Knowledge, attitude, and skill of medical students in dealing with patients with cardiac disorders before and after the cardiac internship

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Abstract

Introduction: Patients with heart diseases who require emergency care need rapid diagnosis and treatment. Medical students are usually among the first individuals to be trained to help these patients in the course of their internship in the treatment chain and have a significant role in reducing mortality and morbidity among patients with heart diseases referred to the emergency ward.

Methods: In this cross-sectional descriptive-analytical study that was conducted in Tabriz, Iran, in 2016, 100 medical students were enrolled in a census course. Knowledge, attitude, and skill of interns toward airway management were evaluated in patients by the students before and after the cardiac internship using a valid and reliable researcher-made self-assessment questionnaire. Data were then analyzed using SPSS software.

Results: Although the level of knowledge and skill of the interns before and after the cardiovascular education course was significant ($P \leq 0.001$), the knowledge and skill scores were lower than the average before and after the course. There was no significant relationship between the gender of the interns with knowledge, attitude, and skill. There was also no significant relationship between the marital status of the participants and the level of knowledge and skills of the interns. Married people had a more positive attitude toward managing patients with cardiovascular diseases (CVDs) compared others ($P = 0.013$).

Conclusion: The level of knowledge and skills of interns in dealing with cardiac patients, before and after the education of cardiac course was low, requiring more attention to training of students in this field.

Introduction

Cardiopulmonary resuscitation (CPR) is a process for restoring the vital functions of important organs of the body including attempt to artificially restore spontaneous blood circulation and respiration.[1] CPR is the guarantor of rescue, and in life-threatening cases, such as cardiac arrest, drowning and airway obstruction, can save lives of humans.[2] Considering that failure to perform these actions or delay in its implementation causes brain death in less than 4 to 6 minutes (golden time), it is urgent to perform the resuscitation action expeditiously. The word CPR has been renamed to cardiopulmonary cerebral resuscitation (CPCR).[3] If recovery is conducted promptly, the lives of 40 to 60% of the cases are saved, but the success of recovery is dependent on proper regenerative skills and performance, as well as its level of consciousness.[4]

In 1960, the first CPR was performed with cardiac massage, which has progressed so far, but still, mortality is still high after cardiac arrest.[5]

On the other hand, cardiovascular diseases (CVDs) are one of the primary causes of death threatening the lives of individuals every year. It is estimated that in 2012, 17.5 million people died of heart

disease (31%), nearly two-thirds of which have occurred in less developed and developing countries. According to the World Health Organization (WHO), one of the main causes of the increase of the deaths among people in the third world countries was the lack of access to health programs for the prevention, diagnosis, and lack of proper treatment of these complications.[6] People with heart disease who require emergency care need rapid diagnosis and treatment, and medical students are usually among the first individuals to help them in the course of their internship in the treatment chain. So that the familiarity of these students with the principles of helping patients with CVDs can have a significant role in reducing mortality and morbidity among the patients referred to the emergency ward.[7]

Iran has ranked as the sixth country among the 10 countries in the world with the highest rates of CVDs.

Therefore, due to a high number of exposures among individuals in need of CPR, awareness and skills in recovery operations are essential even for ordinary people.

Therefore, when the patient's life is in turmoil between death and life at moments, the presence of efficient, knowledgeable, and skillful individuals is one of the patients' absolute rights.[9]

In a study conducted at Tehran University of Medical Sciences, Tehran, Iran, 80% of residents obtained a low level of knowledge about recovery.[10]

In a similar study at Ataturk Hospital in İzmir, Turkey, 94% of the participants had only one revival experience during their education course, and their knowledge of basic and advanced operations was low.[11]

Various studies have shown that the knowledge and practical skills of internship course of medical students in the field of disease management is not acceptable, and it is suggested that because internship course is one of the major courses in medical education, its programs should be designed to fit the future work environment and the real environment, and graduates acquire the necessary skills to deliver services to the community.[7,12,13]

In addition, the factors affecting the process of recovery are varied, and issues such as the lack of access to skilled people, delay in starting message and how to perform it, and the need for educational programs for relevant specialists are debatable and controversial,[14] so that in most studies, the lack of the knowledge and skill of treatment of personnel and their lack of education have been highlighted as the main problem.[15,16]

Given the importance of this issue and considering that in most cases, the need for an intern on the patient's bedside, and that this ability is required for a physician throughout the course, assessment of the educational level in the medical educational units and the ability of interns in airway management is one of the research concerns.[17]

In this study, the aim of the researcher was to acquire information about the knowledge, attitude, and skill of medical students in dealing with patients with CVDs before and after the cardiac internship course, which this credit is included in the curriculum, on the bedside of patients who referred to the emergency ward of educational, treatment centers in the emergency department, to provide further examinations to improve the educational status of medical students.

Methods

Study type: This was a descriptive-analytical cross-sectional study.

Sample size and sampling method: The study sample consisted interns of medical students of Tabriz University of Medical Sciences (Tabriz, Iran) who did not complete the cardiac internship course. According to the previous studies, and after investigations, as well as given the report of the university administration that about 110 interns had not completed the cardiac course, the sample size was estimated to be 100. Due to the limited sample size, the census-based sampling method was taken to fill the sample size, and students who did not want to participate, had

a history of working in the cardiology wards, had completed a cardiac care workshop, or medical students who completed the course in the cardiology ward were excluded.

Data collection tool: Data collection tool was a researcher-made questionnaire including the first part, the second part, and the third part on respectively the awareness survey (10 questions of four options), attitude survey (10 questions with 5-degree Likert scale), and skill survey (10 questions with 5-degree Likert scale). Moreover, the students with knowledge, attitude, and skill in the field of dealing and managing cardiac patients were determined based on the score of the relevant questions and determination of the cut-off point using the mean values. The general tool included demographic information of students (age, sex, educational level, work history, and marital status). To determine the reliability of the researcher-made questionnaire, a re-test method was used for 30 internship medical students and the questionnaire was resubmitted after two weeks; so the reliability values were obtained as 0.89, 0.84, and 0.87 for knowledge, attitude, and skill among the students, respectively, and to determine their validity, content validity was used during the study process. In this way, a questionnaire was prepared according to the research aims, study books, and related dissertations after confirmation by the supervisor and distributed to 10 faculty members of Tabriz University of Medical Sciences to determine the validity of the questionnaire.

The researcher attended university and hospitals affiliated after explaining the method and the purpose of the study, and all the medical students who were eligible to include the study were sampled to complete the sample size in a census. The data collection was accomplished through completing the self-reporting questionnaire by the students.

Data analysis: After completing the sampling, the data were analyzed using descriptive statistical methods [including tables, charts, and calculating the statistical mean and standard deviation (SD)], and the statistical analysis of variables was conducted using statistical tests such as chi-square, t-test, and Mann-Whitney test in the SPSS software (version 16, SPSS Inc., Chicago, IL, USA).

Ethical considerations: Written permission was received from the vice chancellor for research of Tabriz University of Medical Sciences to conduct the study and written consent was obtained from the students under study, and they were assured that their personal information would remain confidential in accordance with the instructions of the regional ethics committee of Tabriz University of Medical Sciences.

Results

The gender distribution analysis of the 100 subjects showed that 52 (52%) and 48 (48%) of the respondents were women and men, respectively. The descriptive statistics of age indicated that the mean age of the respondents was 25.03 ± 0.80 years old. A survey of the distribution of the marital status of the subjects revealed that of the 100 respondents, 72 (72%) and 28 (28%) were single and married, respectively.

According to the results, the average attitude of the medical students before and after the internship course was respectively 3.41 ± 0.18 and 3.60 ± 0.27. In addition, according to the value of $P < 0.001$, the mean difference of students' attitude before and after the course was statistically significant.

Given the results, the students' average knowledge before and after the internship course was 2.76 ± 0.44 and 2.93 ± 0.27, respectively. Furthermore, according to the value of $P = 0.001$, the average difference of students' knowledge before and after the course was statistically significant.

Based on the findings, the medical students' average skill before and after the internship course was respectively 1.70 ± 0.45 and 2.36 ± 0.32. Besides, according to the value of $P < 0.001$, the average difference of students' skill before and after the course was statistically significant (Table 1).

Table 1. Comparison of the skills and attitude of medical students in dealing with patients with heart diseases before and after the cardiac internship course

Variable		Mean ± SD	P
Skill	Before the cardiac internship course	45.0 ± 1.70	< 0.001
	After the cardiac internship course	2.36 ± 0.32	
Attitude	Before the cardiac internship course	3.41 ± 0.18	< 0.001
	After the cardiac internship course	3.60 ± 0.27	

SD: Standard deviation

The relation between demographic information and attitude and knowledge of students are shown in tables 2 and 3.

Discussion

In this study, 100 medical students in the internship course before and after the cardiac education course were enrolled, and their knowledge, attitude, and skill were investigated in managing patients with CVDs referred to the emergency cardiology wards from the students' point of view before and after the beginning of the course.

This study showed that the level of knowledge and skills of interns from the viewpoint of medical students regarding the management of patients with heart problems before and after passing the cardiac course and cardiac emergency was lower than the average. However, in terms of attitude, students had a positive attitude toward the ability to manage patients with heart problems; these findings are consistent with the results of previous studies in this field.[17,18]

In this study, the mean score of knowledge of the medical students about cardiac management before and after attending the cardiac education course was 2.76 ± 0.44 and 2.93 ±0.27, respectively, showing a significant difference between the period before and after passing the course (P < 0.001). However, the results indicated that students' awareness of the heart rate education course before and after the course was less than the expected average, indicating undesirable level of knowledge among the students. However, the results indicated that the students' knowledge of the stage before and after passing the heart training course in the management of a patient with a heart problem was less than the expected average, showing undesirable level of knowledge among the students. In the study by Avazbakhsh et al.,[18] the level of awareness of medical interns was moderate regarding the CPR of patients. Krajina et al., in examining the knowledge and attitude of pediatrics residents in the field of CPR, stated that the level of awareness of the residents was not favorable and that the majority of them also admitted the lack of adequate training in this regard;[19] these results are consistent with the findings of the present study.

Regarding the average skill of intern participants according their opinion before and after the cardiac education course was 1.75 ± 0.45 and 2.36 ± 0.32, respectively, and there was a significant difference in the relationship between before and after the course (P < 0.001), but in fact, the results of this study indicated that the skills of interns in managing patients with heart problems were less than average or, in other words, undesirable. In a study by Adineh et al.[20], the mean score of skill was 29.94 ± 4.34; the findings indicated supporting the role of education in improving students' knowledge and skills in CPR.

Table 2. Relationship between demographic information and attitude of students before and after the course

Demographic variable		Attitude		P
		Before the course (mean ± SD)	After the course (mean ± SD)	
Sex	Man	3.43 ± 0.19	3.58 ± 0.25	0.520
	Woman	3.40 ± 0.18	3.60 ± 0.28	
Marital status	Single	3.40 ± 0.16	3.55 ± 0.28	0.013
	Married	3.43 ± 0.22	3.69 ± 0.23	

SD: Standard deviation

Table 3. Relationship between demographic information and knowledge of students before and after the course

Variable	Demographic variable		Before the course (mean ± SD)	After the course (mean ± SD)	P
Knowledge	Sex	Man	2.69 ± 0.46	2.98 ± 0.27	0.120
		Woman	2.79 ± 0.43	2.91 ± 0.27	
	Marital status	Single	2.78 ± 0.45	2.96 ± 0.25	0.175
		Married	2.71 ± 0.42	2.88 ± 0.29	
Skill	Sex	Man	1.72 ± 0.50	2.29 ± 0.42	0.289
		Woman	1.69 ± 0.43	2.39 ± 0.26	
	Marital status	Single	1.67 ± 0.42	2.39 ± 0.31	0.162
		Married	1.75 ± 0.51	2.30 ± 0.35	

In a study by Hosseini Nejad et al.,[21] the skill of 80 interns of Mazandaran University of Medical Sciences, Mazandaran, Iran, was examined and it was shown that none of the participants had the full competence in correct CPR.

Wada and Tamura showed that passing the education courses, in addition to raising the level of knowledge and clinical skills, can increase the chance of the survival of young children and adults.[22] Accordingly, in the study by Papalexopoulou et al.,[23] it was found that teaching CPR skills and helping to maintain these skills were very influential in the long-term among the treatment personnel in rescuing people and, of course, continuing education is effective in sustaining it in the long-term. Initial identification and activation of recovery protocols increase the survival rate of individuals and may even improve cardiac arrhythmias. This strengthens the importance of proper CPR education.

In a study conducted by Zaheer and Haque[24] in Pakistan, the level of knowledge and skills about CPR was studied among internship medical students. Although most of these students had not passed a special practical course and all their information was theoretical, their information on CPR was in good level, however they were weak in terms of practical skills, and hence a course on CPR in the medical students' curriculum was recommended for them.

In a study carried out by Isazadehfar et al.[18] in Ardabil, Iran, factors influencing the knowledge and skills of CPR were reviewed in anesthesia ward of Ardabil University of Medical Sciences. The education of CPR in the anesthesia ward led to an increase in the knowledge and skills of medical students

clearly and explicitly and the authors considered it necessary for interns to attend this course.

The results of several studies performed in the field of CPR education in different treatment groups, the interventions have been evaluated positively and it was suggested that a physician be considered to be responsible for the administration of the CPR, and enhance the knowledge and skills through continuous education of students, nurses, and doctors during their education and employment, as well as their self-confidence and long-term sustainability, in addition to increasing the students' satisfaction with more advanced education as well as by persuading the students to learn about the necessity of performing pulmonary CPR and managing the stages by the physician.[19,25] In another study conducted by Alijanpour et al.,[26] it was suggested that in the education of CPR, in addition to traditional and practical education, multimedia educational methods be combined and integrated for better and more sustainable education. Furthermore, Sayyah[27] reported that interns did not have enough information on CPR during their internship and thus their information would not increase during the course, and the inclusion of a specific ward seemed to be serious for education of interns.

Based on the analytical statistics, the average score of the students' attitude before and after the educational course was 3.41 ± 0.18 and 3.6 ±0.27, respectively, indicating the positive attitude of students in managing patients with CVDs from the viewpoint of their interns before and after the cardiac training course. There was also a

significant difference between the two courses (P < 0.001), this means that after the cardiac educational course, students' attitude towards the management of patients had improved.

Investigating the relationship between demographic characteristics and students' knowledge, skills and attitudes, the results showed that there was no significant relationship between gender and knowledge, attitude, and skill. There was also no significant relationship between the marital status of the participants and the level of knowledge and skills of the interns. In this study, there was a significant relationship between marital status and students' attitude toward the management of patients with CVDs (P = 0.013). Married people had a more positive attitude toward managing patients with heart diseases than others. Adineh et al.[20] in their study showed that the mean of women's knowledge and skills in the field of CPR was higher than that of men, in addition married people had better knowledge and skills compared to single people, which is not consistent with the findings of this study.

Conclusion
Overall, according to the results of this study,

the knowledge and skills of interns in the management of patients with CVDs before and after the internship were weak, requiring the explanation of the necessary strategies to improve the students' knowledge and skills.

Authors' Contribution
Hamid Reza Morteza-Bagi performed the study design, Shabnaz Navabifar conducted data gathering, Fariba Abdollahi carried out data analysis, Hamideh Nouriasl supervised the study procedure, and Amir Ghaffarzad performed writing and conducting the study.

Conflict of Interest
Authors have no conflict of interest.

Ethical Approval
This study was approved by regional ethics committee of Tabriz University of medical sciences.

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