Evaluation of Cardiology Consultation Quality and Quantity Requested from Emergency Departments in Turkey

Türkiye'de Acil Servisten Yapılan Kardiyoloji Konsültasyonlarının Kalitatif ve Kantitatif Olarak İncelenmesi

Fatih Kahraman[1], Tülay Oskay[2], Serdar Güler[3], Taha Gürbüzer[4], Gökay Taylan[5], Ahmet Seyda Yılmaz[6], Hikmet Orhan[7]

[1] Cardiology Clinic, Kutahya Evliya Celebi Research and Training Hospital, Kutahya, Turkey

[2] Cardiology Clinic, Bucak State Hospital, Burdur, Turkey

[3] Cardiology Clinic, Acıpayam State Hospital, Denizli, Turkey

[4] Cardiology Clinic, Biga State Hospital, Canakkale, Turkey

[5] Department of Cardiology, Trakya University, Edirne, Turkey

[6] Department of Cardiology, Recep Tayyip Erdogan University, Rize, Turkey

[7] Department of Biostatistics and Medical Informatics, Suleyman Demirel University, Isparta, Turkey

ABSTRACT

Introduction: Emergency cardiac consultation is a very big part of cardiology practice and there is not any trial evaluating this subject qualitatively and quantitatively with different perspectives yet. We wanted to investigate this process in terms of correlation between emergency physicians and cardiologists.

Methods: Patients who are consulted in a cross-sectional and prospectively 5 different public hospitals were included in the study. In order to examine the nature and intensity of the cardiology consultations and also the diagnostic compatibility, electrocardiography (ECG) and to investigate the adequacy of the first medical treatment were chi-square and correlation analyzes. A P value <0.05 was accepted as a statistical significance limit.

Results: Totally 627 patients (502 patients by practitioners and 125 patients by emergency medicine specialists) were consulted to cardiology. The most common admission cause was chest pain (%47.8), and the most common cause of consultation was having no/weak idea about patient's clinical diagnosis (%39.9). The diagnosis consistency of 48% of consulted patients by EMS was excellent while it was 32.1% in practitioners (p=0.001). Good and excellent ECG interpretation of EMS was 72.8% and it was 50.7% in practitioners (p<0.001). Good and excellent first medical treatment were 46.4% in EMS while it was 38,4 in practitioners (p=0.05). Nearly half of consultations (48.8%) were considered as definitely unnecessary or unnecessary by cardiologists. There was statistically significant correlation between the necessity of consultation and last decision (r=0.811, p<0.001).

Conclusion: There is a big variability in emergency cardiac consultations from the standpoint of consultation necessity, ECG interpretation, first medical management quality and accurate diagnosis.

Key words: Cardiology, consultation, emergency department, quality

ÖZET

Giriş: Acil kardiyoloji konsültasyonları kardiyoloji pratiğinin büyük bir kısmını teşkil etmektedir. Bu çalışmada acil hekimleri ile kardiyologlar arasındaki uyum ve konsültasyonların özellikleri kalitatif ve kantitatif açıdan araştırılmıştır.

Yöntemler: Kesitsel ve prospektif olarak 5 farklı devlet hastanesinde kardiyolojiye acil servisten konsülte edilen hastalar çalışmaya dahil edildi. Kardiyoloji konsültasyonlarının niteliğini ve yoğunluğunu incelemek ve aynı zamanda tanı uyumluluğu, elektrokardiyografi (EKG) yorumlama ve ilk tıbbi tedavinin yeterliliğini araştırmak amacıyla ki-kare ve korelasyon analizleri yapıldı. İstatistiksel anlamlılık sınırı olarak bir p değeri <0,05 kabul edildi.

Bulgular: Toplam 627 hasta (pratisyenler tarafından 502 hasta ve acil tıp uzmanları tarafından 125 hasta) acil servisten kardiyolojiye danışıldı. Kardiyolojiye danışılan hastalarda acile en sık başvuru şekli göğüs ağrısı (%47,8) iken en sık konsültasyon konsülte eden hekimin hastanın tanısı hakkında kesin bir kanaate sahip olmaması nedeniyle yapılmıştı (%39,9). Acil tıp uzmanları (ATU) tarafından danışılan hastalarda kardiyologlarla tanı uyumluluğu %48 iken bu oran pratisyen hekimlerde %32,1 olarak bulundu (p=0,001). Yeterli ve mükemmel EKG yorumlama ATU'da %72,8 iken pratisyen hekimlerde %50,7 olarak bulundu (p<0,001). İlk medikal müdahalede ATU %46,4 oranında yeterli ve mükemmel olarak değerlendirilirken pratisyen hekimlerin %38,4'ü yeterli ve mükemmel bulundu (p=0,05). Konsültasyonların yarısına yakını (%48,8) kardiyologlar tarafından gereksiz veya çok gereksiz olarak değerlendirildi. Konsültasyon gerekliliği ile hasta hakkında verilen son karar arasında istatistiksel olarak anlamlı bir ilişki bulundu (r=0,811, p<0,001).

Sonuç: Konsültasyon gerekliliği, EKG yorumlama, ilk tıbbi müdahale ve doğru tanı koyma bakımından acil kardiyoloji konsültasyonlarında ciddi farklılıklar tespit edildi.

Anahtar Kelimeler: Acil servis, kardiyoloji, kalite, konsültasyon

Corresponding author: Gökay Taylan, Department of Cardiology, Trakya University, Edirne, Turkey
E-mail: taylan1091@hotmail.com
Eskisehir Med. J. 2022; 3(3):283-291.
Received date:02.04.2022 Accepted date:16.09.2022
Authors: Fatih Kahraman (ORCID: 0000-0003-3860-2755), Tülay Oskay (ORCID: 0000-0003-2801-7819), Serdar Güler (ORCID: 0000-0002-2346-1884), Taha Gürbüzer (ORCID: 0000-0002-5265-5135), Gökay Taylan (ORCID: 0000-0002-7015-4537), Ahmet Seyda Yılmaz (ORCID: 0000-0003-3864-4023), Hikmet Orhan (ORCID: 0000-0002-8389-1069)

INTRODUCTION

Rapid diagnosis and treatment of disease are vital for precise evaluation in emergency departments (EDs). Consultation, which is defined as "a service type provided by a physician whose opinion or advice regarding evaluation or management of a specific problem is requested by another physician or other appropriate source," is almost always necessary for critical patients (1,2). Emergency physicians (EPs) (including Emergency Medicine Specialists (EMS) and Practitioners) often request a relevant physician's support to manage patients whose symptoms are strongly related to a particular specialty. The absence of cardiologists and other specialists in EDs 24 hours a day and inadequate medical education for practitioners may make the consultation process a heavy burden for the medical community (3). Particularly in recent years, medical education quality has decreased rapidly with the inauguration of many new medical schools and the increased number of medical students. Obligated assignment immediately after medical school has also increased the number of inexperienced medical doctors in EDs. Furthermore, cardiac emergencies are relatively urgent and vital, so patients with cardiac complaints may make EPs more alert and anxious. This anxiety may result in a rise in cardiac consultation redundancy, which could increase prejudice and cause superficial and inattentive evaluation of patients by cardiologists (4).

Only one or two cardiologists typically work in state hospitals in small districts and must be on call 24 hours a day. They evaluate patients frequently throughout the day, even in non-cardiac or non-emergent situations, via phone call or the WhatsApp application. The right of a physician to request consultation provides an advantage for patient health only if used aptly, timely, and appropriately. Although there is no strict rule or objective viewpoint about consultation requirements, clinical knowledge and experience can reduce nonsense consultations (5). Because we know that cardiologists are consulted frequently for various cardiac and non-cardiac problems, we wanted to investigate these consultations between EPs and cardiologists qualitatively and quantitatively in the points of consultation necessity, diagnosis accuracy, and electrocardiogram (ECG) interpretation in this trial.

METHODS

In this cross-sectional, and multicenter trial, 627 consecutive patients consulted to cardiology for any reason from the ED were included in 5 different centers in Turkey. All consulted patients were included in the study and there were no specific exclusion criteria. Patients who required urgent evaluation and intervention were treated by EPs and were consulted to cardiology according to their urgency in cases of need. Consultation reason, time, and interval were decided by the EP. All cardiologists included in this trial had recently finished their cardiology residencies and had begun working as attending physicians in state hospitals in different regions of Turkey. In this study, data about the first 60 days of the physicians' practice was analysed. The study was conducted with the principles stated in the Declaration of Helsinki and approved by the local ethics committee of Kutahya Health Sciences University (14.07.2020 – 2020/11-19).

Data Collection and Interpretation

Consultation data included demographic features of and complaints by the patients, cardiac risk factors, ECG findings, consultation times, initial diagnoses, and pretreatments by the EPs. Data including the diagnosis of cardiologists was also analysed. Cardiologists evaluated the necessity of consultation, accuracy of diagnosis, first medical treatment, and ECG interpretation by the EP, and all data were recorded and interpreted. In addition, the correlation between the final decision about the patient, the consulting time and

interval, and the consultation cause were all recorded. Patients with incomplete or incoherent data were not included in the study. Days were divided into three equal intervals from 8 a.m. to 4 p.m., from 4 p.m. to 12:00 a.m., and from 12:00 a.m. to 8 a.m., with only the first interval within the hours of regular work day. The patient's complaint, the cause of consultation, diagnosis accordance, and consultation necessity in these different intervals were recorded and interpreted separately.

Categorization of Data

The most important investigations of this trial were on the consistency of ECG interpretations, diagnoses, and treatments between EPs and cardiologists as well as the intensity and quality of emergency cardiac consultations. Every consultation was evaluated and graded separately by a collaborating cardiologist. ECG interpretations and diagnoses by EPs were graded between 1 and 5 points corresponding to very bad, bad, moderate, good, and excellent. The first medical therapy ordered by the EP according to diagnosis was also graded as very bad, insufficient, sufficient, good, or excellent. The consultation quality and necessity of consultation were evaluated by the collaborating cardiologist and graded from 1 to 4 points corresponding to definitely unnecessary, unnecessary, necessary, or definitely necessary, according to its emergency. All consultation data was interpreted for EMSs and practitioners separately and analyzed for any difference between these two groups. The correlations between consultation necessity and last decision, consulting physician and necessity of consultation, and diagnosis correlation and ECG interpretation were all analyzed separately. All classification processes were done carefully to guide future consultation concepts and did not affect the evaluation process.

Statistical Analysis

SPSS version 20.0 (SPSS Inc., Chicago, IL, USA) for Windows was used for statistical analysis of the trial. Descriptive statistics and frequency tables were used in the basic statistical analysis. The continuous data were presented as mean ± standard deviation (SD), and categorical data were presented as percentiles. The chi-square test was used to determine the statistical differences between two or more groups. The variables were investigated using visual (histograms, probability plots) and analytical (Kolmogorov-Smirnov/Shapiro-Wilk's test) methods to determine whether they were normally distributed. Correlation coefficients and significance were calculated using the Pearson test for parametric variables and the Spearman test for nonparametric variables. A p-value of less than 0.05 was considered a statistically significant result.

Table 1. Baseline characteristics of patients and consultation process

Variables		n (%)
Consulting physician	EMS	125 (19.9)
	Practitioner	502 (80.1)
Gender	Male	335 (53.4)
Age	≥75	183 (29.2)
	<75	444 (70.8)
DM		168 (26.8)
HT		365 (58.2)
Smoking		179 (28.5)
HL		32 (5.1)
Prior Heart Disease		209 (33.3)
Chief complaint	Chest pain	300 (47.8)
	Dyspnea	107 (17.1)
	Palpitation	83 (13.2)
	Syncope/presyncope	57 (9.1)
	Other	80 (12.8)
Consultation within	1 hour	286 (45.6)
	1-5 hour	334 (53.2)
	>5 hour	7 (1.2)
Time interval (hour)	8-16	288 (45.9)
	16-24	253 (40.4)
	24-08	86 (13.7)

Abb. EMS; Emergency Medicine Specialist, DM; Diabetes mellitus, HT; Hypertension, HL; Hyperlipidemia

RESULTS

In this trial, 627 patients consulted from EDs to cardiology in five different hospitals were evaluated. The population of the medical care area and on-call days per month for each physician were different from each other in each region. The mean age was 63.8 years (%29 patients > 75 years old) and 53.4% of patients were male. Demographic characteristics of the patients are summarized in Table 1.

The most common admission cause of patients was chest pain (47.8%) and the most common cause of consultation was having no/minimal idea about the patient's clinical diagnosis and need for a cardiologist's opinion (40.2%), and the second most common cause was feeling uneasy about the patient (36.5%). The most common causes of consultations are summarized in Table 2.

Table 2. The most common causes of consultation

Cause of consultation	n (%)
Precise diagnosis	115 (18.3)
No/weak idea about the patient	252 (40.2)
Feeling uneasy about the patient	229 (36.5)
High troponin level	31 (4.9)

Between 12:00 and 8:00 a.m., 33 (38.4%) of the patients were discharged and 53 (61.6%) were either hospitalized or transferred to a tertiary center. Only 4 of 20 (20%) patients who were consulted by an EMS were discharged in this interval, and 29 of 66 (43.9%) consulted by practitioners were discharged after evaluation by cardiologists ($p < 0.027$). More than half of the patients were discharged within the first hour (53.8%), while 20.3% of all consulted patients were hospitalized and 25.9% were sent to a tertiary center for various reasons (need for acute intervention, the lack of empty beds in the hospital, complicated patient, etc.).

The correlations between EMSs and practitioners regarding consultation cause, diagnosis accuracy, ECG interpretation, consultation necessity, and last decision are shown in Table 3. While nearly half (47.2%) of the consulted patients by EMSs within the first hour were transferred to a tertiary center for urgent invasive procedures, only 22.8% of patients consulted by practitioners were transferred ($p < 0.01$). Moreover, 58% of consultations by practitioners within the first hour were discharged quickly.

While the diagnosis consistency of nearly half (48%) of consulted patients by EMSs was excellent, it was only 32.1% for practitioners; the proportion of bad and very bad diagnoses by EMSs was 35.2%, and it was 46.4% for practitioners ($p = 0.013$). Good and excellent ECG interpretation by EMSs was 72.8%, while it was 50.7% by practitioners; bad and very bad ECG interpretation was 12% by EMSs and 34.8% by practitioners ($p <0.001$). There was a statistically significant positive correlation ($r = 0.424$, $p < 0.001$) between the true diagnosis and ECG interpretation. The proportion of patients who were consulted with both excellent diagnosis and ECG interpretation was similar for practitioners and EMSs ($p = .109$). Very well-interpreted ECG with an excellent diagnosis occurred for 48/73 (65.8%) patients in the EMS group and 91/159 (57.2%) patients in the practitioner group.

One of the most important issues was accurate and sufficient emergency treatment; the proportion of good and excellent first medical treatment was 46.4% in EMS and 38.4% in practitioners ($p = 0.05$). The necessity of consultation was also evaluated and nearly half (48.8%) of all consultations were considered definitely unnecessary or unnecessary by consultant cardiologists. While 98.5% of definitely unnecessary consulted patients were discharged directly from the ED, 97.9% of necessary consulted patients were either hospitalized or referred to tertiary hospitals. We found 90% statistically significant correlation between necessity of consultation and last decision ($r = 0.811$, $p <0.001$). The necessity of consultation according to the consulting emergency physician was shown in Figure 1.

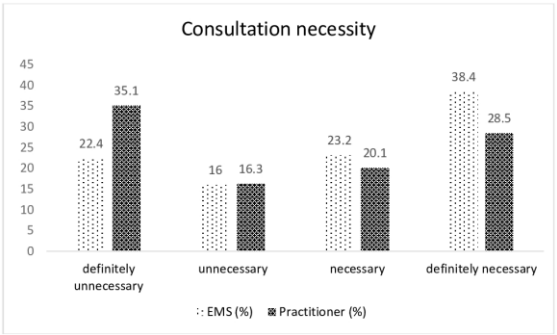

Figure 1. Consultation necessity according to consulting physician (data are shown in percentages)

The EPs consulted 115 patients (18.3%) after precise diagnosis, and 13% of these patients were discharged by cardiologists. The number of patients consulted because of the practitioner feeling uneasy or having no/minimal idea about the patient's diagnosis was significantly higher than for EMSs (83.8% vs 50.4%, p <0.001, Figure 2).

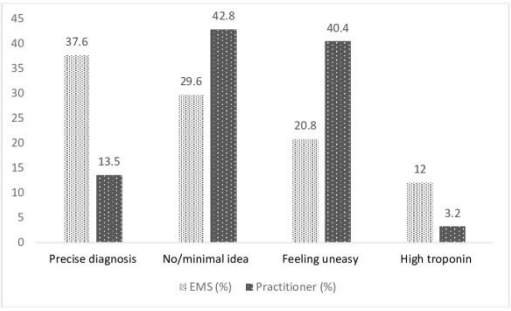

Figure 2. The causes of concultations according to physicians (data are shown in percentages)

More than one third (42%) of patients consulted to the cardiologist with the symptom of chest pain, which is the most common cause of admission, were evaluated as non-cardiac or non-emergent by the consultant and interpreted as definitely unnecessary or unnecessary consultation.

DISCUSSION

The current trial was specifically designed to assess the quality and quantity of emergency cardiac consultations. It is the first trial investigating the consistency between EPs and cardiologists from the standpoint of ECG interpretation, diagnosis, and first contact medication, with the consultations divided into three different time frames (8:00 a.m.–4:00 p.m., 4:00 p.m.–12:00 a.m., and 12:00 a.m.–8:00 a.m.), the latter two of which may prolong the consultant physician's first arrival to the patient because they are out of the hours of regular work day. This trial also has important implications for understanding the intensity of cardiologists' work and the importance of medical school education and emergency residency training.

In our study, we questioned the differences and similarities between EMSs and practitioners during the consultation process. We found statistically significant differences in ECG interpretation, diagnosis accuracy, consultation necessity, and first medical management. This is the first trial that has investigated the difference between these two physician groups, although several previous studies have clarified the emergency consultation process (6-9). As a matter of course, EMSs are well-trained physicians who both manage patients and serve as mentors to the practitioners. Thus, this trial showed the importance of emergency residency education after medical school by showing the significant decrease in unnecessary consultations and more accurate diagnosis and ECG interpretation.

Another novelty of our study was grading the questioned parameters such as ECG interpretation, diagnosis accuracy, and the quality of first medical management as very bad, insufficient, sufficient, good, or excellent, and the consultation necessity as definitely unnecessary, unnecessary, necessary, and definitely necessary. As expected, insufficient ECG interpretations, first medical managements, and accurate diagnoses were high in number, and nearly half of the consultations were considered to be definitely unnecessary or unnecessary by cardiologists. Moreover, nearly all definitely unnecessary consulted patients (98.5%) were quickly discharged from the ED after cardiologic evaluation. Our main aim was to

Table 3. Consultation cause, accurate diagnosis, ECG interpretation, consultation necessity and last decision correlation between EMS and practitioners

Variables		EMS n (%)	Practitioner n (%)	p value
Cause of consultation	Precise diagnosis	47 (37.6)	68 (13.5)	<0.001
	No/minimal idea	37 (29.6)	215 (42.8)	0.001
	Feeling uneasy	26 (20.8)	203 (40.4)	0.001
	High troponin level	15 (12)	16 (3.2)	0.003
Diagnosis consistency	Very bad	18 (14.4)	73 (14.5)	0.484
	Bad	26 (20.8)	160 (31.9)	0.004
	Moderate	7 (14.3)	42 (8.4)	0.124
	Good	14 (11.2)	66 (13.1)	0.723
	Excellent	60 (48)	161 (32.1)	0.001
ECG interpretation	Very bad	3 (2.4)	55 (11)	<0.001
	Bad	12 (9.6)	119 (23.8)	<0.001
	Moderate	19 (15.2)	72 (14.4)	0.595
	Good	18 (14.4)	94 (18.8)	0.884
	Excellent	73 (58.4)	159 (31.9)	<0.001
Consultation necessity	Definitely unnecessary	28 (22.4)	176 (35.1)	0.002
	Unnecessary	20 (16)	82 (16.3)	0.465
	Necessary	29 (23.2)	101 (20.1)	0.233
	Definitely necessary	48 (38.4)	143 (28.5)	0.019
Last decision	Discharge	44 (35.2)	295 (58.8)	<0.001
	Hospitalization	57 (45.6)	105 (20.9)	<0.001
	Transfer	24 (19.2)	102 (20.3)	0.634

Abb. EMS: Emergency Medicine Specialist, ECG: electrocardiography

investigate both the sufficiency of emergency evaluation of patients and the necessity of cardiac consultations by grading these parameters. In a qualitative analysis and review, Kessler et al. evaluated the consultation process to define a framework that could improve communication between departments and patient outcomes (6). Our analysis also aimed to improve this perspective, which would allow us to improve the communication between the consulting and consulted physicians.

ECG evaluation of patients presenting to EDs with various complaints like chest pain and syncope relating to the cardiovascular system should be performed accurately and rapidly (10). Eken et al. investigated the consistency of ECG interpretation and chest pain classification between EPs and cardiologists (9). They found a strong consistency, especially in determining the ST segment elevation (94.6%, kappa = 0.85), which is the most important clinical scenario and should never be overlooked. In another study conducted by Corey et al., early consultation with a cardiologist in an ED reduced rehospitalization and health care costs for low-socioeconomic urban patients (7). Madsen et al. questioned decreasing unnecessary provocative testing in patients with chest pain admitted to ED observation unit by consulting to a cardiologist (11). In this observational study conducted with 1190 patients with chest pain, mandatory cardiology consultation significantly decreased the rates of provocative testing. This reduction was particularly notable among low-risk chest pain patients. These three trials may show the benefit of mandatory and early cardiology consultations and consulting all patients may be better. However, these trials questioned only one clinical scenario, and parameters differed from reality.

There are some difficulties in the practicability of these procedures. First, in Turkey, there are one or two cardiologists in each state hospital and they are on call nearly every day and responsible for all consulted patients 24 hours a day. Second, EDs are very busy

Table 4. ECG interpretation and diagnosis accuracy difference between EMS and practitoners

Variables			Consulting physician		Total	P
			EMS	Practitioner		
Diagnosis consistency	Very bad	n	18_a	73_a	91	0.013
		%	14.4%	14.5%	14.5%	
	Bad	n	26_a	160_b	186	
		%	20.8%	31.9%	29.7%	
	Moderate	n	7_a	42_a	49	
		%	5.6%	8.4%	7.8%	
	Good	n	14_a	66_a	80	
		%	11.2%	13.1%	12.8%	
	Excellent	n	60_a	161_b	221	
		%	48.0%	32.1%	35.2%	
ECG interpretation	Very bad	n	3_a	55_b	58	<0.001
		%	2.4%	11.0%	9.3%	
	Bad	n	12_a	119_b	131	
		%	9.6%	23.8%	21.0%	
	Moderate	n	19_a	72_a	91	
		%	15.2%	14.4%	14.6%	
	Good	n	18_a	94_a	112	
		%	14.4%	18.8%	17.9%	
	Excellent	n	73_a	159_b	232	
		%	58.4%	31.9%	37.2%	

Abb. EMS; Emergency Medicine Specialist, ECG; electrocardiography, a and b; Each subscript letter denotes a subset of consulting physician categories whose column proportions do not differ significantly from each other at the 0.05 level.

units that may see many more cardiac patients than in more developed countries. These two factors lead to exhausting working shifts, which may quickly consume the physician's energy. Third, insufficient medical education and malpractice issues make the practitioners unsettled and drive them to the consultation process easily. Our trial also supports this reality, in which 48.8% of consultations were evaluated by cardiologists as definitely unnecessary or unnecessary. Furthermore, ECG interpretation by practitioners was not accepted as sufficient. Good and excellent ECG interpretation by practitioners was only 50.7%.Another novelty of our trial was dividing the day into three different intervals. Consultation numbers at different times play an important role in analyzing the results because most cardiologists work the following day after an on-call night. So, consultations between 12:00 and 8:00 a.m. quickly disrupt sleep quality and may decrease the quality of outpatient clinic services the following day. Oktay et al. mentioned the importance of this subject in their study. They proposed further studies to obtain more detailed information on the reasons for visits with respect to the time of visits in EDs (12). However, no study has yet compared the time intervals of ED visits. Furthermore, to our knowledge, there has not previously been a study investigating the sleep quality of cardiologists during on-call days. Our findings support this undocumented problem because one of every three consulted patients was discharged quickly after careful cardiac evaluation.

Our primary aim in this trial was to obtain a snapshot of the quality of ED cardiology consultations. The second aim was to compare the concordance of cardiologists with EMSs and practitioners separately. The third aim was to investigate the quality of first medical management, ECG interpretation, and diagnosis accuracy in EDs. For this reason, we did not record the last diagnosis of patients or the results of transferred, hospitalized, or discharged patients in detail. This trial is the first to highlight the ED cardiology consultation process in a different manner by grading the quality of questions by cardiologists. Even though grading the quality of the consultation process was done by cardiologists alone and Foldes et al. found that the appropriateness of ED visits may differ greatly between physicians (e.g., internal medicine and ED physicians) which may provide evidence that consultation interpretation may differ between ED physicians and cardiologists, our findings provide the perspective of the cardiologists on the intensive consultation process (13). We hope it may help to improve communication between these two specialties.

In addition, increasing number of cardiovascular diseases all over the world and increasing number of consultations as a result of increasing defensive medicine practices/lack of professional experience cause a high workload of cardiologists. In this respect, it should be ensured that the cardiology subjects included in the National Core Training Program are fully familiar with each new graduate medical school student while doing their cardiology internship and the number of clinic medicine practices should be increased.

Study Limitations

Although this is a unique descriptive study highlighting the ED cardiology consultation process, it has several limitations. First, the study was conducted in only five secondary state hospitals, none of which has a catheterization laboratory. By increasing the center number and adding interventional clinics to the study, we can acquire more detailed and objective findings about healthcare in Turkey. Second, we did not follow the patients after the last decision of cardiologists, so we do not know the endpoints of patients who were discharged, hospitalized, or transferred to another center. Third, we evaluated the EPs' decisions and diagnoses only according to the cardiologists' comments. No objective tool other than the consulted physician was used to estimate the precise outcome. Considering these limitations, the results of this study should be interpreted carefully.

CONCLUSION

Consultation is an interdisciplinary issue that demonstrates the interdependence between each department. Though there is no strict rule regarding the boundaries of consultation, every department and hospital should establish a protocol to minimize the problems encountered in this issue (14,15). Adequate and high-quality medical education and emergency residency training are the cornerstones of improving the quality and efficiency of the consultation process. Efficient communication between EPs and other departments and continuous medical education are also important.

Informed Consent: The patients provided written consent in the study.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: None

REFERENCES

1. Segen JC. The dictionary of modern medicine. CRC Press; 1992.
2. Çanakçı ME, Çetin M, Turgay Yıldırım Ö, Aydin MO, Altuntaş G, Acar N. Assessment of Electrocardiography Knowledge Among Doctors Working in Emergency Department. Eskisehir Medical Journal. 2021; 2(2): 103-110.

3. Ayyıldız FA, Başpınar İ, Ayyıldız A, Katırcı Y. Satisfaction Levels of Patients Who Were Followed In Emergency Department And Evaluation Of The Factors That Impact The Outcome. Eskisehir Medical Journal. 2021; 2(1): 1-5.

4. Zeytin AT, Kaya Ş, Kaplan D, Zeytin AM, Kaya F. An evaluation for the anxiety and depression levels of emergency medicine professionals. Eskisehir Medical Journal. 2021; 2(2): 118-23.

5. Yıldız G, Çanakçı ME, Turgay Yıldırım Ö, Ayyıldız F A, Acar N. Analysis of Complaints and Processes of Patients Consulted from Emergency Service to Cardiology Department. Eskisehir Medical Journal. 2021; 2(1): 6-10.

6. Kessler C, Kutka BM, Badillo C. Consultation in the emergency department: A qualitative analysis and review. Journal of Emergency Medicine. 2012;42(6):704-11.

7. Corey ET, Coplan MJ, Spencer K, et al. Cardiology Consultation in the Emergency Department Reduces Re-hospitalizations for Low-Socioeconomic Patients with Acute Decompensated Heart Failure. Am J Med. 2017;130(9)(1112):17-31.

8. Ozcete E, Kacmaz O, Damar O, Ustundag M, Orak M, Guloglu C. Evaluation of Consultations Requested from Patients Admitted to the Emergency Department. Eurasian Journal of Emergency Medicine. 2015;14(3):113-7.

9. Eken O, Goksu E, Eray O, Yalcinkaya S. The consistency of emergency physicians' and cardiologists' ECG interpretation and likelihood classification of chest pain patients. International Journal of Clinical Practice. 2006;60(10):1194-7.

10. Ginde AA, Char DM. Emergency medicine residency training in electrocardiogram interpretation. Academic Emergency Medicine. 2003;10(7):738-42.

11. Madsen T, Smyres C, Wood T, et al. Cardiology consultation reduces provocative testing rates in an ED observation unit. American Journal of Emergency Medicine. 2017;35(1):25-8.

12. Oktay C, Cete Y, Eray O, Pekdemir M, Gunerli A. Appropriateness of Emergency Department Visits in a Turkish University Hospital. Croatian Medical Journal. 2003;44(5):585-91.

13. Foldes SS, Fischer LR, Kaminsky K. What Is an Emergency? The Judgments of Two Physicians. Annals of Emergency Medicine. Published online 1994. doi:10.1016/S0196-0644(94)70322-1

14. LaCoursiere DY, Nager CW. A comparison of two models of gynecology service consultation to the emergency department in an academic medical center. American Journal of Obstetrics and Gynecology. 2003;188(5):1166-8.

15. Vissers MC, Hasman A, Linden CJ. Consultation behaviour of residents supported with a protocol processing system (ProtoVIEW) at the emergency ward. International Journal of Bio-Medical Computing. 1995;38(2):181-7.

Cite as: Kahraman F, Oskay T, Guler S, et al. Evaluation of Cardiology Consultation Quality and Quantity Requested from Emergency Departments in Turkey. Eskisehir Med J. 2022;3(3):283-291.