

Intern Physicians' Thoughts About Cardiology Training and Examination of Diagnosis and Treatment Adequacy in Cardiovascular Emergencies

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ABSTRACT

Objective: Cardiovascular diseases (CVD) are the number one cause of death globally. Emergency cases related to CVDs have an important place among all emergency applications. This study was conducted to determine the competencies of intern physicians studying at the Faculty of Medicine in the Republic of Türkiye regarding their perspective on cardiology education and expertise, their ability to diagnose and treat cardiovascular emergencies and their ability to manage these emergency cases.

Materials and Methods: The study included 286 intern physicians, 149 of whom were women (52.1%) and 137 of whom were men (47.9%), who completed the survey sent to social messaging programs. Physicians were asked about the adequacy of the education at the medical schools they attended and case questions regarding cardiovascular emergencies, including basic biochemical and radiological imaging methods, and their answers were recorded.

Results: The average age of the intern physicians participating in the study was found to be 24.1±1.3 years. In questions regarding medical and specialty education, only 57% of intern physicians stated that they received adequate medical education, and 76.6% stated that the Covid-19 pandemic affected their medical education. The part that physicians are most hesitant about making the correct diagnosis and applying treatment in cardiovascular emergencies is medication administration.

Conclusion: Intern physicians should be given basic training on the correct approach to cardiovascular emergencies, both during their medical education and in workshops after graduation.

Keywords: Cardiovascular, emergency, intern, physician

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INTRODUCTION

Cardiovascular disease (CVD) is the number one cause of death globally, with more people dying from CVD each year than from any other cause.^[1] According to a report published by the World Health Organization (WHO), an estimated 17.3 million people died of CVD in 2008, representing 30% of all global deaths.^[2] It is predicted that approximately 23.6 million people will die from CVDs, especially heart disease and stroke, by 2030. These patients often come to emergency departments with cardiac symptoms.

In a retrospective study conducted in a training and research hospital in our country, CVD was detected in 23.7% of 156,818 patients who applied to the emergency department between 01.01.2011 and 31.12.2011.^[3]

The main purpose of medical faculties in education is to develop students who know the health problems of the country and have the knowledge and skills to overcome these problems in primary healthcare institutions, who can work as physicians and managers in these institutions, who observe the ethical rules of the profession, who are



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researchers and questioners, who constantly renew and improve themselves, who are internationally accepted to train general practitioners in accordance with the specified criteria.^[4,5] In this context, the development of many education and training methods, the determination of priorities and the adequacy and restructuring of medical education have come to the fore. As a result, the National Core Education Program (NCEP) was determined for the first time in February 2002 by the Medical-Health Sciences Education Council and took its final form in 2020.^[6]

Considering the content of this program, symptoms such as dyspnea, chest pain, syncope, hypertension and palpitations are the frequent reasons why people with CVD go to emergency services. It seems that these are among the clinical symptoms/findings/situations that should be given more emphasis in the training program and, if possible, should be reflected in the program frequently in different periods throughout the training life.^[7] In addition, in this program, physicians are required to diagnose and provide initial treatment for major cardiovascular emergencies. This study was conducted to evaluate the competencies of intern physicians studying at the Faculty of Medicine in the Republic of Türkiye regarding their perspective on cardiology education and expertise, their ability to diagnose and treat cardiovascular emergencies, and their ability to manage these emergency cases.

MATERIALS and METHODS

Intern physicians studying at medical faculties in the Republic of Türkiye between 22/11/2021 and 10/12/2022 were included in this descriptive study. A survey was sent to intern groups in physicians' social messaging programs, and 286 intern physicians, 149 female (52.1%) and 137 male (47.9%), who wanted to participate in the study and completed the survey completely, were included in the study. Consent was obtained from those who agreed to participate in the study. The survey form included information about age, gender, the adequacy of the education they received at the medical school, the impact of the coronavirus pandemic on their education, their desire to do specialization training and their specialty preferences, the difficulties they face in the diagnosis phase of cardiological emergencies, acute coronary syndrome, arrhythmias, heart failure, pulmonary embolism, syncope and aortic diseases among cardiological emergencies. It consists of case questions related to syndromes, including basic biochemical and radiological imaging methods. In these questions, tips for physicians to reach a differential diagnosis are given and the aim is to help them

reach the correct diagnosis. In the field of treatment, the first interventions that should be done when these diseases are encountered in the emergency department were specifically asked. Approval was received for our study by the local ethics committee. (Decision no: 2021/49-07) The study was carried out in accordance with the Helsinki Declaration.

Statistical Analysis

Continuous variables are given as mean \pm standard deviation and categorical variables are given as percentages. Since our study is a survey study and there is no grouping design; Intergroup, intragroup comparison and statistical analysis tests were not used.

RESULTS

The average age of the intern physicians participating in the study was found to be 24.1 \pm 1.3 years. In questions regarding medical and specialty education, only 57% of intern physicians stated that they received adequate medical education, and 76.6% stated that the Covid-19 pandemic affected their medical education. While 96.5% of intern physicians are considering specialization training, the rate of those who want to specialize in cardiology is only 16.1%. While 74.1% of intern physicians wanted to do their specialty training in Türkiye, 17.1% preferred European Union countries, 4.5% preferred the United States, and 4.2% preferred other countries. 81.5% of intern physicians stated that they went to a private teaching institution for the medical specialty exam (MSE).

In the question asked to physicians regarding emergency room visits, the most feared emergencies were; Trauma was determined as 25.9%, pediatric emergencies as 25.2%, cardiovascular emergencies as 22.7%, gynecological emergencies as 15.7%, neurological emergencies as 7.7%, and other emergencies as 2.8%. Regarding the question of cardiovascular emergencies, aortic dissection was the emergency that intern physicians feared most in terms of diagnosis, treatment and patient management (Table 1). The part that physicians are most hesitant about making the correct diagnosis and applying treatment in cardiovascular emergencies is medication administration (Table 2).

Among the questions asked regarding cardiovascular emergencies, the most difficult to diagnose was pulseless electrical activity (PEA) (55.9%). The highest diagnosis is aortic dissection (99%). In questions related to first-line treatment after diagnosis, accuracy rates were not as high as in diagnosis (Table 3). While the most successful disease in first-line treatment was acute coronary syndromes (90.8%), the least successful disease was pulseless electrical activity (55%).

Table 1. Cardiovascular emergencies that intern physicians fear most in terms of diagnosis, treatment and patient management

Cardiovascular emergencies	Number	Rate %
Heart failure	24	8.4
Acute coronary syndromes	39	13.6
Arrhythmias	45	15.7
Aortic dissection	154	53.4
Pulmonary embolism	24	8.4

Table 2. Areas that intern physicians afraid of correct diagnosis and treatment in cardiovascular emergencies

Cardiovascular emergencies	Number	Rate %
Cardiovascular drug applications	125	43.7
ECG evaluation	105	36.7
Radiological evaluation	52	17.8
Biochemical evaluation	4	1.4

When asked to intern physicians about their competence in basic life support (BLS) and cardiopulmonary resuscitation (CPR) in case of out-of-hospital cardiac arrest (OHCA) coming to the emergency department, only 78.6% stated that they considered themselves competent in this regard. Additionally, the most difficult area during CPR was endotracheal intubation with a rate of 50.6% (Table 4).

DISCUSSION

The main purpose of medical schools is to provide physicians with education at international standards and to equip them with basic knowledge and skills. The physical conditions of the faculty, educational programs and the level of instructors are very important in medical education. The main reason for the existence of all these factors is the student. For this reason, every activity and every educational program should be student-centered. Thus, students' opinions about their faculties and their roles in directing education are determined.^[8] In our study, a survey form was sent to social messaging platforms where intern physicians studying at medical faculties in our country were present, thus aiming to reach a more general result across the country, not just a single faculty. 47% of the intern doctors who participated in our survey stated that they could not receive adequate medical education, and 76% of the participants said that the Covid-19 pandemic was a factor in this. Considering that the pan-

Table 3. Rates of intern physicians correctly diagnosing and treating common cardiovascular emergencies

Cardiovascular emergencies	Diagnosis %	Treatment %
Acute coronary syndrome	81.8	90.8
Pulmonary embolism	96.5	46.5
Supraventricular tachycardia	76.6	61.2
Ventricular tachycardia	79.4	63.6
Ventricular fibrillation	83.6	55.2
Pulseless electrical activity	55.9	64.5
Pulmonary edema	89.5	69.1
Aortic dissection	99	65.7

Table 4. Areas where intern physicians have the most difficulty when performing cardiopulmonary resuscitation

	Number	Rate %
Cardiovascular drug applications	47	16.4
ECG evaluation	55	19.2
Endotracheal intubation	145	50.6
Biochemical evaluation	39	13.6

demic lasted approximately 2 years and medical students were educated online for most of this time, these rates are actually the expected results.

In pre-graduate education, approach to emergency patients is very important. It is a known fact that the density of emergency service applications in our country is high. For this reason, the NCEP created in Türkiye includes the learning objectives in the skills list, especially in the necessary initiatives for first and emergency aid section.^[9] Considering the rates of cardiovascular emergencies among all emergency applications, it is seen that they are at the top. In a study conducted by Sert et al.,^[10] the applications made to the emergency department of a tertiary hospital in our country over a 5-year period were retrospectively examined and the most common reasons for admission were respiratory system diseases (24.7%), musculoskeletal system diseases (17.5%) and CVD (14.5%) are listed. It is an undoubted fact that in this study conducted in all age groups, the rate of CVD will increase significantly when only looking at the adult age group.

In an unselected and consecutive prehospital cohort conducted abroad, consisting of 3,410 patients who called the national emergency telephone number from 2005 to 2008

and were brought to the emergency room by ambulance after the call; CVD was detected in 2056 patients (60.3%), non-CVD in 1264 patients (37.1%), and trauma-related emergencies were detected in 90 patients (2.6%).^[11] When we look at the subgroups of cardiovascular emergencies, chest pain other than acute coronary syndrome (ACS) is 14.6%, ST-elevation myocardial infarction (STEMI) is 8.1%, non-ST-elevation myocardial infarction (NSTEMI) is 6.2%, Unstable angina pectoris (USAP) is 9.4%, cardiac failure was 3.1%, stroke 2.8%, atrial fibrillation (AF) 2.8%, other CVD-related emergencies 2.8%, and the rate of patients with out-of-hospital cardiac arrest (OHCA) that could not be reversed and whose exact cause of death was unknown was 9.9%. Ischemic heart diseases and malignant arrhythmias that develop due to them are the most important causes of death in OHCA arrests. In our study, the issue that intern physicians had the most difficulty in emergency admission was PEA. When OHCA arrives in emergency departments, a significant amount of PEA can be observed, and if a correct diagnosis is not made, immediate initiation of CPR may be delayed.

Another study conducted in South India found that awareness about basic life support (BLS) among students, doctors and nurses was below %50.^[12] In this study, students; It has been shown that there is a serially increasing awareness rate from interns to interns and then to assistants. In addition, awareness was found to be higher in those who performed CPR and in those who had previously attended a workshop on CPR, rather than those who only received CPR. In our study, interns were not asked basic questions about the correct application of CPR, but only whether they felt competent. Despite this, only 78.6% of the interns stated that they considered themselves sufficient.

Medical faculties contain much different and special educational dynamics compared to other faculties. The main purpose of medical faculties is to train general practitioners who can make correct diagnoses and interventions in accordance with professional ethics in all circumstances. Intern physicians should be given complete basic and practical training, especially in order to perform emergency interventions correctly and on time. In a study conducted by Özkan and Cafoğlu^[13] on faculty members, it is seen that faculty members prioritize the problems related to the excess of students and insufficient number and qualifications of faculty members as problems in medical education in Türkiye. Altınışık et al.^[14] conducted a study on first-time medical faculty students, it was stated that the students mostly complained about the inadequacy of physical facilities.

Limitations of the Study

Although our study recruited intern physicians from medical faculties in many regions of the country and tried to reach a nationwide result rather than a single faculty, the number of participants was low. In addition, the approach of intern physicians to emergency patients due to CVD was tried to be measured mainly by case questions related to these diseases. When these patients are encountered in emergency departments in real life, many factors in the environment (such as stress, patient density, fatigue, possibility of violence) can change the treatments given and the time taken to take action against emergency situations.

CONCLUSION

Considering the Covid-19 pandemic and the negative impact of online education on medical education, intern physicians; In order to be able to intervene in CVD-related emergencies correctly and in a timely manner, both medical education and practical in-service training should be given in their hospitals where they work after school, and their knowledge and skills should be kept up to date.

Disclosures

Ethics Committee Approval: The study was approved by the Biruni University Non-interventional Research Ethics Committee (No: 2021/49-07, Date: 19/03/2021).

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