



**UNIVERSITI PUTRA MALAYSIA**

***PHYSICAL ASSESSMENT SKILLS PRACTISED AMONG CRITICAL  
CARE NURSES IN A SELECTED GOVERNMENT HOSPITAL IN  
MALAYSIA***

**SYERIL NADIA BINTI ROSLI**

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By

**SYERIL NADIA BINTI ROSLI**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra  
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Science**

**January 2022**

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in  
fulfilment of the requirement for the degree of Master of Science

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January 2022

**Chair : Soh Kim Lam, PhD**  
**Faculty : Medicine and Health Sciences**

Physical assessment (PA) skills are a systematic use of inspection, palpation, percussion, and auscultation techniques. PA is vital in clinical decision-making, enabling nurses to recognise and respond to patients' clinical changes. Understanding the extent of skills used and the barriers nurses experience when performing PA are crucial. The PA skills practised in Malaysia, particularly among critical care nurses, have little corroboration. This study aimed to identify the PA skills practised by critical care nurses, the perceived barriers and associated factors. This study used a cross-sectional study design with open-ended questions, with approval from the National Medical Research Register. Using a purposive sampling strategy, 133 critical care nurses working in the Medical-Surgical Intensive Care Unit (MSICU), Cardiothoracic ICU (CICU) and Neuro High Dependency Unit (Neuro HDU) at Hospital Sultanah Aminah Johor Bahru were recruited from November 2019 to January 2020. Before recruitment, nurses were screened for eligibility and informed of the study's objectives and voluntary participation. A six-point Likert scale of 40-item PA skills and a five-point Likert scale of 38-item barriers perceived by nurses were investigated, together with open-ended questions. The survey was adapted from a prior Delphi study. Data were explored and analysed descriptively and inferentially using IBM SPSS version 25 for the Mann-Whitney U test, Kruskal-Wallis test, and the Spearman Correlation test. Qualitative data were reviewed and coded manually into categories before content analysis. The response rate was 88.2%. Most of the nurses worked in MSICU, female and diploma holders. Only 34% of nurses had a post-basic certification. Most of them had less than ten years of experience. The majority of nurses performed 32 of the 40 skills regularly (80%), five skills occasionally (12.5%) and three skills rarely (7.5%). 86% of nurses performed PA skills upon patient admission. The routine skills were vital signs monitoring and PA of neurological, integumentary, nutritional, musculoskeletal, urinary, cardiovascular and respiratory systems. The remaining body system was gastrointestinal. About 20% of nurses did not measure respiratory rate regularly.

MSICU nurses ( $U = 1129$ ,  $p < 0.001$ ) and nurses with more than ten years of experience ( $H(2) = 9.60$ ,  $p = 0.008$ ) performed more PA skills than other groups. Five subscales of barriers, namely “lack of confidence” ( $r = -0.25$ ), “reliance on others and on technologies” ( $r = -0.24$ ), “lack of time and interruptions” ( $r = -0.24$ ), “lack of nursing role models” ( $r = -0.23$ ) and “lack of influence on patient care” ( $r = -0.20$ ), significantly affected the nurses’ PA skills. Other factors affecting PA skills included having good knowledge and awareness about PA skills, less paperwork and workload, time management, equipment issues, superiors’ encouragement, good role models, and a monitoring system for PA skills. Continuing nursing education, participation in relevant courses, and standardised forms to record PA would improve their skills. The critical care nurses’ PA skills needed improvement. Their backgrounds and perceived barriers influenced their PA skills. Nursing management should pay greater attention to the survey’s concerns about improving PA skills, particularly in critical care settings.

Keywords: Physical assessment skills, barriers, factors, critical care, nursing

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
sebagai memenuhi keperluan untuk Ijazah Master Sains

**KEMAHIRAN PENILAIAN FIZIKAL YANG DIAMALKAN DALAM  
KALANGAN JURURAWAT PENJAGAAN KRITIKAL DI HOSPITAL  
KERAJAAN TERPILIH DI MALAYSIA**

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Kemahiran penilaian fizikal ialah penggunaan teknik pemeriksaan, palpasi, perkusi dan auskultasi secara sistematik. Ia penting dalam membuat keputusan klinikal serta membolehkan jururawat mengenal pasti dan bertindak balas terhadap perubahan klinikal pesakit. Memahami sejauh mana kemahiran yang digunakan dan halangan yang dialami oleh jururawat semasa melaksanakan penilaian fizikal adalah penting. Terlalu sedikit kajian berkaitan penilaian fizikal yang diamalkan di Malaysia, terutamanya dalam kalangan jururawat penjagaan kritikal. Kajian ini bertujuan mengenal pasti kemahiran penilaian fizikal yang diamalkan oleh jururawat penjagaan kritikal dan halangan yang dialami serta faktor yang berkaitan. Kajian yang menggunakan reka bentuk kajian keratan rentas dengan soalan terbuka ini, telah mendapat kelulusan Pendaftaran Penyelidikan Perubatan Kebangsaan. Menggunakan strategi persampelan bertujuan, 133 jururawat penjagaan kritikal yang bekerja di Unit Rawatan Rapi Perubatan-Pembedahan (MSICU), Unit Rawatan Rapi Kardiorasik (CICU) dan Unit Kebergantungan Tinggi Neuro (Neuro HDU) di Hospital Sultanah Aminah Johor Bahru telah direkrut dari November 2019 hingga Januari 2020. Sebelum direkrut, jururawat telah disaring serta dimaklumkan tentang objektif kajian dan penyertaan adalah sukarela. Skala Likert enam mata bagi 40 item kemahiran penilaian fizikal dan skala Likert lima mata bagi 38 item halangan yang dirasakan oleh jururawat telah disiasat termasuk soalan terbuka. Tinjauan diadaptasi daripada kajian Delphi sebelumnya. Data diterokai dan dianalisis secara deskriptif dan inferensi menggunakan IBM SPSS versi 25 untuk ujian Mann-Whitney U, ujian Kruskal-Wallis, dan ujian Korelasi Spearman. Data kualitatif disemak dan dikodkan secara manual ke dalam kategori sebelum analisis kandungan. Kadar tindak balas adalah 88.2%. Kebanyakan jururawat bekerja di MSICU, wanita dan lulusan diploma. Hanya 34% daripadanya mempunyai pensijilan pos basik. Rata-rata berpengalaman kurang daripada sepuluh tahun. Majoriti jururawat melakukan 32 daripada 40 kemahiran secara berkala (80%), lima kemahiran secara sekali-sekala (12.5%) dan tiga kemahiran secara jarang

(7.5%). 86% jururawat melakukan penilaian fizikal semasa kemasukan pesakit. Kemahiran rutin adalah pemantauan tanda-tanda vital dan penilaian fizikal sistem saraf, integumen, pemakanan, muskuloskeletal, sistem kencing, kardiovaskular dan pernafasan. Sistem badan yang berbaki adalah gastrousus. Kira-kira 20% jururawat tidak mengukur kadar pernafasan secara berkala. Jururawat MSICU ( $U = 1129$ ,  $p < 0.001$ ) dan jururawat yang mempunyai pengalaman lebih daripada sepuluh tahun ( $H(2) = 9.60$ ,  $p = 0.008$ ) melakukan lebih penilaian fizikal berbanding kumpulan lain. Lima subskala halangan, iaitu "kekurangan keyakinan" ( $r = -0.25$ ), "kebergantungan kepada orang lain dan teknologi" ( $r = -0.24$ ), "kekurangan masa dan gangguan" ( $r = -0.24$ ), "kekurangan model peranan kejururawatan" ( $r = -0.23$ ) dan "kekurangan pengaruh terhadap penjagaan pesakit" ( $r = -0.20$ ), memberi kesan ketara kepada penilaian fizikal jururawat. Faktor lain yang mempengaruhi penilaian fizikal termasuklah pengetahuan dan kesedaran yang baik tentang penilaian fizikal, kurangnya kertas kerja dan beban kerja, pengurusan masa, isu peralatan, galakan pihak atasan, model peranan yang baik, dan sistem pemantauan untuk penilaian fizikal. Pendidikan kejururawatan yang berterusan, penyertaan dalam kursus berkaitan dan borang khas untuk merekod penilaian fizikal akan meningkatkan kemahiran mereka. Kemahiran penilaian fizikal jururawat penjagaan kritikal memerlukan penambahbaikan. Latar belakang dan halangan yang dihadapi mempengaruhi penilaian fizikal. Pengurusan kejururawatan harus memberi perhatian yang lebih kepada kebimbangan responden berkaitan meningkatkan kemahiran penilaian fizikal, terutamanya dalam penjagaan kritikal.

Kata kunci: Kemahiran penilaian fizikal, halangan-halangan, faktor-faktor, penjagaan kritikal, kejururawatan

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I certify that a Thesis Examination Committee has met on 6 January 2022 to conduct the final examination of Syeril Nadia binti Rosli on her thesis entitled "Physical Assessment Skills Practised among Critical Care Nurses in a Selected Government Hospital in Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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## TABLE OF CONTENTS

	<b>Page</b>
<b>ABSTRACT</b>	i
<b>ABSTRAK</b>	iii
<b>ACKNOWLEDGEMENTS</b>	v
<b>APPROVAL</b>	vi
<b>DECLARATION</b>	viii
<b>LIST OF TABLES</b>	xii
<b>LIST OF FIGURES</b>	xiii
<b>LIST OF ABBREVIATIONS</b>	xiv
<b>CHAPTER</b>	
<b>1 INTRODUCTION</b>	<b>1</b>
<b>2 LITERATURE REVIEW</b>	<b>8</b>
2.1 Physical assessment	8
2.2 The prevalence of PA used	9
2.3 PA skills in the critical care settings	14
2.4 The correlation between nurses' demographics and PA skills	15
2.5 Barriers and factors affecting PA practice	16
2.5.1 Survey methods	18
2.5.2 Fundamental issues of PA skills	18
2.5.3 Categories of barriers	19
2.6 PA skills in Malaysian critical care settings	23
2.7 Conceptual framework	23
2.8 Conclusion	24
<b>3 METHODOLOGY</b>	<b>25</b>
3.1 Study design	25
3.2 Study location	26
3.3 Study population	26
3.3.1 Sampling frame	27
3.3.2 Sampling unit	27
3.3.3 Sample size calculation	27
3.4 Sampling method	28
3.5 Instrumentation	29
3.5.1 Questionnaire survey	29
3.5.2 Open-ended questions	30
3.5.3 Validity and reliability	30
3.5.4 Pilot study	31
3.6 Data collection	32
3.7 Data analysis	33
3.7.1 Exploratory data analysis	33
3.7.2 Descriptive statistical analysis	34
3.7.3 Inferential statistical analysis	35
3.7.4 Qualitative data	35
3.8 Ethical consideration	35

<b>4</b>	<b>RESULTS</b>	<b>37</b>
4.1	Demographic data	37
4.2	SO1: Type and frequency of 40 PA skills	38
4.3	SO1: Barriers to nurses' use of PA scale	50
4.4	Time of PA skills being performed	53
4.5	SO2: The relationship between nurses' demographics and use of PA skills	53
4.6	SO3: The relationship between nurses' demographics and perceived barriers	54
4.7	SO4: The relationship between PA skills used and perceived barriers	58
4.8	SO5: Factors affecting PA skills	59
<b>5</b>	<b>DISCUSSION</b>	<b>63</b>
5.1	The use of PA skills by critical care nurses	63
5.2	The relationship between nurses' demographics and PA skills	65
5.3	Timing of the PA performed	66
5.4	Barriers to nurses' use of PA scale	66
5.4.1	Specialty area	66
5.4.2	Reliance on others and technologies	67
5.4.3	Lack of confidence	67
5.4.4	Lack of nursing role models	68
5.4.5	Lack of time and interruption	68
5.4.6	Ward culture	69
5.4.7	Lack of influence on patient care	69
5.5	Relationship between nurses' demographics and nurses' perceived barriers to practise PA skills	69
5.6	Relationship between skills and perceived barriers by critical care nurses	70
5.7	Factors affecting PA skills used among critical care nurses	71
5.8	Suggestions to promote use of PA	72
5.9	Other barriers in implementing PA among nurses	73
<b>6</b>	<b>SUMMARY, CONCLUSION, IMPLICATIONS, LIMITATIONS, AND RECOMMENDATIONS</b>	<b>75</b>
	<b>REFERENCES</b>	<b>80</b>
	<b>APPENDICES</b>	<b>86</b>
	<b>BIODATA OF STUDENT</b>	<b>112</b>
	<b>PUBLICATION</b>	<b>113</b>

## LIST OF TABLES

<b>Table</b>		<b>Page</b>
2.1	Articles reviewed included in this study	9
2.2	Articles reviewed included in this study	16
2.3	Articles reviewed included in this study	18
3.1	Cronbach's alpha for two groups of variables	32
4.1	Demographics of nurses by work unit	37
4.2	Type and frequency of PA skills practised by critical care nurses (n = 133)	38
4.3	PA skills practised by MSICU nurses (n =94)	40
4.4	PA skills practised by CICU nurses (n = 14)	42
4.5	PA skills practised by Neuro HDU nurses (n = 25)	43
4.6	Median score for each PA skill by total sample and critical care units	48
4.7	Median score of barriers experienced by the nurses based on types of ICU	51
4.8	Thirty-eight items of barriers experienced by critical care nurses (n = 133)	51
4.9	Timing of the practice of PA skills	53
4.10	Association between nurses' demographics and the PA skills applied	54
4.11	Association between nurses' demographics with barriers perceived by nurses in PA skills practice (n = 133)	56
4.12	Correlation between PA use and barriers perceived by nurses in PA skills practice (n = 133)	58
4.13	Factors and measures contributing to nurses' use of PA skills	62

## LIST OF FIGURES

<b>Figure</b>		<b>Page</b>
2.1	Conceptual framework of the study	24
3.1	Flow chart of activities	25
3.2	Normality test for the score of PA skills	33
3.3	Normality test for seven subscales of barriers to PA skills	34
4.1	Type of techniques used routinely by critical care nurses (32 skills)	46
4.2	Type of techniques used occasionally by critical care nurses (5 skills)	46
4.3	The techniques used rarely by critical care nurses (3 skills)	47
4.4	Frequency of PA skills performed by critical care nurses	47
4.5	PA scores by critical care nurses	49
4.6	Score of PA performed by different critical care units	50



## LIST OF ABBREVIATIONS

CICU	Cardiothoracic Intensive Care Unit
CNE	Continuing Nursing Education
HSA	Hospital Sultanah Aminah
ICU	Intensive Care Unit
MOH	Ministry of Health
MREC	Medical Research and Ethics Committee
MSICU	Medical-Surgical Intensive Care Unit
Neuro HDU	Neuro High Dependency Unit
PA	Physical assessment
RN	Registered nurse
RR	Respiratory rate

# CHAPTER 1

## INTRODUCTION

### 1.1 Background

A systematic guideline known as the nursing process was introduced by Ida Jean Orlando in 1958 and consists of six sequential steps: assessment, diagnosis, outcomes identification, planning, implementation, and evaluation (Fennessey & Wittmann-Price, 2011; Ernstmeyer & Christman, 2021). In the assessment step, objective and subjective data must be collected upon completing the assessment process using three methods: interview, observation, and examination (RNpedia, 2021).

For the examination method, three approaches can be systematically conducted: the cephalocaudal approach, the body system approach, and the review of system approach (RNpedia, 2021). An example of the cephalocaudal approach is the head-to-toe admission assessment, which includes physical, emotional, and mental evaluations (Kleber, 2021). These evaluations are also known as nursing admission assessment and should be carried out upon patient admission.

There is a primary survey within the assessment itself, which encompasses the assessment of the airway, breathing, circulation, and mental status. This type of assessment requires emergency medical attention since it could be life-threatening to the patient (RNpedia, 2021).

The second is the body system approach, also known as focused assessment (Ernstmeyer & Christman, 2021; RNpedia, 2021). This type of assessment is conducted according to the body system in identifying the baseline, any adverse events, abnormalities, and concerns. There are more than 120 skills to be assessed (Birks et al., 2013). The skills are categorised according to the body systems, namely the assessment of neurological, respiratory, cardiovascular, renal, musculoskeletal, skin, eye, ear, nose, and throat (Kleber, 2021).

The third is the review of the system approach, which means that an examination is conducted on the affected area or specific patient's complaint (RNpedia, 2021). This type of assessment is usually used in controlled settings where the care is focused more on the patient's presented problem (Kleber, 2021).

Besides these three approaches, other types of assessments are available to fulfil the patient's care. Medical-surgical nursing assessment is defined as assessing the patient's surroundings that affect their needs, such as: charting intake and output; assessing any lines, tubes, drains, and airways; looking for trends in vital signs; administering infused continuous medication; and checking the provided oxygen settings and the necessary connected equipment (Kleber, 2021).

Other than the head-to-toe assessment, there is an intensive care unit (ICU) assessment for the critical care settings. There are types of equipment such as bedside monitors, ventilators, central lines, arterial lines, central venous pressure, foley catheters, and feeding tubes used in the ICU. The ICU nurses should assess their functions and settings other than conducting the nursing assessment. The assessment is also more detailed and compulsory upon admission, as well as during new shift transitions, as the patient needs more care in the ICU (Kleber, 2021).

Physical assessment (PA) is the systematic use of inspection, palpation, percussion, and auscultation skills. There are many debates surrounding PA's role of in nursing. Previously, PA skills have not been a part of the nursing syllabus because they have been consistently recognised as the doctor's sole responsibility (Aldridge-Bent, 2014; Thomas, 2017). Some research investigated and discussed PA as the additional role of nurses and the benefits to patients (Zambas, 2010; Zambas et al., 2016). Later, with the advancement of nursing roles in the clinical setting, PA has gradually become part of the nurses' skills. Along with the Standards of Practice development, PA has been incorporated into the nursing syllabus (Fennessey & Wittmann-Price, 2011).

PA is a fundamental element in the nursing process, which is crucial for clinical decision-making (Fennessey & Wittmann-Price, 2011). Nurses are expected to execute a comprehensive PA. Thus, such skills have become part of the nursing profession's role (Cicolini et al., 2015). Zambas (2010) considers PA to be a clinically focused practice that increases nurses' ability to recognise and respond to the patients' clinical deterioration. Nurses can be incorporated as part of the diagnostic team, who are able to differentiate between normal and abnormal findings, which subsequently develop their confidence and performance (Zambas et al., 2016). Furthermore, it will improve the patient's ward experience and clinical outcome (Douglas et al., 2016; Fennessey & Wittmann-Price, 2011).

A qualitative study in New Zealand reported that PA impacts the diagnosis and treatment of the patient. Nurses commented that the PA on patients increased their enthusiasm for history-taking, allowing them to have another point of view compared to the medical team and be more persistent in scrutinising the definite explanation (Zambas et al., 2016). Good practice of PA skills assists nurses in identifying any clinical changes in the patient to ensure safety and quality care (Douglas et al., 2016).

Critical care nurses should be able to transform the theory into practice. They are expected to practise critical thinking, judgement skills, problem-solving, reasoning, and sufficient competence to detect changes in the patient (Baxter & Edvardsson, 2018). Critical care nurses should be able to make effective decisions following patients' haemodynamic monitoring by integrating the monitoring data with their assessment skills. To achieve that, they must be competent in their observation skills (Alastalo et al., 2017).

PA has increasingly become part of the essential skills for critical care nurses. A study of PA techniques among Italian registered nurses working in the internal medicine, intensive care, and surgical units reported that nurses in the Intensive Care Unit (ICU) performed PA more than those working in other units (Cicolini et al., 2015).

In addition, studies have proven that a lack of knowledge among nurses in implementing PA would affect the management of any clinical changes in patients (Fennessey & Wittmann-Price, 2011). Early intervention is vital to reduce the mortality rate and increase the survival rate of critical care patients (Massey et al., 2016). Acute care nurses are responsible for identifying and responding to patients at risk of clinical deterioration to prevent further worsening. There is growing evidence showing that failure to recognise hospitalised patients at risk of clinical deterioration is partly due to inadequate PA by nurses (Cicolini et al., 2015; Osborne et al., 2015).

### **Nursing education in Malaysia**

Nursing education in Malaysia started as "on-the-job training" in the hospital service using a British-based training curriculum in the 18<sup>th</sup> century. Hospitals in Malaysia began to provide nursing training in the 19<sup>th</sup> century. It all started with a diploma programme that focused on direct patient care and functional-oriented tasks. Tertiary level nursing education began when the University of Malaya started to offer a Bachelor's certificate at the end of the 1990s (Ministry of Higher Education, 2010).

Continuous and in-service education, such as post-basic courses, post-graduate certificates, and in-service training, is provided for nurses to maintain their knowledge, upgrade their skills, and increase their competencies. It is also part of the requirement to renew their Annual Practising Certificates (APC). Post-basic courses of 6 to 12-month duration are provided by the Ministry of Health (MOH) to upgrade the theory and skills of specialised clinical nursing (Ministry of Higher Education, 2010).

In Malaysia, a task force committee was established to upgrade the nursing profession by monitoring nursing training and safeguarding patient care (Ministry of Higher Education, 2010). This task force reported that even though operational

policy on standard nursing practice exists for the government hospitals under MOH, it was not enforced. Nurses are only obliged to carry out a general nursing assessment upon a patient's admission (Hospital Parit Buntar Perak, 2015).

To the best of our knowledge, there is no specific policy on PA procedure for nurses thus far. PA, one of the evidence-based practices, is not part of Malaysian nursing's agenda and nurses are not expected to perform the PA (Ministry of Higher Education, 2010). A study reported that Malaysian nurses learned about PA in nursing school but did not practise them in the clinical setting as they were too busy carrying out the doctors' orders (Ong-Flaherty, 2012).

## **1.2 Problem statement**

Nursing education in Malaysia emphasises four essential competencies that nurses should be equipped with upon entering nursing service: critical thinking and problem-solving; knowledge-based practice; clinical competence and accountability; and ethics (Ministry of Higher Education, 2010). Nursing students are taught 126 skills in the textbook. The teachers must check all of these skills following the school's module before graduation. Newly graduated nurses are expected to have basic information about their skills once they start working in the clinical setting.

There are standards of nursing practice in the clinical setting. Guidelines and protocols are prepared as a referral. Besides the mentoring system during the probationary period, new nurses must complete a logbook and undergo an examination (Hamzi Hadi, ICU Nurse Hospital Port Dickson, pers. comm. 28 December 2018). This process ensures the nurses' competence in practising safely for both staff and patients. When they are still under probation, they can observe all the nursing practices performed by their mentors before carrying out the practices independently. Once they are familiar with it, the practice becomes a status quo before being repeated for the future batches of junior nurses.

PA is part of the standard nursing practice in critical care settings. Nurses are expected to perform head-to-toe PA upon new admission or while passing over the patients to the next shift. When other healthcare professionals want to obtain updates during the daily ward round, nurses are often the next source of information after the patients themselves (Hamzi Hadi, ICU Nurse Hospital Port Dickson, pers. comm. 28 December 2018). A recent report showed that a general nursing assessment was conducted upon patient admission to the ICU as per the guidelines in one of the major referral hospitals in Malaysia (Fazilah, ICU Nurse Hospital Sultanah Aminah, pers. comm. 15 October 2019). While this shows an improvement in Malaysian nursing practice, there is still a lack of evidence on the effectiveness of the PA skills among critical care nurses (Ong-Flaherty, 2012).

In the literature search on this topic, most of the studies focused on the importance of using PA, especially in terms of improving patient outcomes and safety. The research is also aimed at identifying the multiple skills taught in nursing schools, especially the most essential skills that nurses should master before entering clinical work (Anderson et al., 2013; Birks et al., 2013; Douglas et al., 2014, 2015, 2016). These studies were conducted in multidiscipline areas and did not explicitly assess critical care. Therefore, the findings were so general that the critical care nurses' PA skills performance could not be concluded.

According to Ministry of Higher Education (2010), there was "no evidence of the Nursing Process being applied in the clinical training of diploma students, nor was there evidence of the use of the nursing process as a tool of care in any of the hospitals" in Malaysia (p. 34). Besides, nurses were not expected to perform the PA systematically. Therefore, it is apparent that there is a gap between theory and practice, which leads to a lack of evidence on the PA skills used. The performance of PA skills by Malaysian nurses should also be assessed. Based on this issue, this study aimed to investigate the use of PA skills among critical care nurses, the perceived barriers, and factors that affect these PA skills.

### **1.3 Significance of the study**

#### **Contribution to the nursing practice**

The study findings would contribute significant evidence to nursing practice, particularly on PA skills. From the 40 selected skills, specific data on the frequency of use and the hindering factors of each skill would be obtained. Besides, the demographic factors that facilitated or hindered the use of PA skills among the nurses would also be reported.

This study would identify factors contributing to the implementation of PA skills and subsequently propose suggestions to the nursing organisation on the recommended training to be incorporated in the curriculum. Such evidence-based guidelines would facilitate the nursing management in making the necessary decision to enhance their standard of practice. Furthermore, a systematic monitoring and evaluation process could be established based on the study results, apart from implementing the specific intervention and enhancement programmes to improve the use of PA skills among nurses.

In addition, this study would provide a benchmark for the necessary skills that student nurses should be equipped with before entering clinical settings. Nurses should be trained to recognise any changes in the patients' condition to take necessary actions to decrease the adverse effects. To achieve that, nursing schools must focus on producing qualified nurses who are competent and confident in PA skills. The frequently used skills practised in the daily clinic



setting should be emphasised to the students to ensure they obtain sufficient confidence in practising the skills.

## **Contribution to the literature**

Concerning nursing research, this study would provide the basis for future intervention studies to enhance PA use in clinical settings. Meanwhile, as the end-users of the healthcare system, patients rely on a comprehensive nursing process to receive holistic care that can meet their needs. This study would be a first step in ensuring patient safety by ensuring safe nursing practice.

### **1.4 Research questions**

The research questions for this study are comprised of five questions. First, what is the type and frequency (regular, occasional, rare) of PA skills practised by Malaysian critical care nurses? Second, what are the barriers to practising PA skills among critical care nurses? Third is, is there any relationship between the nurses' demographics and the PA skills and the perceived barriers? Fourth, is there any relationship between the perceived barriers and PA skills? Lastly, what are the contributing factors to practising PA skills?

### **1.5 Research objectives**

#### **General objectives**

This study was generally to determine the extent of PA skills among Malaysian critical care nurses and identify the barriers to implementing them in the workplace.

Specific objectives:

1. To determine the frequency of PA skills (inspection, palpation, percussion, and auscultation) used and the barriers to implementing them.
2. To describe and correlate the relationship between the respondents' demographics and the PA use.
3. To describe and correlate the relationship between the respondents' demographics and the barriers to implementing PA skills.
4. To describe and correlate the relationship between the PA skills used and the perceived barriers.
5. To determine factors affecting the implementation of PA skills.

## **1.6 Null hypothesis**

1. There is no significant relationship between the respondents' demographics and the PA skills used in the critical care settings.
2. There is no significant relationship between the respondents' demographics and the perceived barriers in critical care settings.
3. There is no significant relationship between the PA skills used and the perceived barriers to implementing the skills.

## **1.7 Operational definition**

### **PA skills**

PA skills are a systematic use of inspection, palpation, percussion, auscultation, and multi-method techniques carried out by nurses during admission, upon changing shift, and any changes to the patient. It includes 40 skills adopted from a Delphi method study that explored the core skills for nurses by Douglas et al. (2016). The skills consist of vital signs and PA of eight body systems. This variable was measured with a six-point Likert scale of frequency, adopted from an Australian study by Birks et al. (2013).

### **Barriers to the use of PA skills**

The hindering factors in practising the PA skills are experienced internally or externally by the nurses. These variables were measured using the "Barriers to Nurses' Use of PA Scale" developed by Douglas et al. (2014). These 38 items are derived from seven sub-scales: "reliance on others and technologies," "lack of time and interruption," "ward culture," "lack of confidence," "lack of nursing role models," "lack of influence on patient care," and "specialty area."

### **Contributing factors**

The nurses' facilitating factors for practising PA skills were qualitatively explored in the literature review and will be self-reported by the author.



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