ORIGINAL ARTICLE

Theoretical Knowledge on Cardiopulmonary Resuscitation among Student Nurses at School of Nursing Lafia, Nigeria

Sulaiman Umar[1*], Mukailu Dauda[2]

[1]Department of Medical Surgical Nursing, College of Nursing and Midwifery Lafia, Nasarawa State, Nigeria

[2]Department of Community Health Nursing, College of Nursing and Midwifery Lafia, Nasarawa State, Nigeria

*Corresponding author:

Sulaiman Umar, Lecturer, Department of Medical Surgical Nursing, College of Nursing and Midwifery, Lafia, Nasarawa State, Nigeria. Email: rnumarsulaiman91@gmail.com

Abstract

Background and Aim: Cardiopulmonary resuscitation (CPR) can be defined as a life-saving emergency procedure that involves breathing for the victim and applying external chest compressions to make the heart pump. CPR has become a life-saving technique, and is no longer limited to health related professionals, which can be effective to decrease the mortality and morbidity in many medical emergencies such as heart attack, suffocation and other conditions where the circulatory collapse occurs. Sudden cardiac death can be attributed to 15%-20% of all the deaths worldwide. The objectives of this study were to assess the theoretical knowledge on cardiopulmonary resuscitation among nursing students and to determine the association between the level of theoretical knowledge regarding cardiopulmonary resuscitation and the selected socio-demographic variables.

Methods: Convenient sampling technique was used to select the sample. Data were collected using a modified structured knowledge questionnaire administered to 50 student nurses. Data were analyzed using descriptive and inferential statistics with the aid of IBM SPSS Statistics for version 23.0.

Results: The results showed that the age range of the majority of the respondents was between 18-20 years [25 (50%)]. Majority of the respondents, 45 (90.0%) had adequate knowledge, 5 (10%) had moderate knowledge, while only one respondent (2.0%) had inadequate theoretical knowledge on cardiopulmonary resuscitation. Thus the $H_{0:1}$ hypothesis was rejected while $H_{1:1}$ hypothesis was accepted. There was no statistically significant association noted between their level of theoretical knowledge regarding cardiopulmonary resuscitation and the selected socio-demographic variables (age, gender, marital status, religion, level of study, and previous knowledge of CPR). Hence the $H_{1:2}$ hypothesis was rejected while $H_{0:2}$ hypothesis was accepted.

Conclusion: Majority of the respondents had adequate theoretical knowledge regarding cardiopulmonary resuscitation, and no statistically significant association between their level of theoretical knowledge regarding cardiopulmonary resuscitation and the selected socio-demographic variables was noted.

Keywords: Cardiopulmonary resuscitation, Lafia, School of Nursing, Student nurses, Theoretical knowledge

Introduction

Cardiopulmonary resuscitation (CPR) can be defined as a life-saving emergency procedure that involves breathing for the victim and applying external chest compression to make the heart pump.[1] CPR has become a life-saving technique, and is no longer limited to health- related professionals, which can be effective to decrease the mortality and morbidity in many medical emergencies such as heart attack and other conditions where the circulatory collapse occurs.[2] However, sudden cardiac death is the most common cause of death resulting in 17 million deaths every year worldwide or accounting for 25% of global mortality. Out-of-hospital sudden cardiac arrest is a global health issue with a reported incidence of 40.6 per 100,000 people in Europe, 47.3 in North America, 45.9 in Asia and 51.1 in Australia. Decreasing the time of initiation of CPR is crucial for improving outcomes in cardiac arrest cases.[3] Moreover, early and effective CPR increases both the survival rate and post arrest quality of life.[4] Multiple studies have investigated the implementation of high-quality prehospital resuscitative efforts, and across these studies, different terms describing high-quality resuscitative efforts have been used, such as high-performance CPR with an improved chance of survival.[5] The core study dataset complied with Utstein-style. Primary outcomes were return of spontaneous circulation and survival to hospital admission. Secondary outcome was survival to hospital discharge.[6] The objectives of this study were to assess the theoretical knowledge on cardiopulmonary resuscitation among nursing students and to determine the association between the level of theoretical knowledge regarding cardiopulmonary resuscitation and the selected socio-demographic variables.

Research Hypothesis

$H_{1:1}$ There is a statistical significance of theoretical knowledge of cardiopulmonary resuscitation.

$H_{0:2}$ There is no statistical significance association between the level of theoretical knowledge regarding cardiopulmonary resuscitation and the selected socio-demographic variables.

Materials and Methods

Study Design

The study utilized a descriptive survey design to investigate the target population of student nurses at the School of Nursing in Lafia, Nasarawa State, Nigeria.

The sample size comprised 50 student nurses from the same institution. A non-probability convenient sampling technique was employed to select the participants, allowing the researchers to gather data from those who were readily available and willing to participate in the study
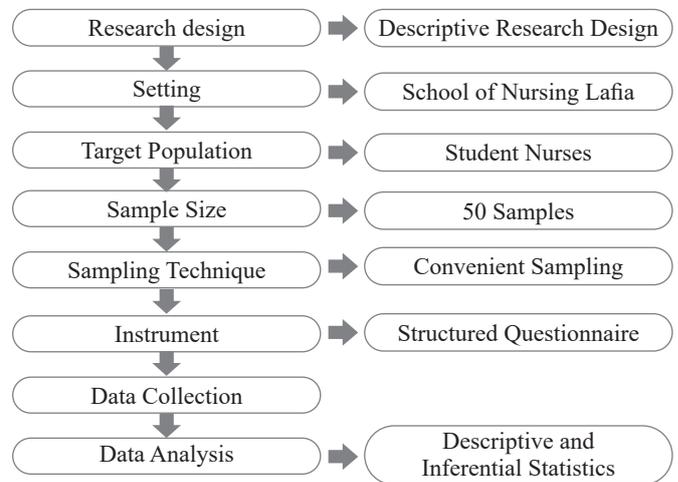

Figure 1: Schematic representation of research methodology

Instrument

The instrument for data collection was adopted and modified to suit the research objectives. The questionnaire consisted of two sections - Section A, and Section B. Section A included questions pertaining to socio-demographic data, while Section B consisted of 20 questions related to theoretical knowledge on cardiopulmonary resuscitation.

Data collection

Formal permission was taken from the Principal of School of Nursing Lafia, Nasarawa State. The data for the main study were collected from 50 study participants, which comprised 100, 200, and 300 level students. The researcher gave formal self-introduction and explained the main purpose of the study. On an average, it took about 50-60 minutes to collect the responses from all the participants. The subjects were assured on the maintenance of confidentiality in terms of their responses.

Data analysis

Data were analyzed using descriptive and inferential statistics with the aid of IBM SPSS Statistics version 23.0.

Results

Table 1: Respondents' socio-demographic variables (N=50)

Sl. No.	Variables	Frequency (F)	Percentage (%)
1	**Age** 18-20 years 21-23 years ≥ 24 years	25 18 7 50	50.0 36.0 14.0 100.0
2	**Gender** Male Female	10 40 50	20.0 80.0 100.0
3	**Marital status** Unmarried Married	45 5 50	90.0 10.0 100.0
4	**Religion** Christianity Islam	18 32 50	36.0 64.0 100.0
5	**Level of study** 100 level 200 level 300 level	22 6 22 50	44.0 12.0 44.0 100.0
6	**Area of resident** Rural Urban	20 30 50	40.0 60.0 100.0
7	**Previous knowledge of cardiopulmonary resuscitation** Yes No	48 2 50	96.0 4.0 100.0

Table 1 shows that the age ranges of the respondents included in the study were between 18-20 years, 21-23 years, and ≥ 24 years, which accounted for 25 (50%), 18 (36%), and 7 (14%) subjects, respectively. In terms of gender, males were the minority representing 20%, while females comprised the majority representing 80%. Most of the respondents 45 (90%) were unmarried, while 5 (10%) subjects were married. In terms of religious practice, 18 (36%) practiced Christianity, while 32 (64%) practiced Islam. Similarly, in terms of the respondents' level of study, 100 level, 200 level, and 300 level accounted for 22 (44%), 6 (12%), 22 (44%), respectively. According to their area of residence, 20 (40%) were residing in rural areas, while 30 (60%) were from urban areas. However, 49 (98%) of the target population had previous exposure to theoretical knowledge on CPR, while one (2%) subject did not have any prior knowledge.

Table 2: Respondents' theoretical knowledge regarding cardiopulmonary resuscitation (N=50)

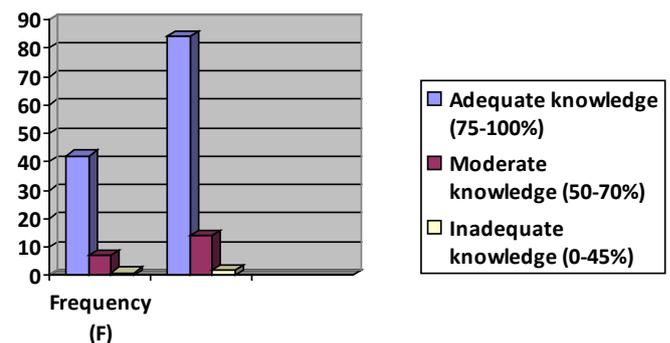| Knowledge scores	Frequency (F)	Percentage (%)
Adequate knowledge (75-100%)	42	84.0
Moderate knowledge (50-70%)	7	14.0
Inadequate knowledge (0-45%)	1	2.0

Figure 2: Theoretical knowledge regarding cardiopulmonary resuscitation

The bar chart (Figure 2) above shows that, out of 50 respondents, 42 had adequate knowledge, seven had moderate knowledge, while only one respondent had inadequate theoretical knowledge regarding cardiopulmonary resuscitation which accounted for 84.0%, 14.0%, and 2.0%, respectively.

Table 3: Association between knowledge scores of the respondents and the selected socio-demographic variables (N=50)

Sl. No.	Demographic variables		Level of knowledge				Chi-Square	*P* Value
			Yes		No			
			F	%	F	%		
1	**Age**	18-20 years	24	49.0	1	2.0	0.633	0.914
		21-23 years	18	36.7	0	0.0		
		≥24	7	14.3	0	0.0		
2	**Gender**	Male	8	17.8	2	40.0	0.239	1.389
		Female	37	82.2	3	60.0		
3	**Marital status**	Unmarried	40	88.9	5	10.0	0.432	0.617
		Married	5	11.1	0	0.0		
4	**Religion**	Christianity	17	37.8	1	20.0	0.401	0.617
		Islam	28	62.2	4	80.0		
5	**Level of study**	100 level	18	40.0	4	40.0	0.220	3.030
		200 level	6	13.3	0	0.0		
		300 level	21	46.7	1	20.0		
6	**Previous history of cardiopulmonary resuscitation**	Yes	47	97.9	2	4.0	0.960	0.043
		No	1	21.1	0	0.0		

Table 3 depicts that no statistically significant association was noted between the level of theoretical knowledge regarding cardiopulmonary resuscitation and the selected socio-demographic variables of the respondents (age, gender, marital status, religion, level of study, and previous knowledge of CPR).

Discussion

On analysis of sociodemographic variables, age range of the respondents was noted to be between 18-20 years, 21-23 years, and ≥24 years which accounted for 25 (50%), 18 (36%), and 7 (14%) respondents, respectively. In terms of gender, males were the minority representing 20%, while females comprised the majority representing 80%. Most of the respondents 45 (90%) are unmarried, while 5 (10%) are married. In terms of religion, 18 (36%) practiced Christianity, while 32 (64%) practiced Islam. Similarly, in terms of the respondents' level of study, 100 level, 200 level, and 300 level accounted for 22 (44%), 6 (12%), 22 (44%) respondents, respectively. According to their area of residence, 20 (40%) were residing in rural areas, while 30 (60%) were from urban areas. It was reported that 49 (98%) of the study population had previous theoretical knowledge regarding CPR, while one (2%) of the participant had no prior knowledge.

The results showed that, out of the 50 respondents included, 42 had adequate knowledge, seven had moderate knowledge, while only one had inadequate theoretical knowledge regarding cardiopulmonary resuscitation which accounted for 84.0%, 14.0%, and 2.0%, respectively.

Implications of the findings with literature support

Of the 50 respondents included in the current study, majority 42 (84.0%) had adequate knowledge, 7 (14.0%) had moderate knowledge, while only one respondent (2.0%) had inadequate theoretical knowledge regarding cardiopulmonary resuscitation. Therefore, the $H_{0:1}$ hypothesis was rejected, while $H_{1:1}$ hypothesis was accepted. This is in conformity with a study conducted by Aranzabal-Algeria G *et al*., on factors influencing knowledge regarding cardiopulmonary resuscitation

in hospitals in Peru. Convenience sampling was used to select 1075 healthcare workers from 25 hospitals in Peru. Data were collected using a questionnaire. The results showed that 95% had good knowledge, while 5% had poor knowledge about CPR. [7]

No statistically significant association between their level of theoretical knowledge on cardiopulmonary resuscitation and the selected socio-demographic variables (age, gender, marital status, religion, level of study, and previous knowledge of CPR) was noted. Hence the $H_{1:2}$ hypothesis was rejected, while $H_{0:2}$ hypothesis was accepted. This is in conformity with a study conducted by Vidmanic S to assess nurses' knowledge on cardiopulmonary arrest and resuscitation-emergency in Croatia. Purposive sampling technique was used to select 91 emergency nurses from three University hospitals. The results showed that there was no statistically significant relationship between the level of knowledge and the selected socio-demographic variables, additional training (P=0.28) and working experience (P =0.38).[8]

Findings aligned with previous study cited

Out of 50 respondents, majority 42 (84.0%) had adequate knowledge, 7 (14.0%) had moderate knowledge, while only 1 (2.0%) respondent had inadequate theoretical knowledge on cardiopulmonary resuscitation. Therefore, the $H_{0:1}$ hypothesis was rejected while $H_{1:1}$ hypothesis was accepted, which is in conformity with a study conducted by Vandali V *et al*. assessing the knowledge regarding cardiopulmonary resuscitation (CPR) among first year GNM (Diploma nursing students) students studying at SND College of Nursing with an aim to develop an information booklet. Purposive sampling was used to select 50 samples. Data were collected using a questionnaire. The findings clearly showed that only one student had poor knowledge regarding CPR, 38% had adequate knowledge, while 62% had good knowledge.[9]

There was no statistically significant association between their level of theoretical knowledge on cardiopulmonary resuscitation and the selected socio-demographic variables (age, gender, marital status, religion, level of study, and previous knowledge of CPR). Hence the $H_{1:2}$ hypothesis was rejected while $H_{0:2}$ Hypothesis was accepted, which conforms with the findings of a study conducted by Raiz S *et al.,* on assessment of cardiopulmonary resuscitation among Pharmacy students of Mirpur, Azad Jammu and Kashmir, India. Convenience sampling was used to select 150 Pharmacy

students. The results showed no statistically significant association between level of knowledge and the selected socio-demographic variable (previous CPR training).[10]

Limitations of the study

This study was limited to a sample of 50 student nurses from School of Nursing Lafia, Nasarawa State, Nigeria. The study was limited to the experience of the researcher.

Conclusion

In conclusion, the results revealed that majority of the respondents had adequate knowledge with only a few respondents demonstrating inadequate theoretical knowledge regarding cardiopulmonary resuscitation. There was no statistically significant association between their level of theoretical knowledge on cardiopulmonary resuscitation and the selected socio-demographic variables (age, gender, marital status, religion, level of study, and previous knowledge of CPR).

Ethical consideration

The proposed study was conducted after the approval from Ethical committee, Ministry of Health Lafia, Nasarawa State of Nigeria and necessary permissions were also obtained from the school principal and the study participants.

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Conflict of interest
Nil

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