

Assessment of Knowledge of Cardiopulmonary Resuscitation among Pharmacy Students of Mirpur, Azad Jammu & Kashmir

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Abstract

Introduction: Cardiopulmonary resuscitation (CPR) is the most important lifesaving technique in several emergency situations such as cardiac arrest. In future, being part of health care professionals, pharmacy students are deemed to possess basic skills and expertise which are required to perform CPR. **Objective:** To assess the knowledge of cardiopulmonary among pharmacy students of Mirpur Azad Jammu & Kashmir. **Methods:** It was a questionnaire-based, descriptive cross-sectional study, conducted among 4th and 5th year students of two Pharmacy institutes of Mirpur AJ&K from November 2018 to January 2019. A pre-tested questionnaire from previous study was used to collect data. It comprised of 13 dichotomous questions with "Yes/No" options, regarding knowledge of CPR. Descriptive statistics was used to unfold the demographic characteristics. Inferential statistics (Kruskal Wallis and Man Whitney) tests were used for evaluating difference between dependent continuous variables and independent variables and Chi-square was applied to determine difference between grouped variables. P-value of less than 0.05 is considered significant. The data was analyzed using SPSS version 20. **Result:** Overall, 131 out of 150 (response rate=92%) students participated in current study. Gender distribution among the participants was almost equal with 66 males (50.4%) males and 65 (49.6%) females took part in current study. Participants of the age group 21-23 years (n=88, 67.2%) were dominant. Only few students (n=23, 17.6%) reported to have taken training in CPR previously. Eighty-eight (66.7%) had average knowledge of CPR. No significant differences among male and female, 4th and 5th year students of both the institutes were found. **Conclusion:** The study revealed that knowledge level of CPR is adequate in most of the students of pharmacy. However, further improvements are required to perform CPR in an efficient manner. Thus, training in CPR should be mandatory in the pharmacy curriculum.

Keywords: Knowledge, CPR, Pharmacy students, BLS

INTRODUCTION

Annually 4 to 5 million deaths occur due to cardiac arrest worldwide [1]. In cardiac arrest chance of life decreases by 7-10% every minute without any basic life support [2]. Cardiopulmonary Resuscitation (CPR) is the most lifesaving technique in several emergencies. Such

emergencies in which persons heart beat and breathing suddenly stops like heart attack, suffocation, near-drowning or heart arrest [3]. These emergencies can be managed by the knowledge and skill in the resuscitation. Resuscitation is "the art of restoring life or consciousness of one apparently dead." With the time being

CPR techniques have been upgrading, that now it has been referred to be basic life support (BLS) which also have other techniques but can be interchangeably used with CPR. To normalize blood circulation in brain and vital organs, chest compressions and mouth to mouth ventilation are given to regain respiration. Respiratory and cardiac arrest situations can rise in any age in adults or neonates [4].

In the latest guidelines quality of CPR is highlighted. Correct chest compressions, rate, depth and minimal pauses in compression are the main elements of CPR. Pauses are important in chest compression as interruptions lead to worst outcomes resulting in decreased coronary perfusion. Depth of compression is often too shallow. Better perfusion is correlated to better survival. In clinical settings quality of CPR performed by professionals is poor, although it improves definitive survival rate. Rate of compression is not optimal during CPR however, higher rate is associated with improved hemodynamic and primary survival [1].

Regardless of any health care provider, any person can learn skills of CPR, now available in modified simple forms. This life saving treatment is immediately initiated in hospitals by the skilled staff members. Approximately 2 per 1000 admissions in a report of cardiac arrest receiving CPR by the trained staff in the hospital resulted in more improvement in the cardiac arrest. In developing countries outcomes of such incidences are rarely reported unfortunately. According to world recommendations, at least every 2 years CPR course should be revised by the health care providers [2].

For all health care professionals, CPR training has been recommended. Since, the establishment of CPR guidelines about 40 years ago, most of the pharmacy institutes had CPR certification of the Pharm-D students during study of their curriculum.

Several reasons that account for the pharmacy students to acquire CPR training include participation in advanced training opportunities in the immunization practice, complying experimental site requirements, and participation in professional CPR learning opportunities that may include Advanced Cardiac Life Support (ACLS). Nevertheless, the majority of pharmacy colleges obtain CPR training from some other entity [5]. Pharmacist is an essential part of the healthcare profession. Therefore, it is essential for the pharmacy students to have sufficient knowledge regarding CPR. A very little data is available in Pakistan regarding CPR among medical professionals including doctors, students & paramedical staff. Moreover, the awareness of this life-sustaining technique should be confined only to the medical personnel but also should be given to the general population [6]. Literature suggests, very little research has been performed regarding CPR among pharmacy students.

The main objective of this study is to access the knowledge of CPR among the pharmacy students. In addition to that, it is expected to emphasize the replenishment of knowledge on CPR among the pharmacy students with modern changes in CPR guidelines.

METHODOLOGY

Study Design

It was a questionnaire-based, descriptive cross-sectional study.

Study Population and Settings

Fourth and fifth-year students of two pharmacy institutes namely Akson College of Pharmacy, Mirpur University of Science & Technology, Mirpur AJ&K and Mohi-ul-din Islamic Institute of Pharmaceutical Sciences, Mirpur AJ&K.

Duration of Study

The present study had been conducted from November 2018 to January 2019.

Sample Size

A non-random purposive sampling approach has been used in this case since the target is an already existing group of individuals. Convenient sampling method was used to collect the data.

Study Instrument

A pretested questionnaire, was used to collect data, which was obtained from a previous study [7]. The questionnaire comprised of two sections. The first section consisted of demographic data such as gender, age, year of study, name of the institution, and previous training while the second section was containing 13 dichotomous questions regarding basic knowledge of CPR. A score of '1' was given to correct answers while an incorrect answer was given '0' mark. Reliability and validity of instrument were assessed before using the questionnaire.

Cut off Point

More than 10 correct responses to questions portray good knowledge, 6 to 10 right answers denote average knowledge while ≤ 5 positive responses represent poor knowledge.

Data Collection

The questionnaires were distributed among all the available participants. Each participant was asked to complete the questionnaire on spot. Incomplete questionnaires and Unsigned consent forms were excluded from study.

Ethical Approval

Before the commencement of this study, official permission was obtained from the authority of Akson College of Pharmacy under the reference no 2422/12/ACP/18. Consent form was also obtained from all the participants.

Statistical Analysis

All statistical analysis was computed using statistical package for social sciences

(SPSS) version 20. The descriptive, inferential statistical analysis along with comparative statistical analysis was performed. Non-parametric tests were used to explore significant difference between dependent and independent variable. Kruskal Wallis and Mann Whitney tests were used for evaluating difference between dependent and continuous independent variables. Chi square test (χ^2) was applied to determine the difference between group variable.

RESULTS

Pre- Testing Results

The questionnaire was distributed among 30 students before the commencement of study. Questionnaire was found to be reliable with Cronbach's alpha value of 0.67. All of 30 respondents found it valid and faced no difficulty in filling questionnaire. The maximum time that a participant took to complete the questionnaire was 3 minutes.

Demographic Results

Among 150 questionnaires which were distributed to the participants, 138 returned with a response rate of 92%. Among the 138 questionnaires, 7 incomplete ones were excluded from the study. Final Number of questionnaires accepted was 131. Table 1 represents the socio-demographic characteristics. Gender distribution among the participants was almost equal with 66 (50.4%) males and 65 (49.6%) females took part in current study. Participants of the age group 21-23 years ($n=88$, 67.2%) were dominant. Most of the students belonged to 4th year of Pharmacy ($n=70$, 53.4%). Majority ($n=103$, 78.6%) of the participants were from Akson College of Pharmacy. Out of 131 participants, twenty-three students (17.6%) reported to have taken training in CPR previously.

Table 1: Demographic Distribution of Study Population (n=131).

Variable	Frequency	Percentage (%)
<i>Gender</i>		
Male	66	50.4
Female	65	49.6
<i>Age (years)</i>		
18-20	09	6.8
21-23	88	67.2
24-26	34	26.0
<i>Year of study</i>		
4 th year pharmacy students	70	53.4
5 th year pharmacy students	61	46.6
<i>Institute</i>		
Akson College of Pharmacy	103	78.6
Mohi-u-din Islamic Institute of Pharmaceutical Sciences	28	21.4
<i>Previous training in CPR</i>		
Yes	23	17.6
No	108	82.4

Table 2 represents the basic knowledge among population about CPR. A large number (n=125, 94%) of pharmacy students considered that they knew about CPR but only 81(61.8%) students correctly answered questions about the correct concept of CPR. Majority of the students knew about basic life support while only 89 (67.9%) students were able to identify the conditions where there is a need to perform CPR. Three questions were addressed regarding chest compressions such as location, depth and rate of compressions and 77% of respondents reported to know correctly

about the location of chest compression while only half of the participants were successful in answering about the rate and depth of chest compression in a correct manner. Most of the pharmacy undergraduates (71.8%) reported to have received information about basic CPR. Therefore, majority (n=107, 81.7%) of the students were willing to check breathing responsiveness in an unconscious person and most of the students (n=86, 65.6%) agreed to check blood circulation in early critical minute after cardiac and respiratory arrest.

Table 2: Knowledge of The participants About CPR (N=131).

S. No	Questions	Correct Frequency (%)	Incorrect Frequency (%)
01	Do you know what a CPR is?	125 (95.4)	6 (4.6)
02	Is CPR also known as basic life support?	117 (89.3)	14 (10.7)
03	Have you ever received information about basic CPR?	94 (71.8)	37 (28.2)
04	Are you aware of the conditions where you need to perform basic CPR?	89 (67.9)	42 (32.1)
05	Do you know the correct concept of performing CPR?	81 (61.8)	50 (38.2)
06	Do you know the location of chest compression?	101 (77.1)	30 (22.9)
07	Do you know the depth of chest compression of CPR?	65 (49.6)	66 (50.4)
08	Do you know the rate of chest compression during CPR?	63 (48.1)	68 (51.9)
09	Would you give mouth to mouth CPR to the victim of life-threatening illness?	80 (61.1)	51 (38.9)
10	Would you sustain life in early critical minute after cardiac and respiratory arrest?	97 (74.0)	34 (26.0)
11	Would you assess responsiveness in an unconscious patient?	84 (64.1)	47 (35.9)
12	Would you check breathing responsiveness in an unconscious patient?	107 (81.7)	24 (18.3)
13	Would you check blood circulation in a victim of life-threatening illness?	86 (65.6)	45 (34.4)

Table 3 shows the comparison between demographic variables and overall knowledge level about CPR. Comparative analysis using Chi-square test shows that there are no statistically significant differences between males and females, students of different age groups or 4th and final year students about the CPR knowledge. There was also no significant

difference in the awareness of CPR among the students of Akson College of Pharmacy and Mohi-u-Din Islamic Medical College. However, a significant difference was obtained in the CPR knowledge of the students who had taken former training in CPR and the students who had not taken any training in CPR which is evident by the p-value of 0.002 (<0.05).

Table 3: Percentage Score Based on Demographic Features of Knowledge of CPR (N=131).

S.No	Characteristic	Knowledge level			P-Value
		Poor	Average	Good	
1	<i>Gender</i>				0.303
	Male (n= 66)	6(9.2%)	41(62.1%)	19(28.7%)	
	Female (n= 65)	2(3.2%)	46(70.7%)	17(26.1%)	
2	<i>Age</i>				0.107
	18-20 (n=9)	1(11.1%)	7 (77.8%)	1 (11.1%)	
	21-23 (n=88)	3 (3.4%)	63(71.5%)	22 (25.1%)	
	24-26 (n= 34)	4(11.8%)	17(50.0%)	13 (38.2%)	
3	<i>Year of study</i>				0.411
	4th year (n= 70)	04(5.7%)	50(71.4%)	16 (28.0%)	
	5th year (n= 61)	04(6.5%)	37(60.6%)	20(32.7%)	
4	<i>Institute</i>				0.143
	Akson College of Pharmacy (n=103)	5(4.5%)	66(62.1%)	32 (29.4%)	
	Mohi-ul-din Islamic Institute of Pharmaceutical Sciences (n=28)	3 (2.9%)	21(75%)	04(14.28%)	
5	<i>Previous training in CPR</i>				0.002
	Yes (N=23)	0 (0%)	10(43.5%)	13(56.5%)	
	No (N=108)	8(7.4%)	77(71.3%)	23(21.3%)	

*Chi square Significant= <0.05

Table 4: Base-line Knowledge about CPR and Test Score (N=131).

S. No	Demographic Characteristic	Frequency	Mean	Standard deviation	P-Value
01	<i>Gender*</i>				0.717
	Male	66	9.00	2.637	
	Female	65	9.15	1.898	
02	<i>Age **</i>				0.249
	18-20	09	8.11	2.261	
	21-23	88	9.05	2.238	
	24-26	34	9.41	2.426	
03	<i>Year of study*</i>				0.369
	4th year	70	8.94	2.203	
	5th year	61	9.23	2.293	
04	<i>Institute *</i>				0.011
	Akson College of Pharmacy	103	9.33	2.238	
	Mohi-ud-din Islamic Institute of Pharmaceutical Sciences	28	8.14	2.289	
05	<i>Previous training in CPR*</i>				0.002
	Yes	23	10.39	2.311	
	No	108	8.80	2.199	

*Mann Whitney test **Kruskal Wallis test

Table 4 presents the descriptive results (frequency, mean, standard deviation). P-value shows that there was no significant difference in terms of gender, age and year of study except between the students of both institutes and training in CPR with p-value 0.002. Students of Akson College of Pharmacy were found to have higher knowledge.

DISCUSSION

The present study population showed a mean knowledge score of 9.08 and majority had average knowledge score which is almost equal to the knowledge of medical students reported in a study [8]. Dr. Abdul Rehman *et al* performed a study and revealed that 60-69% pharmacists' knowledge was adequate [9]. Meena Kumari *et al* reported >47% of the population to have excellent grades [10]. In another study the knowledge and experience regarding CPR were less than score of 50% in medical and dental intern's students, despite that all of them were aware of its importance [11]. In a study, knowledge score was found to be less among medical and nursing interns however it was statistically non-significant. Medical students of Pakistan and Switzerland have been reported to lack adequate knowledge of CPR [12]. This study showed that the mean knowledge score was 9.08 and majority of the students scored between 40% and 80% indicating the adequate knowledge level among the pharmacy students about CPR.

Chi-square test revealed statistically insignificant differences (p-value>0.05) in terms of age, gender and qualification except previous training (p-value <0.05). Comparatively significant p-values were found in a survey of BLS awareness in age, gender, qualification [13]. Findings of present study emphasize the importance of training in CPR because results were found to be statistically significant which is evident by the p-value of less than 0.05 (p<0.002) for the participants who have

been involved in former CPR training. In the study performed by Hassan Zaheer *et al* in Karachi, a large proportion of participants (79%) insisted the inclusion of BLS (CPR) training in the undergraduate curriculum [4]. Effect of training in CPR on the knowledge level of sample is also supported by another research in which basic elementary questions about BLS (CPR) were responded correctly by most of the participants (70%). This was because of the fact that participants were practically familiar with BLS. It has already been recommended in the developing countries to provide training in CPR to the students of high schools about 10 years ago [14]. However, in Pakistan, no such initiative has been taken even for medical and pharmacy students. Need for training and refresher courses for all healthcare professionals are also confirmed by the study performed on cardiologists [6]. A recent study in Pakistan performed by Abbas *et al* compared knowledge level among trained and untrained medical students in first aid. Correct responses of untrained students were significantly less than trained ones regarding CPR, recovery position, asthma and bleeding [15]. Another study draws attention towards the permanent training programs on BLS and ALS because the two fundamental elements that determine the success rate of cardiopulmonary resuscitation are knowledge and practical skills. Other closed studies confirmed this too [2, 16, 17].

Another study inquired whether experience in emergency services has any impact upon CPR knowledge and concrete differences were found between the subjects with or without experience [18]. This also supports present survey which has shown significant effect of the training in CPR upon the knowledge of CPR among students [13]. Compared with a previous study which was performed on pharmacy students and their response rate of the questions related to responsiveness

and breathing of victims was about 80%. And the nearly identical results were obtained in the present study (60-80%). A small proportion of students (32%) of the previous study were willing to sustain breathing of victim by giving mouth to mouth CPR. On the contrary, number of students were almost twice in the present study (61%) [19].

In comparison with another study performed on dentists to check the knowledge level of CPR it was found that there was no significant difference between the response rate regarding correct concept of CPR among the populations of both the studies. In that study about 75.9% participants had received information about basics of CPR and similar percentage (71%) was found in this study. Participants of both the studies reported to have received training in CPR at the percentage of 17% and 12% [7]. 68% of the healthcare providers in a study stated to have prior knowledge on CPR [2].

Knowledge score of the students of both institutes was found to be almost equal. According to a previous study, CPR knowledge was found to be inadequate among medical students inhabiting Switzerland and Pakistan [12]. There were no concrete differences in the knowledge level and frequency of male and female population which is similar to the results of study performed by Javaid Arif Khan and Zafar Haleem Baloch on cardiologists in Pakistan. (P-value>0.05) [6]. Insignificant effect of male and female population on knowledge of CPR is also supported by another study [8]. In a study, gender differences pointed out that females had slightly lower awareness about BLS which was attributed to the differences in between pulmonary capacities of females and males.

Comparing the present data with the literature, it was observed that 48% of the

pharmacy students stated to have correct knowledge about the chest compressions in CPR compared with 39% in a Malaysian study [17]. A comparable percentage of correct answers about the chest compressions was found in another study and about one third of the population answered correctly about the location of chest compressions [13]. Likewise, 25% of healthcare providers in a study responded positively about the chest compression [2]. On the contrary, about three fourth of the population correctly answered the questions about the chest compressions [20]. When the results of present study were compared with an old study, a similar number of students gave incorrect answers about BLS. But opposing results were obtained related to location and depth of chest compression[9]. Compared to the sample responses of questions about location (93%) and depth (93%) of chest compression in a study by Mittal R. Savaliya, response rate in present study was nearly equal 77% for location while lower (50%) for depth of chest compression [21].

About 74% of the population of current study would make an attempt to sustain life in early critical minutes after cardiac and respiratory shock which is two folds higher than medical students (32%) involved in a study [22].

There was no statistically significant difference (P-value=0.369) between final year students and 4th year students in the present study which is opposed by a study conducted in which final year students had better knowledge than 4th year undergraduates [8].

According to a former study, age of the person may affect knowledge level which is shown in the results where students of age group 24-29 had adequate knowledge and so in the present study. This is probably due to more exposure and experience. However, there is no

statistically significant difference between the knowledge levels of different age groups in the current study [8].

In a study, Abdul Majeed Owaid *et al* revealed the difference between the knowledge of students from health-related and non-health related colleges and the P-value reflected significant difference in the knowledge level [23].

In a study, pharmacists reported to have 35.7% score in breathing-related questions before training which was increased to almost twice (78%) after training which is comparable with the result of current study (81.7%) [19].

CONCLUSION AND RECOMMENDATIONS

The current study revealed the knowledge score of CPR is average among most of the pharmacy students however; there is a need for further improvement. CPR training should be mandatory part of the pharmacy curriculum. Repeated training with practical demonstration is required to acquire practical knowledge among pharmacy students.

Policy makers should articulate a policy regarding compulsory CPR education in syllabus and position on the provision of compulsory training schedule and certifications for their degree registration.

Limitations of Present Study

1. Cross sectional study was performed as it is easier to perform, quick and cheaper. As this study also does not require any follow up, data is collected at a time from the participants through questionnaires. However, this study may prove to be sensitive to non-responsiveness of the participants in any part of study tool resulting in loss of validity of the results.
2. The study instrument used in this study actually addressed only theoretical knowledge and practical skills were

not tested among students. Contrarily, theoretical knowledge as well as practical skills both are pre-requisites of CPR performance in an efficient way. Despite limitations, this study paints a picture of the state of awareness of resuscitation among the pharmacy students.

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