

## The Effect of Consultation Training in the Emergency Department on Consultation Process and Patient Results

### Acil Serviste İletişim Eğitiminin Konsültasyon Süreci ve Hasta Sonuçlarına Etkisi

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#### ABSTRACT

**Objective:** The many authors claim that poor communication may lead to bad consultations and patient results, but there is not enough evidence to support this argument. In this study, the aim was to determine whether consultation training makes a difference in the consultation process and patient outcomes.

**Method:** This prospective, pre-/post-training study was conducted from June 1, 2019 to August 12, 2019 in an adult emergency department (ED). A feedback form with 9 questions related to the communication styles of emergency physicians (EPs) and their consultation processes was filled out by consultants. ED and hospital length of stay, in-hospital mortality, and additional requests were also noted. The validated 5Cs consultation model was used for training.

**Results:** In the study, 724 of 1,295 eligible consultations (55.9%) were evaluated by consultants. The median scores of 7 questions related to the consultation processes and communication styles of the EPs increased after training, while there was no difference in patient outcomes or additional requests. In subgroup analyses, the median score of only 1 question increased in the internal consultations after training, while increases were noted for scores on 6 questions relating to surgical consultations. Similarly, there was no significant difference related to patients' outcomes and additional requests in these subgroup analyses.

**Conclusion:** Consultation training had positive effects on the consultation processes and communication styles of the EPs. However, there was no difference in patient outcomes. Nevertheless, we believe that there should be communication skills training in countries that don't already have this in place.

**Keywords:** Consultation, postgraduate, training, emergency medicine, residency

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#### ÖZET

**Amaç:** Birçok yazar, zayıf iletişimin kötü konsültasyon ve hasta sonuçlarına neden olduğunu iddia etmektedir. Fakat bu argümanı destekleyecek yeterli kanıt bulunmamaktadır. Bu çalışmada, konsültasyon eğitiminin konsültasyon süreci ve hasta sonuçlarına etki etmediğini belirlemek amaçlandı.

**Yöntem:** Bu ileriye dönük, eğitim öncesi/sonrası çalışma 1 Haziran 2019 ile 12 Ağustos 2019 tarihleri arasında yetişkin bir acil serviste gerçekleştirildi. Acil hekimlerinin iletişim tarzları ve konsültasyon süreçleri ile ilgili 9 sorudan oluşan bir geri bildirim formu konsültan hekimler tarafından dolduruldu. Acil servis ve hastane kalış süresi, hastane içi mortalite ve ek talepler ayrıca not edildi. Eğitim için valide edilmiş 5Cs konsültasyon modeli kullanıldı.

**Bulgular:** Çalışmada, 1.295 konsültasyonun 724'ü (%55,9) konsültan hekimler tarafından dolduruldu. Acil hekimlerinin iletişim tarzları ve konsültasyon süreçleri ile ilgili 7 sorunun medyan puanları eğitim sonrasında artarken, hasta sonlanımlarında veya ek taleplerde farklılık görülmedi. Alt grup analizlerinde, eğitim sonrası dahili tıp konsültasyonlarında sadece 1 sorunun medyan puanı artarken, cerrahi tıp konsültasyonlarla ilgili 6 sorudaki puanlarda artış kaydedildi. Benzer şekilde, alt grup analizlerinde de hasta sonlanımları ve ek talepler açısından önemli bir fark yoktu.

**Sonuç:** Konsültasyon eğitiminin, acil hekimlerinin iletişim tarzları ve konsültasyon süreçleri üzerinde olumlu etkileri oldu. Ancak hasta sonuçlarında bir fark yoktu. Yine de, bu eğitimin halihazırda iletişim becerileri eğitimi sağlamayan ülkelerde verilmesi gerektiğine inanıyoruz.

**Anahtar Sözcükler:** Konsültasyon, acil tıp, iletişim eğitimi

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## INTRODUCTION

During emergency department (ED) shifts, the time emergency medicine (EM) physicians spend with a laryngoscope is less than the time they spend on phone consultations. Nevertheless, they devote much less time to developing their communication skills than they do to developing their laryngoscope skills (1). Communication is one of the basic elements of health care. The lack of standardization in expression results in non-effective communication, which may hinder a healthy consultation process, especially in the ED. Moreover, poor communication can lead to medical errors and treatment delays (2-4).

Consultation is required in the treatment of 20% to 40% of all ED patients (5). That means that every EM physician devotes a certain portion of each ED shift to communicating with the consulting physician in practice. Although interpersonal and communication skills are core competencies in the medical education systems of developed countries, Turkey's Core Curriculum of Emergency Medicine Education (Version 2.1, published in 2016) does not include a module on communication (6, 7).

In the literature, different consultation training models are defined; the most studied one is the 5Cs model (6, 8-11). Although few studies have shown an increase in the global rating scores of consulting physicians after consultation training, there are no data regarding the effect of this training for emergency physicians in real clinical settings.

In addition, there has been no study to evaluate the communication styles of emergency physicians, the consultation process, and patient outcomes in a detailed manner in relation to consultation training.

In this study, consultant physicians were asked to evaluate and score the ED phone consultation process performed by emergency physicians before and after the 5Cs consultation model training. The first aim was to determine whether consultation training made a difference in the evaluations and scores. A second aim was to determine whether there were any changes in the lengths of stay, the last status of the patients, and the additional requests of consultants from the ED physicians relating to laboratory work and imaging as examples.

## METHODS

*Study Design*

This prospective, pre-post training study was conducted from June 1, 2019 to August 12, 2019 in an adult tertiary care ED in Turkey. The first 30 days were the pre-training period and the remaining 42 days were the post-training period (Figure 1). Gazi University Ethics Commission approved the study (14/05/2019-05).

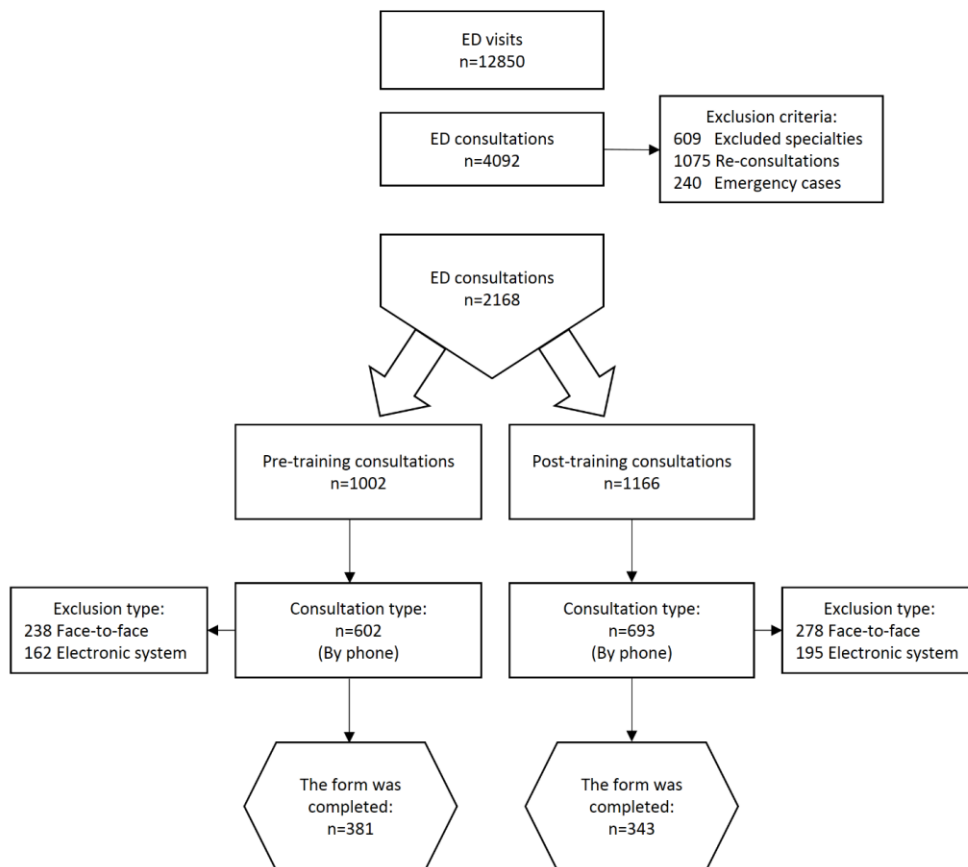


Figure 1. Flow Chart of the Study

### Study Setting and Population

The academic ED where the study was conducted was established in 2001 with 33 patient beds. In 2019 the number of ED visits was 76,900. This department has 21 residents. A feedback form with 9 questions involving a 5-point Likert scale was developed to learn the opinions of the consultant resident physicians (Appendix 1). Four questions were related to the communication style of each emergency physician, while four other questions were related to the consultation process. The final question was related to the workload of the consultant. Nine questions regarding the consultation process and postgraduate year (PGY) of the consultant physician were answered by the consultants. This form also queried physicians as to each patient's age and gender as well as which department was consulted, the time of the requested consultation, the time of patient evaluation by the consultant, the reason for the consultation, and the type of consultation. The demographics were filled out by EM physicians who requested the consultation. In the study, an identifier number was given to each EM physician before the study to determine PGY. The time of the requested consultation and the time of patient evaluation by the consultant were used to identify the length of consultation from the first call to evaluation of the patient by the consultant. Additional imaging, consultation, and laboratory requests by the consultants were determined from the consultation notes recorded electronically in the hospital's system. ED and hospital lengths of stay were calculated from the hospital's electronic system but this data couldn't be reached for patients with simple ED complaints because the discharge time doesn't exist (only patients taking parenteral medication, receiving interventions, or who are admitted have a discharge time). Patients' final status reports and in-hospital mortality were also noted from the hospital records.

Before starting the study, all the residents in the hospital were informed about voluntarily filling out the feedback form after the consultation request in the ED. None of the resident physicians were informed about the training. In addition, these forms were protected by a closed envelope in order to avoid influencing the opinions of the consultant physicians. For this purpose, each consultant was given one form and a self-adhesive envelope for each patient. Thus, the forms were opened and examined only by the researchers.

### Intervention

A standardized and validated ED consultation model, the 5Cs of Consultation, was used for both theoretical and practical training of the EM residents after the pre-training period. In the theoretical training, an academic staff member made a presentation and gave information regarding the 5Cs consultation model and its components (Appendix 2). At the end of the presentation, all EM residents were given a 12-item checklist (6) prepared according to the 5Cs model (Appendix 2 – slide 16) and were asked to score three simulated consultation phone calls performed by two senior residents who were also researchers on the study (Appendix 2 – slide 17, 18, 19). All interviews were discussed and deficiencies were examined after each simulated phone call.

After the three simulation calls were completed, each resident was given one different case file and asked to request a consultation with one of their peers. The cases were determined in accordance with the PGY of each resident. During this period, two different study researchers checked each resident's consultation according to the aforementioned 12-item checklist.

For the first researcher, a median of 11 items (interquartile ranges [IQR] 10-12) were made by all residents and a median of 11 items (IQR 9-12) were made for the second researcher.

In the post-training period, the consultants who were unaware of the consultation training were asked to assess the consultation process by the same forms (consecutively) as before training.

The clinics of ear-nose-throat, gynecology and obstetrics, radiology, anesthesiology, and ophthalmology were excluded from the study because they don't evaluate patients in the emergency department. Re-consultations from the same specialty were excluded from the study for the same patient at the same ED visit. Emergent cases, such as those involving acute myocardial infarction, multiple traumas, hemodynamic instability, or the need for resuscitation were also excluded. In addition, residents who were researchers didn't ask to fill out forms from the consultants in the study.

One month after consultation training, emergency physicians were asked two questions: These were, "Did you use the training model (5Cs) provided when requesting consultation?" and "Do you think the 5Cs consultation model is useful?" Their responses were noted on the basis of a 5-point Likert scale (Strongly disagree to Strongly agree).

### Data Analysis

Statistical analyses were performed using IBM SPSS Statistics for Windows, Version 21 (Armonk, NY: IBM Corp.) and MedCalc® Version 15.8 (MedCalc Software bvba, Ostend, Belgium). Continuous variables were presented as median values and interquartile ranges (IQRs). Categorical variables were summarized as frequencies and percentages. The differences between 2 groups of continuous variables not conforming to the normal distribution were determined by the Mann-Whitney U test. Categorical variables were compared using Pearson's  $\chi^2$  or Fisher's exact test. Odds ratios (ORs) were presented with 95% confidence intervals (95% CI). A critical  $\alpha$  value of .05 was accepted as statistically significant.

## RESULTS

During the study period, 724 of 1,295 eligible consultation forms (55.9%) were filled out by the consultants. A total of 381 forms were completed in the pre-training period and 343 were completed in the post-training period. The rates of male gender, surgical consultations, and procedure/surgery as a reason for consultation were higher in the post-training period compared to those of the pre-training period ( $p < 0.05$  [Table 1]). The lengths of consultations and the PGY of consultants were lower in the post-training period than those of pre-training period ( $p < 0.05$ ). The scores for all questions (Q) except Q1 (tone of voice and kindness) and Q3 (self-confidence) increased statistically after training ( $p < 0.05$ ). There were no differences in the other analyses.

When a subgroup analysis was carried out for internal medical sciences, 385 consultations remained with 217 from pre-training and 168 from post-training groups (Table 2). There was no difference regarding the PGY of consulting and consultant physicians. The length of consultation decreased after training ( $p = 0.013$ ). Only the score of Q2 (length and content of the presentation) increased in the post-training group compared to that of pre-training group ( $p = 0.023$ ). Other analyses were also similar.

**Table 1.** Comparison of pre- and post-training consultations in the ED

	Total	Pre-training n=381	Post-training n=343	P
Male gender, n (%)	428 (59.1%)	207 (54.3%)	221 (64.4%)	0.006
Age, median (IQR)	55 (37-71)	56 (37-71)	55 (37-71)	0.726
The length of consultation, median min (IQR)	30 (15-60)	30 (15-60)	30 (10-60)	0.013
PGY of consulting physician, median (IQR)	2 (1-2)	2 (1-2)	2 (1-2)	0.096
PGY of consultant physician, median (IQR)	2 (1-3)	2 (1-3)	2 (1-3)	0.005
Departments, n (%)				
• Internal	385 (53.2%)	217 (57%)	168 (49%)	0.032
• Surgical	339 (46.8%)	164 (43%)	175 (51%)	
The reason for consultation, n (%)				
• Admission	306 (42.3%)	161 (42.3%)	145 (42.3%)	0.996
• Diagnosis/treatment	263 (36.3%)	150 (39.4%)	113 (32.9%)	0.076
• Procedure/surgery	155 (21.4%)	70 (18.4%)	85 (24.8%)	0.036
Questions				
• Q1	5 (4-5)	5 (4-5)	5 (4-5)	0.979
• Q2	5 (4-5)	5 (4-5)	5 (4-5)	<0.001
• Q3	5 (4-5)	5 (4-5)	5 (4-5)	0.060
• Q4	5 (4-5)	5 (4-5)	5 (4-5)	0.029
• Q5	3 (2-4)	3 (2-4)	3 (2-4)	<0.001
• Q6	4 (3-5)	4 (3-5)	5 (4-5)	0.006
• Q7	4.5 (4-5)	4 (3-5)	5 (4-5)	<0.001
• Q8	4 (3-5)	4 (3-5)	5 (4-5)	<0.001
• Q9	4 (3-5)	4 (3-5)	4 (3-5)	0.026
Additional imaging request, n (%)	129 (17.8%)	70 (18.4%)	59 (17.2%)	0.681
Additional consultation request, n (%)	124 (17.1%)	69 (18.1%)	55 (16%)	0.459
Additional laboratory request, n (%)	166 (22.9%)	89 (23.4%)	77 (22.4%)	0.771
ED length of stay, median hour (IQR)*	13 (4-27)	12 (3-26)	13 (5-30)	0.220
Hospital length of stay, median day (IQR)*	3 (1-10)	3 (1-11)	3 (1-10)	0.709
Final status, n (%)				
• Died in the ED	12 (1.7%)	6 (1.6%)	6 (1.7%)	0.854
• Discharged	405 (55.9%)	203 (53.3%)	202 (58.9%)	0.129
• Admitted	307 (42.4%)	172 (45.1%)	135 (39.4%)	0.116
In-hospital mortality, n (%)	73 (10.1%)	43 (11.3%)	30 (8.7%)	0.257

\*Emergency department (ED) and hospital lengths of stay were analyzed in 498 patients.

PGY: Post-graduate year.

For surgical medical sciences, 339 consultations were analyzed: 164 for pre-training and 175 for post-training (Table 3). The PGY of consultant physicians was lower in the post-training group than that of the pre-training group ( $p=0.015$ ).

All questions except Q1 (tone of voice and kindness), Q4 (medical knowledge), and Q9 (workload of consultant) increased after training ( $p<0.05$ ). Interestingly, the median hospital length of stay also increased after consultation training ( $p=0.034$ ). Although the rate of in-hospital mortality decreased after training, it wasn't statistically significant.

**Table 2.** Comparison of pre- and post-training groups for internal medical sciences

	Pre-training n=217	Post-training n=168	P
Male gender, n (%)	114 (52.5%)	96 (57.1%)	0.368
Age, median (IQR)	56 (37-71)	55 (37-71)	0.726
The length of consultation, median min (IQR)	30 (15-60)	30 (10-60)	0.013
PGY of consulting physician, median (IQR)	2 (1-2)	2 (1-2)	0.146
PGY of consultant physician, median (IQR)	2 (1-3)	2 (1-3)	0.453
Questions, median (IQR)			
• Q1	5 (4-5)	5 (4-5)	0.489
• Q2	5 (4-5)	5 (4-5)	0.023
• Q3	5 (4-5)	5 (4-5)	0.610
• Q4	5 (4-5)	5 (4-5)	0.167
• Q5	3 (2-4)	3 (2-4)	0.309
• Q6	4 (3-5)	4 (3-5)	0.518
• Q7	4 (3-5)	4 (3-5)	0.110
• Q8	4 (3-5)	4 (3-5)	0.074
• Q9	3 (3-4)	4 (3-4)	0.276
Additional imaging request, n (%)	50 (23%)	38 (22.6%)	0.922
Additional consultation request, n (%)	50 (23%)	42 (25%)	0.655
Additional laboratory request, n (%)	76 (35%)	68 (40.5%)	0.273
ED length of stay, median hour (IQR)*	12 (3-26)	13 (5-30)	0.220
Hospital length of stay, median day (IQR)*	3 (1-11)	3 (1-10)	0.709
Final status, n (%)			
• Died in the ED	4 (1.8%)	6 (3.6%)	0.343
• Discharged	97 (44.7%)	79 (47%)	0.650
• Admitted	116 (53.5%)	83 (49.4%)	0.430
In-hospital mortality, n (%)	37 (17.1%)	29 (17.3%)	0.957

\*ED and hospital lengths of stay were analyzed in 331 patients.

PGY: Post-graduate year.

**Table 3.** Comparison of pre- and post-training groups for surgical medical science

	Pre-education n=164	Post-education n=175	P
Male gender, n (%)	93 (56.7%)	125 (71.4%)	0.005
Age, median (IQR)	48 (32-65)	41 (31-59)	0.296
Time of consultation, median min (IQR)	30 (15-60)	30 (10-60)	0.076
PGY of consulting physician, median (IQR)	2 (2-2)	2 (2-2)	0.751
PGY of consultant physician, median (IQR)	2 (1-2)	1 (1-2)	0.015
Questions, median (IQR)			
• Q1	5 (4-5)	5 (4-5)	0.543
• Q2	5 (4-5)	5 (4-5)	0.012
• Q3	5 (4-5)	5 (5-5)	0.047
• Q4	5 (4-5)	5 (4-5)	0.183
• Q5	3 (2-4)	3 (3-5)	<0.001
• Q6	4 (3-5)	5 (4-5)	0.002
• Q7	4 (4-5)	5 (4-5)	0.001
• Q8	4 (3-5)	5 (4-5)	<0.001
• Q9	4 (3-5)	4 (3-5)	0.180
Additional imaging request, n (%)	20 (12.2%)	21 (12%)	0.956
Additional consultation request, n (%)	19 (11.6%)	13 (7.4%)	0.191
Additional laboratory request, n (%)	13 (7.9%)	9 (5.1%)	0.298
ED length of stay, median hour (IQR)*	5.5 (2-19)	6 (3-22)	0.430
Hospital length of stay, median day (IQR)*	1 (1-4)	2 (1-8)	0.034
Final status, n (%)			
• Died in the ED	2 (1.2%)	0 (0%)	0.233
• Discharged	106 (64.6%)	123 (70.3%)	0.267
• Admitted	56 (34.1%)	52 (29.7%)	0.381
In-hospital mortality, n (%)	6 (3.7%)	1 (0.6%)	0.060

\*ED and hospital lengths of stay were analyzed in 168 patients.

PGY: Post-graduate year.

The question of, "Did you use the training model (5Cs) provided when requesting consultation?" had a median score of 4 (IQR 3-4.7) for emergency physicians and "Do you think the 5Cs consultation model is useful?" was scored

with a median of 4 (IQR 3-5) on the basis of a 5-point Likert scale (Strongly disagree to Strongly agree).

## DISCUSSION

In this study, it was found that consultation training has a positive effect on consulting physicians' communication and consultation processes however there were no differences in additional requests by consultants and patients' outcomes after training. There are two studies in the literature performed by Kessler et al. regarding the 5Cs consultation model designed as randomized and controlled (6, 8). The first was related to the effectiveness of consultation training for EM residents. The authors reported that the residents trained with the 5Cs model had higher mean global rating scale scores on simulated consultation phone calls (6). In their other study, medical students who received asynchronous or live training had higher scores on the 5Cs checklist and the global rating scale score than those of the control group in real consultations (8). In addition, Carter et al. reported that global rating scale scores of fourth-year students were higher after implementation of the 5Cs model in the curriculum (12).

In our study, 4 of the 9 questions were related to the communication style of the emergency physician. Of these, the median scores of Q2 (length and content of the presentation) and Q4 (medical knowledge) increased after training in all consultations. Also, the median scores of the other four questions related to the consultation process increased after training. In the analysis of all consultations, the rate of surgical consultations was higher in the post-training group. For that reason, a subgroup analysis was performed.

For internal medical sciences, only the median score of Q2 (length and content of the presentation) increased after training. For surgical medical sciences, all questions except Q1 (tone of voice and kindness), and Q4 (medical knowledge) increased after training.

Patients with internal medical problems such as those relating to oncology and geriatrics, as well as patients with multiple comorbidities often presented to our ED. Therefore, the internal medicine residents spend more time in the ED and communicate more with the emergency residents. This may be the reason for the lower difference in the internal consultations.

As the secondary objective of the study, the rates of additional requests by consultants, in-hospital mortality, admissions, and the lengths of stay were found to be similar between the 2 groups in all consultations. When subgroup analyses were performed, these parameters didn't change in the internal consultations. Conversely, the hospital lengths of stay related to surgical consultations increased after the post-training period. The reason for this prolongation may be related that the patients who presented to the ED in the post-training period of this study needed a surgical consultation because of the higher severity of their situation than the patients in the pre-training period. Although many scientists note that poor consultations can result in negative patient outcomes, we didn't find significant differences in this study. Furthermore, there was no difference in the requests of the consultants between the pre- and post-training groups. This can be attributed to the fact that emergency physicians usually communicate with junior consultants during the consultation process; however the admissions or requests were clarified by senior consultants (chief residents or academic staff) in this academic hospital.

## CONCLUSION

Consultation training has a positive effect on consulting physicians' communication and consultation processes and this difference is more pronounced in clinics where communication occurs less frequently, as with the surgical departments included in our study. However, there were no differences in additional requests by consultants and patients' outcomes after training. Studies in different hospital conditions are suggested in terms of determining the impact on patient outcomes. The authors also recommend that consultation training should be included in the core curriculum of programs in countries in which these do not already exist.

## Conflict of interest

No conflict of interest was declared by the authors.

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