priority-based structuring of time allocation and distribution among competing demands since time cannot be stored, and its availability cannot be increased beyond nor decreased from the twenty-four hours. Thus, time management has a greater buffering effect on academic stress, and poor time management predicts academic stress.

Time management is a strategy that focuses on efficiently using time for goal-directed activities (Rapp, Bachrach & Rapp, 2013). The literature on time management primarily focuses on two main outcomes: well-being and performance (Aeon & Aguinis, 2017). Time cannot be stored, and once it has passed, it cannot be regained, making it a crucial and valuable resource (Aeon & Aguinis, 2017; Chanie *et al*., 2020; Wendt *et al*.,

2021). Aeon and Aguinis (2017) defined time management as the ability to effectively manage time, particularly in relation to personal lives and work schedules, emphasizing the importance of this skill for improved academic performance in students. Time management is crucial for students' academic success, enhancing satisfaction, balancing work and life, reducing anxiety, and simplifying goal achievement. (Aeon & Aguinis, 2017; Chanie *et al*., 2020; Wendt *et al*., 2021).

2.2.1 Time Management in Nursing Education

Nursing school is demanding and requires considerable time and effort. When pursuing a nursing degree such as a Bachelor of Nursing, balancing various responsibilities, like classes, clinical rotations, studying, completing assignments and managing time, can be difficult. A study revealed that nearly two-thirds of college students have moderate procrastination habits, with technology and social media distractions worsening time management (Albursan *et al*., 2022). According to Nayak (2018), nursing is a profession in which nurses sometimes need to work under pressurized working conditions. Time management is about how one manages self. One cannot manage the time; one can only manage how they can use it. Nursing students need to cultivate the skills of effective time management along with other life skills for the ease of transition to graduate nurse. Time management is setting, achieving and accomplishing goals in the minimum possible time. Good time management techniques and skills are essential for functioning more effectively and to focus on results. Good time management benefits in several ways, including greater productivity, less stress, improved efficiency, more opportunities for professional advancement and greater opportunities to achieve career and life goals.

Understanding the importance of time management and gaining skills is essential (Nayak, 2018). Nursing students may need to prioritize all their activities to provide more

time for other important activities. Time management may be the best tool for student nurses and is one of the most important techniques that everyone needs to learn (Eid, Safan & Diab, 2015). Therefore, good time management, such as setting goals and priorities and monitoring time use, can facilitate productivity and minimize stress, contributing to work effectiveness (Al-Khatib, 2014). Contrary, Souza *et al.* (2016) indicate that the difficulty of time management for fulfilling academic activities can cause physical and psychological consequences of stress. Therefore, high-valued time management can promote effective time management, thereby reducing negative psychological impacts.

2.3 Stress in Nursing Education and Time Management

Stress has become part of students' academic lives due to the various internal and external expectations put on their shoulders (Reddy *et al.*, 2018). Stress can be defined as a state of worry or mental tension caused by a difficult situation. Stress is a natural human response that prompts us to address challenges and threats. Everyone experiences stress to some degree. However, how we respond to stress greatly affects our overall well-being (WHO, 2023). Stress is a crucial and likely response to daily living and is unavoidable because it relates to any external incident, whether satisfying or worries producing.

Stress in nursing education is acknowledged as one of the most important issues in the modern world (Labrague, 2014). Stress refers to a forceful interaction between the individual and the environment. This interaction and boundaries related to work may be apparent as threatening to exceed the person's resources and skills (Aini, 2017). Furthermore, nursing students are prone to incidence of stress compared to other students because they are often faced with a situation that requires them to take many responsibilities, such as caring for the life and death of others, being aware of new social

spheres, furthermore, adjust to the academic expectations may be difficult; mastering all learning outcomes in a specific duration of the study; master many theories that must be learned; and learn with people of different cultures and beliefs (Hirsch *et al*., 2015).

Gallardo-Lolandes *et al*. (2020) mentioned that it should be noted that the dilemmas of academic life are increased due to the demands to fulfil a certain academic program associated with a certain curriculum and, on top of that, the goal of obtaining high grades is also paramount for students. All this generates stress in their academic life mainly because of a deficient or null perception of mechanisms to manage time during university life. Students are responsible for organizing their study time from their personal and social activities.

According to Sagredo *et al.* (2020), the levels of stress associated with academic activity could be attenuated if time management were used as a tool in such situations since it would allow academic predicaments to be reduced by generating an improvement in academic efficiency and productivity. In this regard, Calderon and Gustmen (2019) indicated that the organization of student time is part of the culture in countries such as Spain, Germany, China and Japan, being the cultural seal of its citizens, being present in each of their daily obligations.

Likewise, in the research carried out in South Korea, Park and Kim (2018) determined that the social support factor and the academic stress factor of university students had a statistically significant influence on university adjustment; they also estimated that the academic stress factor had partial mediating effects on the relationship between the social support factor and university adjustment. On the other hand, Zhang and Zheng (2017) stated that Chinese university students are overwhelmed by high academic stress because they will have to face increasing competition in the labour market and academic excellence as a social norm in Asian culture. Because of this context, they

are prone to chronic exposure to stress that could negatively influence mental health; therefore, academic stress could lead to negative emotions without adequate and timely coping. The study by Castro, Valenzuela Hinojosa, and Piscoche (2019) found that odontology students at San Marcos University experienced moderate academic stress and emotional exhaustion due to the college's high demand and the clinical demands of various subjects. Stress has become a growing threat in demanding educational institutions, with new curricular modifications contributing to an increased perception of academic stress, leading to problems in time organization to fulfil academic activities (Aldana, Isea & Colina, 2020).

Effective time management is linked to higher academic performance, while poor time management can lead to increased perceived stress among students. Factors such as lack of planning, last-minute study, and external issues like unplanned events, strikes, accidents, and emergencies can negatively impact students' studies (Andreassen, 2015). However, internal time-wasting factors, such as lack of prioritization, procrastination, and distractions, can be even more significant than external ones (Andreassen, 2015). Students may be overwhelmed by tasks and procrastinate due to habitual laziness, which not only hinders completion but also increases tension (Demirci, Akgonul & Akpinar, 2015).

Delay and lack of prioritization are two of the most significant problems among students. Lack of time management skills can lead to procrastination, especially when deadlines are not met (Oettingen *et al*., 2015). Distractions while studying can also waste students' time, as they may mistakenly believe unrelated or unimportant things need urgent attention. In medical school, students with a large curriculum may struggle to manage their study and leisure time, leading to increased stress (Bashir *et al.,* 2015). Thus suggests that students who struggle with time management may experience negative

conditions, such as low grades, diminished performance, stress and frustration. Therefore, students must understand and manage their time effectively to avoid negative effects on their academic performance.

2.4 Theoretical Framework for the Study

Previous studies have reported that nursing students frequently complain of stress and time availability in nursing (Nayak, 2018; Ghiasvand *et al*., 2017). Time is an essential resource everyone possesses equally (Shimaaa *et al*., 2019). Lazarus and Folkman's transactional model of stress is a useful framework for understanding the potential predictive nature of nursing perceptions regarding a stressor (1984).

The transactional approach views stress as a process involving continuous interactions and adjustments known as transactions between an individual and the environment, in this case, time management. The individual is regarded as an active agent who can influence the impact of a stressor through behavioural, cognitive, and emotional strategies. Therefore, this study utilized the transactional stress model as it provides a satisfactory theoretical framework to emphasize the relationship between nursing students and their time management skills.

Figure 2.1 illustrates the relationship between the Transactional Model (Lazarus & Folkman, 1984) and this study's variables (demographic characteristics, time management skills and stress level). For example, as students' time management skills rise, their stress level decreases, i.e., they are inversely correlated (Alay & Kocak, 2002; Alpturk, 2015). Another example, gender could be described as a biological category, but there are certain beliefs societies hold about gender that could affect stress.

Time Management Skill:
- Time planning
- Time attitude
- Time consumers

Participants' Demographic Characteristics:
- Age
- Gender
- Ethnicity
- Year in Nursing Study
- CGPA

Stress Level
- Low (50% less)
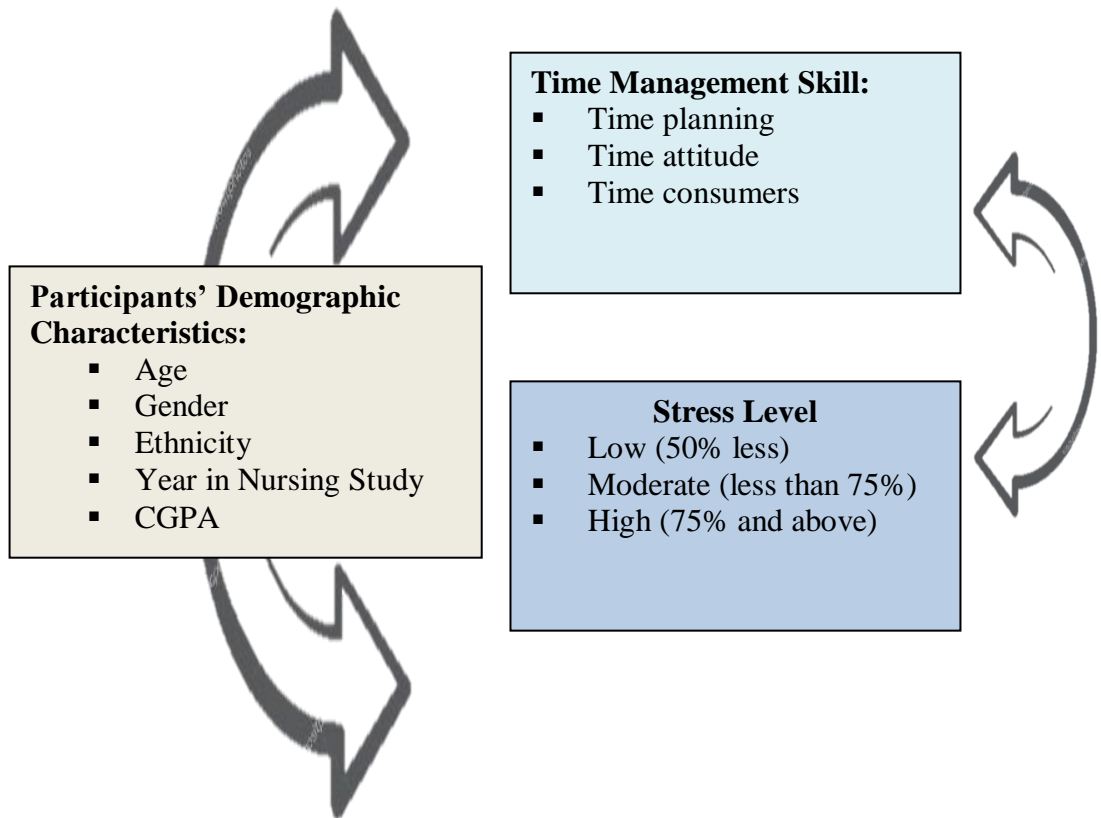- Moderate (less than 75%)
- High (75% and above)

Figure 2.1   Relationship Between Transactional Model, Time Management Skills and Stress Levels among Undergraduate Nursing Students

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Introduction

Chapter 3 contains the research methodology for this study, the explanation of the approach and the rationale used to support the chosen research methodology. Determining and understanding an appropriate research design is essential for achieving the study's aims. Therefore, the chapter begins with a description of a cross-sectional design and justification for using this approach, followed by a description of the study setting, population, participant selection criteria, sampling plan, sample size determination, and instrumentation, including ethical considerations through data collection methods. The final section explains the analytical processes used with the quantitative data.

3.2 Research Design

A cross-sectional design was utilized to determine the time management skills and stress levels among undergraduate nursing students at Universiti Sains Malaysia (USM). The justification and rationale were that in a cross-sectional study, data was collected on the whole study population at a single point to examine variables of interest, relatively cheap and can be conducted more quickly than other types of research (Polit & Beck, 2020).

3.3 Study Setting and Population

The School of Health Sciences, Universiti Sains Malaysia (USM) in Kelantan was the research location because of its designation as an Accelerated Programme for Excellence (APEX) in 2008. Undergraduate nursing students enrolled in USM's Bachelor of Nursing (Honours) Program were recruited as the target population for this study.

3.3.1 Inclusion Criteria

Specific eligibility requirements for inclusion in this study:

i.   Year 1, 2, 3 and 4 undergraduate nursing students at USM.

3.3.2 Exclusion Criteria

i.   Undergraduate nursing students who are absent or on sick leave during the survey period.

3.4 Sampling Plan

Sampling is a process where researchers take a predetermined number of observations from a larger population (Polit & Beck, 2020).

3.4.1 Sampling Method

A simple random sampling technique was used to select participants. The technique was preferred because participants have an equal and fair chance of being selected. As the selection method used gives every participant a fair chance, the resulting sample had an unbiased representation of the population and was unaffected by the researcher (Noor *et al.,* 2022). The study utilized a random number generator software to select participants randomly. A list of Year 1 to 4 undergraduate nursing students' names was obtained from the Academic Office, School of Health Sciences, USM. Each student's name was marked with a specific number, ranging from 1 to 128. For example, the total population of undergraduate nursing students was 128 were entered into the software. The study involved a sample of 116 participants, and after clicking OK, a randomly sorted number was displayed in the selected cell.

3.4.2 Sampling Size Estimation

The study's research objectives were used to estimate the sample size through a sample size calculation.

For objective 1, the single proportion formula and the population proportion were employed based on Ozsoy (2014), whose time-consuming score was 0.061. The estimated sample size for objective one was calculated using the sample size estimation formula as follows:

$$N = \left[\frac{1.96}{0.05}\right]^2 0.061 \,(1 - 0.061)$$

N = 89

If n is the sample size required as per the formula and if d (20%) is the dropout rate, then adjusted sample size N is obtained as N = n/(1-d) = 112

Therefore, the total sample size for objective one was 112 participants.

For objective 2, a single proportion formula and the population proportion were taken based on Nebhinani *et al.*'s (2020) study. The proportion of severe levels of stress is 5% (p = 0.05). The sample size for objective two is determined using the sample size estimation formula as follows:

$$n = \left[\frac{1.96}{0.05}\right]^2 0.05 \,(1 - 0.05)$$

n = 73

Therefore, the estimated sample size was 73.

If n is the sample size required as per formula and if d (20%) is the dropout rate, then adjusted sample size N is obtained as N = n/(1-d). Therefore, the total sample size for objective two was 92 participants.

For objective 3, the sample size was estimated based on a 95% confidence level, a population size of 129, a 50% population proportion, and a 5% margin of error. The calculated sample size was 97. Figure 3.1 illustrates the sample size calculation.

Figure 3.1 Determination of Sample Size Using Sample Size Calculator

If n is the sample size required as per formula and if d (20%) is the dropout rate, then adjusted sample size N is obtained as N = n/(1-d). Therefore, the total sample size for objective three was 116 participants.

For objective 4, the r value 0.364, based on Shimaaa *et al.*'s (2019) study, was used to calculate the sample size. The calculated sample size n is 57. Figure 3.2 illustrates the sample size calculation.

Figure 3.2 Determination of Sample Size Using Sample Size Calculator

If n is the sample size required as per formula and if d (20%) is the dropout rate, then adjusted sample size N is obtained as N = n/(1-d). Therefore, the total sample size for objective four was 72 participants.

The present study utilized the largest sample size of 116 participants based on the rule of equality allocation of random sampling, with twenty-nine participants from each nursing study included.

3.5 Instrumentation

Instrumentation is the use of or work completed by planned instruments around the research topic (Polit & Beck, 2019). The instrument adopted in this study is the Time Management Inventory (TMI) by Alay and Kocak (2002) and the Student Nursing Stress Index (SNSI) by Jones & Johnston (1999) with permission (Appendix A & B).

3.5.1 Instrument

A self-administered questionnaire in English consisting of three sections (Sections A, B and C) was utilized. Section A contains a set of questions to collect the participants' socio-demographic data [age, gender, ethnicity, year in nursing study and Cumulative Grade Point Average (CGPA)]. Section B, the Time Management Inventory (TMI), made up of 27 close-ended questionnaires with three domains: Time planning (16 items), time attitudes (7 items) and time wasters (4 items), and Section C, the Student Nursing Stress Index (SNSI), made up of 22 close-ended questionnaires clustered into four factors: Academic load (5 items), clinical concerns (6 items), personal problems (4 items), and interface worries (7 items) was utilized.

3.5.2 Validity and Reliability of Instrument

The TMI developed by Alay and Kocak (2002) was previously validated using

Cronbach's alpha, and reliability was 0.87 for all scales, while the SNSI developed by Jones and Jonathan (1999) exceeds 0.7. Hence demonstrating that both instruments had good reliability and validity. Despite the reliability and validity of research studies that have been conducted on the instrument and applied to this study, a pilot test was deemed appropriate to collect validity and reliability evidence of the research due to different geographical study settings and to measure the concept under study accurately (Polik & Beck, 2020). Pilot testing was conducted on 10% of undergraduate nursing students from the School of Health Sciences, USM, who were not part of the study participants to determine questionnaire appropriateness and ethical soundness. The alpha coefficient for the time management skills tool was ($\alpha= 0.840$), and for the nursing student stress index tool was ($\alpha= 0.931$). The tools indicate good internal reliability with Cronbach's alpha value. The result added credence where, according to Griethuijsen, the range of Cronbach alpha between 0.6 to 07 is considered adequate and reliable (van Griethuijsen *et al.,* 2015).

3.6 Variables

This research utilized dependent and independent variables, with the dependent variable being dependent on the independent variables and the independent variable being independent and unaffected by the other variables being measured (Kowalczyk, 2015). Table 3.1 illustrates the independent and dependent variables.

Table 3.1   Independent and Dependent Variables

Independent variables	Demographic characteristics of participants: Age, gender, ethnicity, year in nursing study and CGPA.
Dependent	▪ Time Management Inventory (TMI): Time planning, time

| variables | attitudes and time consumers. |
| | ▪ Student Nursing Stress Index (SNSI): Academic load, clinical concerns, personal problems, and interface worries. |

3.6.1 Measurement of Variables

The study's variables were measured using self-administered questionnaires. The Time Management Inventory (TMI) was used to determine the time management skills among undergraduate nursing students. These questionnaires comprised 27 items with the following domains: Time planning, time attitudes and time wasters. Each item was scored on a 5-point Likert scale, with a rating scale from 1= Never, 2= Rarely, 3= Sometimes, 4= Often, and 5= Always was adopted. The scores were reversed in negative statements, with the response "never" given a score of 5 (refer to Table 4.2). The scoring system ranged from 27 to 135. Scores of the items were summed up and converted into a per cent score and classified as follows: 0% to 49% (Low time management skills), 50% to 74% (Moderate time management skills) and 75% to 100% (High time management skills) (Alay & Kocak, 2002). As students' time management skills rise, their stress level decreases, i.e., they are inversely correlated (Alay & Kocak, 2002; Alpturk, 2015).

The stress levels were measured using Jones and Johnston's Student Nursing Stress Index (SNSI) (1999). The SNSI comprises 22 items clustered into four factors: academic load, clinical concerns, personal problems, and interface worries used a 5-point Likert scale ranging from 1= Not Stressful, 2= Low Stress, 3= Moderate Stress, 4= Stressful, 5= Extremely Stressful. The SNSI was adopted to determine the stress level. The total score ranges from 22 to 110. Scores of the items were summed up and converted into a per cent score and categorized as follows: 0% to 49% (Low-stress level), 50% to 74% (Moderate stress level) and 75% – 100% (High-stress level) (Ribeiro *et al*., 2020).

Higher scores demonstrate a higher level of demand or sources of stress.

3.7 Ethical Consideration

Ethical considerations in research are principles that guide the research designs and practices and adhere to a certain code of conduct when collecting data from humans.

3.7.1 Permission to Conduct the Study

The Human Research Ethics Committee (HREC), USM approved this study (USM/JEPeM/KK/23120965)(Appendix E). Permission to conduct a study among undergraduate nursing students was also obtained from the Dean of the School of Health Sciences, USM (Appendix F). Participants were provided an information sheet which contained a comprehensive understanding of the study informing about the study's purpose, procedures, potential risks and benefits, and their role (Appendix C). Participants who clicked the 'Continue' button were directed to complete an online self-administered questionnaire, indicating their willingness to participate in the online survey. Hence, written consent was not required.

3.7.2 Permission to Use the Instrument from Original Author (s)

Permission from the original author was obtained for instrument use (Appendix B).

3.7.3 Subject Vulnerability

The study was voluntary, with participants informed of the study's nature, not influenced by treatment, coercion, or persuasion using simple language understandable to the participants, including the right to withdraw at any time without penalty, as mentioned in the information sheet.

3.7.4 Declaration of Absence of Conflict of Interest

There are no conflicts of interest to declare, as this study was part of the final-year research project. However, the researcher acknowledged no funding was received for this