



JOURNAL OF MALAYSIAN NURSES ASSOCIATION

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FROM THE EDITORIAL DESK

Welcome to the 2025 Special Edition Issue of JOMNA!

It is with great pride and appreciation that Malaysian Nurses Association presents this Special Edition 2025 of the Journal of the Malaysian Nurses Association (JOMNA). This publication reflects the collective intellectual efforts, professional commitment, and scholarly contributions of nurses who continue to advance nursing knowledge, practice, education, and leadership in Malaysia.

We extend our sincere gratitude to the MNA **Selangor Branch** for their excellent initiative and dedication in coordinating and arranging the manuscripts derived from their recent colloquium. The systematic curation of these scholarly works has enabled this special edition to capture contemporary nursing issues, innovative practices, and evidence-informed perspectives that are both relevant and impactful.

Our heartfelt appreciation is also conveyed to all contributors who have submitted manuscripts for this edition. Your willingness to share research findings, clinical insights, reflections, and best practices demonstrates a strong culture of knowledge sharing and professional growth within the nursing fraternity.

Thank you for being part of this meaningful scholarly journey.

UTILIZATION OF PAIN ASSESSMENT TOOLS IN PAIN MANAGEMENT AMONG NURSES IN PUBLIC HOSPITAL

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ABSTRACT

Pain management is a vital component of patient care in hospital settings, where accurate pain assessment is crucial for effective management. This study aims to examine the utilization of pain assessment tools (PATs) among nurses at public hospital in Malaysia, focusing on identifying the factors that influence their use. A cross-sectional study design was employed, involving 310 nurses who were selected through convenience sampling. Data was collected using a structured questionnaire that included sections on demographics, frequency of PAT utilization, and factors affecting their use. The study found that 99.4% of nurses assessed patients for pain, with 94.2% regularly using PATs. Significant barriers to PAT utilization were identified, including nursing workload ($p=0.045$), patient instability ($p=0.048$), and lack of standardized protocols ($p=0.027$). Contrary to expectations, demographic factors such as age, gender, and years of service did not significantly influence PAT usage. The findings suggest that while PATs are widely recognized and utilized, specific barriers related to workload and institutional protocols hinder their optimal use. Addressing these barriers through targeted interventions, such as enhanced training and the development of clear protocols, could lead to improved pain management practices and better patient outcomes. The study underscores the need for ongoing education and institutional support to ensure that nurses can effectively utilize pain assessment tools in their daily practice.

Keywords: Nurse, utilization, Pain Assessment Tools, patient care and pain management.

INTRODUCTION

Pain management is a crucial aspect of patient care in hospitals, and the utilization of pain assessment tools plays a significant role in ensuring effective pain management among nurses. The objectives of this study, to determine the factors associated with the use of the utilization of pain assessment tools in pain management among nurses at public hospital in Malaysia. By examining these factors, researchers aim to identify the association between pain assessment tools with the demographics among nurses.

METHODOLOGY

A cross-sectional study was conducted, involving 310 nurses from various departments in HSB using convenience sampling. A structured questionnaire was administered to gather data on the nurses' demographic information, knowledge of pain assessment tools, perceptions towards pain management, and their practices in utilizing pain assessment tools. The statistical hypotheses were tested using the Chi-square test.

RESULTS AND DISCUSSION

The largest age group among the nurses surveyed falls within the 31-35 age range, accounting for 33.5% of the sample, while the highest percentage of the education qualification falls on diploma workers with 89%. Most nurses (99.4%) assess patients for pain, highlighting the importance placed on pain assessment in their practice. In addition, from the total of 13 factors influencing of utilization PATs, there are seven significant factors that influence PATs while the others are not significant. However, there are no significant associations between demographics and PATs found in this study. The chi-square test was used to determine the significance of the association between two categorical variables and a significant p-value set at less than 0.05 or <0.05 .

Table 1: Demographic Information of Pain Assessment Tools from 310 nurses.

Demographics	Variables	Frequency	Percentage (%)
Age	26 – 30	29	9.4
	31 – 35	108	34.8
	36 – 40	101	32.6
	Above 41 years old	72	23.2
Sex	Male	13	4.2
	Female	297	95.8
Qualification	Secondary School	16	5.2
	Diploma	276	89
	Degree	18	5.8
Position	Community Nurse		
	Registered Nurse	99	31.9
	Matron (Supported Team)	198	63.9
	Matron (Professional Management)	8 5	2.6 1.6
Years of service	Below 5 years	11	3.5
	6 – 10	100	32.3
	11 – 15	95	30.6
	Above 15 years	104	33.6

Table 2: Frequency Utilization of Pain Assessment Tool (PATs) on patients among Nurses

VARIABLES	RESPONSES	FREQUENCY	PERCENTAGE (%)
1. Do you assess patient for pain?	Yes	308	99.4
	No	2	0.6
2. Do you use a pain assessment tools for pain assessment?	Yes	292	94.2
	No	18	5.8
3. Do you document the finding after using the pain assessment tools?	Yes	310	100
	No	0	0
4. Do you discuss pain score during handling and taking over/ ward round?	Yes	300	96.8
	No	10	3.2
5. Do you agree with pain assessment tools statement about their pain?	Yes	293	94.5
	No	17	5.5

Table 3: Factors Influencing of Utilization Pain Assessment Tools Among Nurses

VARIABLES	Responses (n=310)		Pearson Chi - square		
	Yes No	Percentage (%)	df	X ²	p
1. Unavailability of pain assessment tools	111	35.8%	1	0.031	1.000
	199	64.2%			
2. Nursing workload	133	42.9%	1	4.708	0.045
	177	57.1%			
3. Sedation interfering with pain assessment	204	65.8%	1	3.532	0.087
	106	34.2%			
4. Unconducive working environment	106	34.2%	1	3.625	0.061
	204	65.8%			
5. Poor documentation of pain assessment and management	122	39.4%	1	3.685	0.066
	188	60.6%			
6. Patient instability eg: unstable hemodynamic	220	71.0%	1	4.164	0.048
	90	29.0%			
7. Patient inability to communicate	205	66.1%	1	3.685	0.066
	105	33.9%			
8. Lack of protocols for pain assessment	122	39.4%	1	5.231	0.027
	188	60.6%			
9. No designated area for charting pain	92	29.7%	1	4.862	0.032
	218	70.3%			
10. Lack of familiarity with assessment tools	81	26.1%	1	5.720	0.024
	229	73.9%			
11. PATs is difficult to use and complex to interpret	89	28.7%	1	15.584	<0.01
	221	71.3%			
12. The use of PATs is time consuming and not practicable	81	26.1%	1	16.206	<0.01
	229	73.9%			
13. Lack of education	115	37.1%	1	2.130	0.193
	195	62.9%			

Table 4: Association Between Demographic and Utilization of Pain Assessment Tools Among Nurses

Variables	Categories	Responses (n=310)		Person Chi - square		
		Yes No	Percentage (%)	df	X ²	p
Age	26 – 30	26 3	8.4% 1.0%	0.738	1	0.870
	31 – 35	90 14	29.0% 4.5%			
	36 – 40	80 9	25.8% 2.9%			
	Above 41 years	79 9	25.5% 2.9%			
Sex	Male	13 2	4.2% 0.6%	0.066	1	1.000
	Female	262 33	84.5% 10.6%			
Qualification	Secondary School	12 1	3.9% 0.3%	0.577	2	0.778
	Diploma	239 32	77.1% 10.3%			
	Degree	24 2	7.7% 0.7%			
Position	Community Nurse	98 8	31.6% 2.6%	6.833	4	0.134
	Registered Nurse	153 23	49.4% 7.4%			
	Matron (Supported Team)	14 3	4.5% 1.0%			
		9	2.9%			

	Matron (Professional Management)	2	0.6%			
Years of service	Below 5 years	12	3.9%	0.178	3	1.000
		2	0.6%			
	6 – 10 years	83	26.8%			
		11	3.5%			
	11 – 15 years	75	24.2%			
		9	2.9%			
	Above 15 years	105	33.9%			
		13	4.2%			

CONCLUSION

The findings highlight the need for focused educational interventions and training programs to enhance nurses' knowledge and competence in pain assessment tools. Improving these aspects will lead to better patient treatment and overall quality of care in the hospital.

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AWARENESS OF COLORECTAL CANCER AND BARRIER OF ITS SCREENING AMONG YOUNG ADULTS IN PUBLIC UNIVERSITY IN MALAYSIA

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ABSTRACT

Colorectal cancer (CRC) remains a leading cause of death worldwide, despite being preventable and treatable with early diagnosis. Numerous studies have investigated knowledge, awareness, and barriers to CRC screening globally, but none have specifically focused on university students in Malaysia. This cross-sectional study, conducted from January to August 2024, aimed to assess the level of CRC awareness and barriers to screening among 228 young adults at the one public university. Data were collected through a Google Form using Bowel Cancer Awareness Measure (Bowel CAM) questionnaire distributed via email and analysed using SPSS version 27.0. Descriptive statistics were used for sociodemographic, awareness of CRC, and potential screening barriers. Pearson's Chi-Square tested associations between sociodemographic variables and CRC awareness. Results showed that most students had fair knowledge of CRC. A significant association was found between year of study and course of study with CRC awareness, but no significant associations were observed between awareness and gender, ethnicity, family income, family cancer history, or sources of information. Common barriers to CRC screening included perceptions that screening was unnecessary, high costs of colonoscopy, and lack of awareness regarding where to access faecal occult blood tests (FOBT). These findings underscore the need for increased CRC awareness and education on screening options to promote early detection and treatment.

Keywords: Awareness, Colorectal Cancer, Screening Barriers, University Students,

INTRODUCTION

Cancer, or malignant tumors, is characterized by the abnormal growth of cells that can spread to other parts of the body, leading to metastasis. Globally, cancer is the leading cause of death, accounting for nearly 10 million deaths in 2020, with lung, colorectal, liver, stomach, and breast cancers being the most common causes. Colorectal cancer (CRC), in particular, is the second leading cause of cancer-related deaths worldwide, with approximately 1.9 million new cases and 930,000 deaths in 2020 (World Health Organization, 2023). In Malaysia, CRC is the most common cancer among males and the second most common among females. Factors such as age, lifestyle habits, and family history increase the risk of CRC, while early detection through screening, such as the immunochemical fecal occult blood test (iFOBT), can significantly reduce morbidity and mortality. However, despite these measures, less than 1% of the eligible Malaysian population has been screened, with barriers such as lack of awareness, financial concerns, and fear of the screening process (Malaysia National Cancer Registry, 2019).

While CRC is preventable and treatable when diagnosed early, most Malaysian patients are diagnosed at a later stage, significantly reducing their survival rates. Research has identified

several barriers to CRC screening, including a lack of awareness, stigma associated with the screening process, and inadequate access to healthcare facilities (Hatamian et al., 2021; Schliemann et al. 2022). Although global studies have examined knowledge, awareness, and barriers to CRC screening, limited research has focused on these aspects in Malaysia, particularly among university students. This study aims to address this gap by assessing the awareness of CRC and the barriers to screening among young adults at the one of public university in Malaysia. The findings of this study will help develop strategies to overcome these barriers, ultimately increasing participation in CRC screening and improving early diagnosis rates.

METHODOLOGY

Study design and settings

This research utilized a cross-sectional study design. This study was conducted among university students at one of public university located in Kelantan from January to Jun 2024. The sample size of this study was calculated using single proportion formula based on a previous study by Selim et al., (2021) as prevalence of good awareness was 15.9%. a total of 228 students were required for this study with 10% dropout rate. There are three major programs included in this study which are the medical, dental and health sciences. The study population included students at USM's Health Campus. The inclusion criteria were undergraduate and postgraduate students from dental and health science program, age from 20-40 years old. Students who are Non-Malaysian, from Medical program and third- and fourth-year nursing students were excluded as they had already been exposed to cancer education during their academic training, which could skew their awareness levels. Students were recruited through convenience sampling, where students who meet the inclusion criteria were invited to participate in this study.

Instruments

The research used a structured questionnaire as the primary instrument for data collection. The questionnaire consisted of three parts; demographic data, awareness of colorectal cancer, and barriers to colorectal cancer screening. Demographic data includes gender, ethnicity, level of education, year of study for undergraduates, course of study, family income, family history of cancer, and the primary sources of information regarding colorectal cancer.

The Bowel Cancer Awareness Measure (Bowel CAM), developed by University College London in collaboration with Cancer Research UK, was adopted to assess CRC awareness. This measure has been widely used in various studies due to its established reliability and validity, with a Cronbach's alpha of 0.84 and a test-retest reliability of $r = 0.7$, indicating high internal consistency and temporal stability. It consisted of 20 items, adapted from the Bowel CAM, covering three domains: age at risk, awareness of warning signs, and knowledge of risk factors for CRC. A correct response for age at risk and warning sign awarded 1 point, while incorrect or uncertain responses scored 0 points. The section on risk factors using a Likert scale ranging from "Strongly Agree" to "Strongly Disagree." Points were awarded based on agreement, with higher scores indicating greater awareness. The total awareness score ranged from 0 to 20 and was categorized as poor (0–7), fair (8–14), or good (15–20) (Su et al., 2013).

The questionnaire for colorectal cancer screening barrier is adopted from Imran M. et al. (2023), contained 22 items, divided into three subdomains: General Barriers (7 items), Colonoscopy-

Related Barriers (9 items), and Fecal Occult Blood Test (FOBT)-Related Barriers (6 items). Respondents rated their agreement with each barrier on a 3-point Likert scale, with options for "Agree," "Neutral," and "Disagree." Additional questions regarding delay in help-seeking and confidence in detecting symptoms were also included, with responses for the confidence question ranging from "Not at all confident" to "Very confident." Higher mean scores indicated a greater number of respondents agreeing with specific barriers. The question about delays in help-seeking was open-ended, allowing participants to provide qualitative response.

Data collection and data analysis

The ethical approval was obtained from the Human Research Ethics Committee of USM (JPEM) and permission was given by the Deans of the related program. The questionnaire was converted into an online format using google forms to facilitate easy distribution and participation. Links to the questionnaire were shared with eligible undergraduate and postgraduate students through email and social media platforms. In the google form, the respondents were briefed on the purposes of the study and consent was taken before respondent responded to the questionnaire. The questionnaire took approximately 10 to 15 minutes to complete.

Data was analysed using Statistical Package for Social Science (SPSS) version 26.0. Descriptive statistics were used to summarize the demographic data, awareness category and barriers to screening. The Pearson Chi square test was used to examine the association of demographic variables with awareness of CRC. A p-value of < 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

The study included 228 students with a mean age of 22.6 years. Most participants were female (86.8%) and Malay (64.5%). The majority were undergraduates (95.6%), with a significant proportion enrolled in clinical courses (63.2%). Most participants demonstrated fair knowledge of colorectal cancer (59.2%), only a small percentage (10.1%) exhibited poor knowledge. The mean awareness score was 12.54 ± 3.79 , indicating moderate awareness. In contrasts with the findings of Xu et al. (2022) and Hussain et al. (2020), who reported limited awareness among patients in China and Bahrain. This discrepancy could be due to the participants in this study being young university students with better educational backgrounds and access to online resources, making it easier for them to obtain information.

Regarding barriers to colorectal cancer screening, the most cited general barrier was the belief that screening is unnecessary without symptoms. This highlights the lack of public awareness, which is consistent with findings by Imran et al. (2023). Malaysia's CRC screening guidelines emphasize the importance of opportunistic screening for asymptomatic individuals aged 45 to 70 with a family history of CRC (Ministry of Health Malaysia, 2021). In terms of colonoscopy-related barriers, the procedure's cost and concerns about pain were the most frequently mentioned. For the faecal occult blood test (FOBT), many participants were unsure of where to obtain the test, reflecting a lack of knowledge about screening options. Participants expressed low confidence in recognizing colorectal cancer symptoms, with only 2.2% feeling very confident.

Statistical analysis revealed significant association between CRC awareness with year of study

and course of study, which corresponds with findings by Elshami et al. (2022). This suggests that educational exposure plays a crucial role in enhancing awareness. These findings highlight the need for targeted educational interventions to improve colorectal cancer knowledge and reduce screening barriers, particularly among younger adults and non-clinical course students.

Table 1 Association between sociodemographic factors and awareness of Colorectal Cancer

Variables	Awareness, N (%)			X ² statistics (df)	P-Value
	Poor	Fair	Good		
Gender				0.640 (2)	0.726
Male	4 (17.4)	16 (11.9)	10 (14.3)		
Female	19 (82.6)	119 (88.1)	60 (85.7)		
Ethnicity				8.475 (6)	0.205
Malay	13 (56.5)	86 (63.7)	46 (65.7)		
Chinese	7 (30.4)	41 (30.4)	17 (24.3)		
Indian	1 (4.3)	6 (4.4)	1 (1.4)		
Others	2 (8.7)	2 (1.5)	6 (8.6)		
Level of education				1.26 (2)	0.532
Undergraduate	23 (100.0)	128 (94.8)	67 (95.7)		
Postgraduate	0 (0.0)	7 (5.2)	3 (4.3)		
Years of study (undergraduate)				25.96 (8)	0.001
Year 1	3 (13.0)	17 (12.6)	5 (7.1)		
Year 2	5 (21.7)	45 (33.3)	15 (21.4)		
Year 3	10 (43.5)	24 (17.8)	23 (32.9)		
Year 4	5 (21.7)	42 (31.1)	18 (25.7)		
Year 5	0 (0.0)	0 (0.0)	6 (8.6)		
Course of study				14.181 (2)	0.001
Clinical courses	8 (34.8)	82 (60.7)	54 (77.1)		
Non-clinical courses	15 (65.2)	53 (39.3)	16 (22.9)		
Family's Monthly Income (RM)				2.675 (4)	0.614
< RM4,850	14 (60.9)	82 (60.7)	35 (50.0)		
RM4,850 – RM10,959	7 (30.4)	36 (26.7)	25 (35.7)		
> RM10,959	2 (8.7)	17 (12.6)	10 (14.3)		
Family History with Cancer				7.151 (4)	0.128
Colon Cancer	1 (4.3)	6 (4.4)	6 (8.6)		
Other Cancer	1 (4.3)	17 (12.6)	15 (21.4)		
No History of Cancer	21 (91.3)	112 (83.0)	49 (70.0)		
Source of information				16.2 (10)	0.094
School curriculum	4 (17.4)	51 (37.8)	33 (47.1)		
Newspaper	0 (0.0)	0 (0.0)	1 (1.4)		
Television	2 (8.7)	4 (3.0)	2 (2.9)		
Social Media	12 (52.2)	57 (42.2)	24 (34.3)		
Patient	0 (0.0)	4 (3.0)	5 (7.1)		
None	5 (21.7)	19 (14.1)	5 (7.1)		

*Pearson Chi-square test, p-value of ≤ 0.05 is considered to be statistically significant

This study's strength lies in the use of validated instruments like the Bowel Cancer Awareness Measure (Bowel CAM) and the Barrier of Colorectal Cancer Screening questionnaire, which

enhances the reliability of the findings. A large sample size of 228 participants also increased the study's statistical power and generalizability. However, the use of convenience sampling limited the diversity of the participants and introduced potential bias.

CONCLUSION

In conclusion, this study found that the awareness of colorectal cancer (CRC) among young adults is moderate, with most students demonstrating only fair knowledge of the disease. The study revealed that the year of study and course of study were significantly associated with CRC awareness. The most common barriers to colorectal cancer screening included the perception that screening is unnecessary without symptoms, the cost of colonoscopy, and lack of awareness about where to obtain a faecal occult blood test (FOBT). These findings highlight the need for increased education and awareness campaigns targeting young adults, emphasizing the importance of early detection and accessible screening options. Nurses, as key healthcare advocates, should be empowered to educate the public about CRC risks, symptoms, and screening methods.

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KNOWLEDGE AND ASSOCIATED FACTORS ON ELECROCARDIOGRAM INTERPRETATION AMONG NURSES IN CARDIOLOGY UNIT IN HOSPITAL PULAU PINANG

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ABSTRACT

Background: Electrocardiogram (ECG) interpretation is a critical skill for nurses working in cardiology units, as it plays a vital role in the early detection and management of cardiac conditions. Despite the importance of this skill, there are variations in the level of knowledge and accuracy of ECG interpretation among nurses. **Objective:** This study aims to assess the knowledge and associated factors influencing ECG interpretation skills among nurses in the cardiology unit at Hospital Pulau Pinang, providing insights into potential areas for improvement and professional development. **Method:** The study was conducted at the Cardiology Unit of Penang Hospital as a cross-sectional study. It involved 81 nurses from the cardiology unit. The study began in April and continued until mid-May 2020, following ethical approval. Data were analyzed using SPSS version 24. **Result:** The majority, 57 nurses (70.4%), had a good level of ECG knowledge. This was followed by 22 nurses (27.2%) with a moderate level of knowledge, and only 2 nurses (2.5%) had poor knowledge. Overall, most participants in the cardiology unit demonstrated a good level of ECG knowledge. Meanwhile, only age, years of working experience, and completion of a critical care nursing (CCN) course, showed a significant association with ECG knowledge, with p-values <0.005. **Conclusion:** These findings suggest that more experienced nurses and those who have undergone specialized training are better equipped to interpret ECGs accurately. The results underscore the importance of continuous education and targeted training programs to further improve ECG interpretation skills, particularly for less experienced nurses.

Keywords: Knowledge, Associated Factors, Electrocardiogram, Nurses, Cardiology

INTRODUCTION

Cardiovascular disease (CVD) remains the leading cause of mortality in Western countries, accounting for 30% of all deaths (Riley et al., 2016). In 2017, ischemic heart disease caused 13.9% of all deaths, making it the most prevalent cause of mortality (American Heart Association, 2017). Globally, 80% of CVD-related deaths occur in low- and middle-income countries, affecting men and women equally. In Malaysia, cardiovascular disease is also the primary cause of death (Ministry of Health, 2019). Despite its significance in clinical practice, nurses' ability to interpret ECGs is inconsistent, with frequent misdiagnoses and missed electrocardiographic emergencies, leading to adverse patient outcomes (Aljohani, 2022).

Electrocardiography (ECG) is one of the most used diagnostic tests, especially in cardiology units. It plays a crucial role in both the diagnosis and management of patients with cardiac disorders (Yagi et al., 2024). While performing an ECG is relatively simple, interpreting the tracing requires substantial

training and expertise. Accurate interpretation of an ECG is essential in diagnosing cardiac arrhythmias and acute myocardial ischemic syndromes (Riley et al., 2016). Providing high-quality nursing care for critically ill patients is not merely a matter of adhering to standard nurse-to-patient ratios which it requires a combination of the nurse's skill, the complexity of the patient's condition, and the physical environment of care (Dalfo Pibernat et al., 2020). Nursing progress has paralleled socio-economic and cultural changes worldwide, bringing with it significant advancements in science and technology.

Today, the role of the professional nurse extends beyond following doctors' orders, requiring independent decision-making and the application of specialized skills (Polanska et al., 2017). Two critical nursing competencies in cardiology are the monitoring and interpretation of ECG which these skills are essential for supporting accurate diagnoses and effective patient management, particularly in identifying abnormal cardiac rhythms (Yagi et al., 2024). In life-threatening situations, nurses must accurately interpret cardiac rhythms and respond swiftly. To achieve this, they must receive comprehensive education in rhythm interpretation (Roussel, 2015). However, many nurses overly rely on computerized measurements, which are often inaccurate, leading to misinterpretations of ECG results (Coen & Curry, 2016; Tawalbeh et al., 2017; Willette et al., 2007).

One of the most challenging tasks for new critical care nurses is interpreting ECG rhythm strips and determining appropriate interventions when abnormalities are detected which is nurses must recognize that an ECG tracing indicating a highly irregular rhythm, an immeasurable heart rate, and the absence of P waves points to ventricular fibrillation. Early diagnosis and treatment are crucial, as they reduce morbidity and mortality in patients with acute myocardial infarction (Aljohani, 2022). Nurses play a pivotal role during the initial encounter by identifying patients with ST-Elevation Myocardial Infarction (STEMI) or Non-ST-Elevation Myocardial Infarction (NSTEMI). Critical care nurses are trained to care for high-risk patients, particularly those with STEMI, allowing them to plan more effective interventions (Badell, 2017).

According to statistics from the Cardiology Unit of Hospital Pulau Pinang's Coronary Care Unit (CCU), 360 STEMI cases and 104 NSTEMI cases were reported between January and December 2019. Cardiology nurses must have a high level of competence in ECG interpretation to properly categorize patients according to their risk and implement effective care interventions. Therefore, nurses play a vital role in managing patients, particularly in ECG interpretation. The aim of this study is to assess the knowledge and associated factors influencing ECG interpretation skills among nurses in the cardiology unit at Hospital Pulau Pinang, providing insights into potential areas for improvement and professional development.

METHODOLOGY

Design

A cross-sectional descriptive survey was conducted to collect data at a single point in time. This enabled easy and rapid collection of data from numerous emergency nurses at low cost (Polit, 2019) .

Sample

A convenience sample of 81 cardiology unit nurses was obtain at Penang Hospital, specifically in the Cardiology Unit, which includes the Coronary Care Unit (CCU), Cardiac Rehabilitation Ward (CRW), Non-Invasive Cardiology Lab (NICL), Invasive Cardiology Lab (ICL), and Ward C8 from 1st April 2020 to 30th May 2020. A statistical formula was used to estimate the required sample size based on the size of the population of cardiology nurses, margin of error, and confidence level. A sample size of 81 participants was calculated using Raosoft sample size estimation, and these nurses will be recruited from across the units for data collection.

Instrumentation

Data were collected using a self-developed well-designed questionnaire consisting of an information sheet, demographic data sheet (gender position, nursing experience, cardiology experience, and ECG

course taken), and 12 questions knowledge on ECG interpretation. The final version of the questionnaire consisted of 12 questions, with each question carrying 1 point, resulting in a maximum score of 12 points. A questionnaire was deemed valid if all questions were answered, with one response per question. After completion, the maximum score was adjusted from 12 points to 10 for ease of interpretation. Score was categorized into low (0-4), moderate (5-7) and high knowledge (8-10)(Coll-Badell et al., 2017). A pilot test was carried out to evaluate the validity of the questionnaire, the content validity index. The reliability of the questionnaire was also tested on a subsample through intraclass correlation coefficient with a Cronbach value of 0.869.

Data collection

The questionnaires were distributed to the cardiology unit nurses in person through face-to-face interactions. Participants were informed not to refer to any materials or seek assistance while completing the questionnaires, as outlined in the information sheet. They were given 15 to 30 minutes to complete the questionnaire. Once completed, the questionnaires were returned and securely stored for analysis.

Data analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20 for Windows (SPSS Inc., Chicago, IL, USA). The data entry was double-checked to ensure accuracy and validity, and cases with missing data were excluded from the analysis. Descriptive statistics, such as frequency, percentage, mean, and standard deviation, were used to describe the demographic characteristics and ECG interpretation skills of the participants. standard Pearson's chi-square (χ^2) test. The fisher's exact test was used to measure this association if an expected cell count in the cross tabulation was less than 5 (sparse numbers). A P-value of <0.05 was considered statistically significant for all tests.

Ethical considerations

Ethical approval for this study was obtained from the ethics committees of the participating hospitals. Participants were provided with an information sheet detailing the study's background, objectives, their role in the study, data handling procedures, and the contact information for both the investigators and hospital ethics committees. Participation was entirely voluntary, and consent was implied through the completion of the questionnaire. Participants had the right to withdraw from the study at any time without facing any negative consequences. The anonymity of participants and the confidentiality of their data were safeguarded, with no personal identities disclosed in the final report.

FINDINGS AND DISCUSSION

Demographic characteristics of the participants

The demographic data of the study population ($n = 81$) shows that 74 participants (91.4%) were female and 7 (8.6%) were male, with more females working in the cardiology unit. The age group of 26-30 years had the most participants, with 35 (43.2%). The Coronary Care Unit (CCU) had the highest number of respondents (36, or 44.4%), while the Cardiology Clinic had the fewest (2, or 2.5%). Most respondents (38, or 46.9%) had 1-5 years of work experience, indicating they were relatively new. Additionally, 37 participants (45.7%) had completed the Coronary Care Nursing course, while 44 (54.3%) had not. Of those, 43 (53.1%) had not taken the course yet, 26 (32.1%) completed it 1-5 years ago, and 4 (4.9%) more than 11 years ago. In the past year, 23 participants (28.4%) had completed the course, while 43 (53.1%) had not yet taken it.

**Table 3.1: Level of knowledge in ECG interpretation among nurses in cardiology unit
Hospital Pulau Pinang.**

Knowledge	Frequency	Percentage%
Poor	2	2.5%
Moderate	22	27.2%
Good	57	70.4%

Table 3.1 shows a total of 57 participants (70.4%) with a good level of ECG knowledge, while 22 participants (27.2%) showed a moderate level of knowledge. Only 2 participants (2.5%) had a poor level of knowledge. In summary, most nurses in the cardiology department at Penang Hospital have a good

Knowledge in ECG interpretation

Independent Variables	Odds ratio	95% CI for OR		<i>P-value</i>
		Lower	Upper	
Age	0.148	0.216	0.429	0.011*
Gender	0.413	0.275	0.635	0.712
Course on Coronary Care Nursing	11.01	1.347	71.312	0.005*
Years of working	0.927	0.213	10.045	0.032*
Department	2.074	1.349	3.159	0.412

level of ECG knowledge.

Table 3.2: Associated factors on Electrocardiogram Interpretation toward Sociodemographic among Nurses in Cardiology Unit in Hospital Pulau Pinang

Table 3.2 shows the associated factors on electrocardiogram interpretation toward sociodemographic among nurses in cardiology unit in hospital Pulau Pinang which are only age, years of working experience, and completion of a critical care nursing (CCN) course, showed a significant association with ECG knowledge, with p-values <0.005.

The results indicate that a significant proportion of nurses (70.4%) demonstrated good ECG knowledge, which is essential for ensuring high-quality patient care in cardiology. However, 27.2% of the nurses displayed only moderate knowledge, and 2.5% had poor knowledge. These findings are concerning, given that ECG interpretation is a fundamental skill in managing cardiac patients, and errors in interpretation can lead to adverse patient outcomes (Kern et al., 2020). The association between ECG knowledge and demographic factors such as age, years of work experience, and completion of the CCN course provides valuable insights into the factors that influence clinical competency. Nurses with more years of experience and those who completed the CCN course demonstrated higher levels of ECG knowledge, underscoring the importance of both practical experience and specialized education in developing clinical expertise (Mirvis & Goldberger, 2019).

The significant association between years of experience and ECG knowledge is consistent with the concept that expertise in clinical practice develops over time through the accumulation of hands-on experience and exposure to diverse clinical scenarios (Benner, 2021). The finding that younger nurses with less experience were more likely to have lower levels of ECG knowledge emphasizes the need for targeted educational interventions aimed at junior staff. Continuing professional development programs should prioritize ECG interpretation as a core competency, particularly for those in the early stages of their careers (Zhang et al., 2021). Additionally, the completion of the CCN course was identified as a key factor associated with improved ECG knowledge, which suggests that institutions should ensure broader access to and completion of such specialized training programs as part of their workforce development strategies.

CONCLUSION

In conclusion, the study highlights critical factors influencing the level of ECG knowledge among nurses in the cardiology unit at Penang Hospital. The significant associations between ECG knowledge,

work experience, and specialized training underscore the importance of both practical experience and continuing education in ensuring clinical competency. Future studies should consider exploring the long-term impact of structured professional development programs on clinical outcomes in cardiology units. Moreover, institutions should consider implementing mandatory ECG training for all cardiology nurses and promoting the completion of courses such as the CCN course to improve overall patient care quality in critical care settings.

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RELATIONSHIP BETWEEN TIME MANAGEMENT SKILLS AND LEVEL OF STRESS AMONG NURSING STUDENTS IN UNIVERSITY OF CYBERJAYA

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ABSTRACT

INTRODUCTION : Time management skills are crucial for the success of nursing students and the development of clinical competence. development. Nursing is one of the most stressful and challenging professions worldwide. Nursing students already have a limited amount of time to do so many tasks, and it will be difficult for them to fulfil what is expected of them by the lecturer and clinical instructor, especially if they have poor time management skills. Ineffective time management can lead to increased stress levels. This study aims to explore the relationship between time management skills and stress levels among nursing students at the University of Cyberjaya.

OBJECTIVES : This paper aims to determine the relationship between time management skills and level of stress among nursing students in university of Cyberjaya.

METHODOLOGY : A quantitative correlation design and a purposive sampling technique were carried out involving 121 respondents, utilizing the Time Management Skills Questionnaire and the Student Nurse Stress Index (SNSI). This study collects participants' socio-demographic factors such as age, gender, religion, ethnicity, and level of education which predicted nursing student's time management skills and their level of stress.

RESULTS : Data were collected via an online survey and analyzed using IBM SPSS version 23. The findings indicate a significant relationship between time management skills and stress levels among nursing students. Most respondents indicated "sometimes" regarding their time management skills, reflecting high level of proficiency. Nursing students reported moderate level of stress, with significant stressors including examinations, grades, workload difficulty, and fear of failing.

CONCLUSION : This study explored the significance of time management skills and their relationship with stress levels among nursing students. The findings highlight that while time management skills are crucial, they alone do not fully account for the stress experienced by students. Moderate time management skills are associated with increased stress, suggesting that additional factors contribute to the overall stress levels. By understanding the root causes of both moderate time management skills and elevated stress, targeted actions can be implemented to address these issues and improve student well-being.

KEYWORDS: Level of stress, Nursing students, Time management skills

INTRODUCTION

Time management skills for students can be defined as a set of behavioural abilities necessary for the organisation of study and course load. The development of clinical competence and the success of nursing students depend highly on time management skills (Behdarvand, et al., 2023). Time management skills is a crucial issue that influences nursing students' perspectives, how they use the time given to them, and how they change themselves to fulfil their academic commitments. Time management skills is crucial for nursing students because failure to manage one's time properly may result in inadequate attention to studies, increase stress, and decrease work productivity (Zyoud, 2023). Time management skills does not influence only students' performance or their achievements, it also really affects their mental capabilities and create possibilities to increase stress level among them (Ahmad et al., 2019;). Managing time was linked to reduced levels of stress, psychological discomfort, sadness, and hopelessness for a feeling of purpose in life as well as improved self-esteem, and optimism (Liu et al., 2023).

According to Muhsin et al (2023), stress affects emotion, physical and mental in human life. Nursing is known as a stressful job since it is associated with complex job demands and needs, and high expectations, excessive responsibility, and minimal authority have been identified as the main stressors (Babapour et al., 2022). Stress among students has several implications, and their effects has a substantial influence. Students who are tend to have reduced capacity for reasoned decision-making, a propensity for errors, a shorter attention span, trouble focussing, mental blockages, and hypersensitivity to criticism (Vulpe, 2021). They may also be unable to further their professional development. High levels of stress, a lack of enthusiasm to learn new things, or a loss of interest for learning are all caused by the demands and expectations of lecturers and parents, as well as the competitive spirit of students (Mofatteh,2021). Studies shows that, stress is harmful to students' physical and mental health and it has an effect on the immune system and increases the risk of illness (Seiler et al., 2020). University students frequently struggle with time management skills, which contributes to a high level of stress. University students who experience high amounts of stress may do badly academically and experience physical, social, and mental health problems. Many studies have been concentrating on the problem of stress among university students for several years (Ching et al.,2020). Even if a nursing student has strong time management skills, they will still experience stress as a result of their workload (Lovin et al.,2022)

METHODOLOGY

A quantitative correlation design and a purposive sampling technique were carried out involving 121 respondents, utilizing the Time Management Skills Questionnaire and the Student Nurse Stress Index (SNSI). This study collects participants' socio-demographic factors such as age, gender, religion, ethnicity, and level of education which predicted nursing student's time management skills and their level of stress. The data were collected through a Google form survey. A respondent information sheet and link to the Google survey were emailed to the nursing lecturer who then forwarded the link to nursing students in their faculty. Permission letter was sent to the Ethical Committee of the University of Cyberjaya to seek approval to conduct this research. Once approval had been obtained, the author shared the online survey questionnaires' website link to nursing lecturers at the University of Cyberjaya to be distributed to nursing students. An online consent was taken before answering the online survey questionnaires. Each of these participants was given 2 weeks to answer those questionnaires. Each participant was given 10-15 minutes to complete the questionnaire. It was made clear that their participation was entirely voluntary, and that declining to take part in the study would not have any adverse effects on their academic standing or future prospects.

All of them were provided with relevant and adequate information about the purpose and scope of the study, the types of questions that will be asked, and their freedom to leave the research at any time they wish. To keep the participant's information confidential, each contributor was given a pseudonym number (1, 2, 3) instead of their name. The data was downloaded from an online Google survey to Microsoft Excel and transcribed and transformed into IBM SPSS version 29 for statistical analysis. The data will be stored in a laptop that has password and finger print login. The password is only known to the researcher and a second step login would require the researcher finger print for access. The data will be kept for 5 years and will be deleted safely. Overall, the rights and welfare of the participants was given the highest attention and care during the study's execution. The entire procedure of the study was conducted ethically and safely to gain insightful information.

RESULTS AND DISCUSSION

Based on the table, the analysis of the relationship between time management skills and stress levels reveals a Pearson Correlation Coefficient of -0.113. This value signifies a weak negative linear relationship between the two variables. The negative value indicates that, if there is any relationship, it is in the direction where higher time management skills are slightly associated with lower stress. However, the weak strength of this relationship suggests that time management skills alone do not have a strong impact on stress levels.

Table 1: Pearson Correlation test

		Time	Stress
Time management skills	Pearson Correlation	1	-.113
	Sig. (2-tailed)		.218
	N	121	121
Level of stress	Pearson Correlation	-.113	1
	Sig. (2-tailed)	.218	
	N	121	121

This study indicated a high time management skill and moderate level of stress among nursing students at the University of Cyberjaya. The relationship between time management skills and stress levels among nursing students was analysed using the Chi-Square test and other statistical measures. The Chi-Square test revealed a p-value of less than 0.01, indicating a substantial and statistically significant association between time management skills and stress levels. This study anticipated that excellent time management skills would correlate with lower levels of stress among nursing students. Contrary to this expectation, the findings indicate that nursing students at the University of Cyberjaya experience moderate levels of stress despite possessing high time management skills. This discrepancy suggests that while students may have acquired knowledge of time management techniques, they are not fully integrating these practices into their daily routines, leading to persistent stress. According to a study done in University Kebangsaan Malaysia (UKM) students reports of having moderate level of stress and high time management skills. They found that the Time Management Program (TMP) has significantly reduce individual strass level (Helmi et al., 2023). Another study results revealed that nursing students had moderate time management skills scores (75.3%) and moderate stress level scores (54.5%) (Mohammed 2019).

CONCLUSION

This study explored the significance of time management skills and their relationship with stress levels among nursing students. The findings highlight that while time management skills are crucial, they alone do not fully account for the stress experienced by students. Moderate time management skills are associated with increased stress, suggesting that additional factors contribute to the overall stress levels. By understanding the root causes of both moderate time management skills and elevated stress, targeted actions can be implemented to address these issues and improve student well-being.

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THE EFFECTIVENESS OF EMOTIONAL FREEDOM TECHNIQUE IN REDUCING TEST ANXIETY AMONG NURSING STUDENTS IN SELANGOR

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INTRODUCTION

Although anxiety is not only normal but is an essential and expected part of life, to an increasing number of people, it is a major problem. Anxiety and fear are driving people to change the way they behave and prevent them from doing things that they could have done. Baxter et al., (2014) highlighted that the prevalence of anxiety peaks at the age between 20 to 34 years old. This is when students cope with tertiary education or higher education and examinations. Students react to test and examination pressure with different emotions, but one prominent emotion commonly found in students is test anxiety. While everyone goes through a test at some point in their formal education, managing test anxiety can be challenging for some individuals. The prevalence of test anxiety was found to be 52.3% among medical students in Ethiopia (Tsegay et al., 2019), 45.5 % in the United Arab Emirates (Tassadaq et al., 2016) and 29% among university students in Malaysia (Mohamad et al., 2020). Test anxiety levels are expected to rise as countries become more developed (Stankov, 2010).

One type of anxiety that nursing students report experiencing is test anxiety (Senturk & Dogan, 2018; Turner & McCarthy, 2017). The concept of test anxiety is critical in nursing education and the future professional development of nurses as it has a negative impact on learning. (Gibson, 2014). In Malaysia, in a study done in a government university, the prevalence of anxiety and stress symptoms in nursing students was reported as 81.6% and 43.1%, respectively. It was found that 13.2%, 44.3%, and 10.3% of nursing students have clinically significant depression, anxiety, and stress, respectively (Al-ani, 2019).

Test anxiety is a significant health problem affecting nursing students, as evidenced by studies investigating the effectiveness of an intervention to reduce it (Khaira et al., 2023). Many effective interventions, including complementary and alternative medicine (CAM) therapies for reducing test anxiety, have also been identified and tested over the years. In a recent review, aromatherapy hand massage, aromatherapy using a diffuser in combination with music therapy, confidence training for test relaxation, coping program, music therapy, emotional freedom technique, animal-assisted intervention, and guided imagery were all found to be effective in reducing test anxiety (Khaira et al., 2023). Emotional freedom technique (EFT) was found to be effective in reducing test anxiety (İnangil et al., 2020; Irmak Vural et al., 2019) and also reported to be an effective tool in reducing anxiety and stress among nursing students (Boath et al., 2012; Patterson, 2016).

Emotional Freedom Technique (EFT), also known as tapping, is a new and emerging energy psychology technique (psychotherapeutic alternative medicine) where it combines both the cognitive and somatic elements and works by having an individual concentrate on a specific

psychological issue while simultaneously tapping certain “meridian” points on the head and torso,

top to bottom. The combination of these elements has been demonstrated to alleviate various psychological conditions including stress, anxiety, fear, depression, phobias, and posttraumatic stress disorder (PTSD), as well as physical symptoms including pain, fibromyalgia, and traumatic brain injury (Church & Feinstein, 2017).

In the Malaysian university setting, students are not aware of or exposed to test anxiety coping mechanisms, resulting in them experiencing higher levels of test anxiety, which can hinder them from qualifying to be registered nurses and practice nursing in the future. Studies to investigate the effectiveness of EFT in reducing stress and anxiety have been carried out globally, however, there is no known study that has been carried out to evaluate the effectiveness of EFT in reducing test anxiety among nursing students as well as other university students in Malaysia. Based on previous research, it was hypothesized that EFT would result in a significant reduction in test anxiety among nursing students.

The purpose of this study was to implement and evaluate the effectiveness of the Emotional Freedom Technique (EFT) intervention in reducing moderate to high test anxiety levels among nursing students in private universities and colleges in the state of Selangor.

METHODOLOGY

Design And Participants

A randomized controlled trial (RCT) using a Pretest-Post-test Control-group design was conducted in September 2022 and only participants from the five nursing institutions with high level of test anxiety as determined from the results of data analysis of a prior cross-sectional study were selected to participate. The nursing institutions were randomly divided into two groups, experimental group, and the control-wait group to reduce the chance of contamination as the control-wait group could have been exposed indirectly to the intervention through contact with their friends from the same nursing institution. Randomization techniques using the “lottery” method (sampling without replacement) was used to control confounding variables that might affect the relationship between the interventions and outcome in test anxiety. The estimated sample size was calculated using G*Power 3.1 software. The statistical test was set as difference between two independent means (two groups). The effect size was set at 0.5, power at .95 with an allocation ratio of 1. The sample size predicted necessary was 88 for each group, and therefore a total sample size required was 176. However, only 116 were found to have high test anxiety from the results of the initial cross-sectional study. The participants were divided into two groups, the intervention group (n=58) and the control-wait group (n=58). These participants were told that they were part of group 1 (EFT group) or group 2 (control wait group). The control-wait group were also given the EFT intervention after the completion of the data analysis.

ETHICAL CONSIDERATION

This study obtained ethical approval from Universiti Kebangsaan Malaysia, Faculty of Medicine’s Research and Ethics committee (Approval number: UKM PPI/111/8/JEP-2021-640) and was carried out in accordance with the Declaration of Helsinki Permission to undertake the study was obtained from the management of the respective nursing institutions. Permission to use the survey tools was obtained and payment was made to purchase the Test Anxiety Inventory (TAI) questionnaire. The SUD scale was downloaded from the Internet as permission has been given by the developer of these instruments.

PROCEDURES

Data was collected by using a two-part self-administered questionnaire 3 weeks before their

final examination. On the day of data collection, the link to the questionnaire (google form) was forwarded to the students in both the intervention group and the control-wait group by the researcher herself. By answering the questionnaire via google form, it was implied that the students have consented to participate in the survey. The first section of the questionnaire included demographic data such as age, gender, ethnicity, religion and year of study and other demographic factors such as residential status, accommodation, and household income. which may predict nursing students' TA. The second part of the questionnaire was the TA Inventory (TAI), a self- reporting psychometric scale developed by Spielberger (Spielberger, 1980).

INSTRUMENT

Test Anxiety Inventory (TAI) was available in English version. The authors obtained the approval to use the instrument from the copyright holders. The TAI consists of twenty (20) items with three subscales: the subscales, which measure the two major components of TA, Worry (TAI-W) and Emotionality (TAI-E).

Each subscale consists of eight items and therefore weighted scores range from 8 to 32. The minimum TAI total score is 20 and the maximum is 80. TAI is a 4-point Likert- type scale, and the students must respond to the four options: (1) Almost Never = 1, (2) Sometimes = 2, (3) Often = 3 and (4) Almost Always = 4. However, item 1 is reversed score; (1) Almost Never= 4, (2) Sometimes = 3, (3) Often = 2 and (4) Almost Always = 1. The average time to complete this questionnaire was 8 to 10 minutes. The significance level was chosen as ($p < 0.05$). The reliability values of the alpha coefficient for subscales of the original version of TAI were: 0.96 for TAI-T, 0.91 for TAI-W and 0.91 for TAI-E (Spielberger 1980). As the reliability values of Cronbach's alpha for subscales of TAI were: 0.607 for TAI-T, 0.839 for TAI-W and 0.869 for TAI- E in the previous study (Hamzah et al., 2018) on TA among nursing students in Malaysia, the researcher adapted the TAI and administer this instrument in this study.

INTERVENTION

The study utilized Emotional Freedom Technique (EFT), a form of complementary and alternative therapy. The intervention occurred in designated rooms at the nursing institution's campus. The EFT intervention was conducted in groups of two to five participants. Two group treatment sessions were conducted over two consecutive weeks, three months prior to the students' subsequent final examination. This provided students with significant test anxiety the time to practice the EFT intervention before to their final examination. All participants received the EFT handouts detailing the basic method, including a comprehensive description of the steps and sequence, along with a written script for the verbalization component.

DATA ANALYSIS

Data was collected, coded and analyzed using the SPSS (Statistical Package for the Social Sciences) software version 26.0.

RESULTS AND DISCUSSION

Forty-four students engaged in the intervention group, while forty-six students were included in the control group. The intervention group comprised participants from three nursing institutions, while the control group consisted of participants from two nursing institutions.

The TAI scores were classified into four categories: 20-35 (no anxiety), 36-50 (mild anxiety), 51-65 (moderate anxiety), and 66-80 (severe anxiety). In the intervention group 86.4 percent of respondents exhibited moderate anxiety prior to the intervention, while 13.6 percent experienced severe anxiety. After the intervention, 11.4 percent of the respondents exhibited no anxiety, 56.8 percent experienced mild anxiety, 27.3 percent displayed moderate anxiety, and merely 4.5 percent suffered from severe test anxiety. This signifies a substantial decrease in test anxiety levels among respondents in the intervention group following the EFT intervention (Table 1).

In the control group, 2.2 percent of respondents had mild anxiety prior to the intervention, while 97.8 percent displayed moderate anxiety. After the intervention in the control group, 6.5 percent of respondents exhibited no anxiety, 45.7 percent experienced mild anxiety, 37.0 percent displayed moderate anxiety, and 10.9 percent suffered from severe test anxiety. Although there was a notable decrease in test anxiety levels among respondents with moderate anxiety in the control group following the intervention, there emerged respondents exhibiting severe test anxiety, in contrast to the absence of such respondents during the pre-intervention period.

Table 1. Prevalence of test anxiety pre and post intervention in intervention and control group

Category of test anxiety	Intervention group		Control Group	
	Pre-intervention n (%)	Post intervention n (%)	Pre-intervention n (%)	Post intervention n (%)
No anxiety	0 (0)	5 (11.4)	0 (0)	3 (6.5)
Mild anxiety	0 (0)	25 (56.8)	1(2.2)	21 (45.7)
Moderate anxiety	38 (86.4)	12 (27.3)	45 (97.8)	17 (37.0)
Severe anxiety	6 (13.6)	2 (4.5)	0 (0)	5 (10.9)

Following the implementation of the EFT intervention, there was a noticeable and meaningful reduction in the mean scores for all three subscales - TAI total, worry, and emotionality. These results indicate the positive impact that EFT can have on nursing students, and it serves as an excellent example of how alternative therapies can be used to improve overall well-being and mental health. These findings were consistent with an earlier study among Turkish nursing students where EFT performed before an exam showed a reduction in TA (Irmak et al., 2019).

A significant difference in TA scores between the intervention and control groups in the TAI total and emotionality subscale was observed, with a p-value of < 0.5 . However, in the TAI worry subscale, no significant difference was observed in the TA scores. The result of this study aligns with a previous one, indicating that the use of the Emotional Freedom Technique (EFT) intervention is a highly effective method in alleviating exam anxiety and helping the nursing student to better cope with exam anxiety and other anxiety indicators. This finding is consistent with a previous study that also demonstrated the efficacy of EFT intervention in helping individuals cope with anxiety in general and in a separate experiment conducted in India with 100 nursing students by Krishnamurthy and Sharma (2019) EFT significantly reduced TA in the intervention group compared to the control group.

CONCLUSION

Even though TA is an ongoing issue that cannot be ignored while exams continue to be a

part of academic life, this study highlights the importance of addressing this issue. The findings of this study have shed light on the prevalence of TA among nursing students in Selangor, revealing that certain demographic factors such as household income and ethnicity can impact this condition. This is a significant finding, as TA is a persistent issue that can harm academic performance, future career opportunities, and overall quality of life. It is, therefore, crucial to address this issue and provide effective interventions for those experiencing TA. Educators in the academic field should provide timely interventions to reduce test anxiety. While EFT has been found to be effective, the impact of prolonged use EFT on test anxiety must be researched further in the future. Additionally, further research on EFT in reducing test anxiety should be conducted among other health care university students.

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STRESS, ANXIETY AND DEPRESSION; AND THE COPING STYLE AMONG NURSES IN PUBLIC HOSPITAL, MALAYSIA

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ABSTRACT

Introduction: Stress, anxiety, and depression are different matters, yet it is an emotional response for everyone that happens occasionally. These are the typical reactions of all individuals to challenges in human life. **Aims:** To assess stress, anxiety, and depression and the coping style among nurses in Hospital Ampang and to identify the association between stress, anxiety, and depression with the demographic characteristics. **Methodology:** In a cross-sectional study utilising convenience sampling, 251 nurses participated through online questionnaires comprising three sections. Section A: Sociodemographic characteristics, Section B: DASS-21 scale, and section C: 28-item Brief-COPE scale. Descriptive statistics (frequency, percentage, mean, and standard deviation) are used to determine stress, anxiety, and depression and to identify the coping style. Hence, the association between stress, anxiety, and depression and the demographic characteristics was examined by the Chi-square test. **Results:** The majority of the respondents scored stress, anxiety, and depression at an average level. Several coping methods were implemented, including problem-focused, emotion-focused, and avoidant-focused. Additionally, no significant association between stress and demographic characteristics was identified ($p > 0.05$). However, there was a significant association between anxiety and age, ethnicity, and marital status ($p < 0.05$), and there was a significant association between depression and marital status and duty ward ($p < 0.05$). **Conclusion:** This study has significant implications for various stakeholders. For researchers and healthcare management professionals, these findings offer a deeper understanding of the challenges faced by nurses and effective coping mechanisms. This study is a foundational platform for future research efforts, encouraging a more comprehensive exploration of mental health in nursing.

Keywords: Nurses, Stress, Anxiety, Depression, Coping Style

INTRODUCTION

Nursing is often recognised as a very demanding profession. Nurses dedicate most of their time to attending to patients and administrative duties. It may be said that all nurses possess experience with stress, anxiety, and depression since these are prevalent issues encountered by individuals in their personal and professional lives. Nevertheless, the degree and variables that impact these stress, anxiety, and depression issues vary for each person. Multiple previous studies have shown a significant prevalence of stress, anxiety, and depression. Studies have also examined the efficacy of coping methods for managing stress. In other study conducted in Malaysia, similar to the current study but focusing on Medical Officers, it was found that anxiety (28.6%) was the predominant factor contributing to psychological distress among medical officers who worked in the Emergency Department in Malaysian hospitals. This was followed by depression (10.7%) and stress (7.9%) (Yahaya et al., 2018).

METHODOLOGY

Research Design

A quantitative cross-sectional study among 271 nurses in Hospital Ampang, Selangor, Malaysia.

Settings

The setting of this study was done in Hospital Ampang.

Sampling design

Convenience sampling was used.

Sample size

The sample size was calculated using the Raosoft calculator. The total number of nurses in Hospital Ampang was 917 at a confidence level (CI) of 95%, a 5% margin of error with a 50% response distribution, and the required sample size was 271 (N=271). The automated Raosoft sample size calculator recommended a sample of N= 271.

Inclusion and exclusion criteria

Nurses working over six months were included, while those on unpaid or extended medical leave were excluded from the study.

Research instrument

The study involved 251 nurses from Hospital Ampang and used DASS-21 and Brief-COPE questionnaires. A pilot study tested 30 respondents, yielding Cronbach's alpha values of 0.931 for DASS-21 and 0.803 for Brief-COPE.

Data collection and analysis

Data were collected via Google Forms, analyzed using Excel and SPSS 29.0. Descriptive and inferential statistics, including frequency distribution, central tendency, and Chi-square tests, were used to assess stress, anxiety, and depression.

RESULTS AND DISCUSSION

The prevalence of stress, anxiety and depression among nurses in Ampang Hospital

Table 3.1 showed, majority respondents had normal stress levels (78.1%), while a small minority (0.8%) experienced very severe stress.

Table 3.1 The level of Stress

Level	Frequency (n)	Percentage (%)
Normal	196	78.1
Mild	26	10.4
Moderate	23	9.2
Severe	4	1.6
Very Severe	2	0.8
Total	251	100

*Note: n=251

Table 3.2 shows the level of anxiety. Majority of respondents have normal level of anxiety with 145 nurses (57.8%) followed by mild with 52 nurses (20.7%), moderate with 28 nurses (11.2%) and very severe with 18 nurses (7.2%). Meanwhile, the minority of respondents have severe with 8 nurses (3.2%).

Table 3.2 The level of Anxiety

Level	Frequency (n)	Percentage (%)
Normal	145	57.8
Mild	52	20.7
Moderate	28	11.2
Severe	8	3.2
Very Severe	18	7.2
Total	251	100

*Note: $n=251$

Table 3.3 shows most respondents had normal depression levels (73.3%), while a smaller portion experienced mild (15.9%), moderate (6.4%), or severe depression (3.6%) and 0.8% 2 nurses of respondents had very severe depression.

Table 4.8 The level of Depression

Level	Frequency (n)	Percentage (%)
Normal	184	73.3
Mild	40	15.9
Moderate	16	6.4
Severe	9	3.6
Very Severe	2	0.8
Total	251	100

*Note: $n=251$

The frequency of coping style among nurses in Ampang Hospital

The study examined problem-focused, emotion-focused, and avoidant coping strategies among nurses. For problem-focused coping, the highest mean was for "thinking hard about steps to take" ($M=2.876$, $SD=0.914$), while "taking action to make the situation better" had the lowest ($M=2.219$, $SD=1.133$). In emotion-focused coping, the highest mean was "praying or meditating" ($M=3.314$, $SD=0.963$), and the lowest was "making fun of the situation" ($M=1.442$, $SD=0.726$). For avoidant coping, the highest mean was "doing something to think about it less" ($M=2.701$, $SD=0.981$), while "refusing to believe it happened" had the lowest ($M=1.442$, $SD=0.663$). Various reactions were observed across all coping strategies.

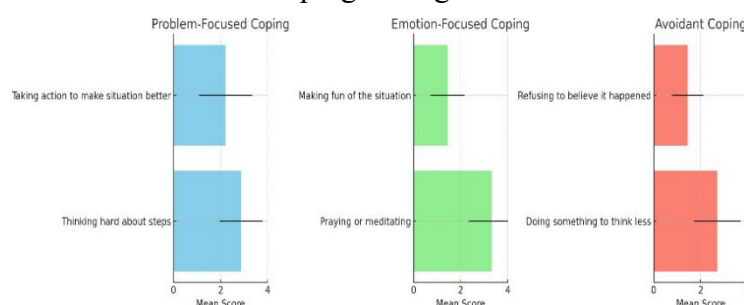


Figure 3.1 The graph represents the mean scores and standard deviations for coping strategies

The association between stress, anxiety and depression with the demographic characteristics of the respondents

The study explored the association between stress, anxiety, depression, and demographic characteristics of nurses. For stress, no significant associations were found with age, gender, ethnicity, marital status, working hours, night shifts, or duty ward ($p > 0.05$). For anxiety, significant associations were found with age, ethnicity ($p=0.004$), and marital status ($p=0.003$) when $p<0.05$, while gender, working hours, night shifts, and duty ward showed no significant association. For depression, significant associations were found with marital status ($p=0.035$) and duty ward ($p=0.000$) when $p<0.05$, while age, gender, ethnicity, working hours, and night shifts were not significant.

CONCLUSION

The study examined stress, anxiety, depression, and coping styles among 251 nurses at Ampang Hospital. Most nurses had average levels of stress, anxiety, and depression, indicating they managed work-related challenges well. Coping strategies included problem-focused, emotion-focused, and avoidant coping, which helped alleviate stress, anxiety, and depression. Significant associations were found between anxiety and age, ethnicity, and marital status, as well as between depression, marital status, and duty ward. The findings emphasize the need for effective coping strategies to maintain nurses' well-being and job effectiveness.

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FACTORS ASSOCIATED WITH PRENATAL IRON AND FOLIC ACID SUPPLEMENTS CONSUMPTION AMONG PREGNANT WOMEN IN HOSPITAL AL-SULTAN ABDULLAH

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ABSTRACT

Iron deficiency anaemia is the most common complication that pregnant women experience during pregnancy. The consumption of iron and folic acid is significantly related to addressing the problem. This study applied the Community of Inquiry (CoI) Framework to explore the cognitive, social, and teaching presences that shape maternal knowledge, attitudes, and barriers influencing IFA supplement consumption at Hospital Al-Sultan Abdullah. Methods: A cross-sectional survey was conducted among 240 pregnant women attending antenatal care. A self-administered questionnaire assessed participants' knowledge, attitudes, and factors influencing IFA supplement consumption. Results: The majority of participants demonstrated moderate cognitive presence, with a mean knowledge score (SD) of 9.63 (3.71). Social presence, as reflected in attitudes towards IFA, was generally high, with a mean score (SD) of 21.29 (3.67). Significant differences were found between education levels and attitudes ($p = 0.028$). The factors influencing IFA supplement consumption with a mean (SD) of 1.88 (3.47) and significant results between the history of pregnancies and factors of IFA supplement consumption ($p\text{-value} < 0.001$). Conclusion: The study highlights the importance of fostering cognitive and social presence through targeted educational efforts to improve understanding and attitudes toward IFA supplements. Strengthening teaching presence, particularly by healthcare providers, could improve the understanding, attitude, and factors of IFA and increase adherence toward IFA supplement consumption.

Keywords: Attitudes towards IFA, Community of Inquiry, Iron and Folic Acid Supplements, Maternal Health, Maternal Knowledge

INTRODUCTION

Iron deficiency anemia (IDA) is a prevalent nutritional issue among pregnant women globally, arising from the body's inability to produce sufficient hemoglobin due to a lack of iron (Mayo Clinic, 2021). IDA poses significant health risks to both the mother and fetus, potentially affecting fetal development and maternal health. The World Health Organization (WHO) estimates that nearly 37% of pregnant women worldwide suffer from IDA, with a higher prevalence of 56% in developing countries, compared to 18% in developed nations (Mabuza et al., 2021). To address these risks, WHO recommends that all pregnant women take daily supplements of 60 mg of iron and 400 mcg of folic acid to reduce the prevalence of iron deficiency and prevent complications during pregnancy (Sanin et al., 2023).

Several factors contribute to poor iron and folic acid (IFA) supplement consumption among pregnant women, including insufficient knowledge, negative attitudes, and various barriers. In Eswatini, knowledge about the role of iron and folic acid supplements during pregnancy remains insufficient (Mabuza et al., 2021). Lencha et al. (2023) state that women with good knowledge of iron supplementation are six times more likely to comply than those with low knowledge. Fear of having a large fetus, forgetfulness, and side effects are common factors influencing pregnant women's attitudes toward IFA supplement consumption (Ridwan & Shafi, 2021). According to Mabuza et al. (2021), the main barriers to pregnant women's adherence to IFA supplements include side effects and forgetfulness.

Additionally, lifestyle factors, particularly among pregnant women in urban areas like those attending Hospital Al-Sultan Abdullah, may also influence adherence. Few studies have examined the knowledge, attitudes, and barriers to IFA supplement consumption among pregnant women at Hospital Al-Sultan Abdullah. Thus, this study aims to explore the knowledge, attitudes, and barriers affecting IFA supplement consumption among pregnant women at Hospital Al-Sultan Abdullah, providing insights to improve adherence and reduce pregnancy-related complications.

METHODOLOGY

Study Setting, Design and Participants

The study was conducted at Hospital Al-Sultan Abdullah in Puncak Alam, Selangor. It was located roughly 20 km northwest of Shah Alam and has treated over a million patients since its opening. The study focused on pregnant women attending this hospital. This cross-sectional study took place between February 22 and May 30, 2024, investigating factors influencing prenatal iron and folic acid (IFA) supplement consumption among pregnant women. The target population consisted of women aged 18 to 45, from primigravida to gravida five. Those with chronic diseases, healthcare professionals, or diagnosed with anaemia or blood disorders were excluded. A total of 240 women participated.

Ethical Considerations

The ethics approval was given by University Research Ethic Committee (FERC/FSK/MR/2023/00302)) and the Hospital Research Ethic Committee (500-PJI

(18/4/07)). Informed consent was obtained, and participants' confidentiality and anonymity were maintained.

Sample Size and Sampling Technique

The sample size was calculated to be 282, considering a 10% dropout rate from a population of 763, obtained from the hospital record. Simple random sampling was used, ensuring equal participation opportunities. Out of the selected participants, only 240 women agreed to participate.

Data Collection Instruments

The study adapted a questionnaire from Mabuza et al. (2021), entitled “Prevalence of iron and folic acid supplements consumption and associated factors among pregnant women in Eswatini: a multi- centre cross-sectional study”. The questionnaire initially in English, then it underwent backward and forward translation to ensure cultural and linguistic relevance for Malay-speaking participants. A pilot study was conducted to validate its use for pregnant women in Malaysia.

Variables measurement

Independent variables

Included socio-demographic data such as age, marital status, education, employment, living area, family income, and pregnancy history, as well as partner’s details.

Knowledge

Assessed by a score (0–13) based on identifying sources of iron and folate, the correct timing for supplement intake, and benefits/consequences of IFA consumption. Cronbach’s alpha: 0.72

Attitude

Attitude toward IFA supplement consumption valuated by a Likert scale (5–25), measuring agreement with statements about IFA supplementation. Cronbach’s alpha: 0.77.

Barriers

The barriers to IFA supplement consumption were closed-ended questions to measure the barriers influencing IFA consumption among pregnant women, with scores ranging from 0 to 13. Cronbach’s alpha: 0.79.

Data analysis

The data collected in the study were analyzed using SPSS version 28.0. The first and second objectives were identifying the knowledge, attitude, and barriers to IFA supplement consumption among pregnant women in Hospital Al-Sultan Abdullah UiTM were use descriptive statistics by calculating the means, standard deviations, frequency, and percentage of the data. The third and fourth objectives were to determine the relationship between knowledge, attitude, factor of IFA supplement consumption, and socio-demographics among pregnant women in Hospital Al-Sultan Abdullah UiTM, which was analyzed using a Kruskal-

Wallis and Mann-Whitney test with the p- value < 0.05 indicate the data was statistically significant.

RESULTS AND DISCUSSION

Table 1. Knowledge, Attitudes, Barriers Toward Iron and Folic Acid Supplement Consumption Among Pregnant Women

Variable	Category	Frequency (n)	Percentage (%)
Knowledge			
List of three food sources of iron	All three correct	171	71.3
	Only two correct	51	21.3
	Only one correct	14	5.8
	No correct	4	1.7
List of three food sources of folate	All three correct	119	49.6
	Only two correct	72	30.0
	Only one correct	31	12.9
	No correct	18	7.5
When should pregnant women start taking IFA	Correct	59	24.6
	Incorrect	181	75.4
List of three benefits of taking IFA	All three correct	106	44.2
	Only two correct	84	35.0
	Only one correct	42	17.5
	No correct	8	3.3
List of three consequences of not taking IFA	All three correct	130	54.2
	Only two correct	72	30.0
	Only one correct	29	12.1
	No correct	9	3.8
Attitudes			
IFA is good for the fetus	Strongly agree	193	80.4
	Agree	44	18.3
	Not sure	2	0.8
Pregnant women should adhere to IFA	Strongly agree	182	75.8
	Agree	55	22.9
IFA results in having big babies	Not sure	128	53.3
IFA leads to unsuccessful pregnancies	Disagree	88	36.7
IFA is only taken if there is a problem in pregnancy	Strongly disagree	98	40.8
Barriers/Factors			
Forgetfulness		131	54.6
Side effects		128	53.3
Safe previous pregnancies without IFA		36	15.0
Dislike of medication		56	23.3

Partner's refusal	2	0.8
In-law's refusal	1	0.4
Distance to the facility is far	17	7.1
Inability to meet transportation expenses	7	2.9
Advised by friends or relatives not to take IFA	6	2.5
Use of traditional medicine	20	8.3
Supplied with tablets that did not last until next visit	29	12.1

Variable	Category	Frequency (n)	Percentage (%)
Out of stock in the facility		20	8.3

Mean knowledge score (SD)	9.63 (3.71)
Mean attitude score (SD)	21.29 (3.67)
Mean barrier score (SD)	1.88 (3.47)

The findings of this study highlight the moderate level of knowledge among pregnant women regarding iron and folic acid (IFA) supplement consumption. A significant number of participants were able to identify multiple iron-rich food sources, reflecting a strong awareness of preventing iron deficiency anemia (IDA). However, a noticeable knowledge gap existed regarding folate-rich foods, as only 49.6% could identify three sources. Additionally, many participants were unclear about when to start IFA supplementation, indicating a lack of adequate guidance that echoes findings from previous studies, such as those by Titaley et al. (2020) and Nazari et al. (2021). Despite understanding the benefits and consequences of IFA consumption, the gap in knowledge about timing and folate sources underscores the need for targeted educational interventions.

The participants demonstrated generally positive attitudes toward IFA supplementation, with the majority agreeing that IFA is beneficial for fetal health. This aligns with findings from Haider et al. (2019), who reported a similar recognition among pregnant women regarding the importance of IFA. However, misconceptions about IFA potentially leading to larger babies or being unnecessary unless problems arise were prevalent, echoing concerns noted by Gebreamlak et al. (2020) and Titaley et al. (2020). Furthermore, barriers such as forgetfulness and side effects were commonly reported, suggesting that these issues need to be addressed to improve adherence.

Table 2. Relationship between Knowledge, Attitude and Barriers of Iron and Folic Acid Supplement Consumption and Socio-Demographics among Pregnant Women

Variable	Knowledge Mean (SD)	P-value (Knowledge)	Attitude Mean (SD)	P-value (Attitude)	Barrier Mean (SD)	P-value (Barrier)
Participant's Age						
18 - 24	8.50 (3.54)	0.811	18.00 (2.83)	0.268	2.50 (0.71)	0.309
25 - 30	9.78 (2.19)		21.15 (2.98)		1.67 (2.03)	
31 - 45	9.56 (2.47)		21.42 (2.49)		2.01 (2.10)	
Marital Status						
Married and living together	9.55 (2.41)	0.078	21.22 (2.68)	0.129	1.83 (2.04)	0.124
Married but not living together	10.55 (1.76)		22.10 (2.69)		2.55 (2.31)	
Level of Maternal Education						
Secondary	10.06 (2.11)	0.435	20.00 (2.69)	0.028*	1.82 (2.04)	0.915
Tertiary	9.60 (2.39)		21.39 (2.67)		1.90 (2.08)	
Employment Status						
Unemployed	9.93 (2.03)	0.640	20.75 (2.91)	0.352	2.30 (2.12)	0.170
Self-employed	9.88 (2.27)		21.67 (2.43)		1.88 (1.62)	
Employed	9.50 (2.48)		21.36 (2.67)		1.79 (2.14)	
Residence						
Urban	9.67 (2.33)	0.777	21.21 (2.65)	0.206	1.87 (2.10)	0.579
Rural	9.43 (2.56)		21.66 (2.84)		2.00 (1.98)	
Family Income						
Less than RM2000	11.00 (.)	0.095	20.00 (.)	0.791	2.00 (.)	0.952
RM2000 - RM3000	10.46 (2.21)		21.38 (2.80)		2.23 (2.92)	
More than RM3000	9.52 (2.38)		21.29 (2.68)		1.85 (1.95)	
History of Pregnancy						
None	9.14 (2.36)	0.079	20.50 (2.98)	0.168	1.22 (2.09)	< 0.001*
One	9.73 (2.36)		21.43 (2.67)		1.54 (1.94)	
Two	10.15 (2.25)		21.48 (2.56)		2.48 (2.03)	
Three	8.97 (2.66)		21.06 (2.59)		2.62 (1.95)	
Four	9.86 (2.03)		22.41 (2.34)		1.95 (2.34)	
More than four	9.77 (2.56)		21.54 (2.54)		1.08 (1.32)	

*Bold values indicate significance at $p < 0.05$

*P-values are based on Kruskal-Wallis or Mann-Whitney tests

The study also found no significant relationships between socio-demographic factors and knowledge of IFA, although a significant link was identified between maternal education level and attitudes, with higher education correlating with more positive perceptions. Additionally, a significant relationship was found between pregnancy history and barrier that affecting IFA consumption, with multiparous women experiencing different barriers, such as forgetfulness and side effects, as noted by Haider et al. (2019).

Hence the study emphasizes the need for targeted educational programs to address knowledge gaps, particularly about folate sources and IFA timing, while also considering the socio-demographic factors that influence attitudes and barriers to adherence. By addressing these misconceptions and barriers, adherence to IFA supplementation among pregnant women can be significantly improved.

CONCLUSION

In conclusion, the study revealed moderate knowledge and positive attitudes toward IFA supplementation, with higher education levels associated with better attitudes and multiparous women facing more barriers. Despite reliable data, limitations included sampling from a single hospital and potential memory bias. The results emphasize the need for targeted education, reminder systems, and counseling to enhance IFA adherence and improve maternal and fetal health outcomes.

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UNVEILING THE HEART OF HEALTHCARE: A COMPREHENSIVE ANALYSIS OF CARING BEHAVIOUR LEVELS AMONG NURSES

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ABSTRACT

In the early 1800s, Florence Nightingale accepted an essential component of nursing practice: caring. Nurses treat people in their experience of sickness, which is a universal truth. Caring behaviour among nurses is vital to healthcare delivery, impacting patient outcomes and overall quality of care. This study explores the caring behaviour level among nurses at Hospital Shah Alam. A cross-sectional design in this study used proportional stratified sampling to select 67 respondents from different departments, and simple random sampling was used to select participants, each assigned a unique identification number to protect confidentiality. The inclusion criteria specified registered nurses with over one year of working experience and direct contact with patients, while nurses on extended leave and managerial roles were excluded. The questionnaire was validated and consisted of two sections. Section A focuses on demographic factors, such as age and year of service, while Section B, the CBI-24, measures caring behaviour among nurses. The data was analyzed using SPSS version 26. The average caring behaviour score of $\mu=3.47$ ($SD=0.51$) suggests a generally high level of caring behaviour. The mean score for each cut point was low at 29.35% ($\mu= 73.35$), medium at 33.64% ($\mu= 84.09$), and high at 37% ($\mu= 92.5$). In- depth for each department, the average score: Obstetric and gynecological ($\mu = 3.29$), Medical ($\mu=3.64$) Surgical ($\mu=3.48$); meanwhile, the Mann-Whitney U test ($p< 0.05$) indicates a statistically significant.

Keywords: Caring Behaviour, Healthcare, Level, Nurses

INTRODUCTION

Caring in nursing involves instrumental (technical) and expressive (affective) skills. Technical care includes serving medications, exhibiting abilities, teaching, and solving difficulties to improve patients' health and comfort. Active listening, respecting patients, demonstrating attention to their feelings, and creating trust, faith, and honesty are all vital parts of expressive care. Healthcare today emphasizes patient-centered care, where nurses must do both technical and emotive tasks. Thus, nursing education emphasizes caring behaviours and attitudes (Kieft et al., 2014). Several studies have explored different factors influencing caring behaviour among nurses in various settings.

Tarberg et al. (2020) identified five components of caring behaviour among nurses and healthcare providers: being available, providing communication, exhibiting compassion, demonstrating competency, and promoting empowerment. This highlights the multifaceted nature of caring behaviour and the importance of these components in enhancing patient care. The level of caring behaviour among nurses is also a crucial aspect of nursing practice that significantly impacts patient care and satisfaction. Kibret et al. (2022) highlighted that while nursing practice centers on caring, many nurses may not consistently exhibit caring behaviours when caring for patients. Another study reported that 80.3% of nurses exhibited high levels of caring behaviour, with professional-technical aspects scoring 82.9% and psychosocial factors at 81.5%. This indicates a tendency for nurses to prioritize technical skills over emotional aspects of care (Oluma et al., 2020).

Meanwhile, Ashagere et al. (2023) highlighted Indonesia's higher level of caring behaviour at 64.7%, while another study from Gondar reported 68.2%. This suggests regional differences in nursing practices and environments that may influence these outcomes. In recent studies, technical skills are often given more weight than care's emotional and social aspects. More in-depth studies are needed to determine how knowledge, empathy, respect, and connections with others affect caring behaviour levels (Alikari et al., 2022). This emphasizes the importance of understanding and enhancing caring behaviour levels among nurses. In light of these findings, this study aims to explore the caring behaviour level among nurses at Hospital Shah Alam.

METHODOLOGY

Research design

The study design is cross-sectional to determine the caring behaviour levels among nurses. This allows a single point-in-time data approach for data collection, enabling researchers to gather information without incurring significant costs or requiring long-term commitment.

Sampling method

In this study, 67 respondents were selected using a proportional stratified sampling method to ensure the sample reflected the distribution of nursing staff across different hospital departments. This technique maintained the ratio of respondents from each department based on their size, enhancing the sample's representativeness and providing a better understanding of caring behaviour in various clinical settings. In the second stage of sampling, simple random sampling was used. Nurses who met the inclusion criteria were included in the study. To protect confidentiality, each respondent was assigned a unique identification number. A random number generator was then used to select participants invited to participate in the research. Sample size within the department:

- 1) Medical department (n=26)
- 2) Obstetric and gynaecology department (n= 28)
- 3) Surgical department (n=13)

Research Setting

This study was conducted among nurses at Hospital Shah Alam (HSAS) because it has the most significant number of workers in the multidisciplinary department. This setting allows for the direct engagement of the target population, providing a relevant and accessible group for determining caring behaviour levels among nurses.

Inclusion and Exclusion Criteria

Participants are registered nurses with at least one year of professional experience and direct contact with patients. The inclusion criteria also include nurses who work under contract. For exclusion criteria, nurses on extended leave, including those on long medical certificates, absent from work, or on study leave, were excluded from this study.

Research Instrument

The questionnaire was validated and consisted of two sections. Section A focuses on sociodemographic factors: age and year of services. For Section B, the Caring Behaviour Instrument (CBI-24) measures caring behaviour among nurses. It is adapted from Wu et al. (2006) and consists of 24 questions scored from 1 to 4 (4 Likert Scale). The data was analyzed using SPSS version 26.

RESULTS AND DISCUSSION

The results of this study provide the total caring behaviour levels among nurses. The high Cronbach's Alpha value of 0.948 indicates strong internal consistency for the caring behaviour scale, suggesting that the measurement tool is reliable.

Table 1 Sociodemographic Characteristics of Respondents

Sociodemographic Insights	
Characteristic	Percentage (%)
Age (21-30 years)	20.9%
(31-40 years)	68.66 %
(>40 years)	10.45%
Years of Service (1-5 years)	25.37%
(6 - 10years)	34.33%
(>10 years)	40.3 %

The socio-demographic data revealed that most respondents are young to middle-aged adults, predominantly between 31 and 40 (68.66%). Additionally, the data indicate that most respondents have over ten years of service (40.3%), which may correlate with their caring behaviours.

Table 2 Caring Behaviour Scores and Distribution
Caring Behaviour Analysis

Characteristic	Percentage (%)
Percentage Distribution of Caring Behaviour Categories	
Low	29.35
Medium	33.64
High	37.00
Caring Behaviour Dimensions	
Assurance	68.17
Knowledge and Skill	72.74
Respect	67.76
Connectedness	68.54

The statistical analysis indicates significant differences between the low, medium, and high caring levels, suggesting distinct behavioural patterns among participants.

The data reveals three distinct caring behaviour profiles with clear statistical separation. The high caring group 37.01% shows the strongest and most consistent caring behaviours ($\mu=3.85$, $SD=0.11$), while the medium group 33.64% displays a moderate engagement with slightly more variability ($\mu=3.50$, $SD=0.13$). The low-caring group 29.35% demonstrates basic caring levels with the most consistency ($\mu=3.06$, $SD=0.09$).

Table 3 Caring Behaviour Scores according to department

Department	Percentage (%)
Obstetric and gynaecology	65.86%
Medical	72.78%
Surgical	69.51%

The medical department leads with a score of 72.78%, indicating a relatively lower performance of caring behaviour levels than the other departments. The surgical department follows with 69.51%, and the obstetrics and gynaecology department 65.86%. This suggests that the obstetrics and gynaecology department might excel in the evaluated criteria, while the medical department may have areas for improvement.

Based on the non-parametric analysis, the Mann-Whitney test shows that it is statistically significant with a p-value <0.05 . The data reveals three distinct caring behaviour profiles among healthcare professionals, with the high caring group (37.01%) demonstrating the strongest and most consistent behaviors ($\mu=3.85$, $SD=0.11$), while the medium group (33.64%) shows moderate engagement with greater variability ($\mu=3.50$, $SD=0.13$). The low-caring group (29.35%) exhibits basic caring levels but with notable consistency ($\mu = 3.06$, $SD = 0.09$). Statistically significant differences were confirmed through the Mann-Whitney test ($p < 0.05$). Departmental performance highlights that the medical

department scored the lowest at 72.78%, indicating a need for improvement in caring behaviors, followed by the surgical department at 69.51%. The obstetric and gynaecology department, despite having the lowest overall score at 65.86%, may excel in specific evaluated criteria, suggesting potential best practices worth investigating. The data clearly illustrates a spectrum of caring behavior profiles across departments, with significant implications for patient care quality. The statistical significance highlights the need for targeted interventions to elevate caring behaviours, particularly within the medical department. Overall, these findings underscore the importance of fostering a culture of caring behaviour across all departments to enhance patient care quality.

CONCLUSION

These findings emphasize the necessity of ongoing professional development and focused interventions to improve caring behaviours, especially in departments that may be underperforming. By highlighting the enhancement of compassionate practices throughout all departments, healthcare organizations can elevate patient outcomes and satisfaction, fostering a more comprehensive approach to nursing care. Future initiatives must target identified deficiencies, advocate for optimal practices in patient engagement, and guarantee that all nursing personnel feel supported in their caregiving responsibilities.

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KNOWLEDGE, ATTITUDE AND PRACTICES OF ASTHMA FOOD TABOOS AND ITS ASSOCIATED FACTORS AMONG PARENTS OF ASTHMATIC CHILDREN IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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ABSTRACT

Asthma food taboos refer to dietary restrictions believed to trigger asthma attacks, potentially affecting the medical management of asthma. This study aimed to assess the knowledge, attitude, and practice (KAP) of asthma food taboos and their associated factors among parents of asthmatic children at Hospital Universiti Sains Malaysia (HUSM). A cross-sectional study was conducted using a Google Forms survey, with 344 eligible parents participating. Data were analyzed using SPSS version 27.0. Results showed that 59.9% of parents had poor knowledge of asthma food taboos, while 67.4% had a positive attitude towards them, and 61.3% practiced these taboos. There was no significant correlation between knowledge and attitude ($p=0.663$) or knowledge and practice ($p=0.683$). However, a significant correlation was found between attitude and practice ($p=0.001$). Sociodemographic factors such as age ($p=0.000$) and religion ($p=0.015$) were associated with the practice of asthma food taboos, whereas ethnicity ($p=0.069$) and educational level ($p=0.831$) showed no significant association. The study concluded that parents of asthmatic children generally possess poor knowledge but maintain positive attitudes and a high level of adherence to asthma food taboos. It is recommended that healthcare professionals increase awareness of how cultural beliefs influence dietary practices and promote education to improve the knowledge, attitude, and practice related to asthma management.

Keywords: asthma management, cultural belief, dietary restriction, asthma food

INTRODUCTION

Asthma is a chronic respiratory condition that affects millions of children worldwide, including in Malaysia, where 6.4% of the population suffers from the disease. Asthma impacts the airways, leading to symptoms like difficulty breathing, coughing, and wheezing, and requires ongoing management, especially in children. In many cases, parents play a crucial role in managing their child's asthma. However, cultural beliefs, particularly those related to food taboos, often influence how parents manage asthma. These food taboos, which involve avoiding certain foods believed to trigger asthma attacks, are deeply rooted in cultural traditions and may affect the effectiveness of asthma management. While some food restrictions may be harmless, they can become problematic when they replace proper medical treatment.

Despite the high prevalence of asthma and the influence of cultural practices on its management, there is a gap in the research regarding the knowledge, attitudes, and practices (KAP) of asthma food taboos among parents of asthmatic children. Previous research conducted in Kuantan, Malaysia, highlighted a high prevalence (46%) of asthma food taboos among patients, but no studies have specifically examined this issue in parents managing their children's asthma. This is a critical gap, as parents' adherence to food taboos may impact their willingness to seek medical treatment and follow proper asthma management protocols, potentially leading to

worse health outcomes for their children. Understanding the KAP of asthma food taboos among parents is vital for improving asthma care. Several factors influence the practice of asthma food taboos, including age, religion, ethnicity, and educational level.

Age is a significant factor, with older individuals more likely to follow food taboos due to cultural traditions and limited healthcare access during their time, as seen in both Asian and Ethiopian studies (Hassan et al., 2016; Ramulondi et al., 2021). Religion also plays a role, although it is more tied to cultural beliefs than religious doctrine. Studies show Christians, Hindus, and Buddhists are more likely to observe asthma food taboos compared to Muslims (Hassan et al., 2016), with practices like fasting influencing how medications are taken (Sukri et al., 2020). Ethnicity is another factor, with Malays being the most likely to practice asthma food taboos, driven by strong cultural and traditional beliefs (Koehler & Leonhaeuser, 2008; Connors et al., 2001). Lastly, education level affects the practice of asthma food taboos, with individuals with higher education showing less adherence to these practices due to better knowledge of asthma management (Hassan et al., 2016). Studies suggest that formal education fosters a better understanding of the importance of medical treatment over cultural food restrictions (Zepro, 2015).

The objective of this study is to determine the level of knowledge, attitude, and practice of asthma food taboos among parents of asthmatic children at Hospital Universiti Sains Malaysia (HUSM). The study also aims to determine the factors affecting practice of asthma food taboos. By investigating the factors associated with these practices, this study will provide insights that can inform healthcare providers in developing effective educational strategies and awareness programs. These programs would aim to promote evidence-based asthma management and reduce the reliance on cultural practices that may hinder proper treatment, ultimately improving asthma control and health outcomes in children.

METHODOLOGY

Study design and settings

This study utilized a cross-sectional design to assess the knowledge, attitude, and practice of asthma food taboos among parents of asthmatic children at Hospital Universiti Sains Malaysia (HUSM). The study's setting was at various clinics and the pediatric ward in HUSM. The sample size of this study was calculated using single proportion formula based on a previous study by (Mengie et al., 2020) as mean SD for practice of asthma food taboo is 16.15. A total of 344 parents with asthmatic children were required for this study with 10% dropout rate. Data collection was conducted over three months with the overall study period spanning from October 2023 to August 2024.

The target population consisted of parents of children diagnosed with asthma attending these healthcare facilities during the data collection period. Eligibility criteria included parents of children aged 2-17 years who live together and are able to communicate in Malay. Exclusion criteria were parents with underlying psychiatric diseases or those whose children were attending boarding school. Convenience sampling was employed, where eligible participants available at the clinics and ward were approached to participate.

Instruments

The study used a structured questionnaire to gather data on the knowledge, attitude, and practice of asthma food taboos among parents. This questionnaire was adapted from a previous study by Hassan et al. (2016) divided into four sections. The first section gathered socio-demographic data, including age, ethnicity, religion, marital status, educational level, occupation, and the

frequency of their child's asthma attacks. The second section assessed the parents' knowledge of asthma food taboos through 10 close-ended questions. Responses were classified as either good or poor knowledge based on the number of correct answers. The third section explored attitudes toward asthma food taboos, using seven questions with a 5-point Likert scale. A score of 18 or above indicated a positive attitude, while lower scores reflected negative attitudes. The final section assessed the practice of asthma food taboos, asking parents if they followed any taboos and, if so, to detail the types, reasons, and timing of their practices. The questionnaire was administered in Malay, as all participants were expected to understand the language, negating the need for translation. The reliability and validity of the questionnaire were established in prior research, with a Cronbach's alpha of 0.67 for both knowledge and practice sections (Hassan et al., 2016). Dependent variables in this study is practice of asthma food taboo and independent variables are knowledge and attitude of asthma food taboos, age, ethnicity, religion and educational level.

Data collection and data analysis

The ethical approval was obtained from the Human Research Ethics Committee of USM (USM/JEPeM/KK/23120945) with permission from the Director of Hospital USM. Data were collected using Google Forms, with participants accessing the questionnaire via a QR code. Eligible participants were approached at the clinics and wards, informed about the study, and provided with an information sheet. Consent was obtained electronically through the Google Forms platform. Participants completed the questionnaire in approximately 10-15 minutes, with the option to ask the researcher for clarification either in person or via WhatsApp.

Data were analysed using the Statistical Package for Social Sciences (SPSS) version 27.0. Descriptive statistics were used to summarize socio-demographic data, expressed as means, standard deviations, or frequencies. Pearson correlation tests and Pearson chi square were conducted to examine the relationship between knowledge, attitude, and practice, as well as sociodemographic factors. The level of significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

This study included 344 parents with median age of 48 years old (IQR=12). The majority of the respondents were females (52.3%), Malay (39.8%), Islam (38.7%), had secondary school education (53.8%) and were private sector employees (32.0%).

The study revealed that 59.9% of parents had poor knowledge regarding asthma food taboos, with many believing that consuming legumes, ice, and watermelon could trigger asthma attacks. However, 67.4% of parents had a positive attitude toward these taboos, despite lacking sufficient knowledge. The most practiced food taboos included avoiding ice water or cold drinks (62.5%), with in total 61.3% of parents practising asthma food taboos. Parents believed that following these food taboos would reduce asthma attacks (62.8%), and many based their practices on personal experiences or family beliefs.

There was no significant correlation between knowledge and attitude ($r = 0.024$, p -value 0.633) or between knowledge and practice ($r = 0.022$, p -value 0.683). However, a strong positive correlation was found between attitude and practice ($r = 0.817$, p -value < 0.001), indicating that parents with a positive attitude toward food taboos were more likely to practice them. Sociodemographic factors such as age and religion were significantly associated with the practice of asthma food taboos, with older parents and those of certain religious backgrounds more likely to follow these practices. Conversely, no significant association was found between ethnicity or educational status and the practice of food taboos (Table 1).

This finding aligns with a previous study by Mengie et al. (2020), where 65.3% of respondents also exhibited poor knowledge of asthma food taboos and 62.5% of respondents held positive attitudes toward asthma food taboos. The poor knowledge may be attributed to deeply ingrained multicultural beliefs passed down through generations, as highlighted by Raimi et al. (2022). Studies suggest that parents often rely on trial-and-error approaches when managing asthma without adequate asthma action plans (Peterson-Sweeney et al., 2003). This lack of proper knowledge could negatively affect the medical treatment of asthma, as emphasized by Hassan et al. (2016).

The findings suggest that cultural beliefs and personal experiences play a significant role in shaping parental practices regarding asthma food taboos. There is a need for better education on asthma management to address misconceptions and promote evidence-based practices, particularly among older and religious parents. However, the limitation of this study is this study's targeted area was limited to Hospital USM. Therefore, the study population's results do not accurately reflect the knowledge, attitude and practice of asthma food taboos among parents with asthmatic children in Kelantan.

Table 1 The Association between Selected Sociodemographic Factor and the Level of Practice Towards Asthma Food Taboos Among Parents with Asthmatic Children in HUSM. (N= 344).

Variables	Practice, n (%)	No practice, n (%)	χ^2	P value
Age (Years) Median (IQR)	55(10)	43 (10)	90.496	0.000
Ethnicity	95 (45.0)	42 (31.6)	7.103	0.069
Malay	42 (19.9)	36 (27.1)		
Chinese	47 (22.3)	31 (23.3)		
Indian	27 (12.8)	24 (18.0)		
Others				
Religion	93 (44.1)	40 (30.1)	12.349	0.015
Islam	35 (16.6)	31 (23.3)		
Buddha	43 (20.4)	25 (18.8)		
Hindu	19 (9.0)	25 (18.8)		
Kristian	21 (10.0)	12 (9.0)		
Others				
Educational status				
Primary school	9 (4.3)	5 (3.8)	0.878	0.831
Secondary school	112 (53.1)	73 (54.9)		
College/ Diploma	61 (28.9)	41 (30.8)		
Degree/ Master/ PhD	29 (13.7)	14 (10.5)		

CONCLUSION

The practice of asthma food taboos is high among parents with asthmatic children in HUSM. The level of knowledge of asthma food taboos did not determine the level of attitude and practice of asthma food taboos while the level of attitude of asthma food taboos determined the level of practice of asthma food taboos. It appears that changing practices and attitudes around asthma food taboos can be achieved by providing appropriate knowledge on these topics. Consequently, health practitioners must learn more about how culture influences diets and foods that could be harmful or fatal for people with asthma.

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THE ART AND SCIENCE OF CARING: A STUDY ON CARING BEHAVIOUR AMONG NURSES AT A PUBLIC HOSPITAL

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ABSTRACT

The principles of art and science form the basis of nursing practice, shaping how nurses engage with patients and provide holistic healthcare. This study explores the caring behaviour level and the relationship between sociodemographic factors and caring behaviour among nurses at Hospital Shah Alam. A cross-sectional design in this study used proportional stratified sampling to select 70 respondents from different departments, and simple random sampling was used to select participants, each assigned a unique identification number to protect confidentiality. The inclusion criteria specified registered nurses with over one year of working experience, while nurses on extended leave and managerial roles were excluded. The questionnaire was validated and consisted of two sections. Section A focuses on demographic factors: age, marital status, number of children, educational level, year of services, and time spent on clinical and shift work, while Section B, The CBI-24, measures caring behaviour among nurses. The data was analysed using SPSS version 26. The average caring behaviour score of $\mu=3.17$ ($SD=0.53$) suggests a generally high level of caring behaviour among respondents. The Kruskal- Wallis test (statistic = 355.13, $p \approx 9.83 \times 10^{-73}$) and ANOVA (with a very low p-value) confirm significant differences in caring behaviour levels among the groups based on sociodemographic variables. The unexpected cluster analysis highlights the middle-aged, married individuals with moderate education and service years exhibiting high caring behaviour, as well as those who are older, married individuals with higher education and service years.

Keywords: Art, Caring Behaviour, Nurses, Science

INTRODUCTION

The principles of art and science form the basis of nursing practice, shaping how nurses engage with patients and provide holistic healthcare. The caring aspect of nursing encompasses support and ethical considerations that play a crucial role in building strong connections with patients and improving their overall well-being. The current study stresses the need to recognize the factors playing a role in actions of nurses, particularly in diverse socio-demographic environments.

A study by Wei and Watson (2019) have noticed that care is not just a trait but can be developed through education and lifestyle. This resonates with the findings identified in Natan et al. (2021), which reported that nurses with advanced degrees have been found to provide care and perform caring practice with higher compassion. Also, that review cites the sociodemographic features like age or marital status, number of years serving, have a great bearing on the views held by nurses and the way they practice caring. Statistically, the recent survey that was conducted on nursing professionals proved that 78% of the respondents rated their caring behaviour as high, there were also negative correlation between years of service and levels of compassion satisfaction among the respondents (Permana et al., 2023). This suggests that nursing practice could benefit from well- structured education to improve the caring skill of nurses, especially those still new into the profession or less educated. It has been established that such caring attitudes among nurses exert a beneficial effect on the patients and their cooperation with the treatment (Watson., 2020). Kibret et al. (2022) mention in the study that 51.67% of nurses in the Haari region had good caring behaviour while 53.3% of nurses in Gamo demonstrated good caring behaviour (Ashagere et al., 2023).

In Malaysia, a study in Sabah highlighted that the mean score for caring behaviour among nurses was approximately 80.3%, indicating a generally high level of caring behaviour. However, research on specific regions like Sabah in Malaysia may not represent the entire country, limiting the generalizability of findings to other states or healthcare settings (Arsat et al., 2022). Besides, the Malaysian healthcare system lacks comprehensive studies and relies on anecdotal evidence without structured methodologies to assess outcomes on caring behaviour. There is a need for more structured research and data collection to quantify the impact of caring behaviour practice on health outcomes in the Malaysian context (Jawahir et al., 2021). In light of these findings, this study aims to explore the caring behaviour level and the relationship between sociodemographic factors and caring behaviour among nurses at Hospital Shah Alam.

METHODOLOGY

Research design

The study design is cross-sectional to determine the caring behaviour levels among nurses. This allows a single point-in-time data approach for data collection, enabling researchers to gather information without incurring significant costs or requiring long-term commitment.

Sampling method

In this study, 70 respondents were selected using a proportional stratified sampling method to ensure the sample reflected the distribution of nursing staff across different hospital departments. This technique maintained the ratio of respondents from each department based on their size, enhancing the sample's representativeness and providing a better understanding

of caring behaviour in various clinical settings. In the second stage of sampling, simple random sampling was used. Nurses who met the inclusion criteria were included in the study. To protect confidentiality, each respondent was assigned a unique identification number. A random number generator was then used to select participants invited to participate in the research. Sample size within the department:

- i. Orthopaedic department (n=20)
- ii. Operation theatre department (n=39)
- iii. Emergency department (n=11)

Research Setting

This study was carried out among nurses at Hospital Shah Alam (HSAS) because it has the greatest number of workers in the multidisciplinary department. This setting allows for the direct engagement of the target population, providing a relevant and accessible group for determining caring behaviour levels among nurses.

Inclusion and Exclusion Criteria

Participants are registered nurses with at least one year of professional experience. The inclusion criteria also include nurses who work under contract. For exclusion criteria, nurses on extended leave, including those on long medical certificates, absent from work, or on study leave, will be excluded from this study.

Research Instrument

The questionnaire was validated and consisted of two sections. Section A focuses on socio-demographic factors: age, marital status, number of children, educational level, year of services, time spent on clinical activities, and shift work. For Section B, the Caring Behaviour Instrument (CBI- 24) measures caring behaviour among nurses. It is adapted from Wu et al. (2006) and consists of 24 questions scored from 1 to 4 (4 Likert Scale). The data was analysed using SPSS version 26.

RESULTS AND DISCUSSION

The results of this study provide significant insights into nurses' caring behaviour and the participants' sociodemographic characteristics. The high Cronbach's Alpha value of 0.907 indicates strong internal consistency for the caring behaviour scale, suggesting that the measurement tool is reliable.

Table 1 Sociodemographic Characteristics of Respondents
Sociodemographic Insights

Characteristic	Percentage (%)
Age (31-40 years)	58.57
Marital Status (Married)	84.29
Number of Children (1-3)	50.00
Highest Level of Education (Diploma)	97.14
Years of Service (Over ten years)	47.14
Time Spent on Clinical Activities (More than 50%)	92.86
Shift Work	88.57

The socio-demographic data revealed that most respondents are young to middle-aged adults, aged between 31 and 40 (58.57%). Most respondents are married (84.29%) and have 1-3 children (50%). The educational background shows that a vast majority (97.14%) have attained a diploma as their highest education level, emphasising the necessity for targeted educational interventions to bridge potential knowledge gaps. Additionally, the data indicate that many respondents have over ten years of service (47.14%), which may correlate with their caring behaviours. The high percentage of respondents (92.86%) spending more than 50% of their time on clinical activities and the prevalence of shift work (88.57%) further contextualise the working environment of these nurses.

Table 2 Caring Behaviour Scores and Distribution
Caring Behaviour Analysis

Characteristic	Percentage (%)
Percentage Distribution of Caring Behaviour Categories	
Low	5.71
Medium	70.47
High	23.80
Caring Behaviour Dimensions	
Assurance	78.26
Knowledge and Skill	84.40
Respect	76.71
Connectedness	77.93

The average caring behaviour score of $\mu=3.17$ ($SD=0.53$) 77.93% suggests a generally high level of caring behaviour among respondents, with most scores clustering towards the higher end of the scale. The distribution of caring behaviour categories indicates that while 5.71% rated their caring behaviour as low, a substantial 70.47% rated it as medium, and 23.80% rated it as high. This indicates a predominantly positive perception of caring behaviour, particularly in areas such as assurance (78.26%), knowledge and skill (84.40%), respect (76.71%), and connectedness (77.93%).

The results from the Kruskal-Wallis test (statistic = 355.13, $p \approx 9.83 \times 10^{-73}$) and ANOVA (with a very low p-value) confirm significant differences in caring behaviour levels among the groups based on sociodemographic variables such as age, marital status, number of children, educational level, years of service, time spent on clinical activities, and shift work. These findings suggest that these sociodemographic factors play a crucial role in influencing the caring behaviour of nurses.

Table 3 Summary of Cluster Analysis, Each Group
Cluster Analysis

	Cluster 1	Cluster 2	Cluster 3
Age	2.5	1.68	3
Marital status	1.82	1.85	2
Number of children	2.32	1.55	3
Educational level	2	2	3
Years of service	3	1.6	3
Time spent in clinical	1	1.07	2
Shift work	1.21	1	2
Total caring behaviour	76.86	75.4	84

The cluster analysis further illustrates the diversity within the sample. Cluster 1 comprises middle-aged, married individuals with moderate education and service years who exhibit high caring behaviour. Cluster 2 includes younger, married respondents with fewer children and service years who show moderate caring behaviour. Finally, Cluster 3 comprises older, married individuals with higher education and service years who reflect high caring behaviour levels.

The findings from the study reveal valuable insights into the caring behaviour of nurses, indicating a generally high level of caring behaviour with an average score of $\mu = 3.17$ ($SD = 0.53$), where 77.93% of respondents reported a positive perception of their caring abilities. The distribution of scores shows that while 5.71% rated their caring behaviour as low, a significant 70.47% rated it as medium, and 23.80% rated it as high. This suggests that most nurses feel confident in their capacity to provide quality care, particularly in areas such as assurance (78.26%), knowledge and skill (84.40%), respect (76.71%), and connectedness (77.93%).

However, a small percentage of nurses rating their caring behaviour as low indicates a need for additional support or training to enhance their skills. Statistical analyses, including the Kruskal-Wallis test and ANOVA, confirmed significant differences in caring behaviour levels based on

sociodemographic variables such as age, marital status, number of children, educational level, years of service, time spent on clinical activities, and shift work. Older nurses and those with more years of service exhibited higher levels of caring behaviour, likely due to accumulated experience and maturity that enhance empathy and patient-centred care practices.

Additionally, higher educational attainment correlated with better knowledge and skills, further improving caring behaviours. Marital status and family dynamics also played a role; married nurses may draw on their personal caregiving experiences to inform their professional practice. The cluster analysis revealed three distinct profiles among the respondents: Cluster 1 consisted of middle-aged, married individuals with moderate education and service years who exhibited high caring behaviour; Cluster 2 included younger, married respondents with fewer children and service years showing moderate caring behaviour; while Cluster 3 comprised older, married individuals with higher education and service years reflecting high levels of caring behaviour.

These clusters highlight the diversity within the nursing workforce and suggest tailored interventions that could enhance caring behaviours across different demographic groups. For instance, younger nurses may benefit from mentorship programs to enhance their skills through experiential learning and support networks. In comparison, older nurses could serve as mentors or trainers for less experienced staff. This finding has a mean score of 77.93%, close to the latest finding in Malaysia. The "art" aspect emphasises the emotional and relational components of caring, which are influenced by sociodemographic factors such as age, marital status, and education. Understanding these influences can help nurses develop more empathetic and tailored care strategies. Conversely, the "science" aspect involves systematically assessing and measuring caring behaviours, as highlighted by the need for reliable measurement tools. By integrating the art and science of caring, nurses can enhance their practice, ensuring that care is compassionate and informed by evidence-based strategies. This holistic approach fosters an environment where nurses and patients

CONCLUSION

In summary, this study contributes to understanding the relationship between sociodemographic factors and caring behaviour among nurses. The findings highlight the sociodemographic factors are crucial in shaping nurses' caring behaviour. Understanding these clusters can inform strategies to support nurses, ultimately improving patient care outcomes. Future research should continue to reassess the measurement tools for caring to ensure they adequately capture these constructs in the context of healthcare work and additional variables such as burnout level to explore the complex relationship in caring behaviour.

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NURSES' KNOWLEDGE, ATTITUDE, AND, PRACTICE TOWARDS FALL PREVENTION ASSESSMENT AT KAJANG HOSPITAL

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ABSTRACT

Purpose: This study aimed to determine the nurses' knowledge, attitude, and practice toward fall prevention assessment at Kajang Hospital. **Scope:** Globally, inpatient falls remain a deliberating concern in healthcare facilities. Nurses demonstrate a dominant role and are accountable for prioritizing fall prevention assessment characterised by knowledge, attitude, and practice. **Methods:** A quantitative research with a cross-sectional design conducted in a small to medium-sized setting at Kajang Hospital. Nurses who were employed in the adult inpatient working department were selected in simple random method (n=172). Data were collected through a self-administered structure utilised by the adapted questionnaire from previous study in English version. **Results:** The study revealed that nurses indicate a significance positive evaluation of knowledge (4.1529 ± 0.38838), attitude (3.9544 ± 0.31599), and practice (4.2189 ± 0.39252) towards fall prevention assessment. Further, the study utilized non- parametric statistical tests included, *Mann-Whitney U* test and *Kruskal-Wallis* test. The study found a significance difference ($p < 0.05$) between genders with knowledge of fall prevention assessment. Next, a significance difference ($p < 0.05$) between educational level and working department with attitude toward fall prevention assessment. Subsequently, the study specified a significance difference ($p < 0.05$) between gender, ethnicity, educational level, designated grade, and working department with practice towards fall prevention assessment. In the study, there is a significance positive strong correlation between the knowledge and practice of nurses on the fall prevention assessment. Besides, it also shows a significance positive strong correlation between the attitude and practice of nurses on the fall prevention assessment. **Conclusions:** Overall, nurses at Kajang Hospital indicate a significance positive evaluation of knowledge, attitude, and practice toward fall prevention assessment. However, several neutral agreements on those dependent variables were identified and discussed. Several nurses' socio-demographic characteristics including gender, ethnicity, educational level, designated grade, and working department, demonstrate a significance difference in knowledge, attitude, and practice toward fall prevention assessment. **Recommendations:** Addressing the deficient gaps in the study with multifaceted recommendations including education, awareness, acknowledgement, empowerment, and reinforcement may enhance efforts targeting nurses' transformation on fall prevention assessment.

Keywords: Fall prevention assessment; Inpatient falls; Nurses

INTRODUCTION

Falls among the hospitalized patients are pressing the patient safety concern and alarming the global public health. Further, it considered to be a nursing-sensitive quality of care indicator, as they are healthcare acquired, mostly preventable and associated with serious consequences for patients, hospitals and the healthcare system (Bernet et al., 2022). Patient falls are a potentially remarkable incident and are considered largely preventable among nurses through the implementation of fall prevention approaches. Formerly, the Malaysian Patient Safety Goals (MPSG) established in 2015 emphasized on the 9th patient safety goal is to reduce patient falls with the targeted quality of fall incidences in hospital setting is 10% reduction or more from the previous year. However, in the current guidelines of MPSG 2.0 that published in 2021 emphasized the targeted inpatient fall should be ≤ 5 per 1000 patient-days. In Malaysia, the fall prevention assessment among hospitalized inpatients has been implemented through the daily Morse Fall Scale (MFS) assessment chart. It outlined the six main components, including the history of falls, secondary diagnosis, ambulatory aids, intravenous devices, gait, and mental status to determine the level of risk for falls among hospitalized adult patients.

An inclusive investigation of the annual fall incident report demonstrated the fall prevalence at Kajang Hospital increased gradually throughout the past three years from the year 2019 to 2021. The report revealed 14 cases of fall incidences occurred in 2019, and the upshot of 20 cases reported simultaneously in the years 2020 and 2021. This increased number is alarming the researcher's concern about the consequences of fall incidents on the nurses' perceived knowledge, practice, and attitude in implementing the fall prevention assessment as the guideline to evaluate the patient fall risk score. Furthermore, the researcher observed there is a lack of evidence or study concerning the nurses' comprehension, behaviour, and implementation toward the fall prevention assessment at Kajang Hospital. Therefore, the researcher aims to determine the nurses' knowledge, attitude, and practice toward fall prevention assessment at Kajang Hospital.

METHODOLOGY

Study design

This study was conducted in quantitative research design using the descriptive study. Further, it was a hospital based non-experimental cross sectional study design that conducted from 01 May 2023 till 15 April 2024.

Study setting

This study was conducted at Kajang Hospital, a government-funded district hospital with a small to medium-sized hospital environment that occupied by the bed capacity of approximately 386 beds.

Population and sampling

Target population

The characteristics of the targeted population was among the registered nurses with the Malaysian Nursing Board who worked at Kajang Hospital. The estimated total population of registered nurses at Kajang Hospital were 260 nurses with various designated grades in the selected adult inpatient working departments.

Sampling method

In this study, the probability sampling method with the simple random sampling was implemented. The sample size of 172 participants were selected randomly from the registered nurse population in the selected working department at Kajang Hospital.

Inclusion and exclusion criteria

The targeted sample were all the registered nurse that fulfil the following criteria include:

- i. Employed in the adult inpatient working department at Kajang Hospital
- ii. Comprehend in English

The excluded sample were the registered nurse who are determine by the following criteria:

- i. Employed in outpatients workplaces at Kajang Hospital such as daycare clinics, and emergency departments
- ii. Employed in pediatrics setting such as neonatal and pediatrics unit
- iii. Employed in operation theatre unit
- iv. Participants who contributed to the pilot study
- v. Who does not comprehend English

Research instruments

Questionnaire

In this study, the questionnaire was adopted and modified from the self-administered questionnaire that constructed in the previous study by Ganabathi et al. (2017). The correspondence authors' permission to obtain the questionnaire was requested through email. Further, the data of modification in the questionnaires were obtained from the Reference Guideline for Nurses in the Prevention of Patient Fall by Nursing Division MOH (2018). Next, the questionnaire were revised for the validation purpose by the two expert panels from the nursing division and fall prevention committee (nursing) of Kajang Hospital. Table 1 illustrated the questionnaire segments and corresponding variables, which consists of four sections, Part A: socio-demographic characteristics, Part B: nurses' knowledge of fall prevention assessment, Part C: nurses' attitude on fall prevention assessment, and Part D: nurses' practice to fall prevention assessment. In this study, the 5-point Likert scale was employed to evaluate the three dependent variables reflecting the extent of performance from low to high. This scale was coded into five categories, which are (1) strongly disagree, (2) disagree, (3) neither agree or disagree, (4) agree, and (5) strongly agree.

Table 1. Questionnaire segments and corresponding variables.

Part	Purpose	Items
A	Socio-demographic characteristics	Age, gender, ethnicity, educational level, designated grade, working department, working experience, patient fall experience, and fall prevention education.
B	Knowledge of fall prevention assessment	It consisting 20 items ranging from identifying fall risk factors, fall risk evaluation, and complications of fall.
C	Attitude on fall prevention assessment	It consisting 20 items of the interrogation of the participant's attitude towards fall.
D	Practice to fall prevention assessment	It consisting 20 items of the practices related with the evaluation of the MFS as fall risk assessment to prevent fall among the hospitalized patients.

Reliability and validity

A pilot study was conducted involving the 17 participants who were excluded from the actual study using the constructed questionnaires, to ensure the reliability of the questionnaire at Kajang Hospital. The Cronbach's alpha coefficient was used to determine the reliability and internal consistency of the three dependent variables in the study. It resulted that knowledge and attitude has good reliability and internal consistency with the Cronbach's alpha coefficient shown 0.865 and 0.861 respectively. While, the reliability of practice was excellence reliability and internal consistency with Cronbach's alpha coefficient, 0.933. Furthermore, the researcher proposed the questionnaire to two expert panels in the clinical nursing which are, Chief Matron of Kajang Hospital, Nor Suraya Binti Safar, and the Patient Fall Committee (Nursing) of Kajang Hospital, Radin Noradriana Hariati to obtain the validity of the study (Refer to *Appendix A*).

Ethical consideration

This study followed the guideline of ethic registration to ensure the ethical considerations are applied. Firstly, the research ethical was approved with minor correction by the OUM chairperson, Yee Bit Lian on 31st of October 2023 (Refer to *Appendix B*). Next, the study obtained the ethical approval from the Medical Research and Ethics Committee (MREC), MOH on 1st of December 2023 with the reference number, NMRR ID-23-03045-XW2 (Refer to *Appendix C*). Then, the research proposal was presented for review and approved by a designated entity to whom has been delegated for clinical research at Kajang Hospital which are, Director of Kajang Hospital, Dr. Hj Muhd Siv Azhar Merican Bin Abdullah, and the Chief Matron of Kajang Hospital, Nor Suraya Binti Safar (Refer to *Appendix D*). Lastly, informed consent was included in the study questionnaire to ensure voluntary participation among the nurses (Refer to *Appendix E*).

RESULTS AND DISCUSSION

Results

Socio-demographic characteristics

The socio-demographic characteristics of the participants are presented in Table 2. Data were collected from 172 participants, who worked as registered nurse included 91.9% females (n=158), 8.1% males (n=14). The majority of participants were ages ranged between 31-40 years old with (n=78, 45.3%), followed by 41-50 years old (n=61, 35.5%), and 21-30 years old (n=22, 12.8%). The least ages ranged between 51-60 years old (n=11, 6.4%). Most of the participants were Malay (n=157, 91.3%), followed by Indian (n=8, 4.7%), and others (n=7, 4.1%). None of the Chinese participants involved in the study. Majority of the participants, 84.3% were graduated with Diploma (n=145), followed by 9.3% participants (n=16) were graduated with SPM, and 3.5% participants (n=6) were graduated with Bachelor. The least participants 2.9% (n=5) were graduated with STPM. As for designated grade, most of the participants 50.6% (n=87) were designated grade of U29, followed by 34.9% (n=60) were designated grade of U32, 8.1% (n=14) were designated grade of U24, 3.5% (n=6) were designated grade of U19, and 1.7% (n=3) were designated grade of U36. The least participants 1.2% (n=2) were designated grade of U41.

For the working department, most of the participants worked in medical with (n=45, 26.2%), followed by (n=39, 22.7%) worked in surgical and orthopaedic, (n= 37, 21.5%) worked in obstetrics and gynaecology, (n=19, 11.0%) worked in intensive care unit, (n=8, 4.7%) worked in isolation unit, (n=5, 2.9%) worked in hemodialysis unit, and (n=3, 1.7%) worked in infection control unit. The least participants (n=2, 1.2%) worked in radiology unit. Further, in working experience, majority participants worked for 11-15 years (n=44, 25.6%), followed by 16-20 years (n=40, 23.3%), more than 20 years (n=38, 22.1%), and 1-5 years (n=28, 16.3%). The least participants (n=22, 12.8%) worked for 6-10 years. In patient fall experience, majority of the participants 65.7% (n=113) were experienced of patient fall, while 34.3% (n=59) had no experienced of patient fall. As for fall prevention education, most of the participants 97.1% (n=167) empowered fall prevention education, whereas 2.9% (n=5) had no fall prevention education.

Table 2. Socio-demographic characteristics.

Socio-demographic variables		Frequency(n)	Percent (%)
Age	21-30 years old	22	12.8
	31-40 years old	78	45.3
	41-50 years old	61	35.5
	51-60 years old	11	6.4
Gender	Male	14	8.1
	Female	158	91.9
Ethnicity	Malay	157	91.3
	Chinese	0	0.0
	Indian	8	4.7
	Others	7	4.1

Level of education	SPM	16	9.3
	STPM	5	2.9
	Diploma	145	84.3
	Bachelor	6	3.5
Designated grade	U19	6	3.5
	U24	14	8.1
	U29	87	50.6
	U32	60	34.9
	U36	3	1.7
	U41	2	1.2
Working department	Medical	45	26.2
	Surgical & Orthopaedic	39	22.7
	Obstetric & Gynaecology	37	21.5
	Psychiatric	14	8.1
	Intensive Care Unit	19	11.0
	Isolation Unit	8	4.7
	Radiology Unit	2	1.2
	Hemodialysis Unit	5	2.9
	Infection Control Unit	3	1.7
Working Experience	1-5 years	28	16.3
	6-10 years	22	12.8
	11-15 years	44	25.6
	16-20 years	40	23.3
	> 20 years	38	22.1
Patient Fall Experience	Yes	113	65.7
	No	59	34.3
Fall Prevention Education	Yes	167	97.1
	No	5	2.9

Nurses' knowledge of fall prevention assessment

Table 3 demonstrated the descriptive analysis for nurses' knowledge of fall prevention assessment. The highest mean $\pm$ SD of the items pertaining to knowledge was 4.44 ± 0.521 , (*Are you aware that preventing fall is one of the patient safety goals in hospital?*). While the least mean $\pm$ SD was 3.12 ± 1.151 , (*Being numb in the limbs is not related to fall*), indicates neutral agreement.

Table 3. Nurses' knowledge of fall prevention assessment.

Items pertaining to nurses' knowledge of fall prevention assessment	Mean	SD
Are you aware that preventing fall is one of the patient safety goals in hospital?	4.44	.521
Morse Fall Scale risk assessment can be categorized into low, moderate, and high risk for falls.	4.42	.519
There are fall prevention policies in this hospital.	4.41	.505
Completion of fall risk assessment useful to identify patient at risk for falling.	4.40	.569
Daily Morse Fall Scale risk assessment tool is useful in assisting you to identify patient at risk for falls.	4.38	.555
Nurses must collaborate with multidisciplinary team to be successful with fall prevention among patient.	4.30	.650
A person with visual impairment has a higher risk of fall.	4.30	.582
Fall increase an elderly risk of morbidity and mortality.	4.27	.593
Intrinsic factors of fall are pathology affecting the body systems involve in such as: balance, vision and reduction in muscle strength.	4.24	.591
Is there a fall prevention committee in this hospital?	4.24	.657
Fall among the elderly lead to hip fracture.	4.24	.598
The more underlying disease contribute to the higher fall risk?	4.21	.686
The consumption of certain medications like: antihypertensive, anti-anginal, and sedatives may contribute to fall risk?	4.19	.615
Does alteration of the environmental factors can prevent the fall injuries?	4.18	.673
Fall can increase unnecessary acute care hospitalizations.	4.15	.777

I always report the fall incident.	4.08	.824
Recurrence high among anyone who has already experienced a fall previously.	4.00	.684
Micturition disorders such as urination, bedwetting, and incontinence are risk factors for falls.	3.76	.909
Does sliding is falling?	3.71	.916
Being numb in the limbs is not related to fall.	3.12	1.151

Note: SD=standard deviation

Nurses' attitude on fall prevention assessment

Table 4 presented the descriptive analysis for nurses' attitude on fall prevention assessment. The highest mean $\pm$ SD of the items pertaining to attitude was 4.41 ± 0.516 , (*Fall prevention interventions should be done actively*). While the least mean $\pm$ SD was 2.98 ± 1.023 , (*Physical injury is not severe even if a fall happens*). Another three items that indicate the neutral agreement were (*I think falls among patients is unavoidable*) with mean $\pm$ SD, 3.39 ± 1.084 , (*If injury occurs falling has little significance*) with mean $\pm$ SD, 3.31 ± 0.999 , and (*The hospital environment is not safe for fall prevention*) with mean $\pm$ SD, 3.10 ± 1.063 .

Table 4. Nurses' attitude on fall prevention assessment.

Items pertaining to nurses' attitude on fall prevention assessment	Mean	SD
Fall prevention interventions should be done actively.	4.41	.516
I am concerned about patient falls.	4.39	.501
Falls preventive education is necessary.	4.37	.583
I will assist immediately if a patient asks for help when they move.	4.36	.581
Fall prevention should be a high priority.	4.31	.533
I have concern about interventions for fall prevention.	4.28	.544
I have to assess all patients to determine risk factors for falls during admission.	4.27	.542
Fall prevention is a high priority for interventions.	4.27	.494
Updates in the current trend of fall prevention is an important aspect in the fall prevention program.	4.24	.537
A patient's fall risk level should be assessed when hospitalized.	4.21	.604
I think that falls happen due to the patient's condition.	4.06	.773
I feel guilty if my patient fall.	4.04	.712
I need more training in fall prevention.	4.02	.657
I have confidence in my ability in fall prevention.	3.98	.635
Fear of falling has a negative impact.	3.61	.745
I think nurses are responsible for patient falls.	3.48	.988
I think falls among patients is unavoidable.	3.39	1.084
If injury occurs falling has little significance.	3.31	.999
The hospital environment is not safe for fall prevention.	3.10	1.063
Physical injury is not severe even if a fall happens.	2.98	1.023

Note: SD=standard deviation

Nurses' practice to fall prevention assessment

Table 5 shows the descriptive analysis for nurses' practice to fall prevention assessment. The highest mean $\pm$ SD of the items pertaining to practice was 4.35 ± 0.536 , (*I will alert with the side effect of medications that administered to the patient*). While the least mean $\pm$ SD was 3.06 ± 1.262 , (*I will not report for the patient fall that unwitnessed by staff*).

Table 5. Nurses' practice to fall prevention assessment.

Items pertaining to nurses' practice to fall prevention assessment	Mean	SD
I will alert with the side effect of medications that administered to the patient.	4.35	.536
I will ensure the lighting in the hallway, patients' room, treatment room, and restroom is bright enough.	4.34	.512
I will perform the Morse Fall Scale risk assessment on daily basis.	4.32	.504
I will apply "YELLOW" signage at the patient's bed with moderate risk for fall.	4.31	.478
I am following the colour coding system, "RED", for high risk for fall patients.	4.31	.536

I will provide education on fall risk interventions to the patient, family, and carers.	4.31	.478
I will conduct a regular environmental rounds to look out for any hazards that may lead to fall.	4.31	.533
I will orientate patient to his/ her new surrounding such as toilet during hospitalization.	4.29	.527
I will report the patient fall witnessed that has no obvious injuries to the ward manager.	4.29	.516
I will make sure the bed railing is raised when the patients are in bed.	4.28	.557
I will assist patient with toileting when required.	4.27	.472
I will ensure "WHITE" fall tag will be coded for low risk for fall.	4.27	.629
I will do reevaluation if there is a change in the patient's mental status or physical condition.	4.27	.528
I will encourage patient to have adequate hydration and nutrition.	4.26	.534
I encourage patient for suitable footwear.	4.26	.523
I will evaluate the patient mental status.	4.23	.511
I am following the fall prevention policies strictly.	4.23	.520
I will seek for physiotherapy to evaluate and treat for the patients' gait and ambulation.	4.20	.471
I will seek occupational therapy for evaluation, and management of activity daily livings.	4.20	.529
I will not report for the patient fall that unwitnessed by staff.	3.06	1.262

Note: SD=standard deviation

To measure the relationship between nurses' socio-demographic factors with the knowledge, attitude and practice towards fall prevention assessment

A *Mann-Whitney U* test was performed to evaluate the association between the groups of categorical variables include gender, patient fall experience, and fall prevention education with knowledge, attitude and practice towards fall prevention assessment. Table 6 demonstrated the association between gender, patient fall experience, and fall prevention education with knowledge, attitude, and practice towards fall prevention assessment. Overall, it resulted that there was a significance difference between gender with knowledge, attitude and practice towards fall prevention assessment. Next, the results revealed that there was no significance difference between patient fall experience and fall prevention education among the nurses with knowledge, attitude and practice towards fall prevention assessment.

Table 6. The association between gender, patient fall experience, and fall prevention education with knowledge, attitude, and practice towards fall prevention assessment.

	Knowledge	Attitude	Practice
Gender			
Mann-Whitney U	524.000	490.000	650.500
Wilcoxon W	629.000	595.000	755.500
Z	-3.275	-3.459	-2.568
Asymp. Sig. (2-tailed)	.001	.001	.010
Patient Fall Experience			
Mann-Whitney U	3320.000	2996.000	2992.500
Wilcoxon W	5090.000	4766.000	9433.500
Z	-.044	-1.092	-1.107
Asymp. Sig. (2-tailed)	.965	.275	.268
Fall Prevention Education			
Mann-Whitney U	373.000	228.000	357.000
Wilcoxon W	14401.000	243.000	372.000
Z	-.408	-1.732	-.555
Asymp. Sig. (2-tailed)	.684	.083	.579

Kruskal-Wallis test

In this study, the association between age, ethnicity, educational level, designated grade, working department, and working experience with knowledge, attitude, and practice towards fall prevention assessment was determined by the *Kruskal-Wallis* test as presented in Table 7. Overall, it resulted that the age ranged has no significance difference with knowledge, attitude, and practice towards fall prevention assessment. Next, the ethnicity has no significance difference with knowledge and attitude towards fall prevention assessment. But, it has significance difference with practice towards fall prevention assessment. Further, the educational level has no significance difference with knowledge towards fall prevention assessment. However, the educational level has significance difference with attitude, and practice towards fall prevention assessment. The designated grade has no significance difference with knowledge and attitude towards fall prevention assessment. However, the designated grade has significance difference with practice towards fall prevention assessment. The working department shown no significance difference with knowledge towards fall prevention assessment. But, it shown a significance difference between attitude and practice towards fall prevention assessment. The findings for working experience shown no significance difference with knowledge, attitude, and practice towards fall prevention assessment.

Table 7. The association between age, ethnicity, educational level, designated grade, working department, and working experience with knowledge, attitude, and practice towards fall prevention assessment.

	Knowledge	Attitude	Practice
Age			
Chi-Square	3.860	.939	1.110
df	3	3	3
Asymp. Sig.	.277	.816	.775
Ethnicity			
Chi-Square	2.446	5.246	7.881
df	2	2	2
Asymp. Sig.	.294	.073	.019
Educational level			
Chi-Square	6.728	7.795	10.486
df	3	3	3
Asymp. Sig.	.081	.050	.015
Designated grade			
Chi-Square	10.085	7.801	15.480
df	5	5	5
Asymp. Sig.	.073	.168	.008
Working department			
Chi-Square	13.771	24.161	21.040
df	8	8	8
Asymp. Sig.	.088	.002	.007
Working experience			
Chi-Square	8.591	2.787	9.229
df	4	4	4
Asymp. Sig.	.072	.594	.056

To discover the correlation between the knowledge and practice of nurses on the fall prevention assessment

In this study, the Spearman's rho correlation coefficient was conducted to discover the correlation between the knowledge and practice of nurses on the fall prevention assessment. The findings was presented in Table 8 with $p=0.000<0.01$, indicate H_0 was rejected, and $r_s=0.678$, indicate a strong positive correlation. Hence, there is a significance positive strong correlation between the knowledge and practice of nurses on the fall prevention assessment.

Table 8. The correlation between the knowledge and practice of nurses on the fall prevention assessment.

			Knowledge	Practice
Spearman's rho	Knowledge	Correlation Coefficient	1.000	.678**
		Sig. (2-tailed)	.	.000
		N	172	172
	Practice	Correlation Coefficient	.678**	1.000
		Sig. (2-tailed)	.000	.
		N	172	172

Note: Correlation is significant at the 0.01 level (2-tailed).

To discover the correlation between the attitude and practice of nurses regarding fall prevention assessment

In this study, the Spearman's rho correlation coefficient was conducted to discover the correlation between the attitude and practice of nurses on the fall prevention assessment. The findings was presented in Table 9 with $p=0.000<0.01$, H_0 was rejected, and $r_s=0.606$, indicate a strong positive correlation. Hence, there is a significance positive strong correlation between the attitude and practice of nurses on the fall prevention assessment.

Table 9. The correlation between the attitude and practice of nurses on the fall prevention assessment.

			Attitude	Practice
Spearman's rho	Attitude	Correlation Coefficient	1.000	.606**
		Sig. (2-tailed)	.	.000
		N	172	172
	Practice	Correlation Coefficient	.606**	1.000
		Sig. (2-tailed)	.000	.
		N	172	172

Note: Correlation is significant at the 0.01 level (2-tailed).

Discussion

Nurses' knowledge, attitude, and practice towards fall prevention assessment.

Undisputable, nurses are accountable with their imperative roles in implementing the fall prevention assessment and evaluation among the hospitalized inpatient. Overall, the present study discovered the nurses indicate a significant positive evaluation of knowledge (4.1529 ± 0.38838), attitude (3.9544 ± 0.31599), and practice (4.2189 ± 0.39252) towards fall prevention assessment.

Regards the nurses' knowledge to fall prevention assessment indicate the positive comprehension is the items, "*Are you aware that preventing fall is one of the patient safety goals in hospital?*". Turner et al. (2022) highlighted preventing hospital falls is an important priority for patient safety, particularly among geriatric patients across the hospitals. Ismail & Khalid (2022) stated patient safety entails of being non-maleficence to patients during the healthcare practises and reducing the risk of unnecessary injury associated with healthcare to an acceptable minimum. Meanwhile, the items related to knowledge that indicate the neutral comprehension is "*Being numb in the limbs is not related to fall*". In contrast with the previous study by Ylitalo et al. (2020), stated peripheral nerve impairment were identified those at high risk for falls, particularly among women during early late life. The hallmark symptom of peripheral neuropathy is sensory loss, with or without pain. Impaired balance and unsteadiness, particularly while walking, is related to poor physical performance and leading falls. Hence, being numb in the limbs may associate with the peripheral nerve impairment that susceptible to the fall incident.

Next, the nurses' attitude to fall prevention assessment indicate the positivity is the items stated as, "*Fall prevention interventions should be done actively*". Wyss-Hanecke et al. (2023) specified by implementing the multifactorial fall prevention interventions including assessment had ascertained the effectiveness in reducing fall risks and decreasing fall rates by up to 30%. A study by Bagui et al. (2019), supported that implementing the fall risk screening tool such as MFS is one of the most prevalent tools that applied to assess patients' fall risk. It also demonstrated a notable prevention strategies to promote patient care, as it resulting in a score that patient predicted to fall not falling. From the items in nurses' attitude toward fall prevention assessment, the least mean $\pm$ SD of the items stated "*Physical injury is not severe even if a fall happens*". It was resulted by the participants uncertainty on the attitude concerning to the occurrence of physical injury due to fall. Fall-related injuries reflecting to the different degrees of injury affected by falls. In a previous study supported by Vaishya & Vaish (2020) specified the severity of fall related-injuries and its outcome

is determined by an individual's frailty and not the age. The commonest and serious injuries are to the head and fractures due to fragility of bones.

Moreover, directing to the nurses' practice to fall prevention assessment indicate the positivity is the items with highest mean $\pm$ SD (4.35 ± 0.536), "*I will alert with the side effect of medications that administered to the patient*". Zhou et al. (2022) stated nervous system related medications were the main medications with a positive signal detected, accounting for 44.1% of the total medications with a positive signal that resulting falls among elderly. Further, Michalcova et al. (2020) revealed poly-pharmacy increase the risk of medication-related falls, especially when at least one established fall risk-increasing drug is part of the patient's daily regimen. The utilised fall risk assessment tool facilitate the prevention of medication-related falls and increase quality of geriatric care in healthcare institutions. While, the least mean $\pm$ SD (3.06 ± 1.262) of the items related to practice, "*I will not report for the patient fall that unwitnessed by staff*", indicate neutral agreement. In a retrospective review by Takase (2023) indicate 79.0% of the falls were unwitnessed by nurses, as it occurred even during nursing care, because nurses temporarily left a patient unattended, or had turned their back on a patient when the patient fell. From a cross-sectional study by Ismail & Khalid (2022), supported a significant association between the incident reporting system and positive patient safety culture. The study also indicate the nurses learnt the impact from the incidents reported and advised on the changes implemented.

The relationship between nurses' socio-demographic characteristics with the knowledge, attitude, and practice towards fall prevention assessment.

The findings in this study provide numerous insights pertaining to the relationship between nurses' socio-demographic characteristics with the knowledge, attitude and practice towards fall prevention assessment. Generally, the relationships between nurses' socio-demographic characteristics has no significance difference with knowledge towards fall prevention assessment except gender. A study by Cho & Jang (2021) highlighted the impact of secondary socialisation and underscore the education system's importance for overcoming gender-defined roles in nursing. This eventually affecting the perceived knowledge in learning process among the nurses. Further, there was an association between gender with attitude and practice towards fall prevention assessment. In the similar study supported by Alrimali et al. (2023), gender had a significant effect on fall prevention practices, where female nurses reporting higher levels of fall prevention practices compared to male nurses. Another study by Tong et al. (2023) highlighted the inequity in gender indicate that professional identity is unique to the perception of caring behaviour held among male nurses, whereas self-acceptance is distinctive among female nurses.

Next, ethnicity was found to be significantly associated with practice towards fall prevention assessment. A study by Albougami & Alotaibi (2020) indicate the facilitation of effective healthcare services is often hindered by cultural diversity because it generates problems for nurses, who are required to communicate and interact with patients of different linguistic and cultural backgrounds. Further, Berhanu et al. (2024) specified that nurses with effective intercultural communication have higher cultural sensitivity scores, because they are well equipped to navigate potential barriers, including language variances, non-verbal cues, and cultural expectations.

In the current study, educational level has an association with attitude, and practice towards fall prevention assessment. Current developments in healthcare systems require continues modification in behaviour of nurses which is mainly addressed by continuing education (Konnyu et al., 2020). Tabish (2019) emphasized by fostering innovations in nursing education is notable to overcome the complexities in healthcare setting that include evolving technologies, the need for

systems thinking, increasing diverse elderly population with multiple chronic morbidities, and a national focus on patient safety and preventing errors.

Following, the designated grade among nurses has significance difference with practice towards fall prevention assessment. In Malaysia, the classification of grade in nursing profession was related with the nursing job scope and educational level. Noticeably, the majority nurses in the study were 50.6% with a basic registered nurse enrolled with diploma in nursing that graded as U29. Ojo & Thiamwong (2022) accentuated assigned nurses in patient care empowered the important roles in implementing fall prevention programs. These include patient assessment, communication with nursing assistants, administer the medications, nursing documentation, including patients in the plan of care, and meeting the patients' needs such as bathroom supervision and ambulation.

Moreover, the working department shown a significance difference between attitude and practice towards fall prevention assessment. From a study by Innab (2022) indicate nurses who worked in general wards had higher perceived on effective interventions for fall prevention than those working in critical care units. As it may relate to the health status of patients, where those in critical care units are less mobile or more likely to be bedridden than patients in non-critical care units. Radecki et al. (2018) emphasised nurses were prerequisite in nurturing rapport and relationships with patients to facilitate understanding of their needs and enhance patient safety.

Ultimately, this study revealed the nurses' age, working experience, patient fall experience, and fall prevention education has no association with knowledge, attitude and practice towards fall prevention assessment.

The correlation between the knowledge and practice of nurses on the fall prevention assessment.

The present study had discovered a significance positive strong correlation between the knowledge and practice of nurses on the fall prevention assessment. This finding is congruent with the study by Suryani et al. (2020) emphasized knowledge is the dominant element that essential for the formation of nurses' interventions. In the study, the nurses demonstrated positive evaluation on the domain of knowledge that constitute of fall risk factors, fall risk evaluation, and fall complications, along with the domains of practice that highlighted the evaluation of MFS as fall risk assessment to prevent fall incident. The learning pedagogy in nursing constitutes the integration of theoretical, and evidenced-based practice to cultivate the implementation of nursing practices. Overall, the findings solely supported by integrating evidence-based practice into the daily nursing care has the potential to improve the practice environment as well as patient outcomes (Abu-Baker et al. 2021).

The correlation between the attitude and practice of nurses regarding fall prevention assessment.

This study specified a significance positive strong correlation between the attitude and practice of nurses on the fall prevention assessment. The positivity of nurses' attitudes regarding falls was an important factor affecting behavioural intention and the promotion of changes in attitudes regarding falls via introducing attitude-reinforcement programs that consider nurses' subjective norms must enhance their sense of responsibility and duty (Cho & Jang, 2020). Aligned with the study findings by Suryani et al. (2020), the noble attitudes by the nurses demonstrated an optimistic effect on practice because strengthen by complete facilities in the inpatient ward to support patient safety, especially in the prevention of fall risk.

CONCLUSION

Overall, nurses at Kajang Hospital indicate a significant positive evaluation of knowledge, attitude, and practice towards fall prevention assessment. From the dependent variables in the study, the majority of nurses agreed that preventing falls is one of the patient safety goals in the hospital, nurses should engage actively in fall prevention interventions, and nurses often be alert to the side effects of medications administered to the patient. However, the study identified few neutral agreements on nurses' knowledge, attitude, and practice towards fall prevention assessment. These neutral agreements or findings can be addressed through targeted practical implications and recommended actions that may enhance the nursing profession, improve the nursing practices and prioritize the patient safety in the clinical area.

Moreover, the study revealed a significant positive strong correlation between the knowledge and practice of nurses on the fall prevention assessment. Further, it also supported a significant positive strong correlation between the attitude and practice of nurses on the fall prevention assessment. In addressing to the highlighted findings, several practical implications were identified such as a structured training program, nursing education, cultural awareness, fostering nursing leadership roles, organizational practices, acknowledgement, and environmental modification. The provision of congruent nursing care in the scope of knowledge, attitude, and practices towards fall prevention assessment is facilitated by the acknowledgment and engagement hand in hand support by the nursing hierarchical approaches. It is strongly believed that nurses empowered the notable roles in fall prevention assessment and prioritizing the patient safety during hospitalization.

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THE EFFECTIVENESS OF FALL PREVENTION EDUCATION ON NURSES' KNOWLEDGE AT AL SULTAN ABDULLAH UiTM HOSPITAL

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ABSTRACT

A patient fall is defined as an unplanned descent to the floor with or without injury to the patient. The increasing number of falls from month to month is very worrying for the patient's safety. The aim of the study is to evaluate the effectiveness of education on nurses' knowledge at Al Sultan Abdullah UiTM Hospital. A single-group experimental design was used to conduct this study. This study was used in one group: "pretest and posttest design" and "education programmed". This study was conducted in Al Sultan Abdullah UiTM Hospital among nurses. Stratified random sampling was used of 121 nurses from the selected unit. Three sections were used to obtain the necessary data: socio demographic characteristic and the knowledge on fall prevention among nurses. Based on the study finding (Pre-knowledge), overall this study reported had average level of knowledge on fall prevention (n= 69; 57.0%) and about 43 percent (n= 52) of the participants had good knowledge on fall prevention. Post intervention, this study shown was increasing that mostly had good level of knowledge on fall prevention (n= 177; 96.7%) and about 3.3 percent (n= 4) of the participants had average knowledge of fall prevention. A statistically significant difference of pre and post in level of knowledge on fall prevention education (p-value=.000). The finding showed that there was a significant relationship between socio demographic (age, gender, working duration and attended fall training) of nurses and their knowledge on fall prevention (pre). In conclusion, it can be concluded that the fall prevention program was effective in improving nurses' knowledge on fall prevention. The researcher needs to explore the concept of optimal fall education programme for the nurses to improve knowledge on fall prevention in future.

Keywords: Fall, nurses' knowledge, fall prevention program, staff nurses

INTRODUCTION

Falls are one of the most common accidents associated with physical and psychological injury and economic harm (1). Fall is the major public health problem, and it is the second leading cause of death due to unintentional injury (2). All healthcare personnel are equally responsible for ensuring the safety of their patients (3). The overall estimated prevalence of falls for individuals aged 55 years and over adjusted to the population of Kuala Lumpur was 18.9%. The estimated prevalence of falls for the three ethnic populations of Malays, Chinese and Indian aged 55 years and over was 16.2%, 19.4% and 23.8%, respectively (4). Each year, somewhere between 700,000 and 1,000,000 people in the United States fall in the hospital (5). Every hospital has a key performance index to achieve every month. Fall

was included in Malaysia Patient Safety goal to prevent harm to the patient. Before this research was done, there was no fall prevention program held at Al Sultan Abdullah UiTM hospital.

This study evaluates the effectiveness of education on nurses' knowledge and practice on fall prevention in Al Sultan Abdullah UiTM Hospital. This study is significant as it will help critically analyses the knowledge and practice of nurses towards fall prevention and identify shortcomings present within the health care system that establish quality fall prevention education.

According to World Health Organization (2019); adverse incidents due to inadequate treatment are potentially among the top ten causes of death and disability in the world. Every year, millions of patients suffer injuries or succumb to death due to unsafe and low-quality healthcare (6). According to the data census fall in Malaysian Patient Safety Goal (MPSG) in the Al Sultan Abdullah UiTM Hospital, total fall in this year from January until October 2023, 38 cases were recorded during the 10 months especially in medical and surgical ward and emergency department. Geriatric psychiatry patients have the highest risk of falls (7).

The increasing number of falls from month to month is very worrying for the patient's safety. Falls are a common problem among older people, leading to major morbidity and increased mortality (8). Patient falls are a nursing-sensitive indicator that affects patient outcomes of care and are determined by the nursing quality and quantity of care (9). Falls in hospital are the most common safety incident affecting older people and are a frequent cause of concern for staff, complaints by families and sometimes coroner inquests or civil claims (10). Before education programme in fall prevention, the result was showed in the several research. This survey demonstrates that ED providers understand the importance of fall prevention in the older population but lack knowledge of specific screening tools or interventions to prevent future falls in their patients (11). The importance of team training is also highlighted, in order to guarantee the success of educational programs for fall prevention, based on the planning of actions and the appropriate choice of educational methods (12).

METHODOLOGY

Study Design

A single group experimental design was conducted among nurses in Al Sultan Abdullah UiTM Hospital at Puncak Alam Selangor. an used to conduct this study that a single group. The target population was from 3 different working disciplines which were Emergency Department, Medical and Surgical Ward. This study used one group: "pretest and posttest design" and "education programmed" were used as the independent variables. The dependent variables, "knowledge level, was measured during pre- and post- interventions. A self-administered questionnaire was used as the tool for data collection, distributed both pre- and post-test to the 121 participants after the educational program

Sample Size Estimation

According to the result, G Power, the minimum number of participants in this study is 110. However, 10 % of subject attrition is included in the sample size to reduce missing data for study subjects and potential error or bias. Thus, the estimated sample size for this study was 121. Stratified random sampling is a type of sampling method in which the total population is divided into smaller groups, or

strata, to complete the sampling process. Respondents were selected based on inclusion and exclusion criteria.

Study Instrument

A self-administered questionnaire was used for this study with permission from 1 journal (1). The questionnaire was divided into two sections: Section A, containing demographic data and Section

assessing nurses' knowledge of fall prevention at Al Sultan Abdullah UiTM Hospital. In section A comprises demographic data such as the respondent's age, gender, level of education, working duration, working place and attended workshop fall prevention training.

In section B has a total of 20 items with multiple choice questions, and the total score is 20. It consists of 20 "Yes", "No", and "Don't Know" items. There are 7 items on policy and patient safety management: 6 items on risk factors and causes of fall, 2 items on fall prevention, 1 item on risk of fall assessment, 1 item on universal fall precautions, 2 items on nursing considerations, and 1 item on fall prevention program. The response choices for items in the true-false questions of Part B are yes, no, and don't know. In terms of scoring, each question is scored as correct or incorrect. For each knowledge item, a correct answer was coded '1', a wrong answer was coded '0', and a don't know answer was coded '0'. The total knowledge scores ranged from 0 to 20. A score of 16 and above was considered good knowledge, moderate knowledge (8 to 15), and poor knowledge (0 to 7). The level of knowledge was categorized into; poor (<35%), moderate (≥ 36 -79%), good (≥ 80 %) (1). Permission was gotten from email by author and the previous Cronbach alpha of the instrument was 0.82.

RESULTS

Demographic Characteristic

The mean age for the respondents was 32.24 years (SD= 5.310). The participants fell into the 31-39 years old age group of the participant (53.7%), followed by 40.5% in the 21-30 years old category and those ≥ 40 years were 5.8 %. From this intervention group, the were 111 of the nurses were female (91.3%) and 10 of them were male (9.7%). For the level of education among the participants, there were 114 of the participants (94.2%) who had diploma holder and while the others had degree with percentage 5.8%. There was no master qualification among the participants. Furthermore, a high percentage of participants reported working durations: 38.8% had 2 to 5 years of experience, followed by 32.2% with ≥ 10 years. Those with 6 to 9 years and ≤ 1 year accounted for 28.1% and 0.8%, respectively.

For the working place, there were 24 of the participants (19.8%) from Emergency Department and those 4 from Medical Ward (6B,8C,8D and 9A) were 11.6%, 10.7%, 11.6% and 11.6% respectively. For those 3 from Surgical Ward (7A, 7B and 8B) were 10.7%, 13.2% and 10.7% respectively. The total of percentage participants from the medical ward were 45.5% and those of Surgical Ward were 34.6%. Most of the participants who involved in this study were consisted of 103 of the participants who did not attend fall training (85.1%) and followed 18 of the participants attended fall training (14.9%). The demographic characteristic is detailed in Table 1.

Table 1: Sociodemographic Characteristic of Respondents

Socio demographic		Mean	SD	(f)	(%)
Age		32.24	5.310		
Range Age	21-30 years old			49	40.5%
	31-39 years old			65	53.7%
	≥ 40-years-old			7	5.8%
Gender	Male			10	8.3%
	Female			111	91.7%
Level of Education	Diploma			114	94.2%
	Degree			7	5.8%
Working Duration	≤ than 1 year			1	0.8%
	2 - 5 years			47	38.8%
	6- 9 years			34	28.1%
	≥ than 10 years			39	32.2%
Working Place	Emergency Department			24	19.8%
	6B Medical Ward			14	11.6%
	8C Medical ward			13	10.7%
	8D Medical Ward			14	11.6%
	9A Medical Ward			14	11.6%
	7A Surgical Ward			13	10.7%
	7B Surgical Ward			16	13.2%
	8B Surgical Ward			13	10.7%
Attended	Yes			18	14.9%
Fall Trainin g	No			103	85.1%

Study Objective 1

To determine differences in the level of knowledge on fall prevention between pre and post education programme among nurse in Al Sultan Abdullah UiTM Hospital. As shown in Table 2, for the pre-intervention of Fall Prevention Programme, overall this study reported that half of participants had average level of knowledge on fall prevention ($n= 69$; 57.0%) and about 43 percent ($n= 52$) of the

participants had good knowledge on fall prevention, presented. Post intervention Fall Prevention

Programme, this study shows was increasing that mostly had good level of knowledge on fall prevention ($n=177$; 96.7%) and about 3.3 percent ($n=4$) of the participants had average knowledge of fall prevention.

Table 2: Level of Knowledge on Fall prevention (Pre and Post) ($n = 121$)

Level of knowledge	Max possible score	Scoring from Range of score	(0-20) %	Pre-test (f) (%)	Post test (f) (%)
Poor	20	0-7	0-35	0 (0.0)	0 (0.0)
Moderate		8-15	36-79	69 (57.0)	4 (3.3)
Good		16-20	80-100	52 (43.0)	117 (96.7)

Table 3 shows a Wilcoxon Signed Rank Test revealed a statistically significant difference in level of knowledge of pre and post on fall prevention education, $z = -8.062$, $p < .000$, with a medium effect size ($r = 0.733$). The median score on level of knowledge on fall prevention was increasing from pre-program ($Md = 2$) to post-program ($Md = 3$).

Table 3 : Differences level of knowledge between Pre and Post about on fall prevention ($n = 121$)

Categories	n	Percentiles			Z	Asymp Sig. (2- tailed)
		25th	50th (Median)	75th		
Level of knowledge (Pre)	121	2.00	2.00	3.00	-8.062 ^b	.000
Level of knowledge (Post)	121	3.00	3.00	3.00		

Study objectives 2

To determine relationship between socio demographic (age, gender, level of education, working duration, working area and attended workshop fall prevention training) of nurses and their knowledge pre and post education programme on fall prevention in Al sultan Abdullah UiTM Hospital. Table 6 shows Spearman rho value ($\rho = 0.363$) are positive, indicating a positive correlation between perceived age and total score knowledge (pre) indicates a weak monotonic relationship between the two variables. $p = .000$ mean $p < 0.05$. If your p-value is close to 0, the observed significant relationship is unlikely to be due to chance and there is a very high probability that null hypothesis is rejected.

Based on table 6, Spearman rho value ($\rho = 0.122$) are positive, indicating a positive correlation between perceived age and total score knowledge (post) indicates a weak monotonic relationship between the two variables. $p = 0.182$ mean $p >$

0.05. If your p-value is close to 1, the observed no significant relationship is unlikely to be due to chance and there is a very high probability that null hypothesis is accepted. Table 6 shows there was also a significant relationship between gender with their knowledge (pre) was significantly higher in female (Md = 15.00, $n = 111$), than male's respondents (Md = 13.50, $n = 10$, $U = 334.000$, $z = -2.101$, $p = 0.036$). The effect size for this difference was 0.191. Based on table 6 there was also a no significant relationship between gender with their knowledge (post) was no significantly in female (Md = 19.00, $n = 111$), than male's respondents (Md = 19.00, $n = 10$, $U = 540.000$, $z = -.153$, $p = 0.878$).

Table 6 shows there was also a no significant relationship between level of education with their knowledge (pre) was no significantly in diploma (Md = 15.00, $n = 114$), than degree's respondents (Md = 15.00, $n = 7$, $U = 388.500$, $z = -1.118$, $p = 0.906$). The effect size for this different was 0.101. Based on table 6 there was also a no significant relationship between diploma with their knowledge (post) was no significantly in diploma (Md = 19.00, $n = 124$), than degree's respondents (Md = 19.00, $n = 7$, $U = 357.500$, $z = -.506$, $p = 0.613$). Based on table 6, it found significant different across four different working duration between pre and post knowledge ($\leq$ than 1 year, $n = 1$, 2 until 5 years, $n = 47$, 6 until 9 years, $n = 34$, $\geq$ than 10 years, $n = 39$), $\chi^2 (2, n = 121) = 12.177$, $p = 0.007$ and $\chi^2 (2, n = 121) = 7.841$, $p = 0.049$.

Among these working durations, $\geq$ than 10 years had higher knowledge (Md = 16.00 :19.00, mean rank: 75.79, 62.21) than 6 until 10 years (Md = 15.00 :19.00, mean rank: 58.76, 70.21), 2 until 5 years (Md = 15.00 :19.00, mean rank: 51.14, 54.57) and $\leq$ than 1-year Md = 13.00 :15.00, mean rank: 23.50, 2.5). Based on table 6, it found no significant different across three different working places between pre and post knowledge (Emergency Department, $n = 24$, Medical ward, $n = 55$, Surgical Ward, $n = 42$), $\chi^2 (2, n = 121) = 0.620$, $p = 0.733$ and $\chi^2 (2, n = 121) = 1.138$, $p = 0.566$.

Among these working places, emergency department had same knowledge (Md = 15.00 :19.00, mean rank: 57.21, 67.25), medical ward (Md = 15.00 :19.00, mean rank: 63.52, 59.83) dan surgical ward (Md = 15.00 :19.00, mean rank: 59.87, 58.96). Table 6 shows there was also a significant relationship between attended fall training with their knowledge (pre and post) was significantly higher in attended fall training (Md = 19.00 (pre), Md = 20.00 (post), $n = 18$ than unattended fall training (Md = 15.00) (pre), Md = 19.00 (post), $n = 103$). For pretest shows $U = 160.000$, $z = -5.643$, $p = 0.000$) and for posttest shows $U = 581.000$, $z = -2.736$, $p = 0.006$. The effect size for this different was 0.513 and 0.249.

Table 6: Relationship between sociodemographic characteristic and total score knowledge on fall prevention (pre and post)

Variables	Total Score knowledge									
	Pre					Post				
	<i>n</i>	Mean	SD	Test	p -value	<i>n</i>	Mean	SD	Test	p -value
Age	121	32.24	5.310	0.363	0.000* ^a	121	32.24	5.310	0.122	0.000 ^a
Gender		Mean rank	Median	Z- value			Mean rank	median	Z-value	
Male		38.90	13.50	-2.101			62.50	19.00	-0.153	0.878 ^b
Female	10	62.99	15.00		0.036 ^{*b}	10	60.85	19.00		
Level of Education				Z- value					Z- value	
Diploma	114	60.91	15.00	-1.118	0.906 ^b	114	60.63	19.00	-0.506	0.613 ^b
Degree	7	62.50	15.00			7	67.00	19.00-		
Working Duration				X ²					X ²	
≤ than 1 year	1	23.50	13.00	12.177	0.007* ^c	1	2.50	15.00	7.841	0.049* ^c
2 until 5 years	47	51.14	15.00			47	54.74	19.00		
6 until 9 years	34	58.76	15.00			34	70.21	19.00		
≥ than 10 years	39	75.79	16.00			39	62.01	19.00		
Working Place				X ²					X ²	
Emergency Department	24	57.21	15.00	0.620	0.733 ^c	24				
Medical Ward	55	63.52	15.00			55	67.25	19.00	1.1138	0.566 ^c
Surgical Ward	42	59.87	15.00			42		19.00		
Attended Fall Training Workshop				Z- value			59.83	19.00		
							58.96	19.00		
									Z- value	

Yes	18	103.61	19.00	-5.643	0.000* ^b	18	80.22	-2.736	0.006* ^b
No	103	53.55	15.00			103	57.64		

DISCUSSION

The impact of a fall prevention programme on nurses' fall prevention knowledge was assessed in this study. The study's findings demonstrate that nurses' fall prevention knowledge as measured by fall prevention knowledge questionnaire, have improved, demonstrating the efficacy of the fall prevention programme. The findings showed that there were findings showed that there was significant difference the level of knowledge between pre and post on fall prevention of participants after the health education programme was carried out where the median score on level of knowledge on fall prevention was increasing from pre programme to post programme.

This finding similar with the study done by Álvarez & Ramírez (1) reported that the majority of staff nurses (61.7%) had moderate knowledge about fall prevention in the pre-test and post-test results showed 100% improvement with staff nurses having good knowledge as compared to 26.7% in the pre-test, indicating improvement in knowledge with the program. There was a significant difference between pre-test and post-test knowledge scores of the staff nurses regarding fall prevention (1). This finding similar with the study done by Saadati et al. (16) reported there was a significant difference between the scores of pretest and posttest regarding the nurses' knowledge ($P < 0.001$).

In this study, from the findings, it can be concluded that the fall prevention program was effective in improving nurses' knowledge on fall prevention. It similar with finding by Álvarez & Ramírez (1). Study results confirmed that knowledge and skills score of nurses improved after the training which confirms that fall risk assessment training was effective (3). Moreover, the program was effective for the fall knowledge, interaction satisfaction, and fall prevention behaviour of both the patient and nurse (17).

In this study, the finding showed that no significant relationship between socio demographic (level of education and working place) of nurses and their knowledge on fall prevention (pre) and the finding showed that significant relationship between socio demographic (age, gender, working duration and attended fall training) of nurses and their knowledge on fall prevention (post). This finding with the study done by Álvarez & Ramírez (1) there was no significant association between post-test knowledge scores when compared to age and gender after intervention programme. In addition, although there were not significant differences in the self-reported perception of (pre) knowledge and the demographic characteristics of education pre intervention programme (19). The finding with the study by Th Minh Chinh et al. (18) that (pre and post) knowledge is highest in the group with 10-20 years of work experience. Correlation between level of (pre) knowledge and participants' years of experience in nursing alone showed statistically significant relationship at $P = 0.01$ among all the selected demographic variable (20).

In this study, the finding showed that there was no significant relationship between socio demographic (working place) of nurses and their knowledge on fall prevention (pre). This finding contradicts with the study done by Gu & Yen (21), they found in their research conducted in China that scores of knowledges, attitudes, and behaviors of clinical nurses in the departments of medical and surgical were significantly higher than those of the clinical nurses in the departments of gynecology, pediatrics, and

neonates. When exploring the association between explanatory variables (previous fall training) with the post knowledge, we identified that the respondent's job role was significant relationship after intervention programme (22).

CONCLUSION

The current study findings emphasize the importance and outcome of fall educational programme for the nurses on fall prevention. A fall education programme focusing knowledge regarding fall prevention among the patients was adopted and validated by panel experts. The key approaches to enhance the effectiveness of such a program personalized Learning. This is a tailor the education to the specific needs and learning styles of the participants. Other than that, continuously evaluate participant progress and provide constructive feedback. The strategies are consisting of administer pre- and post-training assessments to measure knowledge gains, provide immediate feedback during interactive sessions and use surveys and feedback forms to gather participant input and adjust the program accordingly.

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KNOWLEDGE ON INTRAUTERINE DEVICE (IUCD) AS A FAMILY PLANNING METHOD AMONG ANTENATAL MOTHERS

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ABSTRACT

Introduction: Family planning allows couples to attain their desired number of children and it is achieved through use of contraceptive methods (World Health Organization, 2022). Intrauterine Device (IUCD) is one of the modern contraceptive methods besides barrier, hormonal, and permanent method. The Malaysia Ministry of Health (MOH) also provided easily accessible and availability of contraceptive methods, however the use of contraceptive method is still lower. **Objective:** Therefore, the aim of the study is to determine the knowledge level on IUCD and associated factors between knowledge level on IUCD and socio-demographic variables among antenatal mothers. **Methodology:** A quantitative, cross-sectional approach with convenient sampling method was conducted. A total of 247 antenatal mothers from Hospital Ampang were recruited using the Questionnaire. Descriptive Statistics, Chi-Square test and ANOVA test was used to analyse the collected data. **Results/ Discussion:** This study revealed that majority of antenatal mothers was scored moderate level of knowledge on IUCD. Age, gestation, occupation, and wished number of children were significantly associated with the knowledge level of the respondents ($p < 0.005$). **Conclusion:** This current study showed that the knowledge level of IUCD among antenatal mothers in Hospital Ampang was average. Age, gestation, occupation, and number of children were significantly associated with level of knowledge and educational level and sources of information of antenatal mothers were not associated with knowledge level. At the facility, health workers such as doctors and nurses play an important role as main service providers of family planning and that could be the reason why they were the key sources of information for women seeking family planning.

Keywords: Antenatal mothers; Family Planning; IUCD; Knowledge

INTRODUCTION

Globally, 14.3% of women of reproductive age use intrauterine contraception (IUC), but the distribution of IUC users is strikingly non uniform (Buhling, et. al, 2014). In Malaysia, contraceptive prevalence rate (CPR) during past three decades has been steady, with only 34% of women practicing modern contraception (Najafi-Sharjabad, et. al, 2014). Intrauterine Device (IUCD) is one of the modern contraceptive methods besides barrier, hormonal, and permanent method. IUCD is a small piece of flexible T- Shaped device that fits into the uterus that can prevent sperm from reaching and fertilizing the eggs. It is also 98% effectiveness and can be long lasting up to five years (Speedoc, 2022). In Malaysia, only 40.6% of women in community have a good knowledge on IUCD meanwhile 18.2% have scored average and the rest 41.2% scored poor knowledge of IUCD (Nur Ain Mahat & Azizul Halid, 2017). Therefore, this study aimed to determine the knowledge level on IUCD and associated factors between knowledge level on IUCD and socio-demographic variables among antenatal mothers.

METHODOLOGY

Study Design

A cross-sectional study was conducted from 1st October to 30th October 2023 using questionnaire to collect data on socio-demographic information, knowledge on IUCD, sources of information, current family planning method, and side effect on IUCD in Hospital Ampang.

Sampling Method

Non-probability sampling method - convenient sampling technique was used to select the participants based on the inclusion and exclusion criteria required for this study due to restricted time and resources.

Sample Size Calculation

Sample size was calculated by using formula Yamane (1967) with 95% accuracy. Based on this formula, the population was calculated in N-646 (calculated and average of 2 months) and the margin of error, $e = 0.05$. Therefore the sampler size calculated as n-247 with 10% of drop out of sample.

Inclusion Criteria

Antenatal mother who admitted to antenatal ward (4C and 4D) at Ampang Hospital, who can converse or communicate, able to write and read in English or *Bahasa Melayu*.

Exclusion Criteria

Antenatal mothers those who are in labour and women who are contraindicated for IUCD insertion including history of intrauterine infection (PID) within 3 months, cervicitis or vaginitis, cancer of reproductive organs, postpartum Endometritis or septic abortion within 3 months, and suspected Chorioamnionitis.

Instruments

Well-structured questionnaire adopted from Aniechi and Ezuma (2022) was used in this Study. Section A contained questions on participant's demographic data (7 Questions), Section B consists of dichotomous questions on knowledge of intrauterine device (4 questions), Section C contained question (multiple chose-chose the answer related to the respondent) on the use of intrauterine device (2 questions), and Section D contained of 2 dichotomous questions on the common side effects of the use of intrauterine device. Knowledge on IUCD will be measured by the total number of 8 items with a score of 0 for NO and scored 1 for YES. Total scored were categorized based on the percent of the distinct characteristics of IUCD as "high" for those who scores 80% and above, "moderate" those who scores 60 – 79%, and "low" for those who are scores less than 60%.

Reliability and Validation of the Instrument

Reliability was done with a Cronbach's alpha test with score 0.6 and validation was not done to this questionnaires as it was done in Aniechi and Ezuma, (2022) study.

Ethical Consideration

The ethical approval was obtained from Medical Research and Ethic Committee (NMRR ID-23-02015-MDW (IIR)) and Clinical Research Centre (CRC) Hospital Ampang to conduct this study.

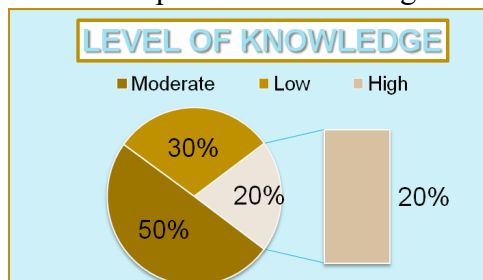
Data Collection Procedure

Before the questionnaires were distributed to the respondents, a brief explanation was given to the respondents in all antenatal wards on the study and questionnaires. Then, the questionnaires were distributed to 247 respondents over the period of 1 month (1st October – 31st October 2023) with a time of 15 to 30 minutes. Respondents were instructed to drop the filled questionnaires in a box provided. Data were analyzed using SPSS Version 25 on Descriptive and inferential statistic (Chi-Square test) for the association between knowledge level and socio-demographic variables.

FINDINGS AND DISCUSSION

Level of Knowledge on IUCD among Antenatal Mothers

Graph 1: The Respondents' knowledge level on IUCD



Graph 1 showed that majority of the antenatal mothers (123 of 247; 49.8%) have moderate level of knowledge on IUCD followed by high knowledge level by 74 respondents (30.1%) and 50 (20.2%) showed to possess low level of knowledge. This study is familiar to Fuziah Paimin & Rafaie Amin (2019) where they stated that 45% of reproductive and married women who are aged 15 to 49 years old have knowledge about contraceptive method. Similarly to Aniechi and Ezuma, (2022) found that more than half of respondents have good knowledge of intrauterine device but only 23 (14%) make use it. In contrast, the knowledge of IUCD among women was poorer even though most of them knew the device can prevent pregnancy (Builu & Naidoo, 2015). In addition, Asnani et al., (2019) showed that 126 out of 350 women (36%) in Northern India had knowledge of PPIUCD.

Association between knowledge level on IUCD and socio-demographic variables of the antenatal mothers

Table 1: Associated Factors and Knowledge on IUCD among Antenatal Mothers

Variable	<i>n</i>	Low <i>n</i> (%)	Moderate <i>n</i> (%)	High <i>n</i> (%)	<i>X</i> ² statistic (<i>df</i>)	<i>p</i> value
Age					21.15 (4)	< 0.001 ^a
18 - 25	30	4 (13.3)	18 (60.0)	8 (26.7)		
26 - 34	136	34 (25.0)	75 (55.1)	27 (19.9)		
Above 35	81	12 (14.8)	30 (37.0)	39 (48.1)		
Gestation					13.83 (4)	0.008 ^a
First	97	26 (26.8)	54 (55.7)	17 (17.5)		
Second - Fourth	128	22 (17.2)	59 (46.1)	47 (36.7)		

Fifth and above	22	2 (9.1)	10 (45.5)	10 (45.5)		
Number of live births					12.19 (6)	0.057 ^a
0	76	20 (24.7)	45 (55.6)	16(19.8)		
1	65	16(22.5)	37 (52.1)	18 (25.4)		
2	46	8 (14.5)	25 (45.5)	22 (40.0)		
3	61	6 (15.0)	16 (40.0)	18 (45.0)		
Religion						0.342 ^b
Islam	233	47 (20.2)	114 (48.9)	72 (30.9)		
Buddha	5	2 (40.0)	3 (60.0)	0 (0.0)		
Hindu	5	1 (20.0)	2 (40.0)	2 (40.0)		
Christian	4	0 (0.0)	4 (100.0)	0 (0.0)		
Educational level					4.96 (4)	0.291 ^a
Primary	2	1 (50.0)	0 (0.0)	1 (50.0)		
Secondary	60	12 (20.0)	35(58.3)	13 (21.7)		
Tertiary	185	37 (20.0)	88 (47.6)	60 (32.4)		
Occupation					30.89 (6)	< 0.001 ^a
Unemployed	50	12 (24.0)	28 (56.0)	10 (10.0)		
Self-employed	13	2(15.4)	8 (61.5)	3 (23.1)		
Government	92	8(8.7)	39 (42.4)	45(48.9)		
Private	92	28 (30.4)	48 (52.2)	16 (17.4)		
Number of children want in life					9.01 (2)	0.011 ^a
≤ 2	90	27 (30.0)	42 (46.7)	21 (23.3)		
3 and above	157	23 (14.6)	81 (51.6)	53 (33.8)		
Sources of information					1.40 (2)	0.496 ^a
Non-Healthcare provider	99	17 (17.2)	49 (49.5)	33(33.3)		
Healthcare provider	148	33(22.3)	74(50.0)	41 (27.7)		

Table 1 showed that age, gestation, occupation, and wished number of children was significantly associated with the knowledge level of the respondents ($p < 0.005$). Similar result was obtained for antenatal mothers wished to have three or more children who scored 51.6% ($p = 0.011$) with moderate knowledge level and thus, there was evidence of a significant association between the two variables. Similarly, the knowledge level of the antenatal mothers was not significantly associated with their religion, educational background, and sources of information ($p > 0.05$). Daba et al. (2021) stated that their study also had significantly associated with knowledge of pregnant women with demographic variables such as age, educational level, occupational status, and monthly income. In contrast, Sisay et al., (2023) found that antenatal mothers who attained secondary, college, and above higher educational level have good knowledge of IUCD.

CONCLUSION

This study showed that the knowledge level of IUCD among antenatal mothers in Hospital Ampang were average. Age, gestation, occupation, and number of children were significantly associated with level of knowledge. At the facility, health workers such as doctors and nurses play an important role as main service providers of family planning and that could be the reason why they were the key sources of information for women seeking family planning.

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RELATIONSHIP BETWEEN SLEEP HYGIENE PRACTICES, SLEEP QUALITY, AND ANXIETY LEVEL AMONG NURSING STUDENTS

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ABSTRACT

INTRODUCTION: A key element of every aspect of our health is sleep. To practice excellent sleep hygiene, one must get a reasonable amount of sleep. Maintaining good sleep hygiene can help enhance both mental and physical health by providing the body with the restorative powers that come from peaceful sleep. Sleep quantity refers to how many hours a person sleeps each night, whereas sleep quality refers to the level of sleep. Poor sleep quality adversely influences day-to-day activities and may predispose affected individuals to poor health and quality of life outcomes and mental health issues such as anxiety, depression, and other problems. As a result, this study primarily examines how sleep affects mental health's detrimental elements. By filling in this study gap, the results will aid in creating focused interventions that will boost academic performance, cognitive functioning, sleep quality, and anxiety management, and possibly even the general well-being of nursing students in the future.

OBJECTIVES : This study investigates the correlation between sleep hygiene, sleep quality, and anxiety levels among nursing students at the University of Cyberjaya.

METHODOLOGY : A quantitative correlation design was employed involving 122 respondents, utilizing Pittsburgh Sleep Quality Questionnaire (PSQI), Sleep Hygiene Index Questionnaire (SHI), and Generalized Anxiety Disorder-7 Questionnaire (GAD-7). A purposive sampling technique was carried out based on this survey's inclusion and exclusion criteria. This study also collects participants' socio- demographic factors such as age, gender, religion, ethnicity, and level of education to interrelate the relationship between anxiety levels.

RESULTS : Data were collected via an online survey and analyzed using IBM SPSS version 29. The results show that there is a significant relationship between sleep hygiene practices, sleep quality, and anxiety levels among nursing students. The majority of the respondents have recorded having 'mild anxiety'.

CONCLUSION : This study explored the relationship between sleep hygiene practices, sleep quality, and anxiety levels among nursing students. The results suggest that poor sleep hygiene practices are associated with reduced sleep quality, which in turn correlates with higher levels of anxiety. This emphasizes the importance of promoting effective sleep hygiene habits to improve sleep quality and reduce anxiety in nursing students.

Keywords: Anxiety, nursing students, sleep hygiene, sleep quality.

INTRODUCTION

Sleep is a fundamental property of all areas of our health. A healthy amount of sleep is essential for good sleep hygiene (Van et al., 2019). Becker further added that sleep hygiene refers to a set of practices and habits that promote sound, restful sleep. Good sleep hygiene can help improve physical and mental health by giving the body the rejuvenation that only serene sleep can provide (Patel, 2021). It entails sticking to a consistent sleep schedule, setting up a relaxing sleeping environment, avoiding stimulants right before bed, and minimizing screen time before bed (Gipson et al., 2019). Xu et al., (2021) emphasized that most adults should sleep for at least seven hours per night, while young people whose sleep needs vary depending on their age need more sleep due to their fast growth and development. Sleep hygiene, a concoction of environmental factors and behavioral patterns, influences sleep quality and can potentially cause sleep disorders (Baranwal et al., 2023).

The number of hours a person sleeps every night is called sleep quantity, while the quality of sleep is called sleep quality (Safitra & Muharyani, 2019). A study by Scott et al., (2021) highlighted that poor sleep hygiene can contribute to the development or exacerbation of various mental health issues, which include depression, bipolar disorders, anxiety disorders, attention deficit hyperactivity disorders (ADHD), substance abuse disorders, schizophrenia, and post-traumatic stress disorders (PTSD). Despite this, very few studies have investigated the impact of poor sleep hygiene, which can also significantly affect physical health, causing cardiovascular problems, obesity, weakened immune systems, and reduced cognitive functions (Scott et al., 2021; Hertenstein et al., 2019). A study conducted in Malaysia highlighted that anxiety disorder ranks among the top 10 causes of disability-adjusted life years for Malaysians aged 10 to 44 in 2019, according to the (World Health Organization., 2019). For instance, among Malaysia's 1851 university students, the prevalent risk of anxiety was 29% (Mohamed et al., 2021).

METHODOLOGY

A purposive sampling technique was carried out based on the inclusion and exclusion criteria. The nursing lecturer gave all nursing students who studied at the University of Cyberjaya in both the Diploma and Degree programs a Google form link with a brief description of the study. A respondent information sheet explaining the study's objectives, confidentiality, and voluntary nature was included in the first section of the Google form. Consent to participate in the study was indicated in one of the sections in the Google form.

The researcher aimed to broaden the scope of the study to include all students studying at the University of Cyberjaya. However, due to logistical limitations, collecting data from the entire population was not feasible. Hence, the study was restricted to participants from nursing faculty who pursuing diploma and degree programs. The inclusion criteria for this study were nursing students who are presently enrolled in the University of Cyberjaya, presently pursuing both a Diploma and Degree program, were in any year of the program, were aged 18 years to 27 years old, either male or female and willing to participate in the study. The exclusion criteria for the subjects of this study are students from the University of Cyberjaya who are alumni, nursing students who transferred to other faculty, and other faculty students at the University of Cyberjaya.

Approval for this study was obtained from the Research Ethics Committee at the University of Cyberjaya. Participants were informed about the study's purpose, including an online consent form which will be obtained before answering the online survey questionnaires. Participants were informed that their participation is voluntary and that refusing to participate in the research would not affect their training, and they may withdraw from the research at any time for any reason. Participants have the right to expect that all information provided will be kept confidential, their participation will be treated as anonymous, and any information about them will only be disclosed with their consent.

Once the Ethical Committee of the University of Cyberjaya approved the study protocol, the author shared the online survey questionnaires' website link to nursing lecturers at the University of

Cyberjaya to be distributed to nursing students. Online consent was obtained before answering the online survey questionnaires. It was made clear that their participation was entirely voluntary, and that declining to participate in the study would not adversely affect their academic standing or prospects. All of them were provided with relevant and adequate information about the purpose and scope of the study, the types of questions that will be asked, and their freedom to leave the research at any time they wish.

To keep the participant's information confidential, each contributor was given a pseudonym number (1, 2, 3) instead of their name. Each of these participants was given two weeks to answer those questionnaires. All the collected data were kept on the researcher's laptop to ensure the participants' privacy and confidentiality.

The data were downloaded from an online Google survey with Microsoft Excel and transcribed and transformed into IBM SPSS version 29 for statistical analysis. The data were collected 3 weeks after theory classes started because that period is crucial as that's when assignments, midterms, and notes were given to the students. Hence, it's the right period to survey to evaluate their sleep hygiene practices, sleep quality, and anxiety levels. Overall, the rights and welfare of the participants were given the highest attention and care during the study's execution. The entire procedure of the study was conducted ethically and safely to gain insightful information.

RESULTS AND DISCUSSION

Table 4.3 Anxiety level among Nursing Students (n=122)

Anxiety Group Level	Frequency (n)	Percentage (%)	Mean	SD
Minimal	34	27.9	1.97	1.48
Mild	53	43.4	6.88	1.12
Moderate	22	18	11.72	1.66
Severe	13	10.7	17.00	1.58

Age, gender, religion, ethnicity, nationality, and education level were all examined in this study as potential influences on the anxiety level. The majority of the nursing students have reported having 43.4% of mild anxiety.

Table 3.2 shows the Correlation between Sleep Hygiene Practices, Sleep Quality, and Anxiety levels Among Nursing Students.

	Anxiety Level Score	Sleep Quality Score
Anxiety Level Score		
Sleep Quality Score	r=0.524 p-value <0.001	
Sleep Hygiene Score	r=0.464 p-value <0.001	r=0.286 p-value 0.001

Pearson Correlation Test

This study found that anxiety does have a significant relationship between sleep hygiene practices and sleep quality among nursing students. This can be concluded because of the value of <0.001 in the Pearson Correlation test. Studies by (Anwer et al., 2019; Ali et al., 2023) revealed that specific worry over falling asleep together with other sleep hygiene practices predicted poor sleep quality, and can be used to support these results.

Their longitudinal study also found that sleep hygiene was connected to poor sleep quality. Similar results about the tendency to correlate anxiety to sleep loss were found (Carciofo, 2020). Furthermore, Tehran University research revealed that inadequate sleep hygiene is the root cause of poor sleep quality (Rezaei et al., 2018).

University students' academic performance, general health, and other variables, like mental health, may all benefit from improved sleep patterns brought about by further research into causality, temporal linkages, and the function of sleep hygiene. Following research on Qazvin University medical students, a lack of knowledge about good sleep hygiene practices contributed to a high rate of students experiencing poor sleep quality (Mardalifa, Yulistini, and Susanti, 2018).

CONCLUSION

The findings indicate that anxiety is associated with sleep hygiene and sleep hygiene is associated with sleep quality. Raising levels of academic and professional ambition and lowering future anxiety are two benefits of improving the curriculum in all grade levels, particularly in university topics, and implementing educational programs run by the Ministry of Education to increase self-efficacy. Future research must examine anxiety in all nursing students in a variety of contexts and at varying levels.

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