Volume 16, 2023/ ISSN No: 1823-8661

JOURNAL of MALAYSIAN NURSES ASSOCIATION

JOMNA CONTENTS

ISSN NO: 1823-8661

The Journal of Malaysian Nurses Association (JMNA) is published annually by the Malaysian Nurses Association. All articles published, including editorials represent the opinion of authors and not necessarily those of the Editorial Board or the Malaysian Nurses Association unless otherwise expressed.

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FROM THE EDITORIAL DESK

Welcome to the 2023 Issue of JMNA!

Malaysian Nurses Association has the honour of establishing a platform for nurses in Malaysia to publish their research articles in their Journal of Malaysian Nurses Association (JOMNA) since 2005. This started in view to expand and promote academic exchange with nursing professionals.

As chief editor of JOMNA, I welcome the submission of manuscripts of relevance to nursing related research. You are encouraged to submit original articles addressing research into the practice, theory, or philosophy of nursing. All articles submitted will be reviewed prior to publication.

This issue includes four quantitative and three qualitative research. Research that investigated on nursing care included in this issue. That is assessing nurse's knowledge, attitudes and practice for pressure injury prevention. A study on relationship between quality of work-life, burnout and professional commitment among nurses. Another on Covid 19 that indwell on resilience through faith that explored the interplay of religiosity and stress levels among Muslim undergraduate student amidst the Covid 19 pandemic. In addition a study among student was done about nursing students experiences with the integration of flexible learning in the Clinical Skills Centre. An observational qualitative study was carried out on clinical handover practice in the Emergency and Trauma Department.. The result of these studies may benefit similar research in the future and may have health policy implications.

Nonetheless, conducting research represents a path forward to enriching the lives of our patients and ourselves as well. Please be a lifelong learner and a researcher. I hope you find our articles enlightening and beneficial.

Lastly, I thank all submitting authors, who have toiled in the production of their work and have chosen JOMNA as the journal they would like to publish in.

L. YOHGASUNDARY LETCHUMANAN

THE ASSOCIATION BETWEEN PARENTAL KNOWLEDGE AND ATTITUDES ON CHILDREN'S PICKY EATING BEHAVIOUR

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ABSTRACT

Background: Food is essential for human health as it provides nutrients and energy to assist growth and development. Childhood is an essential period for growth and development. Food consumption and picky eating are significant to understanding by parents to prevent malnutrition and obesity that may lead to other health conditions in future.

Purpose: This study aimed to determine the parental knowledge and attitude and the association between the level of knowledge and attitudes related to children's picky eating behaviour in Kuantan, Pahang.

Methodology: A cross-sectional study was conducted among 147 parents using convenience sampling. All participants who fulfilled the inclusion criteria were recruited in this study.

Results: Data analysis revealed that most participants have a high level of knowledge (95.9%) and practices (94.6%) related to children's picky eating behaviours. There is a significant association between the level of Knowledge and attitude regarding children's picky eating behaviour with an *r*-value of 0.708 (p-0.001).

Conclusion: The study findings revealed that parents in Kuantan have a high level of knowledge and attitude towards children's food consumption behaviours.

Keywords: Knowledge, attitudes, children, picky eating, nutritional

INTRODUCTION

Picky or fussy eating is one of the most common feeding problems. Picky eating behaviour is commonly reported among young children aged one to ten years, where the prevalence of picky eaters ranges from 25% to 66% (Goh & Jacob, 2012; Haszard et al., 2014; Xue et al., 2015; Chao & Chang, 2017) To date, there is no universal definition of picky eating behaviour. Nevertheless, picky eating behaviour is characterised by the unwillingness to try unfamiliar foods or new foods and having solid preferences towards certain foods. Picky eating can cause imbalanced energy intake and inadequate dietary nutrient intake (Taylor et al., 2015; Mascola et al., 2010). Some examples of unhealthy diets include limited vegetable consumption, excess meat consumption and unhealthy snacks such as sweets or chips. Such an unhealthy diet can result in unfavourable health outcomes, including nutritional deficiencies and poorer cognitive function. Picky eating behaviours may lead to many health conditions, such as malnutrition, obesity, and stunting.

Globally, UNICEF estimated that there are 170 million underweight children and at least 41 million overweight children under five years of age (UNICEF, 2020). In Malaysia, based on the National Health and Morbidity Survey 2019 report, the prevalence of underweight has increased from 12.4% in 2015 to 14.1% in 2029. The prevalence of stunting increased from

17.7% in 2015 to 21.8%, while the prevalence of wasting was also found to increase from 8.0% in 2015 to 9.4% in 2019 (National Institutes of Health (NIH), Ministry of Health Malaysia, 2019).

Inappropriate food intake, environment, and picky eating behaviours may further affect the growth of children below five years of age. Children can develop these habits for various reasons. Russel et al. (2018) stated that children develop picky eating behaviour because of early feeding difficulties, late introduction of lumpy foods at weaning, pressure to eat, and early choosiness. Some children are more sensitive to the foods' taste, smell, colour, and texture. They might reject the foods based on these attributes even before they consume them. These factors also depend on the children's cultural background.

Knowledge and attitudes among parents on food consumption, dietary habits and picky eating behaviours to choose the preference food is crucially important. Thus, this study was conducted to determine parents' knowledge and attitudes regarding children's picky eating behaviours and to identify the association between these two variables.

METHODOLOGY

Study design and sampling

This study employed a cross-sectional design to determine the knowledge and attitude related to preschool children's picky eating behaviour. The convenience sampling method was used to recruit 147 parents with children aged 4 to 6 years in kindergarten registered with *Jabatan Kebajikan Masyarakat* in Kuantan. Parents who have children who do not attend kindergarten during data collection and children with physical or mental disabilities were excluded from this study.

Study tool

The self-completion questionnaire in dual languages consisted of three parts adopted from the previous study was used in this study. Part 1 consisted of a questionnaire related to the socio-demographic background of the participants, including age, educational level, and household income; Part 2 related to parent's knowledge regarding eating habits based on Malaysia's Healthy Lifestyle Campaign 1997 and Malaysia Dietary Guidelines 2020 (Ministry of Health Malaysia, 2020), consisted of 8 items with a five-point Likert scale (strongly disagree=1, disagree=2, neutral=3, agree=4, strongly agree =5). Each participant's knowledge scores were calculated and summed up to give the total knowledge score. The level of knowledge was categorised into three levels: poor level - total score of 8-20; intermediate level – total score of 21-28; and high level – total score of 29-40 ((Zakaria et al., 2022). Part 3, related to parental attitudes, was assessed using the adopted Parental Feeding Style Questionnaire (PFQ), which consisted of four variables measured using a five-point Likert-type scale (Never=1, Rarely=2, Sometimes=3, Often=4, Always=5). Four items assessed parents' feeding attitudes. A score of >10 is considered a positive attitude, while equal or less than ≤10 is considered a negative attitude. All adopted questionnaires were conducted in a pilot study to analyse reliability and consistency with Cronbach's alpha coefficient of > 0.70 and feasible use in Malaysia.

Data collection

This was conducted using an online survey from March to April 2022 among parents with children aged between 4 and 6 years who went to kindergarten and registered with the Department of Social Welfare. The parent's details information was obtained from selected

kindergartens, and parents were contacted for an explanation and consent form. Those who agreed to participate in the study were sent a questionnaire link.

Data analysis

Descriptive and Pearson Correlation statistical analyses were used to analyse socio-demographics, level of knowledge, and level of parents' attitudes related to picky eating behaviours. The Pearson correlation was used to analyse the association between parents' knowledge and attitudes. The level of significance was set at a p-value of <0.05. All data obtained were analysed using the Statistical Package for Social Science (SPSS, version 28.0).

Ethical considerations

This study obtained ethical approval from the Kulliyyah of Nursing Postgraduate Research Committee (KNPGRC) of the International Islamic University Malaysia and IIUM Research Committee (IREC). The consent form will be attached to the questionnaire. The participants' information was confidential.

RESULTS

Socio-demographic background

147 participants participated in this study. The results of sociodemographic data are presented in Table 1. Table 1 shows the sociodemographic data of the parents, including their ages, education level, ethnicity, employment status and household income. The highest age group was between 23 and 32 years (40.1%), and the highest education level among participants was college or university (61.9%). Most of the participants still of working age, with 88.4% were working with household incomes between RM 2501 – RM 5000 (55.1%)

Level of knowledge related to children's picky eating behaviours.

Table 2 shows parental knowledge related to children's eating behaviour. Most participants have a high level of knowledge (95.9%), an intermediate level related to children's eating behaviour was 4.1%, and none obtained a poor level of knowledge.

Table 1: Sociodemographic characteristics of parents

Variables		Frequency (N)	Percentage (%)
Age (years)	18 - 22	5	3.4
	23 - 27	56	38.1
	28 - 32	59	40.1
	> 32	27	18.4
Education Level	Secondary education	56	38.1
	College/University	91	61.9
Race	Malay	137	93.2
	Indian	6	4.1
	Chinese	4	2.7
Employment status	Unemployed	17	11.6
	Employed	130	88.4
Household Incomes	< RM 2500	6	4.1
	RM 2501 – RM 5000	81	55.1
	RM 5001 – RM 10000	50	34.0
	> RM 10000	10	6.8

Table 2: Parental knowledge level related to Picky Eating Behaviour (N=147)

Level of knowledge	Frequency (f)	Percentage (%)
Poor level of knowledge	0	0
Intermediate level of knowledge	6	4.1
High level of knowledge	141	95.9

Table 3: Parental attitudes level related to Picky Eating Behaviour (N=147)

Level of attitude	Frequency (N)	Percentage (%)
Negative attitude	8	5.4
Positive attitude	139	94.6

Level of practice related to children's picky eating behaviours.
Table 3 illustrates the level of attitude among parents related to picky eating behaviours. The majority of the participants obtained positive scores compared to negative scores, with 94.6% and 5.4%, respectively. This finding shows that parents in Kuantan have good attitudes and concern about their children's consumption**.**

The association between level of knowledge and attitude regarding children's picky eating behaviour.
The association between level of knowledge and attitudes was tabulated in Table 4. There is a strong correlation between parents' level of knowledge and attitudes related to children's picky eating behaviours. This shows that the level of attitudes is directly related to parents' knowledge in monitoring their children's food consumption.

Table 4: The association between level of knowledge and attitude regarding children's picky eating behaviour (N=147)

Variables	**Level of Knowledge**	**Level of Attitude**	**P-value**
Level of Knowledge	**-**	0.708**	<0.001

**Correlation is significant at the 0.01 level (2-tailed)

IMPLICATIONS TO NURSING

Parental Knowledge of picky eating behaviours

A total of 147 participants participated in this study. This study consisted of parents with children aged between 4 and 6 years. The majority race in this study was Malay, at 93.2%. Regarding educational level, parents went to college or university, and secondary education

with 91 parents and 56 parents, respectively. Findings from the study revealed that most parents had tertiary education levels, and access to information on healthy food consumption was good.

The level of Knowledge was measured by the Total Participant's knowledge score divided by the Total Maximum score multiple with 100% (Zakaria et al., 2022). The knowledge levels in this study were divided into three categories based on the formula by Zakaria et al. (2022): low level of Knowledge (8–20), intermediate level of Knowledge (23-28), and high level of knowledge (29–40). According to the data analysis, it is clearly shown that 95.1% of the parents have a high level of knowledge related to children's picky eating behaviour. In comparison, 4.1% of the parents have an intermediate level of knowledge related to children's picky eating behaviour, and none of the parents have poor knowledge related to this study.

The current study revealed that most parents have good knowledge of children's food consumption but do not mention the specific food consumed. In contrast, a study by Steinsbekk et al. (2011) shows that children from Northern European countries (Finland, Sweden) preferred food with hard texture compared to children from Southern European countries (Italy, Spain) who preferred soft texture food. The type of food consumed must also be considered by parents, specifically for children below five years of age, because the type of food may influence their dietary intake. However, various factors may influence food consumption, including parental feeding practices, parental education level, cultural impacts, diet habits, and socioeconomic status (Vollmer & Rachel, 2019)

Parental attitudes to picky eating behaviours

Picky eating behaviour was more likely among children with mothers or other family members who were picky eaters. Previous studies also suggested that children often imitate or adopt the eating behaviours their parents observe as influential role models. Hence, family members, especially parents, should portray good eating habits to influence a child's dietary preference. The current study showed that parental attitudes towards their children's picky eating behaviours were positive (94.6%) compared to negative attitudes (5.4%), illustrating that parents were concerned about their children's food consumption.

A longitudinal study by Beiger et al. (2016) found that picky eating behaviour was unrelated to weight-related issues among school-aged children. However, picky eaters may still experience inadequate nutrient intake due to limited dietary intake (Chao, 2018), leading to unfavourable growth. However, the inconsistent findings between picky eating behaviour and nutritional status might be due to the lack of a universal definition for picky eating behaviour used in past studies. Nevertheless, the current study did not report the association between picky eating behaviour, nutritional status, and growth and development outcomes.

The association between level of knowledge and attitude toward picky eating behaviours

The picky eating behaviours may be associated with many factors, including parents' knowledge, attitudes, culture, and socio-economic. The current study identified the association factors between the level of knowledge and parents' attitudes towards their children's picky eating behaviours. This study finding showed a significant association between the level of knowledge and attitude related to the children's picky eating behaviour

with *r*- 0.708 and a p-value <0.001. Parents play a crucial part in their child's growth and development. Parents need knowledge about picky eating habits in children and their consequences for their children and the parents. Parents who understand nutrition can influence and improve their child's nutrition knowledge. Zarnowiecki et al. (2012) showed that parents with a lower education level were less likely to feel that teaching their children about healthy eating was essential. Parents also need to have Knowledge about effective feeding practices. However, parents' education levels can vary because of differences in country and socioeconomic areas.

A study by Warkentin et al. (2012) showed an association between picky eating and increased eating pressure. Understanding the influence of parental attitudes on children's food preferences and behaviours can provide valuable insights into practical strategies for managing and addressing picky eating. Further research is needed to explore the underlying mechanisms and potential factors that mediate the relationship between parental attitude and children's food pickiness. By recognising the association between parental attitude and children's food pickiness, healthcare professionals and practitioners can provide targeted support and interventions to help parents develop positive attitudes and feeding practices that foster healthy eating habits in their children.

CONCLUSION

In conclusion, this study demonstrated significant associations between the level of Knowledge and attitude and between the level of Knowledge and practice concerning children's picky eating behaviour. These findings emphasise parents' crucial role in children's growth and development. Parents need to know about picky eating habits and understand the consequences of such behaviours for both their children and them. Understanding nutrition enables parents to influence and enhance their child's knowledge regarding nutrition. Hence, providing accessible education and support to parents from diverse backgrounds is essential.
Furthermore, the study revealed a significant association between parents' Knowledge and their level of practice concerning children's picky eating behaviour. Parental feeding practices substantially impact children's eating habits and food choices. Parents serve as health promoters, role models, and educators regarding their children's eating behaviours.

RECOMMENDATIONS

Several recommendations can be made to support parents further and promote healthy eating behaviours in children. First and foremost is to develop and implement educational programs and resources targeted at parents to enhance their knowledge about picky eating habits, nutrition, and practical feeding practices. These programs can be tailored to address the specific needs and challenges parents from different educational backgrounds and socioeconomic areas face. Next is to design and evaluate parenting interventions that promote positive attitudes towards food and feeding practices. These interventions can guide the creation of a supportive and nurturing feeding environment, establish healthy eating habits, and address picky eating behaviours in children.

CONFLICT OF INTEREST

The Author has no conflict of interest.

FUNDING

This study was self-sponsor and did not receive any financial support.

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RELATIONSHIPS BETWEEN QUALITY OF WORK-LIFE, BURNOUT AND PROFESSIONAL COMMITMENT AMONG NURSES

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ABSTRACT

Background: Professional commitment has significant influence on nurses' job performance and patients' outcomes. An increasingly excessive workload seems to be an inevitable consequence of the advancement in medical technology. This high workload and poor working environment can lead to poor quality of work-life and eventually, burnout which directly affect nurses' job performance and professional commitment.

Purpose: This study was aimed to determine the relationships between quality of work-life, burnout and professional commitment among nurses.

Methodology: This study adopted a cross-sectional descriptive design. Multistage sampling was used to recruit nurses from two government and two private hospitals according to department and categories in Penang, Malaysia. A self-administered questionnaire was used to collect the data.

Results: A total of 417 nurses participated in the study. The present study found that nurses demonstrated a relatively moderate professional commitment with a mean of 35.71 ± 5.63. About 54.9% of the nurses were satisfied with their working environment. Additionally, 39.6% and 23.7% nurses revealed mild and moderate burnout in emotional exhaustion. P value of age groups (0.008), study setting (0.011), job position (0.023), nursing tenure (0.001), current hospital of years working experience (0.018), and post basic (0.040) were found significant associated with PC among nurses. Conversely, there was a negative relationship between burnout and professional commitment. Burnout accounted 24.2% and work-life 13.2% of the variance in professional commitment.

Conclusion: The study highlights the importance of improving quality of work-life, reducing nurses' burnout in an effort to enhance professional commitment among nurses.

Keywords:
Work conditions, burnout professional, burnout psychological, work performance, and workload.

1. INTRODUCTION

Nurses are responsible for providing a professional nursing service which encompasses respect for the patient, following a standard of care, building advocacy and working effectively in a team while giving direct care to a patient. Today, an excessive workload for nurses is an inevitable consequence of each patient now being treated according to his/her individual needs. A worsening nurse-patient ratio and increasing the number of specific nursing tasks has had a direct impact on nurses' quality of work-life (Yee et al., 2021). Moreover, documentation has always been important to provide protection for the nurses and patients as an evidence of care given, however, an overload of documentation is now causing a serious burden to the nurses and, as a result quality of care is suffering (Hsiu et al., 2015). The main compliant among nurses is about having too much clerical work (86.8%); three quarters of the nurses felt that they could be more efficient if they had less paperwork to do, allowing them devote more time to each patient while, 42.9% felt that they do not have sufficient time for patient care (Yew et al., 2019). Despite the heavy workload on nurses, they still persevere in executing their daily tasks. Similarly, Zaidah et al. (2015) mentioned nurses routinely deal with a heavy workload, lack of staff, tight daily schedules, technical problems in the workplace, pressure from senior management and the increasing demands of patients under care.

Currently, sub-specialties are being introduced to improve specific care for individuals in the community and career development for healthcare provider. Thus, nursing has changed from an ordinary, unskilled job into a recognised profession with the associated increase in professional status and independence, expansion in the number of roles and greater demands on performances (Kelbiso et al., 2018). Indeed, there is no doubt that nurses are currently facing difficulties because of an ever-expanding number of functions, duties, roles and responsibilities of the job to keep pace with advancing technology (Nesje, 2017). Certain issues have arisen in nursing that have caused a decrease in the quality of work-life which sometimes diminishes nurses' previously positive professional commitment (PC) which they have built up throughout their working years (Agatha, 2020). In the long term, with such a burden of current issues in nursing, low QWL and felt burnout will inevitably lead to low PC (Nesje, 2017).

Nowadays, patients are highly educated, demand good quality nursing care and have high expectations from nurses. Nurses need to update their knowledge and skills to meet these patient/public expectations. Despite this, a good deal of QWL issues have been caused by nurses' poor work conditions and dissatisfaction with management decisions, increasing workloads, high work-related stress, disruptive shift work, and an inadequate educational and professional development opportunities (Chang et al., 2017). A nurse manager's role is the most important factor in the development of a nurse's PC. Job dissatisfactions and an intention to leave the profession arise when nurses' competency in providing knowledge-based care are ignored by managers. This can occur when managers focus only on the routines and the physicians' orders (Bayoumy et al., 2016). This worsens if pressure at work increases and especially if a nurse is vulnerable to burnout (Agatha, 2020). A demanding and tiring work environment is the central cause of burnout.

Jafaraghaee et al. (2014) found that burnout is the main constraint on a nurse's PC. Nesje (2017) mentioned an association between burnout and PC amongst professional workers. Maslach et al. (1981) discovered that burnout can have an impact on various self-directed indices of personal distress including physical exhaustion, insomnia, poor working environment, high usage of alcohol and drugs, marital and family problems. Similarly, Chang et al. (2017) found many adverse health outcomes such as depression, anxiety, neck and back pain, sleep disturbance and perceived memory impairment due to burnout. In support of these findings, Jafaraghae et al. (2017) listed dissatisfaction, depersonalization and disappointment as the most common causes of nurses deciding to leave profession. Similarly, Anisa et al. (2020) found that work-related pressure can lead to burnout, and if this increases, higher employee turnover will result.

Quality of work-life, burnout and PC have a direct impact on the profession, the organization, the patients and the community. Negative factors such as overwork, dissatisfaction with management and being ignored can cause nurses to be stressed, which can lead to emotional exhaustion, burnout, and depression (Siti et al., 2018). Moreover, Yuen-Onn et al. (2012) mentioned the rapid expansion of the nursing workforce in Malaysia may pose a threat to nurses' welfare and impact on the quality patient care in long term. Struggling with high job expectation and work related stress exacerbates nurses' burnout and cause attrition in the workforce (Wong et al., 2014). Therefore, it is important to foster positive environment in order to boost nurses' inner self worth and dissuade them from leaving the profession. This study aimed to determine the relationships between QWL, burnout and PC among nurses. The specific objectives of the study were: (1) to assess the level of QWL, burnout and PC, (2) to determine the association between sociodemographic variables with QWL, burnout and PC and (3) to determine correlation between QWL, burnout and PC among nurses.

2. METHODOLOGY

2.1 Design

The study adopted a cross-sectional descriptive design.

2.2 Participants

Nurses were recruited from four hospitals; two governmental and two private. Multistage sampling was employed. In the first stage, the hospitals were stratified into government and private settings. In the second stage, two government and two private hospitals were randomly selected. In third stage, the nurses were selected proportionately which made up 232 nurses from private and government hospitals respectively. In fourth stage, the nurses were selected randomly from medical, surgical, paediatric, maternity and intensive care unit. However, all participants responded voluntarily and any withdraw of participants, other eligible participants were chosen based on the odd numbers and years of working experience. Estimated sample size were 464 nurses calculated using formula by Taherhoost (2016). A self-administered questionnaire was used to collect the data among nurses.

2.3 Measures

The self-administered questionnaire consists of 4 sections which were Section A: Sociodemographic variables (14-items) which included age, gender, education level, study setting, marital status, job position, nursing tenure, years of current hospital working experience, years of current position working experience, net salary, post basic, type of employment, total working hours per shift, type of shift and total maximum number of patient taken care per shift.

Section B: QWL with nine domains on working environment (6-items), organizational culture (7-items), relation and cooperation (6-items), training and development (4-items), rewards and compensation (5-items), facilities for worker (5-items), satisfaction and job security (7-items), autonomy of work (3-items) and adequacy of resources (3-items). The tool was rated by 5-points Likert scale. Total score of QWL was 245. Scoring method followed recommendation by original author where the QWL level was divided to 'satisfied' and 'unsatisfied'. The scoring which were greater than the overall mean (grand mean) of QWL were categorized to as 'satisfied' and those less than overall mean was categorized to as 'unsatisfied'. Four items were reversed coded in QWL tool which were B1.3, B3.3, B2.5 and B8.4 as mentioned by original author. Permission to adopt was granted by Devappa et al. (2015).

Section C: Maslach Burnout Inventory – Human Services Survey contains 3 subscales which were emotional exhaustion (EE) (9-items), depersonalization (5-items) and personal accomplishment (PA) (8-items) using 7-points Likert scale. Scoring method was done by summing up the score for each of the three subscales (emotional exhaustion, depersonalization and personal accomplishment) separately. The range of zero to six was divided equally to identify the no, mild, moderate and severe burnout among nurses. Permission to adopt was granted by Maslach et al. (1981) and publisher Mind Garden Corporation.

Section D: Professional commitment consists of 10-items and was rated by 5-points Likert scale. Permission to adopt was granted by Siraneh et al. (2018). Total score of PC was 50. The PC score was created based on overall mean score and a higher mean score indicated higher professional commitment, while a lower mean score indicated low professional commitment. Question D1.8 and D1.10 were reversed coded, in accordance with the original author's manual.

2.4 Data collection

Data was collected from 5th May 2022 until 20th May 2022. The survey was conducted face to face after thorough explanation given, providing patient information and sheet, and implied consent was obtained.

2.5 Ethical considerations

The study was conducted in compliance with ethical principles outlined in the Declaration of Helsinki and the Malaysian Good Clinical Practice Guidelines. A Medical Research Ethics Committee (MREC) approval letter with reference number NMRR ID – 22 – 00364 – OE4 (IIR) was forwarded to the four relevant hospitals and permission of site approval was obtained. Participants in this study was voluntary. A copy of the information sheet emphasized participant anonymity and informed consent form was given to the respondents, which they signed and dated. Respondents' names were kept on a password-protected database and linked only with a study identification number for this research. The data were handled, stored and processed confidentially according to ethical standards prescribed by MREC.

2.6 Data Analysis

Statistical Package Social Sciences version 23.0 was used for data analysis. Descriptive statistics were frequencies, percentages, mean and standard deviation which were presented in tables. Inferential statistics were independent T-Test, One-Way ANOVA test (using analysis of variance), Pearson's r correlation was used to determine the association between

sociodemographic characteristic with PC and multiple linear regression was computed to determine the correlation between QWL, burnout on PC.

3. RESULTS

In total, 417 nurses participated in this study, which yielded a response rate of 89.9%. The socio-demographic characteristic of the nurses. In the data, there were total of 232 (55.6%) nurses from government hospitals and 185 nurses (44.4%) from private hospitals participated in this study. Nurses' aged range from 22 to 70 years old. More than one third of the nurses were aged in between 21 to 30 years old (n = 170, 40.8%). The study was dominated by 387 (92.8%) female nurses. About three quarter of the nurses were certified with diploma level (n=310,74.3%). More than half of the nurses were in staff nurses position. Out of 417 nurses, 163(39.1%) of nurses were having clinical experience of 6 to 10.9 years. The majority was 6 to 10.9 years (n=170, 40.8%) in current hospital years of working experience. The highest salary group were RM1000 to RM2599.99 and RM 2600 to RM 4199.99 with 163 (39.1%) each respectively. More than half of the nurses do not have post basic (n=263, 63.1%). While, the majority of nurses were permanently employed (n=342, 82%), the remaining were contract nurses. The highest total of patient taken care was 6 patients and above (n=283, 68.3%).

Table 1. Socio-demographic characteristics of nurses (N=417)

Variables/Categories	Mean (SD)	Frequency	Percentage (%)
Age	34.37 (8.49)		
Age group			
21-30 years		170	40.8
31-40 years		162	38.8
≥ 41 years		85	20.4
Gender			
Female		387	92.8
Male		30	7.2
Education level			
Certificate		58	13.9
Diploma		310	74.3
Tertiary		49	11.8
Settings			
Government nurses		232	55.6
Private nurses		185	44.4
Marital Status			
Single		130	31.2
Married		279	66.9
Divorced/Widowed		8	1.9
Job position			
Matron		17	4.1
Ward manager		61	14.6
Staff nurse		285	68.3
Community nurse		54	12.9
Nursing tenure	11.46 (7.79)		
Nursing tenure in years of working exp			
1 to 5.9 years		93	37.4

Variables/Categories	Mean (SD)	Frequency	Percentage (%)
6 to 10.9 years		163	38.8
≥ 11 years		161	23.7
Current hospital working exp	9.12 (11.84)		
Current hospital in years of working exp			
1 to 5.9 years		156	37.4
6 to 10.9 years		162	38.8
≥ 11 years		99	23.7
Current position working exp	8.07 (5.63)		
Current position in years of working exp			
1 to 5.9 years		161	38.6
6 to 10.9 years		170	40.8
≥ 11 years		86	20.6
Net salary (N=394)	2924.68 (1348.20)		
Net salary group:			
RM 1000 to RM 2599.99		163	39.1
RM 2600 to RM 4199.99		163	39.1
≥ RM 4200 and		68	16.3
Post basic			
Yes		154	36.9
No		263	63.1
Type of employment			
Permanent		342	82
Contract		75	18
Total working hours per shift			
7-12 hours		409	98.1
>12 hours		8	1.9
Type of shift			
Shift		349	83.7
Office hours		68	16.3
Total maximum patient taken care each shift	8.56 (5.42)		
Total maximum patient taken each shift (N=357)			
1-5 patients		72	17.3
≥ 6 patients and above		285	68.3

3.1 The level of quality of work-life, burnout and professional commitment

Overall, half of the nurses were satisfied with QWL (n=229, 54.9%) and while under half were (n=188, 45.1%) dissatisfied. Out of the nine domains, nurses were found to be relatively satisfied in eight of them which were: working environment (n=240, 57.6%), organizational culture (n=211, 50.6%), relation and cooperation (n=243, 58.3%), training and development (n=277, 66.4%), compensation and rewards (n=237, 56.8%), facilities for worker (n=237, 56.8%), satisfaction and job security (n=222, 53.2%), and autonomy of work (n=212, 50.8%). One of the domains that found nurses unsatisfied was adequacy of resources (n= 231, 55.4%). In EE, mild burnout was the highest 169 (39.6%) nurses, and followed by moderate burnout total of 99 (23.7%) nurses. In depersonalization, nurses have no burnout was 317 (76%) nurses and followed 64(15.3%) nurses experienced mild burnout. In subscale of PA, the highest number of burnout was severe burnout (n=186, 44.6%) followed by moderate burnout (n=141, 33.8%) which means nurses were having low PA. The percentage of nurses reporting low and high PC were almost equal where 50.1% nurses (n=209) possessed low PC and 49.9% (n=208) of nurses having high PC.

3.2 The association between socio-demographic variables with PC

Age groups, study setting, job position, nursing tenure, current hospital of years working experience, and post basic were found significant associated with PC.

Table 2. Association between sociodemographic variables of nurses with Professional Commitment (N=417).

Sociodemographic variables	N	Mean (SD)	*F/t*	*df*	*p-value*
Age group	170	34.88(6.39)	4.870	2,	*0.008
21-30 years	162	35.80(5.02)		414	
31-40 years	85	37.19(4.81)			
≥ 41 years					
Settings			2.900	415	*0.011
Government nurses	232	36.33(4.99)			
Private nurses	185	34.92(6.27)			
Job position			3.213	3,413	*0.023
Matron	17	38.94(5.868)			
Ward manager	61	36.72(4.251)			
Staff nurse	285	35.26(5.730)			
Community nurse	54	35.93(6.050)			
Nursing tenure in years of working exp			7.623	2, 414	*0.001
1 to 5.9 years	93	34.16(5.902)			
6 to 10.9 years	163	35.40(6.037)			
≥ 11 years	161	36.91(4.759)			
Current hospital years of working exp			4.036	2, 414	*0.018
1 to 5.9 years	156	35.39(6.14)			
6 to 10.9 years	162	35.17(5.52)			
≥ 11 years	99				
Post basic			2.086	415	*0.040
Yes	154	36.45(4.916)			
No	263	35.27(5.980)			

Note: *The mean difference is significant at the 0.05 level

3.3 The relationship between QWL, burnout and PC among nurses

The result of Pearson's r correlation test showed there were significant, moderate and positive correlation between QWL and PC (r=0.363, p=<0.001) and between PC and PA (r=0.467, p=<0.001). There are significant, small and negative correlation between burnout – EE and PC (r=-0.153, p=0.002<0.05), and between burnout-depersonalization and PC (r=-0.225, p=0.000<0.05) (Table 4). Based on Table 4, Model 1 showed QWL accounted for 13.2% of the variance in professional commitment and Model 2 reporting burnout accounted for 24.2% of the variance in professional commitment.

Table 3. Correlation between QWL, Burnout and Professional Commitment among nurses (N = 417)

Variables	*ŕ*	*p-value*
Quality of Work-life: Quality work-life and Professional Commitment	0.363	*<0.001
Burnout:		
Emotional Exhaustion and Professional Commitment	-0.153	* 0.002
Depersonalization and Professional Commitment	-0.225	*<0.001
Personal Accomplishment and Professional Commitment	0.467	*<0.001

Note: *Correlation is significant at the 0.01 level (2 tailed), r = pearson's r correlation value

Table 4. Multiple linear regression predicting professional commitment from QWL and Burnout

Model	Predictor	*B*	*β*	*R2*	*Adjusted R*	*RR*	*F*	*p-value*
1	PC	22.635	0.363	0.132	0.130	0.363	62.889	*<0.001
	QWL	0.079						
1	PC	28.896		0.242	0.236	0.492	43.897	*<0.001
	Burnout: Emotional Exhaustion	-0.213	-0.056					
	Depersonalization	-0.496	-0.117					
	Personal Accomplishment	1.897	0.443					
3	PC	35.480		0.026	0.014	0.162	2.211	0.052
	Independent variables:							
		0.023	0.035					
	Age group	-0.408	-0.048					
	Job position							
	Nursing tenure (years of working)	0.067	0.092					
		0.006	0.012					
	Current hospital (years of working)	-0.129	-0.011					
	Post basic							

Note: B = regression coefficients, β = Beta coefficients , R2 = R change , RR, F =F change
* P value <0.0.5 (2 tailed)
Dependant variable = Professional commitment (continuous variable)

4. IMPLICATIONS TO NURSING AND RECOMMENDATIOS

4.1 Nursing Professionals

Nurses are the backbone of the health organization. As an important category in the organization, nurses should have an awareness where they need to be at par with the technology advancement to be professional. When nurses exhibit the professional behaviors, patients receive better care, team communication is improved, there is increased accountability among nurses and the overall clinical environment is more positive. Therefore, nurses should be guided by leaders in order to shape them be strong, mature and accountable. Besides that, nurses must have strong self-confidence, self-efficacy and resilience so that they are able to face any challenges while giving care to their patients. A good support system from all healthcare provider is critically important. Nurses should build up their self-confidence by building a strong background of anatomy and physiology, acquiring nursing care knowledge and staying updated with trusted sources of information. Hence, nurses will be more committed during providing care to the patients individually. Improve communication with peer and other healthcare provider can be achieved by using clear, respect and optimistic manner will enhance better teamwork.

Avoid negative coping strategies such as excessive intake and mix with toxic people that might demotivated nurses' passion. Shared and talked to the trusted peer/subordinate to continue build up the confident level. Nurses should have knowledge on the signs and symptoms of burnout and take breaks to self-pace by having some fun, relaxing and taking part in comforting acitivities. According to Maslow's hierarchical of needs, basic needs and self-actualization should be fulfilled to achieve high positively energy for coping during work. Highly motivated and enthusiastic nurses will ensure patients are more confident and dismiss any doubt about the nursing care and treatment given. Patient satisfaction with the quality of care can be achieved. In essence, nursing professionals will portray an unwavering commitment to the vocation and the willingness to continuously deliver the highest quality care to the patients.

4.2 Nursing Administration

Nursing leader and ward managers are the ones that have greatest influence on how the nurses feel about their jobs. They should provide a positive and supportive working environment, which includes efficiently matching resources to needs. Nursing administrators should be able to recognize and respect differences among individual nurses, including the particular needs of different generation. Leaders should avoid using communication and management styles that exacerbate burnout. Burnout-related conversations can be incorporated into meetings or gatherings where nurses can reflect on common scenarios and shared best practices with peers. Management can improve the work-life balance of nurses by working with human resources to provide a good working environment. Senior staff should acknowledge nurses whenever any action is to be taken, and spend time talking to them nurses when they raise issues. This will cultivate a healthy working environment among for managers and subordinates alike. Full support and guidance should be offered continuously by superior to enhance nurses' professional commitment. This will meet the needs and expectations of the nurses, and in turn, nurses will feel appreciated, be willingly to improve and begin to take initiative in enhancing their knowledge, skills, behavior and socialization.

4.3 Healthcare System

The study findings should be presented in all hospital level in order to create an awareness among nursing leaders and administrators regarding the current situation that exists. Organization culture, relation and cooperation, compensation and rewards, satisfaction and job security and autonomy to work should be restructured with the regard of present situation in each hospital level. The level of burnout which was faced by the nurses should be discussed to improve the nurses' situation, especially at private hospitals. A willingness to improve the situation will enhance nurses' satisfaction which will have a knock-on effect on professional commitment and quality of care. Committed nurses build effective client relationships, promote good interprofessional cooperation, enhance strong teamwork and provide good quality of care for better patients' satisfaction, perception and compliance. Good QWL with zero error and strong PC capable to facilitate sustainable improvements in patient safety, enhancing the patient experience, reducing risks and harm, achieving better health outcomes with minimal treatment costs can be achieved in the organization.

5. CONCLUSION

These study findings given a detailed explanation for all healthcare providers that will enable them to enhance strong approaches and strategies to overcome the level of burnout among nurses where QWL, burnout and PC were found to be interrelated. Proper approaches and strategies were needed based on the items that had been highlighted to prevent the problem from festering in the individual hospitals and the health service in general organization, and to reenergize nurses to be committed in their profession for a better future. Timely and proper action taken will be benefit patients, nurses and healthcare organization alike. A support system within the healthcare system is vitally important to enhance nurses' satisfaction on resources of work and communication, therefore, able to reduce burnout and increased the PC towards better nursing profession. The result will improve the image of the nursing profession and gain respect from the patient, the healthcare provider and community.

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KNOWLEDGE AND ATTITUDE REGARDING NEEDLE STICK INJURIES AMONG NURSES IN PUBLIC HOSPITAL IN KUALA LUMPUR, MALAYSIA

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ABSTRACT

Background: Needle stick injuries (NSIs) pose a significant occupational hazard for healthcare workers, particularly nurses, due to the potential transmission of blood-borne pathogens.
Purpose: This study aimed to determine the association between knowledge and attitude among nurses regarding NSIs.
Method: A quantitative cross-sectional study of medical ward nurses at a public hospital in Kuala Lumpur, Malaysia, was conducted from May to August 2022. The study used convenience sampling among 208 participants. A reliable knowledge and attitude NSI questionnaire with good internal consistency was used in the study.
Result: In the study with 208 participants, the majority were female (82.7%) and had over five years of experience (50.5%). Most held a diploma (92.3%) and were vaccinated against Hepatitis B (96.6%). Access to hospital occupational health services was high (91.8%), and knowledge about NSIs was good. No significant association was found between knowledge and attitude towards NSIs (p=0.125).
Conclusion: This study found that while most nurses had good knowledge and attitudes about NSIs, they had knowledge gaps in specific preventative procedures. The results showed not a significant association between knowledge and attitude levels, demonstrating that knowing about NSIs does not necessarily lead to a positive attitude towards prevention.

Keywords: Knowledge; attitude; nurses; needle-stick injuries

INTRODUCTION

Needle stick injuries (NSIs) pose a significant occupational hazard for healthcare workers, particularly nurses, due to the potential transmission of bloodborne pathogens (BBPs) and the resulting compromise to their health and safety. In Malaysia, there is an incidence rate of 6.0 NSI cases per 1000 HCWs, including nurses, reported in 2016 who risk getting BBP (Ishak et al., 2019). NSIs occur when needles inadvertently puncture the skin, exposing healthcare professionals to potentially contaminated blood and body fluids (Chowdhury & Chakraborty, 2017). Nurses, who play a pivotal role in patient care across various healthcare settings, face an increased risk of NSIs during routine activities (Yang et al., 2022).

While NSIs are commonly reported among nurses globally, the distribution of NSI incidents among healthcare workers in Malaysia differs, with doctors, especially houseman officials,

accounting for the highest number of reported cases (Fadhli et al., 2018; Wahab et al., 2019). Nevertheless, the prevalence of NSI cases among nurses in Malaysia remains substantial, highlighting the need for further research in this area (Guest et al., 2014; Ishak et al., 2019). Furthermore, a study conducted by Wahab et al. (2019) reports that, out of the total 35 million healthcare workers (HCWs) globally, with a focus on nurses, 3 million encounter NSIs annually.

Knowledge plays a crucial role in the prevention of NSIs among nurses. During their diploma studies, nurses are exposed to NSI-related knowledge, which equips them with valuable information and understanding of NSI prevention in the workplace (Hayati & Zainuddin, 2020). However, it is important to note that knowledge alone may not be sufficient. Nurses who possess adequate knowledge of NSIs, including their causes, symptoms, and prevention, are more likely to implement preventive measures such as using safety devices and proper needle disposal to reduce NSI incidence (Bhargava et al., 2013).

Interestingly, the association between knowledge and NSI incidence is influenced by attitude. A study by Syakirah et al., (2018) revealed that student nurses with superior NSI knowledge reported more NSIs compared to other healthcare workers. Attitude, characterized by behaviors and perceptions, significantly impacts the occurrence of NSIs. Several studies have demonstrated that nurses exhibit a positive attitude towards NSI prevention, driven by their concern for blood-borne pathogen infections. They engage in practices such as antiseptic wound washing, incident reporting, and prophylactic medication therapy (Dafaalla, 2016; Khraisat et al., 2015).

The association between knowledge and attitude can be explained by the influence of a comprehensive understanding of NSIs, including their causes, risks, and preventive measures, and attitudes towards these incidents (Hamada et al., 2018). Nurses who possess knowledge about NSIs are more likely to recognize the potential dangers and take necessary precautions to prevent them. Furthermore, nurses with both good knowledge and a positive attitude towards NSIs are more likely to implement preventive measures, such as using safety devices and proper needle disposal, resulting in a reduced incidence of NSIs (Bhargava et al., 2013). Additionally, nurses with adequate knowledge and a positive attitude are more aware of the associated risks and the importance of preventive measures, further contributing to the reduction of NSI incidence (Madhavan et al., 2019). The combination of knowledge and a positive attitude also enhances the effectiveness of training programs on preventive measures, ultimately leading to a decrease in NSI incidence (Hamada et al., 2018).

Therefore, the objective of this study is to assess the level of knowledge and attitude among nurses towards NSIs and their prevention. Specifically, the study aims determine the association between knowledge and attitude among nurses regarding NSIs. By accomplishing these objectives, the study seeks to provide valuable insights into the current knowledge and attitude levels among nurses regarding NSIs, identify potential knowledge gaps, and areas where attitudes may require improvement.

METHODOLOGY

Research sampling method

Cross-sectional study was conducted at a public hospital in Kuala Lumpur, Malaysia with the study duration between May and August 2022. The participants were nurses working in medical wards and convenience sampling was applied. Nurses who had more than three

months of working experience and were willing to participate were included, while those working during office hours were excluded. To achieve a representative sample, a minimum of 208 nurses was determined using Rao soft Inc.'s sample size calculator, considering a 5% error margin, 95% confidence level, and 50% response distribution, based on a total of 450 nurses. This level of precision is commonly used in many scientific studies and surveys to balance the trade-off between accuracy and practicality (Joshi et al., 2019).

Research tool, data collection and data analysis

This study utilized the KAP NSI questionnaire adopted from Dafaalla, (2016), which included Likert scale items. The results demonstrated good reliability, with a Cronbach's alpha coefficient of 0.705 for the knowledge and attitude by pilot study was conducted. The knowledge section, consisting of 8 items measured on a 3-point Likert scale, achieved a Cronbach's alpha value of 0.720. The attitude section, comprising five items measured on a 5-point Likert scale, yielded a Cronbach's alpha value of 0.704. The Bloom's cutoff approach was employed to assess knowledge and attitude levels, with scores above 80% considered good, scores between 60% and 79% considered moderate, and scores below 60% categorized as low (Chand et al., 2022).

Data collection and analysis were conducted using the Statistical Package for Social Science (SPSS, version 27.0). Descriptive statistics were used to analyze socio-demographic data and the knowledge with attitude NSI, while Fisher's test was employed to determine the association between knowledge and attitude. Data collection with participants receiving the questionnaire via Google Forms distributed through the official WhatsApp group. To mitigate biases and exclusion criteria, the sister/matron on duty was informed about the selection of eligible participants. Participants were guided on how to answer questions, and a consent form was provided. The questionnaire, available in Malay and English, was designed to be straightforward, brief, and respectful of participants sensibilities, ensuring completion within 10 to 15 minutes.

Ethical Consideration

The Ethical Approval was gained from the institutional ethics committee (500-FSK-PT.23/4), Medical Research and Ethics Committee (MREC) – NMRR ID-22-00827-URK (IIR), Hospital Directors' (HKL/HCRC/AK-02-02) and the participants consent.

RESULT

Socio-demographic background

Table 1 provides the distribution of various variables among participants. The majority of participants were below 30 years old (66.3%), female (82.7%), had over five years of experience (50.5%), held a diploma (92.3%), were fully vaccinated against Hepatitis B (96.6%), and had access to hospital occupational health services (91.8%). Regarding NSI knowledge, a significant percentage of participants (98.1%) were aware of the hospital's NSI policies or guidelines. Primary sources of information included hospitals (54.3%) and continuing medical education /continuing nursing education /courses (34.1%). Additionally, a notable proportion (53.8%) of participants were familiar with the term "post-exposure prophylaxis." In terms of NSI prevention, a majority (66.4%) reported consistently wearing gloves when handling needles at work. Furthermore, the majority of participants (94.7%) reported no instances of contaminated NSI within a year.

Table 1: Socio-demographic of the participants (N=208)

Variables	n (%)
Age	
Below 30 years	138 (66.3)
Above 30 years	70 (33.7)
Gender	
Male	36 (17.3)
Female	172 (82.7)
Experiences	
Below five years	103 (49.5)
Above five years	105 (50.5)
Education level	
Diploma	192 (92.3)
Post-basic	16 (7.7)
Hepatitis B vaccination status	
Not completely/Not vaccination	7 (3.4)
Fully vaccinated	201 (96.6)
Know Policy Hospital/Guideline NSI	
No	4 (1.9)
Yes	204 (98.1)
Primary sources of information NSI	
College/university	22 (10.6)
Hospital	113 (54.3)
Mass media/electronic media	2 (1.0)
CME/CNE/Course	71 (34.1)
Attend courses related to Guideline and Policy Hospital	
No	75 (36.1)
Yes	133 (63.9)
Always wear gloves when handling needles at workplaces	
Rarely	3 (1.4)
Sometimes	22 (10.6)
Most of the time	45 (21.6)
Always	138 (66.4)
Use needles per week, min-max	
7-140	**50.00 (76)
Frequency of contaminated NSI per year	
Never	197 (94.7)
One and more	11 (5.3)
Hospital occupational health service	
No	6 (2.9)
I don't know	11 (5.3)
Yes	191 (91.8)
Heard about the term post exposure prophylaxis	
No	26 (12.5)
I don't know	70 (33.7)
Yes	112 (53.8)

*Note: **Median (IQR)*

Knowledge towards NSI

The participants exhibited a good understanding of HIV, hepatitis B virus (HBV) and hepatitis C virus (HCV) transmission, with mean scores of 2.90, 2.96 and 2.85, respectively, on a 3-point Likert scale in the table 2. The mean score for washing with soap and water was 2.21, indicating the need for better adherence to this important step. The mean score for washing with antiseptic was notably low at 1.75, indicating a significant knowledge gap. In terms of needle-stick testing, participants displayed a moderate level of knowledge, with mean scores of 2.58 for direct viral testing at six weeks and 2.62 for HCV antibody testing at 4-6 months. Overall, it is encouraging to note that the majority of participants (71.6%) displayed a high level of knowledge, indicating a generally well-informed group. This suggests that efforts should be focused on improving knowledge among the smaller proportion with moderate knowledge (27.9%) and addressing the knowledge gaps identified.

Table 2: Knowledge among nurses toward NSI (N=208)

No	Question	Mean	SD	Min	Max	Level of knowledge, n (%)		
						Low	Medium	High
1	Hepatitis B virus infection can be transmitted by blood	2.96	0.226	1	3			
2	Hepatitis C virus infection can be transmitted by blood	2.85	0.473	1	3			
3	HIV\AIDS infection can be transmitted by blood?	2.90	0.381	1	3			
4	Immediate action for NSI: Wash with soap and water.	2.21	0.908	1	3			
5	Immediate action for NSI: Wash with water.	2.58	0.705	1	3	1 (0.5)	58 (27.9)	149 (71.6)
6	Immediate action for NSI: Wash with antiseptic.	1.75	0.875	1	3			
7	HCV needle-stick: Direct viral testing at six weeks	2.58	0.684	1	3			
8	HCV needle-stick: HCV antibody testing at 4-6 months	2.62	0.663	1	3			
	Total	**2.71**	**0.464**	**1**	**3**			

Notes: Scores above 80% are good, 60%–79% moderate, and below 60% poor

Attitude towards NSI

The results in Table 3 indicate that participants had a high level of concern about NSIs, with 4.60 out of 5 on the Likert scale. They expressed a notable concern about sharps injuries due to infrequent changes of sharps disposal containers, scoring 3.92 on average. Regarding the

prioritization of patient care over healthcare worker safety, participants had a moderate agreement, scoring 3.55. The majority strongly believed in immediately reporting all sharps injuries at work, scoring 4.63. They also demonstrated a high awareness of the preventability of NSIs, with a mean score of 4.77. In terms of attitude, 81.3% of participants displayed a good level of attitude, while 18.8% had a medium level.

Table 3: Attitude among nurses toward NSI (N=208)

No	Question	Mean	SD	Min	Max	Level of attitude, n (%)		
						Low	Medium	Good
1	I am worried about having an NSI	4.60	0.630	2	5	0 (0.0)	39 (18.8)	169 (81.3)
2	Workplace sharps disposal container changes are irregular, risking injury.	3.92	1.324	1	5			
3	Patient care is more important than the safety of HCWs	3.55	1.556	1	5			
4	All sharps' injuries at work should be reported immediately.	4.63	0.532	3	5			
5	Is NSIs preventable?	4.77	0.524	2	5			
	Total	**2.81**	**0.391**	**2**	**3**			

Notes: Scores above 80% are good, 60%–79% moderate, and below 60% poor.

Association between knowledge and attitude toward NSIs

Table 4 presents the distribution of attitude levels and knowledge levels among the participants. The study found that among the participants with a low knowledge level, none had a low attitude level, and all had a high attitude level. Among those with a medium attitude level, 16 (27.6%) had a medium knowledge level. In contrast, among those with a high attitude level, 126 (84.6%) had a high knowledge level. The statistical test conducted to determine the association between attitude and knowledge levels resulted in a p-value of 0.102, indicating that there is no significant association between attitude level and knowledge level among the participants in this study.

Table 4: Association knowledge level and attitude level (N=208)

Variable		Attitude level, n (%)		P value
		Medium	High	
Knowledge level, n (%)	Low	0 (0.0)	1 (100)	0.102[a]
	Medium	16 (27.6)	42 (72.4)	
	High	23 (15.4)	126 (84.6)	

Notes: Fisher Test[a] and scores above 80% are good, 60%–79% moderate, and below 60% poor

IMPLICATIONS TO NURSING

Enhancing Knowledge of NSI among Nurses

The study findings indicated that nurses exhibited a strong comprehension of the transmission modes of hepatitis B, hepatitis C, and HIV/AIDS through blood exposure. These results are consistent with previous research highlighting the superior knowledge of blood-borne pathogens, including HIV, Hepatitis B, and Hepatitis C, among nurses (Al-Khalidi & Nasir, 2022; Yang et al., 2022). This can be attributed to the comprehensive curriculum and educational programs offered during their diploma studies, which adequately cover the fundamentals of NSIs (Hayati & Zainuddin, 2020).

However, it is worth noting that there was a lack of consistency in the participants' familiarity with the term "post-exposure prophylaxis." A considerable proportion (33.7%) expressed uncertainty or limited knowledge, which is lower compared to findings from previous studies (Amare et al., 2018; Dafaalla, 2016). This highlights the importance of enhancing nurse's awareness and understanding of post-exposure prophylaxis. Nonetheless, the overall findings of this study are not concerning, as a high percentage (91.8%) demonstrated awareness of the existence of the Hospital Occupational Health Service, and a majority (96.6%) had detectable levels of hepatitis B antibodies.

Addressing knowledge gaps in immediate actions after NSIs is crucial. Nurses had moderate knowledge of washing with soap and water, but limited knowledge of washing with antiseptic, compared to the previous study (Jahangiri et al., 2016). It is important to follow the Ministry of Health Malaysia's guideline, which recommends using soap or antiseptic in addition to water for handwashing after a NSI (*Guideline on Occupational Exposure*, 2019). Relying solely on water may not effectively remove potential pathogens and contaminants (Burton et al., 2011).

Nurses' Attitudes towards NSI

The study findings revealed that nurses showed a high level of concern (mean ± SD: 4.60 ± 0.63) regarding the risk of NSIs. This study finding aligns with a previous study conducted by Yang et al., (2022), which further confirms their strong awareness of the potential hazards associated with NSIs. Approximately 18.8% of nurses expressed concerns about infrequent sharps disposal container changes at work. This aligns with previous research by Bazie, (2020) indicating nurses' worries about the risk of NSIs due to inadequate cleanliness and management. In terms of priorities, nurses exhibited a moderate level of agreement (mean: 3.55) regarding the choice between patient care and healthcare worker safety. This suggests that some nurses may experience dilemmas in prioritizing patient needs over their own safety (Zhang et al., 2018).

Furthermore, the study demonstrated a positive attitude among nurses regarding reporting sharps injuries at work, with a strong consensus (mean: 4.63) on the significance of promptly reporting all NSIs. These findings align with a previous study by Hamzah & Mahmood, (2017) and Dafaalla, (2016), which also indicated a positive reporting attitude in sharp injury reporting (mean; 4.43). Last and least, nurses generally acknowledge that NSIs can be prevented (mean: 4.77). This indicates their understanding and belief that appropriate preventive measures can reduce the risk of NSIs (Zhang et al., 2018).

Association between knowledge with attitude toward NSIs

The findings of the present study are consistent with prior research conducted by Kaushal et al., (2022) and Bhargava et al., (2013), which also reported no significant correlation between the overall knowledge scale and overall attitude scale towards NSIs. In contrast, Hamada et al., (2018) conducted a different study and observed that despite possessing good knowledge of NSIs, participants displayed a negative attitude towards them. Similarly, Azman et al., (2020) study involving 151 houseman officers found a correlation between knowledge and attitude. The study revealed that house officers who experienced NSIs had lower scores in practicing universal precautions than to those who did not experience such incidents. Besides that, this discrepancy in attitude can be attributed to various factors, including the practice of needle recap, cigarette smoking, inadequate training on occupational health and safety, longer working hours per week, job dissatisfaction, and limited work experience (AlJohani et al., 2021). It is important to note that variations in the research tools employed across these studies may contribute to the divergent findings (Bhargava et al., 2013; Dafaalla, 2016; Hamada et al., 2018; Kaushal et al., 2022).

It is essential to acknowledge that factors beyond knowledge alone influence attitudes towards NSIs. While nurses may express a positive attitude towards preventing NSIs, their behavior may not consistently align with their attitude (Ditching et al., 2021). For example, the findings indicate a need for improvement in nurses' understanding of immediate actions following a NSI, as a significant proportion of nurses demonstrated lower knowledge levels regarding post-NSI care. This knowledge gap can contribute to inconsistent behavior, as some nurses may not adhere to the recommended protocols for such situations, such as washing the affected area with soap and water or using antiseptic (*Guideline on Occupational Exposure*, 2019).

Additionally, individual beliefs, risk perceptions, organizational policies, and support systems significantly impact nurses' attitudes towards NSIs (Ditching et al., 2021). Several studies have identified factors that hinder nurses from implementing preventive measures, including resource constraints, time limitations, and inadequate support from management (Hamada et al., 2018; Oluwatosin et al., 2016; Yang et al., 2022).

Significantly, this study findings highlight a notable trend: nurses exhibiting low knowledge levels regarding NSIs consistently maintained a high level of positive attitude towards NSI prevention. This emphasizes the critical role of targeted educational interventions aimed at addressing knowledge gaps. To foster a positive attitude and ensure effective NSI prevention, this study recommends the implementation of continuous education and training programs. This aligns with existing literature, emphasizing the need for ongoing efforts to enhance nurses' knowledge and attitudes in the realm of NSI prevention (Hamada et al., 2018; Yang et al., 2022).

CONCLUSION

In conclusion, this study assessed nurses’ knowledge and attitude towards NSIs in a Kuala Lumpur public hospital. Nurses demonstrated satisfactory knowledge of NSIs, but with room for improvement in immediate response. They displayed a high level of concern and awareness, moderately prioritizing patient care over worker safety. Most nurses exhibited a positive attitude towards NSI prevention. However, no significant correlation was found between knowledge and attitude, highlighting the need to bridge the gap for better worker safety. The study was independent, unfunded, and conflict-free. Limitations included a small sample, self-reported data, and a cross-sectional design. Addressing knowledge gaps and promoting positive attitudes among nurses is crucial. Future research should focus on

implementing interventions to enhance immediate response measures and explore the impact of sustained education on aligning knowledge and attitude for comprehensive NSI prevention.

ACKNOWLEDGEMENT
The authors express gratitude to the Director General of Health Malaysia and all participants and healthcare institutions involved in the study for their valuable contributions and support.

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ASSESSING NURSES' KNOWLEDGE, ATTITUDES, AND PRACTICES FOR PRESSURE INJURY PREVENTION

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ABSTRACT

Background: Pressure injuries are a widespread healthcare concern that significantly burdens patients, family members, and caregivers. Knowledge, attitude, and practice regarding preventing pressure injuries among nurses are three crucial factors that may reduce the incidence of pressure injuries.

Purpose: This study aims to determine the knowledge, attitude, and practice level regarding preventing pressure injuries among nurses in the medical and surgical wards at a university Hospital in Malaysia.

Methodology: A total of 109 nurses participated in this cross-sectional study.

Results: The nurses demonstrated a high mean ±sd percentage for knowledge (84.9% ± 11.05), a positive attitude (95.7% ± 5.73), and effective pressure injury prevention practices (72.1% ± 7.30). The result also indicates a significant weak correlation between the nurses' level of knowledge and practice regarding pressure injury prevention.

Conclusion: This study showed that nurses understand pressure injury prevention, have positive attitudes, and follow recommended practices. However, knowledge alone may not strongly influence pressure injury prevention attitudes and practices. Hence, future research should identify ways to close the gap, such as educational programs, interdisciplinary collaborations, and quality improvement initiatives, so that translation of pressure injury prevention knowledge into practice can improve patient outcomes and ensure a high standard of care.

Keywords: Knowledge, Attitude, Practice, Nurse, Pressure Injury

INTRODUCTION

The European Pressure Injury Advisory Panel and National Pressure Injury Advisory Panel defines pressure injuries as localised injuries to the skin and underlying tissues, commonly over a bony prominence, caused by pressure or pressure combined with shear and friction (Haesler et al., 2017). According to the Malaysia Ministry of Health, pressure injuries are areas of injured skin and underlying tissue (Ministry of Health of Malaysia, 2022). They are usually caused by prolonged immobility characterised by sitting or lying in one position too long, reducing the blood supply to the skin and tissue, resulting in damage and ulceration. Pressure injuries are common among hospitalised patients, and the presence of pressure injuries has been shown to burden patients and caregivers substantially.

Previous literature suggests that about sixty thousand people died because of complications of pressure injury worldwide (Muhammad & Naseem Khan, 2017). Considerable variability in pressure injury incidence between developed and developing countries exists, with an estimated incidence rate of pressure injuries of 8.3 % to 25.1 % in developed countries and 2.1 % to 31.3 % in developing countries (Kaddourah et al., 2016). Pressure injury prevalence has become a widely recognised quality indicator in a hospital setting since it improves

patients' quality of life, increases hospital expenses, and harms fulfilling care goals to the point where their occurrence reflects the quality of care. Nurses are the front line healthcare workers caring for bedridden and critically ill patients most vulnerable to developing pressure injuries; thus, preventing ulcers should be considered a priority (Muhammad & Naseem Khan, 2017).

Although evidence-based guidelines for preventing pressure injuries have been listed and are widely accepted worldwide, the problem persists in healthcare facilities worldwide. The researcher believes in assessing the knowledge, attitudes, and practices to provide good health care (Alshahrani et al., 2021). Some studies demonstrate that the overall knowledge about pressure injury among nurses is appropriate, while others show that the knowledge about pressure injury is inadequate. Moreover, despite the positive approach toward pressure injury prevention, a gap between theory and practice has been discovered in some research. While better knowledge, attitudes, and practice lead to better health care, all disciplines must be aware of, well-informed about, and proficient in clinical practice guidelines to reduce pressure injury. Hence, this study aimed to assess nurses' knowledge, attitude and practice related to pressure injury prevention.

Methodology

The study was conducted using a cross-sectional approach. This study was conducted in the medical and surgical ward at a university hospital in Malaysia located in Kuantan, Pahang. The sample of this study was recruited through the universal sampling method, which yielded 107 nurses from the medical and surgical wards. The instrument for data collection was an adapted and validated questionnaire. The questionnaires are adapted from a research paper entitled "Knowledge, Attitude and Practice of Nurses toward Pressure Injury Prevention in the University of Maiduguri Teaching Hospital, Borno State, north-eastern Nigeria" by Uba MN et al. (2015). The questionnaires were divided into four main parts, including sociodemographic background, knowledge towards pressure injury prevention, attitude towards pressure injury prevention, and practice towards pressure injury prevention. The researcher seeks approval for this research study from the Institutional Review Board (IRB) and the hospital for data collection. The researcher's information, the research study's aims, the respondents' confidentiality, and the right to refuse or withdraw from the study were included in the questionnaire. The respondents were ensured that their personal information was kept private.

Result

The results that will present the sociodemographic data, the level of knowledge, attitude, and practice towards pressure injury prevention among nurses in the medical and surgical ward at a university hospital in Malaysia, as well as the relationships between the level of knowledge, attitude, and practice towards pressure injury prevention among nurses in the medical and surgical wards.

Sociodemographic background

Sixty-five nurses from medical and surgical wards participated in this study. Table 1 presents the sociodemographic data of nurses in the medical and surgical wards. The mean and standard deviation (sd) for age was 27.11 years old and 3.16, respectively. Most respondents are female (90.8%) compared to males (9.2%). Most respondents were married (58.5%), and others were single (41.5%). One of the respondents has a Bachelor of Nursing (1.5%), while other respondents have a diploma in nursing (98.5%). Most respondents who answered the questionnaires were from the medical ward (78.5%) and others from the surgical ward

(21.5%). Meanwhile, the mean (sd) for employment as a permanent staff member at the university hospital was 30.89 months (16.70). Most respondents (72.3%) have received formal training on pressure injury prevention.

Table 1: Sociodemographic data of nurses working in the medical and surgical ward (n=65)

Variable	Mean	Standard deviation (sd)	Frequency	Percentage (%)
Age (years)	27.11	3.16		
Gender				
Male			6	9.2
Female			59	90.8
Marital status				
Single			27	41.5
Married			38	58.5
Divorced			0	0
Widowed			0	0
The level of education				
Diploma in Nursing			64	98.5
Bachelor of Nursing			1	1.5
Master of Nursing			0	0
PhD of Nursing			0	0
What area of practice do you work in?				
Medical			51	78.5
Surgical			14	21.5
How long have you been employed as a permanent staff nurse in your hospital?	30.89	16.70		
Have you received any formal training on pressure injury prevention since you qualified as a nurse?				
Yes			18	27.7
No			47	72.3

Nurses' Knowledge of Pressure Injury Prevention

Table 2 presents the level of knowledge of pressure injury prevention among nurses in the medical and surgical wards. It can be concluded that most nurses responded correctly to the questions with a mean score of 84.90 %, demonstrating their high level of knowledge towards pressure injury prevention.

Table 2: Level of knowledge of pressure injury prevention among nurses in the medical and surgical ward (n=65)

Variables	Correct N (%)	Incorrect N (%)
What factors contribute to pressure injury formation in a hospital?	49 (75.4)	16 (24.6)
What assessment procedure do you select for a patient with spinal cord injury at high risk for pressure injury development?	65 (100)	0 (0)
Which one of the risk assessment scales for pressure injury development do you use?	57 (87.7)	8 (12.3)
What are the early signs for pressure injury development?	60 (92.3)	5 (7.7)
Which one is the proper method of skin care for pressure injury preventions?	61 (93.8)	4 (6.1)
What nurses' actions are significant for prevention of pressure injury?	64 (98.5)	1 (1.5)
How can moisture be reduced under elderly patients?	57 (87.7)	8 (12.3)
What do you do to prevent heel ulcer?	63 (96.9)	2 (3.1)
What kind of vitamin is important to maintain healthy skin?	48 (73.8)	17 (26.2)
Which answer is the best educational activity that enhances competency ofstaff nurses in preventing pressure injuries?	22 (33.8)	43 (66.1)
What teaching do patient need to comply with pressure injurys prevention?	64 (98.5)	1 (1.5)
Total score for knowledge towards pressure injury prevention (mean±sd)	84.90	11.05

Nurses' Attitude Towards Pressure Injury Prevention

Table 3 presents the attitude toward pressure injury prevention among nurses in the medical and surgical wards. The majority of the respondents provided an agreed answer. Agree means the respondents have a positive attitude, while disagree means the respondents have a negative attitude. Most nurses agree that most pressure injury risk factors can be avoided (100%), patients should be cleaned immediately after soiling (100%), and nurses' awareness to turn patients at risk for pressure injury every 2 hours. Based on the total score of the level of attitude towards pressure injury, it can be concluded that the nurses have a positive attitude (95.74%).

Table 3: Level of attitude towards pressure injury prevention among nurses in the medical and surgical ward (n=65)

Variables	Agree (positive) F (%)	Disagree (negative) F (%)
Most risk factors of pressure injury can be avoided.	65 (100)	0
Prevention of risk factors for pressure injury is time-consuming for me to carry out.	55 (84.6)	10 (15.4)
I am less interested in pressure injury prevention than other aspects of nursing care.	61 (93.8)	4 (6.2)

I am aware of an appropriate assessment procedure for pressure injury formation.	62 (95.4)	3 (4.6)
My clinical judgement is better than any pressure injury risk assessment tool available to me.	35 (53.8)	30 (46.2)
Patient who is at risk for pressure injury development should be assessed at the first day of admission.	61 (93.8)	4 (6.2)
Pressure injury risk assessment should not be regularly carried out on all patients during their stay in hospital.	54 (83.1)	11 (16.9)
All data about pressure injury should be documented at the time of assessment and reassessment.	64 (98.5)	1 (1.5)
Pressure injury is an important indicator for quality of nursing care.	62 (95.4)	3 (4.6)
Patient's relative should not be advised to assess patient's skin during bathing a patient.	61 (93.8)	4 (6.2)
Patient should be cleaned immediately after soiled.	65 (100)	0 (0)
Patient should be massaged at the bony prominences after turning position.	58 (89.2)	7 (10.8)
I think that nutritional status of a patient is not a problem for pressure injury development	.60 (92.3)	5 (7.7)
I am aware to turn my patient who is at risk for pressure injury every 2 hours.	65 (100)	0 (0)
I value that joining educational activities on pressure injury prevention is important for my practice.	64 (98.5)	1 (1.5)
Total score for attitude towards pressure injury prevention (Mean ± sd)	95.74	5.73

Nurses Practice of Pressure Injury Prevention

Table 4 presents the level of practice towards pressure injury prevention among nurses in the medical and surgical wards. The majority of the nurses identify common contributing factors for pressure injury development by periodical assessment of the patient's skin (92.3%), document all the data related to pressure injury development (92.3%), use the special mattress to prevent pressure loadings (90.8%) and turn a patient position every two hourly (96.9%). The interpretations of Table 6 showed that the mean (sd) of the nurse's practice towards preventing pressure injury was 72.10% (7.30). This indicates that the nurses have good practice towards preventing pressure injury.

Table 4: Level of practice towards pressure injury prevention among nurses in the medical and surgical ward (n=65)

Variables	Always N (%)	Sometimes N (%)	Never N (%)
I identify common contributing factors for pressure injury development by periodical assessment of patient's skin.	60 (92.3)	5 (7.7)	0 (0)
I do skin assessment that guided by a standard nursing care available in my ward or in my hospital.	61 (93.8)	4 (6.2)	0 (0)
I use risk assessment scale to assess pressure injury.	53 (81.5)	11 (16.9)	1 (1.5)

I document all data related to pressure injury development.	60 (92.3)	5 (7.7)	0 (0)
I place the pillow under the patient's leg to prevent heel ulcer.	57 (87.7)	8 (12.3)	0 (0)
I advice caregiver to use creams or oils on patient's skin in order to protect from urine, stool or wound drainage.	14 (21.5)	35 (53.8)	16 (24.6)
I perform lab test for assessing nutritional status followed by physicians' order.	4 (6.2)	53 (81.5)	8 (12.3)
I provide vitamins and food for patients who are malnourish.	7 (10.8)	53 (81.5)	5 (7.7)
I monitor a protein and calories diet in patient who is bedridden.	11 (16.9)	49 (75.4)	5 (7.7)
I always use a special mattress to prevent pressure loadings, such as foam, air, and water bed mattresses.	59 (90.8)	6 (9.2)	0 (0)
I avoid using donut-shape (ring) cushion at bony prominences to prevent pressure injury formation.	26 (40.0)	26 (40.0)	13 (20.0)
I do turn a patient position every two hourly.	63 (96.9)	2 (3.1)	0 (0)
I pressure injuryt pillow under patients' leg from mid-calf to ankle in order to keep heels off the bed.	62 (95.4)	3 (4.6)	0 (0)
I always attend seminars for pressure injury prevention.	36 (55.4)	20 (30.8)	9 (13.8)
I give advice to patients or caregivers regarding pressure injury preventive care before discharge the patient from hospital.	59 (90.8)	6 (9.2)	0 (0)
Total score for practice towards pressure injury prevention (mean ± sd)	72.10		7.30

Relationship Between The Level of Knowledge, Attitude and Practice Towards

Pearson's correlation test is used to identify relationships between the level of knowledge, attitude, and practice towards pressure injury prevention among nurses in the medical and surgical ward. The findings showed a significantly weak relationship between the level of knowledge and the level of practice towards pressure injury prevention, r= 0.300 and the p-value, p= 0.015. Meanwhile, the correlation between the level of attitude and practice, r= 0.163 and the p-value, p= 0.194 (see Table 5) was insignificant.

Table 5: The relationship between the level of knowledge, attitude, and practice towards pressure injury prevention among nurses in the medical and surgical ward (n=65)

Variable	The level of practice	
	r	**P-value**
Level of knowledge	0.300	0.015
Level of attitude	0.163	0.194

Note: Pearson correlation $p < 0.05$ significant

Implications to Nursing

Previous studies suggested that the knowledge and attitude towards pressure injury prevention are linked to their practice (Muhammad & Naseem Khan, 2017; Uba MN et al., 2015). In this study, the participants' knowledge was tested, and the results indicate that they understand various aspects of pressure injury prevention, where 75% of nurses correctly identified the factors contributing to pressure injury formation. Aside from that, most nurses correctly identified the early signs of pressure injury development and the proper skin care methods for prevention. This is a positive finding because early detection and proper skin care practices are critical for timely intervention and prevention of pressure injuries. It is worth noting that 26% of nurses may benefit from educational interventions to improve their understanding of the role of vitamins in skin health and pressure injury prevention. Aside from that, only 33.8% of the nurses correctly identified the best educational activity to improve staff nurses' competency in preventing pressure injuries. This finding suggests that there may be a knowledge gap regarding the educational strategies for improving nurses' competence in this area. According to Seton et al., the lack of staff time and limited resources dedicated to education on pressure injury may have contributed to learning and retention barriers, which can negatively impact the nurse's knowledge of pressure injury management (Seton et al., 2022). Hence, more research and exploration of effective educational interventions can help bridge this gap and ensure evidence-based practices are implemented.

While most nurses have positive attitudes toward pressure injury prevention, some areas have differing opinions or knowledge gaps. According to the findings of this study, most nurses acknowledge that pressure injury risk factors can be avoided. This positive attitude is critical because it indicates that nurses understand the preventable nature of pressure injuries and are likely to be motivated to implement preventive measures. Nevertheless, most nurses (84.6%) agreed that preventing risk factors for pressure injury takes time. The time constraints to focus on the preventive strategies for pressure injury have been mentioned in various studies (Barakat-Johnson et al., 2019; Teo et al., 2019). Thus, it is critical to address time constraints and provide adequate resources and support to ensure that nurses can effectively carry out prevention efforts without jeopardising other care aspects.

The total score for practice towards pressure injury prevention indicates a mean score of 72.10, with a standard deviation of 7.30. This mean score suggests that nurses adhere to recommended practices on pressure injury prevention, and the slight standard deviation may indicate a relatively low variation in their practices. Hence, future studies should consider determining the incidence of pressure injury in the ward setting to observe if adherence to the practice on the prevention of pressure injury is beneficial in preventing the occurrences of pressure injury. In addition to identifying early pressure-related skin damage using traditional methods such as observation of blisters, redness, and open wounds of the skin, the use of technology may also assist the nurse in identifying the incidence of pressure injury before clinical manifestations. Technology such as ultrasound, thermography, subepidermal moisture measurement (SEM), reflectance spectrometry, and laser Doppler flowmetry may be helpful (Scafide et al., 2020). This study also found that the nurses often include placing a pillow under the patient's leg, using a special mattress, turning every two hours, and providing health education on pressure injury prevention before discharge as preventive interventions. The findings are similar to another study by Edsberg et al., who found that based on the Braden scale of 296,014 patients hospitalised in 1801 acute care facilities in the United States, the most compliant preventive intervention for pressure injury was skin assessment and pressure redistribution (Edsberg et al., 2022). However, this study found that

the nurses may need to pay more attention to the importance of educating the patients about using the cream on their skin to protect against urination, drainage, friction, and shear. Many products are shown to be clinically effective in preventing the development of pressure injury. For instance, a clinical trial conducted by Baghdadi et al. found that using *Aloe vera* gel and *Calendula officinalis* ointment as prophylactic dressing twice a day can effectively prevent pressure injury (Baghdadi et al., 2020). Aside from that, only a small percentage of nurses focus on nutrition, which includes providing vitamins and food to malnourished patients and monitoring the diet of bedridden patients. Indirectly, the findings suggested that there is room for improvement in upgrading the knowledge gap of the nurses on the preventive measures of pressure injury. Targeted interventions to close practice gaps, improve adherence to evidence-based guidelines, and improve patient outcomes in pressure injury prevention.

The relationship between knowledge level and attitude toward the level of practice in pressure injury prevention was investigated. This study shows that nurses with more knowledge adhere to pressure injury prevention practices more closely. Although the correlation is weak, increasing knowledge is associated with a tendency to implement prevention measures better. The findings parallel the knowledge, attitude and practice or behaviour model that assumes knowledge will influence the attitudes, shaping behaviour or practices. Nonetheless, the extremely weak correlation between knowledge and practice emphasises the limited influence of attitude on preventive practice implementation. Hence, it may suggest that, even if nurses have the necessary knowledge, their attitudes may translate into something other than consistent adherence to pressure injury prevention practices. In contrast, the level of attitude toward pressure injury prevention among nurses does not significantly influence the actual implementation of preventive practices. The findings are similar to another study by Lotfi et al., where no significant relationship was found between attitude and behaviour on skin care, prevention, and management of pressure injuries (Lotfi et al., 2019).

Recommendations

Consequently, the findings of this study emphasise the importance of improving knowledge translation into practice among nurses in the medical and surgical wards. Seton et al., in their study, recommend routine delivery of innovative, interactive pressure injury education, including games, to frontline nursing staff at least quarterly (Seton et al., 2022). While knowledge is an essential foundation, additional factors other than attitude may contribute to the knowledge-practice gap. Such factors include organisational barriers, resource constraints, and competing priorities. Future research should investigate potential mediators of the knowledge-practice relationship. Investigating organisational factors such as leadership support, resource availability, and clinical protocols and guidelines could be part of this.

Furthermore, qualitative research and in-depth interviews may provide valuable insights into the barriers and facilitators influencing the implementation of pressure injury prevention practices in this setting. Considering the identified barriers and context-specific challenges, interventions should be developed to bridge the gap between knowledge and practice. Educational programmes, regular updates on evidence-based practises, interdisciplinary collaborations, and quality improvement initiatives can help to improve knowledge-practice alignment.

Conclusion

Finally, this study provides valuable insights into nurses' knowledge, attitudes, and practises in pressure injury prevention in the medical and surgical wards at a university hospital in

Malaysia. The findings show that nurses have a good understanding of pressure injury prevention, positive attitudes, and a relatively high level of adherence to recommended practices. The study also discovered a weak significant correlation between knowledge level and adherence to pressure injury prevention practises, indicating that knowledge alone may not strongly influence practice. Other factors, such as organisational barriers, resource constraints, and competing priorities, may contribute to the implementation gap between knowledge and practice. Future research should investigate these factors and identify potential interventions to bridge the gap, such as educational programmes, interdisciplinary collaborations, and quality improvement initiatives. This study highlighted the importance of continuously improving knowledge translation into practice in pressure injury prevention. Healthcare organisations can improve patient outcomes and ensure a high standard of care in pressure injury prevention by filling knowledge gaps, promoting evidence-based practices, and identifying and overcoming implementation barriers.

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NURSING STUDENTS' EXPERIENCES WITH THE INTEGRATION OF FLEXIBLE LEARNING IN THE CLINICAL SKILLS CENTRE

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ABSTRACT

Background: In nursing education, flexible learning is highly regarded since it offers students a variety of readily accessible, customized learning opportunities. By successfully developing clinical competency outside of the conventional paradigm, this model guarantees that nursing students will have the abilities necessary to adapt to the constantly changing healthcare environment.

Purpose: This study aimed to explore the nursing students' experiences related to the implementation of flexible learning methods to learn clinical skills.

Methodology: This research employed a descriptive qualitative research design and involved the participation of 11 undergraduate nursing students from the Kuliyyah of Nursing at the International Islamic University Malaysia, located in Kuantan, Pahang. The study sample was using purposive sampling methods. Data collection occurred through one-on-one interviews between 12th April 2023 and 19th April 2023.

Results: Through a thematic analysis of participants' responses, this study unveiled four themes associated with various forms of flexible learning within clinical skills practice. These include Self-Directed Learning, Benefits, Barriers, and Challenges.

Conclusion: The research recommends educators to use technology sensibly, particularly in creating instructional videos, to enhance student learning. The study identifies educators' proficiency with video technology as a barrier in nursing education, emphasizing the need for annual training. Flexible learning, including video-based instruction, offers advantages in skill acquisition, although students express concerns about feedback and prefer hands-on sessions. Balancing online and physical sessions is essential to nursing education, prioritizing students' well-being and capacity to learn.

Keywords: flexible learning, clinical skills practice, nursing students, experiences, nursing education

INTRODUCTION

The COVID-19 epidemic has been a driving force behind changes in the landscape of nursing education. The conventional model of in-person, skills laboratory-based clinical skills training has encountered numerous challenges, making the integration of flexible learning methodologies imperative. This paper explores nursing students' experience with the implementation of flexible learning in the context of nursing students' clinical skills training in the skills laboratory, with a focus on the benefits, challenges, and potential strategies for successful adoption.

Beyond geographic limitations, flexible learning gives nursing students the chance to access clinical skills training resources whenever it's convenient for them. Students can review and practice skills whenever and wherever they desire thanks to virtual platforms and online modules, which provide a 24/7 learning experience (Reyes et al., 2020). Students can customize their learning experience to fit their unique requirements and interests, which is one of the main benefits of flexible learning. According to Nurmal et al. (2020), students who engage in self-directed learning are able to concentrate on areas that require more practice and advance at their own speed. This method makes use of a variety of resources, such as interactive online discussions, multimedia materials, and virtual simulations, to enhance the learning process and accommodate diverse learning preferences and styles (Kumar et al.,2021). Moreover, the autonomy offered by flexible learning encourages students to think critically and independently, an essential skill for effective clinical practice (Jowsey et al., 2020).

However, the implementation of flexible learning is not without its challenges. Some students may lack the technical skills required to navigate online platforms and engage with digital learning materials. Educators must ensure that students receive adequate training and support in using these technologies (Pimmer et al., 2020). While virtual simulations provide valuable practice, they cannot entirely replace hands-on experience. Skills laboratory-based training remains essential, and students must have access to the necessary physical resources and equipment. Nursing educators need to adapt to the new teaching methodologies, including the creation of online content and providing guidance in digital environments (Langegård, et al., 2021). Additionally, flexible learning can lead to feelings of isolation among students, as they may miss the social interaction and peer support that traditional in-person training offers (Jowsey et al., 2020).

In conclusion, flexible learning is a progressive step in preparing nursing students for the needs of modern healthcare. This is especially true when it comes to clinical skills training in the skills laboratory. Even while it has many advantages, like improved customisation and accessibility, there are several issues that need to be resolved. Over the past few decades, flexible learning has been widely used in theoretical classrooms; however, research on its efficacy in clinical skills practice among nursing students is still lacking. By examining

nursing students' experiences using flexible learning in the context of clinical skills practice, this article aims to close the gap. We hope to make a contribution by investigating the viewpoints, difficulties, and benefits that students see in this changing educational environment.

METHODOLOGY

This study employed a descriptive qualitative research design and focused on undergraduate nursing students enrolled in the Kuliyyah of Nursing at the International Islamic University Malaysia (IIUM) in Kuantan, Pahang. Inclusion criteria comprised students who were actively pursuing their undergraduate nursing studies, spanning two, three, or four years, and who had experienced flexible learning in clinical skills during the semester. Students meeting these criteria were invited to take part in the study. Data collection commenced after obtaining necessary approvals from the Kulliyyah of Nursing, the Postgraduate and Research Committee (KNPGRC), and the IIUM Research Committee (IREC). Data collection methods included face-to-face sessions held in a private location and online sessions conducted via Google Meet. To compile a list of potential participants, the researcher contacted administrative staff to acquire the names, matriculation numbers, email addresses, and phone numbers of eligible students. A week prior to the interviews, selected participants were provided with information about the interview's agenda and a set of guided topics. Before the actual interviews, the researcher explained the study's particulars to the participants. The importance of confidentiality was emphasized, and consent for audio recording was obtained. The interviews, which aimed to gather comprehensive information, spanned a duration of approximately 25 to 45 minutes per participant. A set of developed topic guides consisting of 16 questions. During these interview sessions, audio records were used, with the permission of the participants, to ensure that no information from the discussions was missed. A thematic analysis approach was utilized to analyse the data.

RESULTS

A total of 11 undergraduate nursing students participated in this study. They were in the 2nd, 3rd, and 4th year of their studies and had experienced flexible learning in clinical skills. From interviews, 21 codes were extracted. Subsequently, these codes were classified into two main domains: types of flexible learning activities and nursing students' experiences with flexible learning activities in clinical skills. There was one main theme for types of flexible learning activities and three themes for nursing students' experiences with flexible learning activities in clinical skills. The types of themes included self-directed learning and experience themes encompassed benefits, barriers, and challenges.

Theme 1: Self-Directed Learning

The majority of participants in this study indicated that they had employed self-directed learning methods, primarily through the utilization of pre-recorded videos. Faculty members typically recorded the clinical procedures, making these videos accessible to students through the university's e-learning platform. For instance, one participant noted, "*Most of the lecturers share the link to the procedure videos, which have been uploaded to the LMS system.*" Additionally, many participants took the initiative to create their own recorded videos during

the demonstration sessions, with the lecturer's permission. They felt that the pre-recorded videos lacked comprehensive explanations. As one participant explained, "*I recorded the demonstration session, even though the lecturer had provided a pre-recorded video, because I found the explanation to be insufficient and the video too concise*."

In addition to these university-provided resources, some participants sought further understanding by referring to procedure videos available on YouTube. These external resources served as supplementary references, aiding students in comprehending the rationale behind each step of the clinical procedures. A participant elaborated, "*Despite the availability of pre-recorded videos by our lecturers, certain aspects of the procedures still posed challenges. In such cases, we turned to YouTube videos from other university sources to gain a clearer understanding*."

Theme 2: Benefits

The participants in this study expounded upon the various benefits associated with flexible learning, particularly in the context of utilizing videos for clinical skills practice. One of the participants emphasized the advantage of video-based learning in terms of continuous revision, stating, " *I like watching videos since they are a great reference when I need to rehearse a process and help to refresh my memory.*." Furthermore, most participants underscored the convenience of flexible learning, highlighting the ability to access and learn procedures at any time and from any location. One participant articulated this convenience, noting, "*For learning procedures, we are not restricted to a certain place, like the Clinical Skills Centre (CSC), and we are free to modify our schedules accordingly.*."

Furthermore, participants recognized the significance of pre-recorded videos in preparing for clinical skills evaluations. They regarded these videos as essential tools for revision before assessments, simulations, and Objective Structured Clinical Examinations (OSCEs). As one participant conveyed, "*I consider these videos crucial, as they enable me to review the procedures comprehensively before assessments, simulations, and OSCE exams*." Additionally, the participants acknowledged the role of flexible learning in preparing them for clinical attachments, with an emphasis on enhancing patient safety by reducing the likelihood of errors. They noted how this approach ensured that students were well-prepared for procedures such as subcutaneous Actrapid injections, minimizing the risk of administering the wrong medication or route. One participant explained, "*This approach helps us minimize errors, even in minor procedures like subcutaneous Actrapid injections. It ensures that we administer the correct dosage and route, reducing the risk of errors*."

Participants also credited flexible learning with boosting their confidence when performing procedures in real healthcare settings. They highlighted that consistent practice using checklists and videos alleviated nervousness, particularly when administering medications to real patients. As one participant affirmed, "*It enables us to practice procedures regularly, following checklists and videos, which diminishes nervousness when carrying out procedures in hospital settings, such as administering medication to actual patients*." Furthermore, participants stressed that flexible learning enhanced their familiarity with procedures by

providing a clear understanding. This approach went beyond theoretical knowledge, allowing them to visualize real clinical settings and better comprehend the practical aspects of healthcare delivery.

Theme 4: Barriers

The findings from the interviews revealed two primary categories of barriers, encompassing both extrinsic and intrinsic impediments to flexible learning. Among the extrinsic barriers, poor Internet connectivity emerged as a prevalent hindrance, with participants highlighting its detrimental impact on online learning. As one participant described, "*A common external obstacle encountered in online learning is the issue of poor Internet connectivity, often leading to video buffering problems.*" Furthermore, participants shed light on the limitations associated with direct feedback and engagement, particularly during online learning sessions. They shared concerns about the challenges of seeking clarification from lecturers, emphasizing that queries arising from video-based learning sessions often went unanswered for extended periods. One participant noted, *"One limitation pertains to the inability to seek immediate guidance from the lecturer during online learning. When we encountered difficulties while watching videos in the early morning or late at night, obtaining prompt clarification was hampered by the need to reach out to the lecturer via WhatsApp.*"

Intrinsic barriers also surfaced, with some participants acknowledging their struggles related to self-motivation. They admitted to a lack of enthusiasm for watching videos provided by their lecturers, citing the allure of engaging with other forms of entertainment, such as YouTube, TikTok, and various social media platforms. One participant candidly stated, "*Intrinsic challenges included a lack of self-motivation to watch the provided videos. The presence of alternative and more captivating distractions, like YouTube, TikTok, and social media, often led to a disinterest in the learning process*."

Theme 5: Challenges

The theme of challenges yielded two distinct sub-themes concerning technology and equipment. Participants overwhelmingly expressed dissatisfaction with the provided videos, citing shortcomings in the creators' proficiency and video production skills, which resulted in issues such as improper camera angles and low-quality audio. One participant pointed out, "*The videos often failed to capture the procedure steps clearly, with inadequately positioned cameras." Another participant noted, "It appeared that the lecturer may have been new to video creation, resulting in poor video quality and faint audio."* Furthermore, participants highlighted the difficulties they faced in concentrating on lengthy, unedited videos that lacked the necessary editing to emphasize key procedural elements. As one participant elaborated, "*The videos, often spanning 10 to 8 minutes without editing, made it challenging for us to maintain our focus*."

In addition to these technological challenges, a significant number of participants also reported discrepancies between the steps demonstrated in the videos and what had been

taught during practical sessions. This discordance created confusion and hindered their understanding of the procedures. One participant recounted, "*During hands-on sessions at the Clinical Skills Centre (CSC), lecturers frequently assumed that everyone had watched the videos, which resulted in a cursory demonstration of the procedures.*" Furthermore, participants discussed equipment-related challenges, primarily pertaining to the limited availability of essential resources. Many participants shared their experiences of having to share equipment with fellow students due to shortages. They recounted instances where they were unable to access the same equipment when needed, attributing this difficulty to the high demand for limited resources. As one participant noted, "*I often had to share equipment with others because it was in short supply, and many students had already borrowed the available equipment and taken it back to the dormitory.*" Moreover, participants expressed concerns about the insufficient supply of equipment at the CSC, making it challenging for them to borrow items for practice outside the facility. One participant expressed, "*While equipment was available at the CSC, its limited quantity posed challenges for students who needed to borrow equipment for practice*."

Another equipment-related issue highlighted by most participants was the malfunctioning of equipment, which further exacerbated the challenge of resource availability. The impaired functionality of instruments, coupled with the high demand for equipment, limited participants' ability to effectively utilize the resources provided. As one participant pointed out, "*Malfunctioning equipment and instruments, coupled with the rapid turnover of users, often prevented us from using the available equipment effectively*."

DISCUSSION

In the realm of nursing education, the judicious utilization of technology, particularly in the creation of learning materials such as instructional videos, has been recognized as pivotal for enhancing student learning (Corbally, 2005). Nevertheless, it is worth noting that some educators face challenges in harnessing video technologies effectively, which, as discussed by the author, can act as a barrier to nursing students' education. To address this, it is recommended that nursing educators receive annual training on video production. This is congruent with the current study's findings, which emphasize the significance of providing coaching in video creation courses for educators to bolster students' engagement in mastering clinical skills.

Beyond traditional sources like the Clinical Skills Centre (CSC) and the hospital wards, the incorporation of video-based learning materials offers students an alternative, accessible means of acquiring clinical skills. This not only streamlines the learning process but also augments students' performance by enabling them to learn and practice clinical skills at their own convenience, irrespective of location or time constraints. Consequently, the need for students to physically attend the CSC for skill acquisition diminishes. However, it does pose a challenge for educators who must ensure the continuity of education. This transformative shift to flexible learning activities empowers nursing students to have greater control over the pace of their studies, a crucial consideration given the multitude of procedures they are required to master. These findings resonate with several recent studies, which identify

flexible learning as an avenue for self-directed learning (Yoshioka-Maeda et al., 2019; Foronda et al., 2018; Barisone et al., 2019; Bdair, 2021).

Despite the benefits of flexible learning, most participants in this study expressed concerns regarding the limited direct feedback and engagement inherent in this approach. In response, it is essential for educators to incorporate procedural steps and explanations into their videos to compensate for the absence of real-time critique. This aligns with the study's findings, where participants underscored the necessity of feedback to enhance their proficiency in clinical procedures (Egilsdottir et al.,2022) . Previous research has also underscored the critical role of supportive instructions in the development of clinical skills (Coyne et al., 2018). Furthermore, educators can conduct question-and-answer sessions with students before their clinical attachments at hospitals, thereby reinforcing their understanding of the procedures taught.

While hands-on, in-person sessions remain the preference for most students when learning clinical skills, there is a recognized value in recorded videos as supplementary references. The majority of students favor pre-recorded videos created by their lecturers, citing the advantage of these videos in providing a comprehensive, uninterrupted overview of the procedural steps. Importantly, students emphasized the need to prioritize their well-being in educational sessions, especially in terms of their ability to grasp the information and master the clinical procedures. This emphasis on student well-being aligns with previous research that highlights the importance of nurturing a supportive learning environment that caters to students' capacity to comprehend and apply the knowledge at hand (Kasinathan, 2023).

In conclusion, the effective use of video-based learning materials can significantly benefit nursing education. While flexible learning offers a wealth of advantages, addressing feedback and engagement limitations is vital. A balanced approach that combines the benefits of in-person sessions with video resources is key to providing nursing students with a well-rounded education that empowers them to excel in their clinical practice.

IMPLICATION TO NURSING

The implementation of flexible learning in nursing education holds profound implications for the nursing profession. It empowers nursing students with a versatile approach to acquiring clinical skills and knowledge, thereby fostering adaptability and self-directed learning. This, in turn, equips future nurses with the ability to continually update their skills in a rapidly evolving healthcare landscape. Moreover, flexible learning promotes accessibility, enabling individuals from diverse backgrounds and geographical locations to pursue a nursing education. It accommodates those with various commitments, including work and family responsibilities, making nursing education more inclusive. Nursing, as a profession, stands to benefit from a more diverse and well-prepared workforce. As nurses graduate with the ability to leverage technology and self-guided learning, they become better equipped to provide high-quality patient care and adapt to new healthcare practices and technologies. In essence, the implications of flexible learning in nursing education extend to the enhancement of

patient safety, healthcare efficiency, and the resilience of the nursing workforce in the face of future challenges.

CONCLUSION

In conclusion, the study explored the implementation of flexible learning in nursing education, delving into its profound impact on nursing students and the nursing profession as a whole. This innovative approach offers students the flexibility to learn clinical skills through a variety of methods, from pre-recorded videos to guided learning sessions. Our qualitative findings shed light on the benefits, barriers, and challenges associated with this approach, highlighting the need for training and enhanced support for both educators and students. Flexible learning, with its potential to enhance accessibility, accommodate various schedules, and promote self-directed learning, paves the way for a more inclusive nursing education. It equips future nurses with adaptability and prepares them for the evolving healthcare landscape. The implications of flexible learning for nursing are substantial. It contributes to a diverse and well-prepared nursing workforce, capable of providing high-quality care and adapting to healthcare innovations. This, in turn, enhances patient safety and healthcare efficiency. As it embrace these transformative changes in nursing education, the profession stands stronger and more resilient in the face of future challenges.

FUNDING

This research was supported by Ministry of Higher Education (MoHE) (SPG 22-050-0050).

ETHICAL CONSIDERATION

The author(s) ensures anonymity and explicit consent was obtained from all participants throughout this study. This study received ethical approval from university's research bodies, Kuliyyah of Nursing Post-Graduate and Research Committee (KNPGRC) and IIUM Research Committee (IREC) [grant numbers IREC 2023-KON/NURF40].

CONFLICT OF INTEREST

The author(s) declare no conflict of interest.

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CLINICAL HANDOVER PRACTICE IN THE EMERGENCY AND TRAUMA DEPARTMENT OF SASMEC@IIUM: AN OBSERVATIONAL QUALITATIVE STUDY

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ABSTRACT

Introduction: Where there is a high patient turnover rate and a fast-paced atmosphere with unpredictable events, such as in the emergency and trauma department (ETD), the likelihood of miscommunication and errors rises. Communication between the shifts or among the employees must be informed of crucial information to ensure safety and effective clinical handover practices. Therefore, the primary goal of this study is to discover clinical handover practices that can improve communication between emergency healthcare personnel (HCPs) and within various departments.

Purpose: To identify the existing shift handover procedures, the resources and supports available to improve clinical handover efficacy, as well as the factors that promote and impede clinical handover effectiveness among the emergency staff.

Methods and methodology: This descriptive, qualitative study used a purposive sampling strategy, obtaining 33 nurses, doctors, and AMOs where the data reached saturation. Open-ended questions using a topic guide interview were used to elicit the participants' opinions on the current clinical handover procedures in the department. Thematic analysis was used to analyse the data after the sub-themes and themes were created.

Results: Six themes were identified for this study, consisting of 1) learning methods of clinical handover, 2) information passed to the next shift, 3) information expected to be received,
4) opinions on current handover, 5) handover effectiveness, and 6) suggestions for improvement.

Conclusion: The emergency HCPs have diverse backgrounds in clinical handover and working experiences due to having previously worked in other hospitals or departments. In this study, they discussed their own experiences with clinical handover in the department as well as the variables that determine how well the clinical handover process works. The

findings were focused on the components that the participants believed may be advantageous for the general improvement of the clinical handover.

Keywords: Clinical handover; Practice; Emergency and Trauma Department; Qualitative.

INTRODUCTION

The emergency and trauma department (ETD) is a well-known area of high turnover patients, generated by admissions, transfers, and discharges. While this situation occurs, there is a need for clinical handover reports from one staff member to another, from one department to another, or even between various health professions (Manias, 2015).
Clinical handover is defined as "*the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis*" (British Medical Association, 2004, p.7), and it is conducted at the bedside of the patients. Clinical handover is a critical nature of communication between the staff, given physicians, nurses, or even the assistant medical officer. However, it received relatively less attention, and the evidence is limited, particularly in Malaysian settings.

Several studies have reported that inefficient clinical handover leads to poor patient outcomes (Manias et al., 2015) and jeopardizes patient safety (Thomas & MacDonald, 2016). In the ETD, communication failures occur due to the fast-paced nature of urgent care as well as the unpredictable nature of the department (Manias et al., 2015). It is necessary to develop the standard and improve the communication aspects.

Hence, this study examined the current shift handover practices among emergency healthcare providers (HCPs) at SASMEC@IIUM, identified the resources and supports to enhance clinical handover effectiveness, and determined the barriers and facilitators to the effectiveness of clinical handover. This, in return, could avoid and reduce the occurrence of major incidents while handing over patients' information.

Conducting a qualitative study helps to gain a better understanding of clinical handover practice among emergency HCPs and its implications for effectiveness. It is hoped that the findings could assist the administrator in identifying the best approach to clinical handover and produce the standard guideline to be used by the emergency HCPs, regardless of their profession, and can be extended to the whole organization. Hence, this study aimed to identify the existing shift handover procedures, the resources and supports available to improve clinical handover efficacy, and the factors that promote and impede clinical handover effectiveness among the emergency staff.

METHODOLOGY

Study Setting, Design and Sample

A qualitative study was conducted among experienced emergency HCPs who have been working in the department, using a purposive sampling method. About 33 participants who are currently working at the emergency and trauma department of SASMEC@IIUM were successfully recruited for this study. The participants consisted of three different professions: 14 nurses, 10 physicians, and 9 assistant medical officers who are permanently working in the department as residents. This study excluded those who were undergoing official leave, such as maternity leave, paternity leave, or study leave.

Material

A semi-structured interview using open-ended questions was used as the primary method of data collection. The topic guide for the interview was developed in the English language by the researcher, Dr. Nurul 'Ain Ahayalimudin, a qualitative researcher who had numerous experiences in developing interview topic guides for qualitative studies. The interview consisted of questions that related to the participant's experiences during their working days, suggestions, opinions, and expectations for the practice of clinical handover while working at the department.

Ethical consideration

Approval of this research study has been obtained from the Department of Education and Research, SASMEC@IIUM, and the International Islamic University Malaysia Research Ethics Committee (IREC) on 12th January 2021. Afterwards, the participants were approached with the consent form during the scheduled meeting. All information regarding the study was explained to the participants before the interview session to make sure they understood well and got more ideas on the questions that would be asked. A consent form was completed by the participants before the interview as evidence of their willingness to be involved in this study. The data was kept private and confidential using pseudonyms.

Data collection

The data collection started from March 2022 until September 2022. In this study, the data were collected through a one-on-one interview using the topic guide. Interviews were conducted in English and Malay, with the duration of each interview session being approximately 30 minutes on average. The interview sessions were audio-recorded. In addition, the interview was conducted informally with a conversational style using open-ended questions.

Data analysis

After listening to the audio recordings of the interviews numerous times, the recordings were transcribed and thematically analyzed. By employing the thematic analysis by Braun and Clarke (2006), the researcher was able to identify, analyze, organize, describe, and report the themes based on the data set. The data were used to identify similar or repeated answers from different individuals. It was analyzed after that before being turned into pertinent themes and organized. The researcher then described and published the data, highlighting the significance of the themes. The relevant aspects of the data were then coded to make sure they matched the study topic. Based on the previously published research pertinent to the subject, data interpretation and contextualization have been completed. To make sure that the results were consistent, a different researcher served as a peer reviewer and looked over the research procedure and data analysis.

Trustworthiness

The criteria of trustworthiness developed by Lincoln and Guba (1985) were used in this study, which are dependability, credibility, conformability, and transferability. To ensure dependability in this study, the researcher's supervisor acted as a peer reviewer and examined the research process and the data analysis to ensure that the findings were consistent. Also, reflexivity as a researcher kept reminding herself to not be biased throughout the whole research process.

Other than that, constant comparison in the data analysis process is also being done by comparing each of the interpretations and findings with the existing findings that emerged from the data analysis. The data collected through interviews and the document for the handover could ensure the credibility of the findings. Finally, there was transferability, in which the results of qualitative research can be transferred to other contexts or settings with other respondents.

RESULTS

Six themes emerged after the researchers reviewed the transcripts as summarized below.

Table 1: Themes and categories identified from the interviews

Themes	Categories
Learning methods of clinical handover	• During study years • Learned while at work • Learning from experienced seniors and tagging • Formal learning through seminars and training
Information passed to the next shift	• Patients' related information • Equipment and technology used • Information on medical plans • Management provided to the patient
Information expected to receive	• Patients' condition in detail • Pending procedures • Interpretation of investigation results • Status of equipment used

	• Complete and precise information
Opinions on the current handover	• Complete information provided • The use of mnemonics and systematic tools • Various ways of communication
Handover effectiveness	• Perceived barriers • Facilitating factors • Lacking in current handover practices
Suggestions for improvement	• Self-initiative • Group handover • Addition of staff • Bedside handover implementation • Training and documentation • Device and technology use

Theme 1: Learning methods of clinical handover

i. During study years

The vast majority of the participants stated that during their study years, they were taught the clinical handover approach informally.

> *"During my study years, I had learnt the method of handover, but it was not under one special curriculum." (MO7)*

ii. Learned while at work

Some participants stated that they learned the method of clinical handover from their observations while working.

> *"... Sometimes we observe first the way the experienced workers handle. And by the time we knew some important points, and the least important points, we then sorted them out in our way while passing over." (MO 9)*

iii. Learning from experienced seniors and tagging

Most of the participants stated that they learned from their seniors and colleagues during their working days.

> *"...learnt from the seniors only informally and practice passing over in front of the patients" (AMO 1)*

iv. Formal learning through seminars and training

A few of them also stated that they learned clinical handover formally during continuous medical education (CME).

"...I guess in continuous medical education (CME), the morning passes over so it most likely around every year. Within one to two months or three months, there will be pass over training formally." (SN 10)

Theme 2: Information passed to the next shift

i. Patient'' related information

Most of the participants mentioned they included the patients' background details in the report.

".... information that we used to obtain from the staff in charge of the patient. depending on the patient that they manage during their specific shift. if there are a lot of patients then there will be a lot of cases. We even passed who will oversee the patients according to specific zones." (SN 1)

ii. Equipment and technology used

Some of the staff also stated that, other than patient status, they will also include equipment status and clinical item shortages in their report for the next shift.

"...Hmm if there is no patient-related pass over, we will pass information on the equipment. if there is any problem or ventilator failure the next shift will not be surprised by them. So, we need to pass over the report either already conveyed to PENMEDIC or not since all equipment failure will be sent to PENMEDIC for their further actions…" (AMO 7)

iii. Information on medical plans

Some of the participants pointed out that they also include medical plans in their reports for the next shift to be well prepared.

"...not only that, but we also include the patients' registered number (RN), comorbidity if any, underlying diseases, chief complaint, the reason the patient came in etc. management of the doctors, plans and all we have to include so that the next shift know what to expect..." (SN 5)

iv. Management provided to the patient

The participants agreed that they pass on the management they have done to the patients in the report.

"...We have to pass on the criteria indications that are needed to be admitted in yellow or any zones in ETD. And then of course the biodata which include the name, age high-risk disease or underlying diseases and also the history of previous illness. If the shift, we just pass on what are the ongoing and pending procedures that require next shift to continue..."(AMO 2)

Theme 3: Information expected to be received

i. Patients' condition in detail

The participants stated that they usually expect to receive complete information about the patient's current condition.

> *"…we need to pass in detail. Because I think sometimes something is missing. What have they done maybe they forgot to tell us right? then we need to find it again in the report or maybe we need to call them. If in radio yes, also the same for example the equipment failure or misplaced they do not write in the report. So that shows they have not informed the in charge…" (AMO 1)*

ii. Pending procedures

The participants stated that they expected to receive all pending procedures that had not been done in the previous shift.

> *"...If it's me usually the general overview only and the issues that need to be solved or any pending procedures overall…" (SN 13)*

iii. Interpretation of investigation results

The participants stated that they would need accurate information provided by the staff from the previous shift.

> *"…hmm if there is an abnormal procedure such as blood investigation result, or physical examination or unstable patient. We need to be cautious. That is the info that we need to know…" (MO 2)*

iv. Status of equipment used

They also mentioned that they will need information on the equipment as well, in addition to the patients' information.

> *"…for me such as the medical equipment in the department like PHC whatever equipment failure or malfunction or technical problems all must be reported. And also, must report the exact place of the equipment used and put in back once used…" (AMO 2)*

v. Complete and precise information

Some added that they expect to receive complete information from the previous shift.

> *"…sometimes there was also incomplete information passed such as the patient's belongings that had been given to the patient. That one I think is important to know who the patient was dealt with that sometimes staff used to miss..." (AMO 3)*

Theme 4: Opinions on the current handover practices

i. Complete information provided

Few data were collected showing that the clinical handover is considered sufficient since it is standardised and aligned with the Ministry of Health (MOH).

"...for me, everything is fine here since we are practising the same method as other hospitals, especially in ETD where we will handover report in front of the patient and pass the details...." (MO 3)

ii. The use of mnemonics and systematic tools

The majority of the participants agreed that ISBAR mnemonics are very helpful in their clinical handover process.

"...But more than 50% of ETD staff implement ISBAR I can confirm that. It's a good thing since we don't want to have any missing information that's the reason. Also, other than handover methods through phone, we will write in ISBAR in papers. The ISBAR form will be checked and signed by the ward staff as our copy to prevent any problems in future." (AMO 6)

iii. Various ways of communication

Few participants who have previously worked in different settings stated that the environment and flow of ETD are quite different from wards or clinics.

"...based on my previous working experience in the pediatric ward, the handover method is a bit different. The content of the report. In ETD it's like "Touch N Go" where it is very brief, so it is different here..." (SN 12)

Theme 5: Handover effectiveness

i. Perceived barriers

From the study data, it is said that human factors contribute to the ineffectiveness of clinical handover.

"...factors that hinder the effectiveness maybe the team leader (TL) for the shift plays the main role in handover report. Sometimes those who work in specific zones miss out on something, so I guess it is the role of TL to remind. If there is no TL or TL is not responsible, then it will affect handover..." (AMO 1)

Most of the participants agreed that the process of handover will be interrupted if there are a lot of admissions at the same time.

".... the factors would be if suddenly patient came in while passing over. But this may be a bit personal since everyone can hand over a report anywhere so it depends on the individual if they can be focused. If a staff is not being focused while passing over then it will be a waste..." (AMO 3)

The participants also shared that interruptions can be minimized if all staff are punctual and disciplined.

".... hmm if the staff arrived late and maybe if there is a shortage of staff. Because sometimes we need more people to in charge radio and PHC since both areas require different works..." (AMO 6)

ii. Facilitating factors

A few participants agreed that providing accurate and precise information enabled the handover to be smooth.

> *"…. check the patient's details including the name, doctors' plan, any pending procedures and other things related to that…" (SN 2)*

Most of them stated that the handover is best delivered in front of the patient.

> *"...for pass over, I think it is better to be done face to face since we can directly observe the patient. Oh!And I think technology also plays an important role in this yes both are important…" (SN 5)*

Some stated that with good individual discipline, the handover process can be effective.

> *"…. I think the important part is the interactions between us and the one who receives both must have the initiative to pass and receive accurately because this involved teamwork so both must be focused." (AMO 2)*

iii. Lacking in current handover practices

A few participants shared that they only knew about the patients they were in charge of, not all patients in detail.

> *"… the lack here is we don't know about other cases. Some staff have the initiative to read and know about other cases, but some are not. It is better if we know all cases during that time, so I think currently we only pass the cases that we oversee and do not know about other cases…" (SN 2)*

One participant expressed that it is hard to measure the effectiveness of clinical handover.

> *"…. for me everything is under control it's just we don't have any proper or clear guidelines for an effective report. So to measure the effectiveness is very hard I guess but anyway, everything is fine not much or major problems occurred..." (MO 1)*

Theme 6: Suggestions for improvement

i. Self-initiative

One staff member stated that it is their initiative to learn more about the abbreviations and medical terms that will be used frequently during the clinical handover.

> *"... I think everything is fine all information received for us to increase our knowledge, especially the medical short forms such as hospital-acquired pneumonia (HAP), and community-acquired pneumonia (CAP) so we need to know the medical abbreviation, so we need to have the initiative to learn more…" (AMO 3)*

ii. Group handover

Some participants suggested that the handover could be more effective if carried out in groups.

> *"The improvement I think the handover system must involve a group so that the information won't be mixed up, so we need one time where everyone gathers, and the report is delivered at that time. But sometimes the method cannot be done due to the workload of the staff, but I think the formal workshop can be done for the handover to be more efficient…" (AMO 1)*

iii. Addition of staff

Most of the healthcare personnel agreed that ETD needs to have more staff for the handover to be carried out smoothly.

> *"…It is better if more staff can be taken in because sometimes one staff oversees four to five patients alone. So, if possible, for us to have more staff so that the process will become more efficient..." (AMO 5)*

iv. Bedside handover implementation

From the study data, most of the participants mentioned the importance of bedside handover so they could directly involve the patient during clinical handover.

> *"…for pass over report must be conducted in front of the patient so that we can confirm the condition of the patient. So, for me, we need to pass in front of the patient…" (AMO 7)*

v. Training and documentation

The participants added that the training is important for the staff to accurately prepare the report and standardise the content of the clinical handover.

> *"…another suggestion would be continuous training regarding clinical handover. Not just a speech but a quick practical session maybe in 5 minutes, twice a week. So, the trainer or superior will demonstrate the important points that need to be included as simple as that. I think this will be effective while working we practise it…" (MO 3)*

From the study data, it was revealed that the systematic documentation process can be one of the ways to improve the flow of clinical handover.

> *"…. I think the delivery of the report needs to go step by step so the delivery will be structured, and nothing will be missed out. And need to be recorded as well since we can forget sometimes especially if we have a lot of work…." (AMO 6)*

vi. Device and technology use

A few participants suggested that they would need a more advanced system for the clinical handover process.

> *"... We are still using the manual method even though we have the computer. So,in the pass over sometimes we tended to miss out on the manual such as the blood form which we needed to fill in. ... Due to that, we won't have to fill in a lot of forms manually and we just need to order them through a system where the details of patients are all included there..." (MO 7)*

The participants wish to have an advanced system for documentation that enables the handover to be more efficient in the future.

> *"...if possible, for us to have one advanced system that we do not need to use the board anymore. Because sometimes the board we need to erase the and wait for the board to dry before we can use it again or maybe any technology that can make it faster in writing, so I think we need advanced technology..." (AMO 5)*

DISCUSSION AND RECOMMENDATION

This qualitative study concentrates on the participants' experiences, opinions, and expectations in the Emergency and Trauma Department of SASMEC@IIUM. From this study, we summarized our findings into six themes: learning methods of clinical handover, information passed to the next shift, information expected to be received, and opinions on current handover, handover effectiveness, and suggestions for improvement.

Learning methods of clinical handover

The first theme focused on how the healthcare personnel of the Emergency and Trauma Department (ETD) of the SASMEC@IIUM learned the methods of clinical handover. This includes various methods shared by the participants, such as learning formally during clinical years of study, informal learning during the working period, and a few others.

Under this theme, the study discovered that most of the participants learned clinical handover practices informally during their clinical years of study and their working period. This shows that the clinical handover practices were not being emphasized, even though the clinical handover practices in ETD play an especially crucial role in providing first-hand management for the patient.

There were two studies that mentioned that despite being one of the most essential patient-focused processes, there is limited formal education in preparing healthcare personnel for clinical handover practices (Owen et al., 2009; Scovell, 2010). This will raise concerns about the effectiveness of clinical handover practices among the staff, especially in ETD, as it is known as a fast-paced department that provides urgent care with an unpredictable nature, which might lead to miscommunication and mismanagement for the patient (Manias et al., 2015).

Information passed to the next shift

It is important to identify the information provided by healthcare personnel to their colleagues during the change of shift. This is to ensure the information delivered is reliable, precise, and accurate since the information provided will influence the management of the patient. Clinical handover functions as responsibility and accountability for care continuity from one healthcare personnel to the next (Makkink et al., 2022). This is why the information contained in the clinical handover needs to be as precise as possible, since it is the responsibility of all staff working as healthcare providers.

In this theme, the participants explained the information they used to convey during their daily clinical handover to the next shift. From the results presented, the participants mostly described how they delivered similar points in their handover reports, such as patients' related information, the status and conditions of the equipment and technology used during their shift, medical plans, and the management they provided for the patient throughout the shift.

The information included in the clinical handover is usually brief, related to the patient, and required for healthcare personnel to provide suitable interventions for the patient. Jenkin et al. (2007) described that healthcare personnel collect information such as age, chief complaints, presenting illness, social background, and more from patients that come into ETD.

Information expected to receive

The theme that emerged is related to the expectations of the participants who were to receive information from the staff during the previous shift. Based on the study data, most of the participants agreed that aside from the basic background of the patients, they would expect as much detail as possible from the patient that might be useful to the management provided by the healthcare personnel. It is also explained by the healthcare personnel the importance of delivering precise and complete information for every handover since the information provided will affect the continuity of care for the patients later. Delivering accurate information can not only prevent treatment errors but also prevent delays in patient management (Weston et al., 2022).

In addition to the patients' conditions, most of the participants agreed that the pending procedures were crucial to be included in the handover report for the next shift. Any procedures or plans that were unable to be completed during the shift due to several reasons must be informed and passed to the next shift for the continuity of the patient's management. The information transfer can be summarised by using an outline of the events that happened to the patient, the management given, and the current state, but some consider the information transfer to include the patient's needs prospectively (Fealy et al., 2019).

The investigation results may take some time before being completed in one shift. However, if the investigation results were out within the same shift, the healthcare personnel agreed that the interpretation of the results was important to be included in the handover report as well. This action is believed to ease the continuity of care and minimise the time needed for healthcare personnel to provide management as soon as possible for the patient. The participants in a study by Fealy et al. (2019) believed that the handover report is an important

document that acts as a medium of communication between healthcare personnel to maintain continuity of care.

Although the patient's related information is crucial for healthcare personnel in providing care for the patients, the status and conditions of the equipment used for management are no less important. Healthcare personnel need to report any malfunction, insufficient number of or faulty equipment or facilities they used while providing care. This is to ensure the care process is not interrupted and that the wellbeing of both the patient and the staff is well taken care of.

Opinions on the current handover

The participants expressed their opinions on the current handover in ETD SASMEC@IIUM from three main aspects. For the first part, the majority shared their views that all healthcare personnel provide complete and sufficient information needed for patients' management to be carried out. Most of the participants even mentioned that they did not have any more comments regarding the content of the clinical handover, as they assumed they had already received all the information required for the proper interventions.

Most of the participants agreed that the use of mnemonics and other tools has eased the process of clinical handover during an exchange of shifts. ISBAR is a tool that stands for identity, situation, background, assessment, and recommendation and has been widely used by healthcare personnel, especially in ETD during handover reports. Most healthcare personnel worldwide agreed that the use of ISBAR helped a lot in making clinical handovers more structured and precise (Fealy et al., 2019). However, some of the participants stated that not all staff have been complying with ISBAR during handover, and some shared that they sometimes did not comply with ISBAR due to the time constraint, as it needs to be written accordingly and may not be applicable in a hectic environment.

Finally, the participants mentioned that they are mostly satisfied with the communication between all healthcare personnel in ETD, including the communications with healthcare personnel throughout the hospital from other departments. A study by Chien et al. (2022) revealed that the staff can benefit a lot where the training will enhance the communication skills among staff while improving their skills in clinical handover. They agreed that the relationship and good environment of the workplace influence the communication process between healthcare personnel. However, some participants suggested that the communication skills be polished through training or improved individually for the clinical handover to be passed accurately and received precisely at the same time.

Handover effectiveness

In this study, the factors that influence the effectiveness of clinical handover are covered in this theme. Emergency departments are highly dynamic and stressful care environments that may affect healthcare providers and patient outcomes. ETD has special and unique challenges compared to other departments as the staff works under pressure and length of stay that may result in a rush for care transitions and handover, high patient turnover, and overcrowding. Last but not leas, the patients in ETD experience frequent occurrences of

movement where they need to be transferred to different departments within a short time (Cross et al., 2019). Thus, many factors can influence the effectiveness of clinical handover, whether they are barriers or facilitate the process of report handover.

The healthcare personnel in ETD SASMEC identified the common barriers they faced during the clinical handover daily; however, they stated that those barriers are not severely affecting the process of clinical handover as they are already used to them, and some of the barriers are unpredictable and unavoidable. However, they stated that it is best if only those barriers can be minimised so that the clinical handover can be carried out more efficiently. Contradicting to the facilitating factors, the factors compiled in this theme were perceived as very useful for them while carrying out handover, and some of them expressed that it is best if the helpful aids can be multiplied or just sufficient for them to ease their process of handling and handover reports amongst healthcare personnel.

The participants also shared what they think is lacking in the current handover process. There are only two main aspects, for which they mentioned: the current handover, which causing one staff member to only know about the patients they are responsible for and not all patients in detail. They were concerned on this matter that if there is any occurrence where the staff in charge is not present, other staff will not be able to replace the staff in charge of the patient. Another aspect is that one participant mentioned that we can never have accurate measurements to measure the effectiveness of clinical handover. Therefore, it is very hard to tackle this issue and improve it for future use. It was also said in a study by Cross et al. (2019) that the most effective method for clinical handover remains uncertain in maintaining the continuity of patient care since there will always be barriers at every emergency department with different environments and places.

Suggestions for improvement

For this theme, a compilation of suggestions was shared by the participants that they envisioned to enhance improvement in clinical handover overall in ETD SASMEC. The suggestions cover various aspects with the hope that they will be beneficial for the improvement of clinical handover soon. For the first part, the participants shared their thoughts on the self-initiative that all staff must have for their work to be efficient. Most participants agreed that attitude plays an important role in executing tasks, especially among healthcare personnel since they are dealing with patients' lives.

In addition, the staff attitudes will very much influence the working environment and the attitude of the junior staff in terms of the development of clinical confidence in their practices (Weston et al., 2022). There were some initiatives where the participants highlighted that the staff should have the initiative to learn more on their own, especially the medical terms and abbreviations that are commonly used among healthcare providers to ease communication among them. This can also be associated with the staff having some expectations and knowledge before the clinical handover session, which will reduce interrupting questions during the clinical handover (Javidan et al., 2020).

In between those, some participants expressed that a good system may be beneficial to ease the clinical handover; however, it is still dependent on the staff themselves whether they will comply with the system while executing their tasks. Thus, compliance with the good system will improve the process of clinical handover and other tasks as well. In a study by Chung et al. (2021), healthcare personnel seldom used the systematic approach due to inadequate training and a lack of practice.

Since the healthcare personnel in the hospital need to face a lot of workloads daily within a hectic and unpredictable environment in ETD, most of the participants emphasised that it would be better if there were more staff allocated in every shift. The addition of staff they requested not only eases all tasks and the current workloads, but more manpower can also prevent medical and human errors from occurring, especially in passing accurate information and details for the patients' management.

Together with bedside handover, communication skills will be polished along the way since healthcare personnel need to communicate with the patients while handling reports to their colleagues. A participant in a study by Campbell and Dontje (2019) believed that bedside handover can improve communication skills among staff while reducing errors related to the handover process.

The study data also revealed that the participants agreed the staff will learn the best method for documentation and will be encouraged to apply the latest method learned that suits the environment of the emergency department since documentation is the main key element of all aspects of patient care within the health system (Norton, 2020). A few participants also expressed the benefits of a tagging system among the new and senior staff that will give out the results and benefits of learning as training does. According to Weston et al. (2022), the junior nurses in their study are aware of the importance of observing and attachment to the seniors in ensuring effectiveness while conducting the clinical handover. Therefore, the senior nurses play important roles by demonstrating the conduct of handover.

From the data collected, it was also revealed that healthcare personnel need more advanced electronic systems to be applied in ETD SASMEC@IIUM, not only for the improvement of clinical handover but all medical tasks overall. They said that this advanced technology will save more time and result in better and faster management for the patients. A few participants also suggested that a new system be implemented to ease the registration and billing process by providing a programmed checklist for a smooth registration process and handover in ETD SASMEC@IIUM.

IMPLICATION FOR NURSING

Poor clinical handover causes major incidents that will affect patient conditions overall; thus, the clinical handover practices are important for providing accurate and precise information among emergency healthcare personnel (Manias et al., 2015). Poor communication may lead to poor message received and it can give implication to nursing carrier if it's can cause error.

From the study data, the participants expressed the importance of clinical handover through the information contained in the handover report, as mentioned. They agreed that the clinical handover plays a crucial role not only in saving lives but also important for them as a continuity of management and treatment for the patients. It was said by Weston et al. (2022) that handover is a living document that emerges from the information obtained not only during the exchange of shifts but also throughout the patient's management overall. Therefore, all nurses area compulsory to have handover session in if each zone in Emergency Department. Thru proper handover it can ensure the correct treatment will give to patient and to ensure the continuity of care given to patient.

Based on a few studies, it is agreed that through group handover, the clinical handover process can be completed efficiently while minimizing the tendency to cause clinical errors and inaccurate information during clinical handover. According to Javidan et al. (2020), during the handover report, it was identified that a lack of active listening causes a loss of 30% of information passed from healthcare personnel in ETD; thus, active listening is proven to enhance the effectiveness of clinical handover.

Many studies have proven the effectiveness of bedside handovers in healthcare settings. A study by Campbell and Dontje (2019) stated that bedside handover effectiveness should not be underestimated when a good relationship between patients and healthcare personnel can be enhanced through this method while promoting safety in patient care. This way of handover improved the accuracy of the information passed among the staff while building a good bond between the healthcare personnel and the patients during the handover process. The patients can get involved in the treatment provided for them and thus enhance their trust in the healthcare personnel when they are aware of and understand the treatments and management provided for them. The nurses also believed that bedside handover helped a lot in reducing poor patient outcomes due to incomplete reporting (Campbell & Dontje, 2019).

The study data also revealed that the participants agreed the staff will learn the best method for documentation and will be encouraged to apply the latest method learned that suits the environment of the emergency department since documentation is the main key element of all aspects of patient care within the health system (Norton, 2020). A few participants also expressed the benefits of a tagging system among the new and senior staff that will give out the results and benefits of learning as training does. According to Weston et al. (2022), the junior nurses in their study are aware of the importance of observing and attachment to the seniors in ensuring effectiveness while conducting the clinical handover. Therefore, the senior nurses play important roles by demonstrating the conduct of handover.

Clinical judgement and training were found to be the most significant risks to patient safety. It can be demonstrated that formal training is equally important as learning through experience, with both learning methods leading to efficient clinical handover practices. Hence, continuous nursing education (CNE) is crucial and important for nurses to learn and improve the nurses. Best practice may lead to the best outcomes for nurses and patient.

CONCLUSION

This study revealed that the healthcare providers in ETD have various experiences during clinical handover, and a majority of the participants shared that they had never attended any training or seminar specifically for clinical handover before. Most of the participants stated that they have learned the method of clinical handover through their practical years, tagging system, and previous working experiences informally. In addition, most of the participants expressed that the factors interrupting the clinical handover are mostly inevitable due to the nature of ETD, which is chaotic and fast-paced, so they have gotten used to the interruptions.

The participants had come up with suggestions to improve the clinical handover along the way. The study data exposed the resources and supports that the participants thought would be useful for the improvement of clinical handover. The ideas of the participants ranged from the self-initiative of the staff themselves, going through the system and technology of the hospital, the addition of staff for each profession per shift, and the official seminars and training that should be provided specifically with the topic of clinical handover for all staff, especially in ETD. They believed their suggestions would be very beneficial for the improvement of clinical handover overall, which would then enable the staff to provide the best patient care and enhance the quality of services for the betterment of health for the patient.

ACKNOWLEDGEMENT

This study has been granted RM20,000 by SASMEC @IIUM with identifier 2021-21-SRG21-047-0047.

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RESILIENCE THROUGH FAITH: EXPLORING THE INTERPLAY OF RELIGIOSITY AND STRESS LEVELS AMONG MUSLIM UNDERGRADUATE STUDENTS AMIDST THE COVID-19 PANDEMIC

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*A*BSTRACT

Introduction: The COVID-19 pandemic has had a profound effect on societies, individuals, families, and communities around the world. Many individuals struggled to control their stress as a result of the panic caused by this outbreak, which brought about an absence of tranquillity in their daily lives. Engaging in worship and prayer as a coping mechanism for stress is advantageous for all individuals, including those enrolled in universities.

Objective: The study aims to determine the level of religiosity and stress among Muslim undergraduate students at the Kuantan campus of the International Islamic University Malaysia (IIUM) and explore the association between the two variables.

Methodology: A quantitative cross-sectional study was conducted from May to June 2022 on 249 Muslim undergraduates at IIUM Kuantan Campus. Participants were selected by convenience sampling. All Muslim undergraduate students received an English-language Google Forms questionnaire. The Duke University Religion Index (DUREL) and Perceived Stress Scale (PSS-10) were included. Data was analysed using SPSS 27.0.

Results: At IIUM Kuantan, Muslim undergraduate students exhibit high levels of religiosity (mean=15.73, SD=3.358) but moderate stress levels (mean=20.71, SD=5.590). Weak and inverse linear correlations exist between stress and ORA/IR items (r=-0.124 and -0.057) respectively, while a weak, direct linear correlation exists between stress and NORA item (r=0.087). However, all three items have insignificant P values (ORA: P=0.051, NORA: P=0.173, IR: P=0.370), hence the H0 cannot be rejected.

Conclusion: Most IIUM Kuantan Muslim undergraduates were religious but experienced moderate stress during the COVID-19 pandemic. Despite this, religiosity did not significantly predict stress levels, suggesting that it may not be a direct predictor.

Keywords: Religiosity, Stress Levels, Muslim Undergraduate Students, COVID-19 Pandemic, Coping Strategies

INTRODUCTION

The COVID-19 pandemic is having a significant impact on people, families, communities, and societies around the world. The outbreak began in Wuhan, China in December 2019 and quickly spread to other countries. On March 12th, the World Health Organization (WHO) declared COVID-19 a pandemic. The WHO Strategic Preparedness and Response Plan for COVID-19 aims to control the pandemic by reducing transmission and mortality rates in all countries.

In March 2020, the Malaysia Prime Minister's office announced the Movement Control Order (MCO) which prohibited many activities. Business premises, public and private schools, universities, places of worship, and all non-essential activities were ordered to halt. This included the suspension of the Muslim Friday prayer (Bunyan, 2020). The situation was resolved promptly by immediately isolating the patients and providing them with treatment. Physical distancing and movement restrictions, known as "shutdowns" and "lockdowns," can slow COVID-19 transmission by reducing contact between individuals (WHO, 2020). Various age groups and different lifestyles in the community deal with depression. However, these conditions are caused by other economic, social and cultural causes, roots and contexts. It has been revealed that stress is the primary factor affecting mental health (Heitzman, 2020). The body's reaction to a demand, change, or threat is generally referred to as stress. Stress does not have an inherent positive or negative quality, but it can have either beneficial or harmful consequences (Bienertova-Vasku et al., 2020). Cultural, religious, social, and experiential factors all play a role in how individuals respond to stressful situations (Luhrmann et al., 2021; Mahamid & Bdier, 2021; Saud et al., 2021; Uddin et al., 2022).

During the COVID-19 pandemic and Movement Control Order (MCO) in Malaysia, religion played a significant role in helping individuals cope with stress and uncertainty about the future. In a recent study, more than half of the participants expressed that religion aided in dealing with the challenges brought about by the pandemic. However, there is a gap in research regarding the specific relationship between religiosity levels and stress among students in this context (Woon et al., 2021). Therefore, they did not observe faith-religious coping strategies in relation to stress and anxiety, particularly in a Muslim context. In light of the COVID-19 pandemic, this study will determine the pressure associated with religiosity among Muslim undergraduates on the IIUM Kuantan campus.

MATERIAL AND METHOD

A quantitative cross-sectional study was conducted from May to June 2022, involving 249 Muslim undergraduate students from the IIUM Kuantan campus in Pahang. The study used convenience sampling, a non-probability sampling technique that selected respondents who were conveniently available to participate in the survey. Muslim undergraduate students at IIUM Kuantan in 2021/2022 are the focus of the study. Participants should have a mobile phone or device to complete online questionnaires and have experienced the COVID-19 pandemic in Malaysia, especially during MCO. The study excludes students who took leave in 2021/2022 and those with pre-existing medical conditions or depressive and anxiety disorders.

A three-part online self-administered questionnaire was used in the study. Part A collected sociodemographic data like gender, age, year of study, Kulliyyah, living arrangement during the Movement Control Order (MCO) (alone/friends/family), pre-existing mental illness, Covid-19 infection, and quarantine due to Covid-19 exposure. Part B used the Duke University Religion Index (DUREL) Questionnaire to measure RAO, one question for NORA, and three questions for intrinsic religiosity (IR) (Koenig et al., 1997). Meanwhile, Part C used the Perceived Stress Scale (PSS) Questionnaire which consisted of a ten-item self-report instrument. Respondents were required to rate how often they felt a certain way during the pandemic COVID-19, especially during the MCO period, on a five-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always).

Data collection was approved by the Kulliyyah of Nursing Research Committee (KNPGRC) and IIUM Research Committee (IREC). Each participant received an information sheet

explaining the study's goals and confidentiality measures before consenting. All participants were assured that their information would be confidential and used for academic purposes. Participants were told they could refuse participation or withdraw consent at any time.

STATISTICS

Data analysis was done using SPSS 27.0. A p-value below 0.05 was significant. Descriptive statistics in percentage and frequency showed participant socio-demographic information. The mean and standard deviation of religiosity and stress levels were shown (SD). Pearson correlation was used to analyse religiosity and stress.

RESULTS

In this study, a cohort of 249 Muslim undergraduate students at IIUM Kuantan, Pahang, Malaysia was examined. The majority were female (78.3%), aged between 22-25 years (68.7%), and primarily in their fourth year of study (43.8%), with a diverse distribution across different Kulliyahs, Nursing being the most prominent (33.7%). During the COVID-19 pandemic's Movement Control Order, most students resided with their families (80.7%) and reported no history of pre-existing mental illness. However, a significant number had been infected with COVID-19 (43.0%), and a majority had experienced quarantine due to close contact with COVID-19 patients (75.9%). These socio-demographic and medical history insights lay the foundation for the subsequent analysis of religiosity and stress levels among this cohort. The results of the study are summarized in Table 1.0.

Table 1.0 : Socio-demographical background of Muslim undergraduate students in IIUM Kuantan, Pahang, Malaysia (N=249)

Variables		Mean (SD)	Frequency (Percentage)
Gender	Male		54 (21.7)
	Female		195 (78.3)
Age	18-21 years old	0.69 (0.470)	77 (30.9)
	22-25 years old		171 (68.7)
	26-29 years old		1 (0.4)
Year of Study	First		33 (13.3)
	Second		62 (24.9)
	Third		39 (15.7)
	Fourth		109 (43.8)
	Fifth		6 (2.4)
Kulliyah	Sciences		31 (12.4)
	Medicine		61 (24.5)
	Allied Health Sciences		53 (21.3)
	Dentistry		6 (2.4)
	Nursing		84 (33.7)
	Pharmacy		14 (5.6)
Living arrangement During MCO	Living alone		5 (2.0)
	Living with friends		43 (17.3)
	Living with family		201 (80.7)
Any mental illness before COVID-19	Yes		0
	No		249 (100)

Being infected with Covid-19	Yes	107 (43.0)
	No	142 (57.0
Quarantine experienced for being close contact with patients with COVID-19	Yes	189 (75.9)
	No	60 (24.1)

Religiosity Levels

Table 2.0 shows IIUM Kuantan's 249 Muslim undergraduates' religiosity. In Category 1, which assesses Organized Religious Activity (ORA), 48.6% of students attended religious meetings a few times a year, with some attending more often. In Category 2, Non-Organized Religious Activity (NORA), 47.8% attended private religious activities daily, while others did so multiple times (32.5 percent). In Category 3, Intrinsic Religiosity (IR), 76.3% strongly believed that their religious beliefs were an integral part of their lives and shaped their lifestyle (62.2 percent). These findings illuminate Muslim undergraduate students' religiosity, which will help us understand their COVID-19 pandemic coping strategies and stress levels.

Table 2.0 IIUM Kuantan's undergraduates' Religiosity

Variable		Frequency (Percentage)
Category 1: ORA (Organized religious activity)		
Attend mosque or other religious meetings?	Never	2 (0.8)
	Once a year or less	10 (4.0)
	A few times a year	121 (48.6)
	A few times a month	60 (24.1)
	Once a week	30 (12.0)
	More than once/week	26 (10.4)
Category 2: NORA (Non-Organized religious activity)		
Spend time in private religious activities, such as prayer, meditation or Al-Quran study	Rarely or never	6 (2.4)
	A few times a month	0
	Once a week	0
	Two or more times/week	43 (17.3)
	Daily	119 (47.8)
	More than once a day	81 (32.5)
Category 3: IR (Intrinsic religiosity)		
Experience the presence of the Divine (i.e., God) in life	Definitely not true	1 (4)
	Tends not to be true	0
	Unsure	15 (6.0)
	Tends to be true	43 (17.3)
	Definitely true of me	190 (76.3)
Behind my whole approach to life really lie on religious beliefs	Definitely not true	3 (1.2)
	Tends not to be true	78 (31.3)
	Unsure	13 (5.2)
	Tends to be true	0
	Definitely true of me	155 (62.2)
Try hard to carry religion over into all other dealings in life	Definitely not true	4 (1.6)
	Tends not to be true	122 (49.0)
	Unsure	16 (6.4)
	Tends to be true	0
	Definitely true of me	107 (43.0)

According to the DUREL questionnaire, IIUM Kuantan Muslim undergraduates are very religious. Three categories have a mean (SD) total score of 15.73 (3.358), with minimum and maximum scores of 6 and 22.

Table 3.0: Religiosity Levels (N=249

Variable		Mean (SD)	Minimum	Maximum	Mean (SD)
Religiosity Level	**ORA**	2.74 (1.093)	6	**22**	15.73 (3.358)
	NORA	4.06 (0.940)			
	TOTAL IR	8.94 (2.813)			

Stress Levels

Table 4.0 presents the frequency distribution of stress religiosity levels among 249 Muslim undergraduate students at IIUM Kuantan during the COVID-19 outbreak. The data illustrates the prevalence of various stress levels across a range of emotional and psychological experiences, with "Sometimes" being the most common response category for most stress-related statements.

Table 4.0: The frequency table of stress religiosity levels among Muslim undergraduate students in IIUM Kuantan (N=249)

Variables (During the COVID-19 outbreak)		Frequency (Percentage)
Upset because of something that happened unexpectedly	Never	5 (2.0)
	Almost Never	24 (9.6)
	Sometimes	132 (53.0)
	Fairly Often	64 (25.7)
	Very often	24 (9.6)
Felt that unable to control the important things in life	Never	11 (4.4)
	Almost Never	35 (14.1)
	Sometimes	121 (48.6)
	Fairly Often	54 (21.7)
	Very often	28 (11.2)
Felt nervous and “stressed”	Never	5 (2.0)
	Almost Never	28 (11.2)
	Sometimes	97 (39.0)
	Fairly Often	76 (30.5)
	Very often	43 (17.3)
Felt confident about your ability to handle personal problems	Never	16 (6.4)
	Almost Never	74 (29.7)
	Sometimes	130 (52.2)
	Fairly Often	27 (10.8)
	Very often	2 (0.8)
Felt that things were going your way	Never	6 (2.4)
	Almost Never	52 (20.9)

	Sometimes	156 (62.7)
	Fairly Often	31 (12.4)
	Very often	1 (0.4)
Could not cope with all the things that had to do	Never	6 (2.4)
	Almost Never	46 (18.5)
	Sometimes	127 (51.0)
	Fairly Often	54 (21.7)
	Very often	16 (6.4)
Able to control irritations in your life	Never	12 (4.8)
	Almost Never	90 (36.1)
	Sometimes	127 (51.0)
	Fairly Often	17 (6.8)
	Very often	3 (1.2)
Felt that you were on top of things	Never	6 (2.4)
	Almost Never	30 (12.0)
	Sometimes	144 (57.8)
	Fairly Often	59 (23.7)
	Very often	10 (4.0)
Angered because of things that were outside of your control	Never	7 (2.8)
	Almost Never	51 (20.5)
	Sometimes	113 (45.4)
	Fairly Often	59 (23.7)
	Very often	19 (7.6)
Felt difficulties were piling up so high and could not overcome them	Never	8 (3.2)
	Almost Never	55 (22.1)
	Sometimes	113 (45.4)
	Fairly Often	46 (18.5)
	Very often	27 (10.8)

In Table 5.0, stress levels among Muslim undergraduate students at IIUM Kuantan indicate that the majority experienced moderate stress levels (73.5%), while 11.2% reported low stress levels and 15.3% reported high stress levels, with corresponding means and standard deviations provided.

Table 5.0: Stress Levels Category among Muslim undergraduate Students in IIUM Kuantan, Pahang (N=249)

Category	Frequency (n)	Mean (SD)
Low Stress Levels	28 (11.2)	20.71 (5.59)
Moderate Stress Levels	183 (73.5)	
High Stress Levels	38 (15.3)	

Association between Religiosity and Stress Levels

The analysis in Table 6.0 reveals weak correlations between religiosity levels and stress levels among the 249 participants. Specifically, Organized Religious Activity (ORA) and Intrinsic Religiosity (IR) displayed weak, inverse correlations with stress levels, while Non-Organized Religious Activity (NORA) exhibited a weak, direct correlation. However, none of these correlations were statistically significant at a 95% confidence level ($p>0.05$).

Table 6.0: Association between religiosity and stress level (N=249)

Variables	Pearson Correlation	
	Stress Levels	
Religiosity Levels	**Pearson Correlation (r)**	**Sig. 2-tailed (p)**
ORA	-0.124	0.051
NORA	0.087	0.173
IR	-0.057	0.370

Note : Statistical test (Pearson Correlation)
*Pearson Correlation set, p=0.05 with 95% CI
Pearson Correlation, p<0.05 as significant 95% CI.

DISCUSSION

The International Islamic University Malaysia (IIUM) was founded in 1983 to integrate Islamic values and knowledge across all academic disciplines. At IIUM Kuantan, 78.3% of participants were female and aged 22–25. (68.7 percent). Fourth-year students made up 43.8% of the participants, with the Kulliyyah of Nursing having the most (33.7 percent). Most participants lived with their families during the COVID-19 Mobility Control Order (MCO). In addition, many participants had quarantine experiences due to close contact with COVID-19 patients (75.9 percent). The research seeks to understand the religious beliefs and practises of the younger generation during these difficult times, in line with a Polish study on a growing faith crisis in this age group (Kowalczyk et al., 2020).

Religiosity Levels

This IIUM Kuantan study found that most Muslim undergraduates were religious, with a large percentage saying their beliefs shaped their lives. Many students practised religion at home during the COVID-19 pandemic, showing that religion can adapt to difficult times. A significant number believed they could experience God in their lives, but did not strongly emphasise integrating Islam into all aspects of life, despite the belief that Islam offers a way out of difficult situations (Mohamad Ismail et al., 2022). Researchers found that positive religious coping reduces anxiety and depression, as seen in Malaysia's pandemic healthcare workers (Chow et al., 2021). Religion's potential to contribute to well-being and mental health during collective crises was emphasized (Novaes et al., 2022).

Stress Levels

The prevention measures related to COVID-19, such as lockdowns and quarantines, have been associated with increased stress, anxiety, and depression in society (Roychowdhury, 2020). The majority of Muslim undergraduate students at IIUM Kuantan experienced moderate stress during the pandemic, possibly due to home living arrangements. The pandemic, combined with fake news and conspiracy theories, has caused uncertainty, fear, and stress, especially for students worried about their future and clinical training. COVID-19 fear has been linked to psychological issues and weakened immune systems, emphasising the need for collective stress management (Karnatovskaia et al., 2020). Similar findings from a study in Turkey suggest that students' stress levels were affected by their knowledge of people testing positive for COVID-19 (Aslan & Pekince, 2021). Counsellors, lecturers, family members, and friends must be involved to raise awareness and provide strategies for coping with unexpected challenges, as many students were upset by pandemic events. As shown in other studies, the COVID-19 pandemic has caused situational stress, affecting various aspects of life and raising concerns (Hena et al., 2020; Lakhan et al., 2020). It's important to acknowledge that one year after the onset of the pandemic, depression levels

may rise, especially among students and the unemployed, affecting their anxiety levels and overall life satisfaction (Lakhan et al., 2020). Hence, stress management is vital, especially among student populations, during the ongoing COVID-19 pandemic.

Association Between Religiosity And Stress Levels

ORA and IR showed a weak and inverse linear correlation between religiosity and stress, while NORA showed a direct linear correlation. This suggests that IIUM Kuantan Muslim undergraduates' stress levels were unrelated to religiosity during the COVID-19 pandemic. Stress during the pandemic may be caused by external factors like daily routine, study, and clinical disruptions. Other regional studies have linked increased religious and spiritual practises to improved mental health, reduced sadness and fear, and increased hope during the pandemic. Positive religious coping reduces psychological issues, especially during difficult times, according to research (Koenig, 2012; Seyyed Mirzayi et al., 2017).

CONCLUSION

Most IIUM Kuantan Muslim undergraduates were religious but experienced moderate stress during the COVID-19 pandemic. Despite this, religiosity did not significantly predict stress levels, suggesting that it may not be a direct predictor. Time constraints and data collection confidentiality issues limited this study to 249 participants. To better understand the relationship between religiosity and stress, future studies should include socio-demographic factors. Larger studies across Malaysia's centres and states can provide local insights.

IMPLICATION TO NURSING

The COVID-19 pandemic has underscored the need for crisis preparedness. Nurses and university administrations can collaborate to develop crisis response plans with mental health support for students.

CONFLICT OF INTEREST

The author has no conflict of interest to declare about this study.

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JOURNAL OF MALAYSIAN NURSES ASSOCIATION (JOMNA)
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