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RESEARCH ARTICLE

Paramedics' Knowledge about Cardiopulmonary Resuscitation for Road Traffic Accidents

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ARTICLE INFO	ABSTRACT
	Road traffic injuries are the leading cause of fatalities worldwide. Each year, road accidents cause the deaths of about 1.2 million people and lead to non-fatal injuries and health issues for up to 50 million individuals. The aim of this study was to describe the level of paramedic's knowledge about cardiopulmonary resuscitation for road traffic accidents victims. The study used a descriptive, cross-sectional design. The study was conducted in medical operations department's immediate ambulance division in Al-Diwaniyah city, Iraq. Study starting from November2023 to February 2024, study was done among 40 paramedics using non-probability purposive sampling. A questionnaire was designed for the purpose of this study used self-administrated questionnaires adopted from the previous studies for the purpose of the current study consist of two parts. Part I involve paramedics information tool in which three questions about the demographic characteristics of the paramedics were prepared by the researchers, in light of the literature. Part II involve paramedic's knowledge questionnaire this tool was prepared by the researchers According Australian version protocol to assess paramedics' knowledge consists of 10 multiples choose question. The final form was scrutinized by 10 specialists who had experience or training in disaster and emergency medicine. The researcher distributed the questionnaires to the selected respondents after they finish their duty. All the respondents were given the consent form and the questionnaire at the same time. Respondents were given 10 minutes to complete the questionnaire after the briefing. All data collected was first collected and analyzed using SPSS (Statistical Package for Social Science) Version 26.0. Descriptive statistic was used to analyze demographic data, and knowledge. The findings reveal that paramedics show fair level of knowledge. Paramedics of medical operations department's immediate ambulance division in this study demonstrate unacceptable level of knowledge about cardiopulmonary resuscitation for road traffic accidents. we recommended increase the number and duration of training programs and courses on Cardiopulmonary Resuscitation inside and outside Iraq to improve knowledge. and follows protocols classified by the World Health Organization

INTRODUCTION

Road traffic injuries are the leading cause of fatalities worldwide. Each year, road accidents cause the deaths of about 1.2 million people and lead to non-fatal injuries and health issues for up to 50 million individuals [1]. Across all age categories, road traffic injuries are currently the tenth most common cause of mortality worldwide. A paramedic's profession requires a high degree of technical expertise in addition to quick decision-making and the ability to react appropriately and quickly. Paramedics provide life support in an emergency. aid with cardiopulmonary resuscitation (CPR) for cardiac arrest that occurs outside of a hospital [2]

Accident victims who promptly obtain pre-hospital emergency care and are then brought to a medical facility may see a decrease in the severity of their injuries and accidents [3]. Cardiopulmonary resuscitation is a critical life-saving technique that everyone in the community needs to be trained [4]. For the best result, the management of a person experiencing cardiac arrest necessitates a methodical approach. This necessitates managing the cardiac arrest victim according to a planned sequence of measures in order to restore spontaneous heart function. When a victim experiences cardiopulmonary arrest outside of a hospital, they should follow the reduced BCLS technique, which is based on an algorithm. The BCLS method is simple to comprehend, retain, and apply in real-world scenarios [5].

Ambulances aim to provide prompt initial medical care to patients and swiftly transport them to a specialized medical facility. They are commonly designed with light signals and audible alarms to notify the public and guarantee unhindered transfer of the sufferer. They can swiftly and effectively transport paramedics and the necessary equipment for immediate emergency care to the incident, and subsequently transfer the patients to the hospital [6]. In-hospital cardiac arrest, which has a substantial impact on public health, strikes around 300,000 adults in the United States annually and is associated with a high mortality rate [7]. Cardiopulmonary resuscitation (CPR) is a highly successful initial intervention for cardiac arrest and is crucial in delivering fundamental life support [8]. Cardiopulmonary resuscitation (CPR) is an essential skill that healthcare professionals, especially nurses, must possess [9]. An emergency response system must be activated, early chest compressions must be performed, defibrillation must occur quickly, advanced life support must be administered effectively, and post-cardiac arrest care must be integrated for resuscitation to be successful [10]. Technology is becoming more and more prevalent in healthcare and daily life, with several uses for cardiac arrest and cardiopulmonary resuscitation (CPR) [11]. This study was undertaken to assess knowledge of nurses in medical operations department's Immediate Ambulance Division in Al-Diwaniyah city about nursing intervention for road traffic accidents victims.

METHODS

Study design and Setting:

This was a cross-sectional study conducted in medical operations department's Immediate Ambulance Division of Diwaniyah city, Iraq to asses Paramedics nurses ' knowledge about CPR for road traffic accidents , from November 2023 to February 2024.

Study Population and Sampling:

Non-probability purposive sampling was used to include 40 paramedics from all Ambulance Divisions and departments in Al-Diwaniyah Governorate The sample size was determined using a formula of estimating a single population proportion for cross sectional study by using a single population formula and considering the following assumption: = total population (paramedics) =45, 95% confidence, 5% error 5\100=0.05, if N=45, n= sample size E=error n=N\[1+(N) (E)²] n=45\ [1+45(0.05)²], n=45\ [1+45(0.0025)], n=40[13]. Roa software had been used with at set confidence interval of 5% and a confidence level of 95% to determine the sample size .

Inclusion and exclusion criteria:

All staff of paramedics who were working in medical operations department, paramedics who agreed to participate in the study, working both morning and evening shifts. paramedics who declined to take part in the study.

Study instruments and Data collection procedure:

This study used self-administrated questionnaires adopted from the previous studies for the purpose of the current study consist of two parts. Part I involve paramedics information tool in which three questions about the demographic characteristics of the paramedics were prepared by the researchers, in light of the literature. Part II involve paramedic's knowledge questionnaire this tool was prepared by the researchers According Australian version protocol to assess paramedic's knowledge consists of 10 multiples choose question. Each answer was given "1" score

for correct and "0" for incorrect answer, with a total score of 10 grades. paramedics who answered 50% or more of the information questions incorrectly were unaccepted as having knowledge. The final form was scrutinized by 10 specialists who had experience or training in disaster and emergency medicine. The researcher distributed the questionnaires to the selected respondents after they finish their duty. All the respondents were given the consent form and the questionnaire at the same time. Respondents were given 10 minutes to complete the questionnaire after the briefing. The respondents submitted the completed questionnaire to the researcher. All questionnaire collected were rechecked by the researcher as to avoid unanswered questions. scores:

- 0 – 0.33= poor knowledge.
- 0.34– 0.66= Fair knowledge.
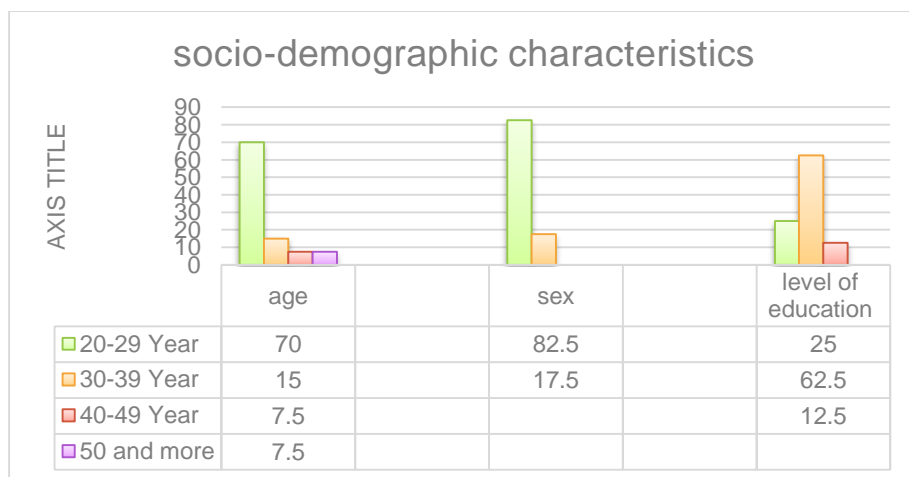- 0.67 – 1= Good knowledge

Ethical considerations:

Ethical approval has been obtained from the Research Ethics Committee of Faculty of Nursing, University of Baghdad, Iraq, with an ethical approval number 22/11/2023-16105. and higher authority of Diwaniyah health directorate. Respondents in this study were on a voluntary basis, and the respondents who agreed to participate were asked to sign the consent form after explanations regarding the procedure involved in this study were given. Anonymity and privacy have been assured.

Data analysis:

The data were analyzed using Statistical Package for Social Science (SPSS) version 0.26 Descriptive statistics were used in this study (e.g., mean, standard deviation, frequency, and percentage). The reliability analysis indicated that Cronbach's Alpha [13] was r = 0.754 for Knowledge, which is deemed a reasonable statistical fit limited by the reliability factor.

RESULT

socio-demographic characteristics	age	sex	level of education
20-29 Year	70	82.5	25
30-39 Year	15	17.5	62.5
40-49 Year	7.5		12.5
50 and more	7.5		

Figure 1: displays the distribution of participants based on their socio-demographic characteristics

figure1: The age of the participants was from 20-29years with a median age of 30 years and more than two-thirds (70%) were in the age group of 20-29 years. More than three quarter of the study participants (82.5%) were male and (17.5%) were female. Similarly, more than half of the study participants (62.5%) hold a diploma degree and less percentage of the study participants were (17.5%) were bachelor education.

Table (1): assessment of paramedics Knowledge Regarding "Performing Cardiopulmonary Resuscitation" via First Aids for Traffic Accidents

(A.D.): Assessment Degree, M.s=mean of score [(0 - .49) = Poor knowledge (F); (0.5 – .74) = Fair knowledge (F); (0.75 – 1) = Good Knowledge(G]

NO	Items	answer	f (%)	M	Ass.
1	When performing cardiopulmonary resuscitation, the injured person placed on the ground or a hard surface	Incorrect	13(32.5)	.68	Good
		Correct	27(67.5)		
2	The carotid arterial pulse is measured for no more than 12 seconds	Incorrect	17(42.5)	.57	Fair
		Correct	23(57.5)		
3	Squeeze the jaw during CPR for a purpose of Open the airway	Incorrect	12(30)	.70	Good
		Correct	28(70)		
4	Breathing during cardiopulmonary resuscitation is checked by: Look at the rise and fall of the chest	Incorrect	16(40)	.60	Fair
		Correct	24(60)		
5	Performing ventilation in the injured person's mouth (kiss of life) twice, slowly, and once each 5 seconds	Incorrect	27(67.5)	.33	Poor
		Correct	13(32.5)		
6	Determine the location of the chest compression before starting the compression by placing the hands crossed over the chest, The lower half of the sternum	Incorrect	33(82.5)	.18	Poor
		Correct	7(17.5)		
7	The paramedic maintains his torso during chest compressions in a position where he is the shoulders and elbow joint are perpendicular to the injured person	Incorrect	30(75)	.25	Poor
		Correct	10(25)		
8	Press down on the breastbone 30 times at 5 to 6 cm a rate of 100 to 120 times per minute	Incorrect	29(72.5)	.28	Poor
		Correct	11(27.5)		
9	Among the treatments used during cardiopulmonary resuscitation is atropine	Incorrect	15(37.5)	.63	Fair
		Correct	25(62.5)		
10	Symptoms of sudden cardiac arrest are Both breathing and pulse stop	Incorrect	23(57.5)	.43	Fair
		Correct	17(42.5)		

Table 2 displays the paramedics' knowledge of cardiopulmonary resuscitation. The mean scores from the pretest demonstrate that the paramedics' knowledge was poor.

Table 2: Assessment of Paramedics' Proficiency in "Cardiopulmonary Resuscitation" via First Aid in Traffic Accidents.

Levels of knowledge	assessment				
	f	%	M	S. D	Assessment
Poor	10	25			
Fair	28	70	4.63	1.409	poor
Good	2	5			

Total	40	100			

f: Frequency, %: Percentage, M. s=mean of score [(≤ 4.99) = Poor Knowledge, (≥5-10)} =Good knowledge

, SD Standard deviation of total score

This table shows that paramedics' knowledge about cardiopulmonary resuscitation during first aids; they show fair level of knowledge.

DISCUSSION

A total of 40 participants were included in this study; the majority of the study participants were male more than females. These findings disagree with studies, which reported no statistical differences association between nurse's knowledge and sex [14] .and another study agree with this result shows that a high percent (59.4%) of the study sample are males more than females [15]. Based on the data analysis conducted for this study, the findings presented in **figure 1,** These findings agree with many studies, which reported the majority of study group nurses' ages were (20- 24) years old who were accounted for (64 %), control group nurses ages were (30-34) years old were account (44%) [16]. The **figure1** showed the paramedics hold a diploma degree. the result agrees with study indicated that there was a highly significant relationship between level of education and paramedic knowledge at (P value = .000) [17,18].and another study agree with this study concerning the level of education, the highest percentage among nurses in the study group refers that 40% of them are graduated from "nursing secondary school", while among the nurses in the control group, the highest percentage refers that 48% of nurses are graduated with "diploma degree" in nursing. This result in line with studies. [19,20] **Table 1,2**. This tables shows that paramedics' knowledge about cardiopulmonary resuscitation during first aids; they show poor level of knowledge. This study supported the result included 60 participants. found that a significant portion of participants lacked CPR knowledge, with results ranging from 30% to 38% having poor knowledge [21,22]. And another study agrees with this result which showed that most respondents did not know how to perform CPR [23].

This indicates a deficit in CPR knowledge among the tested population [24].

However, some study contradicted this finding and showed nurses having good to moderate CPR knowledge [25,26].

Strengths and limitations:

Strengths of the Study. The major strength of this research lies in the fact that it has attempted to assess paramedics' knowledge concerning CPR for road traffic accidents victims in Al-Diwaniyah city, Iraq. Limitations of the Study. The major limitations of this study include the following; The fact that no study was conducted so far in Iraq on this topic; no enough literature was available to discuss in national context and the study may be subjected to response set bias from the respondents

Conclusions

Paramedics' Knowledge about cardiopulmonary resuscitation for Road Traffic Accidents is weak in pre-assessment

Acknowledgment

Thank you to all of the paramedics who contributed to this study.

Author contribution

All authors contributed to the paper's initial conceptualization and cross-sectional design. All authors contributed to the final paper. The final version was agreed upon by all authors after authoring or critically reviewing the essay for key intellectual content

Conflict of interest

There are no conflicts of interest in this study

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