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Knowledge and Practice of Basic Life Support (BLS) Among Registered Nurse at a Private Hospital in Seremban

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ABSTRACT

Introduction: Basic Life Support (BLS) is a mechanism that maintains or restores life by creating and sustaining airway, ventilation and circulation without the need for adjunctive equipment and successful cardiopulmonary resuscitation, increasing the chances of survival. **Objective:** to determine the registered nurse knowledge and practice of BLS in one of private hospital in Seremban. **Methods:** A quantitative cross sectional study regarding knowledge and practice of BLS among staff nurses was done. Questionnaires were distributed to 170 respondents in one of the private hospitals in Seremban. Questionnaire were divided in four part; Part A demographic data, Part B regarding knowledge on BLS, Part C practice on BLS. **Results:** Data analysis showed that respondents have good knowledge with 143(84.1%); respondent show an average level of practices with 92(54.1%). There was an association between level knowledge and practice with $p = 0.0319$. **Conclusion:** There was a good knowledge and an average practice towards BLS among nurses in one of private Hospital in Seremban. This show that the educational programs can be enhanced to sustain the theoretical and practical aspect of BLS while performing in nursing expertise. Therefore future research is suggested to further investigate BLS issue as this skill is important for the nurses in order to provide better prognosis during emergency in patient care.

Keywords: Knowledge; Practice; Basic Life Support

INTRODUCTION

Cardiac disorder was known as the most common cause of death. According to the Department of Statistic Malaysia (2018), the leading cause of world biggest killer is ischemic heart disease. Sudden cardiac arrest involves medical procedures that are rapidly occurring in all age groups. To avoid sudden cardiac arrest-related deaths, lifesaving interventions are important (Chandrasekaran *et al.*, 2010). Basic Life Support (BLS) is a mechanism that maintains or restores life by creating and sustaining airway, ventilation and circulation without the need for adjunctive equipment. Cardiopulmonary resuscitation is the first important step in managing patient with cardiac arrest. Efficient cardiopulmonary resuscitation by healtcare members was important to reduce death due to cardiac arrest (Vanden Hoek *et al.*, 2010).

Effective emergency aid services are expected to be provided by nurses either in their working area or outside of hospital. Nurses can experience numerous emergency cases such as sudden cardiac arrest and respiratory failure. Nurses have to be the first to practice BLS in these emergency scenarios. The American National Red Cross (2015) reported that the BLS applies to patients suffering from respiratory failure, cardiac arrest and respiratory obstruction from healthcare practitioners and public safety professionals. Cardiac arrest-related morbidity and mortality rates can be significantly impacted by nurses first action (Greif *et al.*, 2020). Training on BLS will also improve nurses' self-esteem

connected to BLS activities and lead to the management of anxiety. To improve knowledge and skills in this field, training on BLS with periodic replication is important. It is expected that nurses who are one of the healthcare providers will know about BLS since they often face life-threatening circumstances in the workplace, and BLS expertise, experience and practice will certainly help them in an emergency (Raguindin, 2010). Bhanji *et al.* (2015) reported that a strong grasp of basic knowledge and procedures in cardiac life support was important to minimize the mortality rate and improve the victim's outcome.

Kose *et al*., (2019) found that knowledge of healthcare professionals in Pakistan is feeble, and it needs to do a structured training of BLS for a healthcare provider. While Alanazi, Nicholson & Thomas (2017) reported that the nurses' knowledge toward BLS might be on the poor site. During the 10 Golden minutes after cardiac arrest, cardiac arrest victims' fate is considered crucial (Salameh *et al.*, 2018). A poor resuscitation may cause devastating results due to the nurses' lack of practice and experience. Many nurses are not competent to provide what they have practiced during BLS training and code blue drill, thus giving a poor impact on patient life (Salameh *et al.*, 2018).

Sufficient knowledge and understanding of BLS are important to ensure that rescuers are capable of providing the requisite lifesaving steps at the time of emergencies. According to Piryani *et al.*, (2019), the nurse's knowledge contributed a lot during an emergency and cardiac manoeuvre. Updating clinical knowledge and practical skill will improve cardiac manoeuvre efficiency and save the life of a patient. Nurses with excellent knowledge and skill have the highest outcome to save patient life (Kose *et al.*, 2019). Training nurses in cardiopulmonary resuscitation contributed to a major increase in hospital discharge survival after cardiac arrest in the hospital (Novaes Neto & Freitas, 2020). Thus, this research was done to determine the registered nurse knowledge and practice of BLS in one of private hospital in Seremban.

METHODOLOGY

Study Design

The study designs use quantitative cross-sectional to determine knowledge and practice of BLS among staff nurses at a private hospital in Seremban.

Study Setting

The study was conducted at KPJ Seremban Specialist Hospital. The staff nurses who attended BLS training in more than one year became the target population.

Sample

Selected respondent was choose by using purposive samopling tehnique. The inclusion criteria for the respondents in this study were, all staff nurse who has attended BLS training in more than one year and staff nurse who can read and converse in English. While the exclusion criteria were staff nurses who had just attended BLS course in less than one year, staff nurses who never attend BLS course, other health care providers such as doctors, allied health, non-clinical staff and nursing care aid, and a student nurse.

Sample Calculation

The sample size has been calculated based on Krejcie & Morgan (1970) with the population number was 300 staff nurses. Confidence Level (α): 95%, Margin of Error (e): 5%, Population Proportion (p): 50, Population Size (N) 302. The sample size required was 170 staff nurses.

Instrument

A set of questionnaire was used which consist of 4 main parts adapted from Yunus *et al.*, (2015). Part A consist of demographics data; part B consist of Knowledge on BLS. Part C consist of Practice on BLS questionnaires. In Part A, the questionnaires covered socio-demographics, which covers information about the respondent's detail including age, gender, race, educational level, years of services and previous BLS training. Part B was questionnaire on Knowledge of BLS adapted from Yunus *et al.*, (2015). The questionnaire consist of 10 multiple choice questions and each correct answer will be given '1' mark while '0' mark will be given for the wrong answer. A score of 30% to 45% was considered as poor, “45% - 55%; average”, “55% -65%; good”, “65% - 75%; very good” and “excellent: >75. Part C was questionnaire on practice towards BLS adapted from Yunus *et al.* (2015). The questionnaires consist of 8 multiple choice questions, and each correct answer will be given '1' mark while '0' mark will be given for the wrong answer. A score of 30%

to 45% was considered as poor, "45% - 55%; average", "55% - 65%; good, "65% - 75%; very good" and excellent: >75%. A pilot study was done among 20 respondents. The Cronbach's Alpha obtained was 0.75, which was acceptable.

Data Collection

Permission from Universiti Teknologi Mara (UiTM) and KPJ Seremban Specialist Hospital Research & Quality Innovation Committee were obtain prior data collection. After identifying respondents who meet the inclusive criteria, the respondents were approached and explanation was given. Then, informed consent was given. Next, the researcher personally distributed the questionnaires and respondents need to answer immediately. The respondents were given questionnaires after they finished their working hours. The questionnaire was collected immediately after respondent's finish answering. The questionnaire was distributed and collected between June to August 2020.

Data Analysis

Data was analyse based on each specific objective.

Table 1: Plan Data Analysis

Research Objectives	Data Analysis
1. To identify knowledge among staff nurses on Basic Life Support in one of private hospital in Seremban.	Descriptive Statistic
2. To determine the Practice among staff nurses towards Basic Life Support in one of private hospital inSeremban	Descriptive Statistic
3. To identify the relationship between knowledge and practice among staff nurses on Basic Life Support in one of private hospital in Seremban.	Chi- Square

Ethical approval

Approval from the UiTM Ethics Committee was obtained on 2 June 2020 and KPJ Seremban Specialist Hospital Research & Quality Innovation Committee on 9 June 2020, before the study started. Respondents were given written consent prior to the commencement of the study.

RESULTS

Demographic Data

Table 2 showed the respondent's demographic data where most of the respondent were female with 158 (92.9%) while male were12 respondents (7.1%). Age of 21 – 30 years old were the highest respondent with numbers of 86 respondents (50.6%).

Most of the respondents were Malay with 150 (88.2%) respondents. Most staff nurses had a diploma with 151 (88.8%) respondents, while another 19 (11.2%) respondents had a Bachelor background. 68 (40%) of respondent work more than 10 years. Lastly, the result found that all the respondents attended BLS courses with 170 (100%) respondents.

Table 2: Demographic Characteristic among Respondent (n=170)

Demographic Characteristic	Frequency (n)	Percentage (%)
Age		
21 to 30	86	50.6
31 to 40	64	37.6
41 to 50	16	9.4
51 to 60	4	2.4
Gender		
Male	12	7.1
Female	158	92.9
Race		
Malay	150	88.2
Indian	18	10.6
Chinese	2	1.2
Education Level		
Diploma	151	88.8
Degree	19	11.2
Year of services		
< 5 years	46	27.1
6 to 9 years	56	32.9
More than 10 years	68	40
Attended basic life support courses		
Yes	170	100
No	0	0

Knowledge among Staff Nurses on BLS

Table 3 showed the distribution of the knowledge question among respondent regarding BLS. The frequency and percentages represented the correct answer from the respondents. For question "What is the abbreviation of BLS?"most respondents know the abbreviation with 164 (96.5%) respondents. Most of the respondents 156 (91.8%) gave a correct response on first question "When they found someone who are unresponsive in middle of the road". Besides that, half of the respondents 96 (56.5%) answered correctly for the question their immediate action "when respondents is not

responding after shaking or shout". Most of the respondents know the compression location with 164 (96.5%), and 117 (68.8%) knew the technique of rescue breathing in infants. Meanwhile, 151 (88.8%) and 132 (77.6%) respondents knew the depth of compression for adult and neonate, respectively. Moreover, most of the respondents 151(88.8%) and 158 (92.9%) know the abbreviation for Automated External Defibrillator (AED) and Emergency medical services (EMS). Lastly, 76 (44.7%) answered correctly for the question "respondents first response for a friends experiencing choking while eating".

Table 3: Knowledge among Staff Nurses on BLS (n=170)

Question	Frequency (n)	Percentages (%)
What is the abbreviation of "BLS"	164	96.5
"Your first response when found someone unresponsive?"	156	91.8
"First response when somebody not responding after shaking and shouting at him?"	96	56.5
"Location for chest compression?"	164	96.5
"In infants how do you give rescue breathing?"	117	68.8
"Depth of compression for adults?"	151	88.8
"Depth of compression for neonates?"	132	77.6
"AED stand for?"	151	88.8
"EMS stand for?"	158	92.9
"Your first response when someone choking but responsive?"	76	44.7

Level of BLS knowledge among staff nurses

Table 4 shows that most of the respondent had a good knowledge with 143 (84.1%) respondent, 26 (15.3%) had average knowledge, and only 1 (0.6%) have poor knowledge.

Table 4: Level of Knowledge among Staff Nurses on BLS (n=170)

Level of Knowledge	Frequency (n)	Percentages (%)
Good	143	84.1
Average	26	15.3
Poor	1	0.6
Total	170	100.0

Practice among Staff Nurses towards BLS

Table 5 showed that most of the respondent had an average level of practices with 92 (54.1%), and 78 respondents (45.9%) have a good practice. No respondent shows poor practices in this study.

Table 5: Practice among Staff Nurses towards BLS (n=170)

Question	Frequency (n)	Percentages (%)
"All of the following was adult Chain of Survival EXCEPT?"	97	57.1
"Time to switch roles in 2-rescuer CPR"	149	87.6
"First step in BLS for adults?"	118	69.4
"In adults the location for a pulse check checked?"	168	98.8
"What is the ratio for compression to ventilation?"	157	92.4
"AED proper steps are?"	163	95.9
"Signs of severe airway obstruction?"	72	42.4
"Characteristics of high-quality CPR?"	147	86.5

Level of BLS Practice among Staff Nurses

Table 6 shows only 78 (45.9%) had a good level of practices toward BLS, while half of the respondent had a average level of practice with 92 (84.1%).

Table 6: Level of Practices among Staff Nurses towards BLS (n=170)

Level of Practice	Frequency (n)	Percentages (%)
Poor	0	0
Average	92	54.1
Good	78	45.9
Total	170	100.0

Relationship between Knowledge and Practice among Staff Nurses on BLS

Table 7 showed that data analysed on association between level of knowledge and practices towards BLS among staff nurses. The result showed that most of the respondent had a good knowledge with 143 (84.1%) respondent, 26 (15.3%) had average knowledge, and only 1 (0.6%) have poor knowledge. In addition, result found that there was an association between level knowledge and practice with p-value = 0.0319 (p<0.05).

Table 7: Relationship between Knowledge and Practices among Staff Nurses towards BLS (n=170)

Variables	Level of Knowledge (n) (%)			x^2 (df)	*P* – value
Level of practices	Poor	Average	Good		
Poor	1 (6%)	26(15.3%)	143(84%)	3.816(6)	0.0319
Average	0 (0%)	92 (54.1%)	0(0%)		
Good	0 (0%)	0 (0%)	78(45.9%)		

** Chi-Square*

DISCUSSION

Knowledge among Staff Nurses on BLS

BLS was integrated while managing patients in the health setting. Knowledge played an important element in ensuring the input's content to deliver while managing the patients holistically. As mentioned by Salameh *et al.*, (2018) during cardiac arrest the first 10 minutes was very crucial in order to provide a good prognosis to the patient. The nurse who always remain with the patients, knowledge on BLS was very important to give the immediate action in every emergency situation. This study reported that majority of the respondent had a good level of knowledge towards BLS with 143 (84.1%). The result was good because the continuous nursing education (CNE) learning program and training were frequently conducted by the Nurse Educator and BLS team to the staff nurses in the hospital as they need to renew BLS certificate every two years. CNE program on BLS provide an update which play a vital role for brushing up the knowledge. The hospital management also keeps on teching the latest version of BLS to ensure the knowledge of the nurses remain updated. This result is parallel with the study from Ralapanawa *et al.*, (2016) that showed almost 90% of the respondent had good knowledge in BLS. Other studies from Moon et al., (2019) also found that 80% of the respondents had good knowledge. In contrast with Kose *et al.,* (2019) who found that the knowledge of healthcare professional was still low and the main cause was due to inadequate slot of the BLS training. Kose *et al.,* (2019) also suggested the needs to do a structured training of BLS to healthcare providers.

This study also shows that most of the respondent 156 (91.8%) answer correctly on question "the first action when someone was unresponsive in the middle of the road". This showed that respondents were confident in performing BLS with knowledge acuired. Moon *et al.,* (2019) highlights the importance of knowledge: BLS's success rate can be improved with good knowledge. Even though different studies have been conducted worldwide to analyze BLS's general knowledge, the most important was the education process to impart the nurses' knowledge. Irfan *et al.*, (2016) also reported that healthcare providers' knowledge was higher, especially medical officer in comparison to the nurses in the medical and nurses from dental departments. Good knowledge can be acquired by the nurses possiblely derived from the good support from the educational program and course attended by the respondents. The study by Abolfotouh et al., (2017) found that education programmed on BLS improved significantly the level of knowledge among healthcare providers.

Practices among Staff Nurses towards BLS

This study showed that most of the respondent have average practices with 54.1% toward BLS. The practice might be at average level due to the staff nurses having low exposure to real situations as most of the staff nurses' years of service were less than 10 years. This finding agree with Sheeraz *et al.*, (2020) who found that most of the nurses have average practice towards BLS. This finding shows despite having a good level of knowledge, still respondents lack in practices.

According to Moon *et al.,* (2019) the educational programmes will improve the knowledge and attitudes towards performing a good practice. Another study from Yunus *et al.*, (2015) also found moderate practice among healthcare workers toward BLS. This study highlighted the importance of continuous assessment and practical course to enhance knowledge and practices. According to Abolfotouh *et al.,* (2017), despite respondent having good knowledge, the practical does not determine the good reflection from the knowledge. In addition, behaviour towards practice was still the main component to sustain the good practices toward BLS. Conducting BLS using mannequin was simpler than conducting BLS on a real human. One of the main issues was when the nurses were nervous, they forgot to perform and to deliver well.

Relationship between Knowledge and Practice among Staff Nurses on BLS

Component knowledge and practice were important to derive BLS's good performances while managing patients in emergencies. This component was important among nurses to represent a good outcome while managing the patients. This study analyzed the relationship between two variables between knowledge and practice and found that knowledge and practices have a significant relationship towards BLS among nurses in the hospital with $X^2(df) = 3.816$ (6) and p-value 0.0319 (p-value <0.05). This study was similar to Yunus *et al.*, (2015), where they found a strong association between knowledge and practice among nurses towards resuscitation with - $p<0.0001$. Papi *et al.,* (2020) found that good knowledge reflects in the outcome of the good

of practices. A good knowledge and practice in resuscitation skills can give a better prognosis to the patient during emergency situation. The skill while performing CPR was important to increase survival chances in a potentially life threatening situation (Avabratha, 2012). This study finding shows that both variables which were knowledge and practices have a strong association towards BLS .This show that every nurse need to have a good knowledge and practice in BLS to save patients lives and improves the nursing management and practices among organization (Aaberg *et al.,* 2014).

CONCLUSION

This study found that a good knowledge and an average practice towards BLS among nurses in one of private Hospital in Seremban. This shows that educational program can be enhanced to sustain the theoretical and practical aspects while performing BLS by nursing expertise. In additions, this study also indicates the importance of BLS course among nurses to gain knowledge and improve attitudes for delivering a good practice towards BLS. Lastly, this study indicates the importance of basic resuscitation among nurses and should be mandatory for everyone. Therefore, more attention must be considered in maintaining and improving BLS in personnel emergency. Intensive training and safe practices towards BLS can be done among nurses in Malaysia.

Conflict of Interests

The authors declare that they have no conflict of interests.

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