

# The Effect of Learning Style Preference, Clerkship Training and Role Model on Specialization Selection

## Öğrenme Stili Tercihi ile Staj Eğitimi ve Rol Modelin Uzmanlık Seçimi Üzerindeki Etkisi

Ali Kagan Coskun<sup>1</sup> (ORCID: 0000-0002-8058-985X)

Zuhal Yapici Coskun<sup>2,3</sup> (ORCID: 0000-0002-9338-4669)

Isil Irem Budakoglu<sup>4</sup> (ORCID: 0000-0003-1517-3169)

<sup>1</sup>University of Health Science Gulhane Medical Faculty, Ankara, TÜRKİYE

<sup>2</sup>Gazi University Institute of Health Sciences, Ankara, TÜRKİYE

<sup>3</sup>Ankara Bilkent City Hospital Obstetrics & Gynecology Clinic, Ankara, TÜRKİYE

<sup>4</sup>Gazi University Faculty of Medicine, Ankara, TÜRKİYE

Corresponding Author: Ali Kagan COSKUN, E-Mail: kagancoskun@gmail.com

### Abstract

**Aim:** The clerkship period in medical schools is an integrated learning experience that is also helpful in choosing a future career. The aim of this study was to evaluate the effect of both general surgery clerkship and awareness of learning styles on specialty preferences of medical students.

#### Keywords:

Medical Education,  
Clerkship Training,  
Specialty Choice,  
Learning Style  
Preference, Role Models

#### Anahtar Sözcükler:

Tıp Eğitimi, Staj  
Eğitimi, Uzmanlık  
Seçimi, Öğrenme Stili  
Tercihi, Rol Modeller

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**Methods:** In this study, which was planned as an educational intervention, a questionnaire questioning specialty preferences and a learning style scale were administered to fourth-year medical students before their general surgery clerkships. Following the questionnaire, brief training was given about specialty branches and learning styles. After the clerkship, the students were asked to answer the questionnaire again about their specialty preferences. Changes between clerkship training, learning style awareness and specialty preferences were evaluated.

**Results:** One hundred eight students participated in the study (M:81, F:27). The mean age was 23.0. The most important factor in choosing a specialty is professional satisfaction (64%) with the work in that specialty. The approach of the trainers in the clerkship training (67%) was to focus on the most influential mind-changing factors for the choice of specialty. The most common learning styles among female students were kinesthetic and visual, while the most common learning style among male students was auditory. However, the learning style of students who preferred surgical branches

was generally in the kinesthetic group.

**Conclusions:** An effective clerkship program in which students encounter effective positive role models, gain knowledge about their field of specialization and learning styles, and increase their awareness will provide the right guidance in their specialization preferences.

### Özet

**Amaç:** Tıp fakültelerindeki staj dönemi, gelecekteki kariyer seçimine de yardımcı olan entegre bir

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*öğrenme dönemidir. Bu çalışmanın amacı, hem genel cerrahi stajının hem de öğrenme stilleri farkındalığının tıp öğrencilerinin uzmanlık tercihleri üzerindeki etkisini değerlendirmektir.*

**Yöntem:** Eğitim müdahalesi olarak planlanan bu çalışmada tıp fakültesi dördüncü sınıf öğrencilerine genel cerrahi stajları öncesinde uzmanlık tercihlerini sorgulayan bir anket ve öğrenme stili ölçeği uygulandı. Anketin ardından uzmanlık dalları ve öğrenme stilleri hakkında kısa bir eğitim verildi. Staj sonrasında öğrencilerden uzmanlık tercihleri ile ilgili anketi tekrar yanıtlamaları istendi. Staj eğitiminin, öğrenme stili farkındalığı ve uzmanlık tercihleri arasındaki değişiklikler değerlendirildi.

**Bulgular:** Çalışmaya yüz sekiz öğrenci katılmıştır (E:81, K:27). Uzmanlık seçiminde en önemli faktör, o uzmanlık alanındaki çalışmadan duyulan mesleki memnuniyettir (%64). Eğiticilerin staj eğitimindeki yaklaşımı (%67) uzmanlık seçimi için en etkili fikir değiştirici faktörlerden biriydi. Kız öğrenciler arasında en yaygın öğrenme stili kinestetik ve görsel iken, erkek öğrenciler arasında en yaygın öğrenme stili işitseldir. Ancak cerrahi branşları tercih eden öğrencilerin öğrenme stili genellikle kinestetik grupta yer almıştır.

**Sonuç:** Öğrencilerin etkili pozitif rol modellerle karşılaştıkları, uzmanlık alanları ve öğrenme stilleri hakkında bilgi edindikleri ve farkındalıklarını artırdıkları etkili bir staj programı, uzmanlık tercihlerinde doğru yönlendirmeyi sağlayacaktır.

## INTRODUCTION

The career we choose shapes the rest of our lives. Although medical students have already chosen the profession that will shape their future after the university exam, they have difficulty in choosing the specialty they will follow throughout their medical education and then practice in their profession. This decision may vary according to the trend during the first three years of medical education, when the basic sciences predominate, or according to their experience during clinical training, when they are close to starting their professional life (1, 2). Many factors are involved in choosing a branch or shifting to a different specialty. We briefly review these factors below, such as personal attention, professional satisfaction, economics, social status, role models, workload or stress, responsibility and malpractice risk, communication, satisfaction, improvement opportunities, family, environmental impact, and so on. Previous studies have observed that these factors are especially relevant in the decisions made during the planning of the future of students (2-4).

The concept of learning style, first introduced by Dunn in 1960 (5), stated that the process differs according to the individual, starting with a focus on new and difficult knowledge and continuing with the process of receiving

information and placing it in the mind (6,7). Although there are many models of learning styles defined by various authors, among them the most favored are Carl Jung's basic personality and sensory properties classification, Felder and Silverman's learning styles, VARK learning styles, Kolb's learning styles, and Gregorc's model of learning styles. In the VARK (Visual, Aural/auditory, Reading, and Kinesthetic) model defined by Fleming (8), subjects are asked to answer how they determine preferences when processing information according to the situation and in different scenarios. The decision-making process takes place by processing the information gathered and evaluating the impact of experiences (9,10). It should not be overlooked that the educational curriculum prepared according to this format can optimize one's performance (11). In addition, recognizing students' learning habits shaped by their previous learning experiences and knowing their learning styles for their successful development (12) contributes to their professional lives by facilitating the selection of an appropriate specialization.

In medical schools, the clinical period is an integrated learning experience in which students observe and experience how to treat patients effectively and efficiently, while developing

their knowledge, skills, and professional attitudes. In this period, programs can be structured according to the organ system or based on the TASK, but they can also be configured as a “clerkship” based on the discipline. During a clerkship, medical students observe the clinic as a whole, including the faculty members’ behavior and approach to the patient. Based on this observation, they begin to form an idea about their future professional life. Our aim in this study was to evaluate the effect of general surgery clerkship education and gaining awareness about the learning style of medical school students on their specialty preferences.

## METHODS

This study, which was planned as an educational intervention, was applied to fourth-year medical students who came to Gülhane Training and Research Hospital General Surgery Clinic for clerkship training between September 2018 and June 2019 in the 2018-2019 academic year. Ethical approval was obtained from the University of Health Sciences Gulhane Non-Interventional Research Ethics Committee (04.12.2018, No. 2018/320).

No sample selection was conducted for this study. All fourth-year medical students were contacted, and those who agreed to participate within the specified time were enrolled after being verbally informed of the purpose and giving their consent. There was no inclusion criteria, only the students who did not accept to join the study and who did not give informed consent were excluded. Afterwards, in a 45-minute educational lecture, they were given brief information about both the general surgery clerkship they would be attending and other medical specialties (about what they are getting into, specialized training in diagnosis and treatment, information about the definition and types of learning styles, and facilitating learning by providing supportive activities). Following informative lecture, the VARK Learning Preferences Inventory (13,14) developed by

Fleming from Lincoln University of New Zealand in 1987 was applied to the participants. The VARK questionnaire consists of visual, auditory, reading/writing and applied learning (kinesthetic) categories. The answers to the questions determine which characteristics of the individual outweigh that effect their learning or teaching preferences (15). Then a survey related with future professional life of the student was administered to the participants. This form was prepared by researchers. The survey questions are as follows;

1. Where do you want to work after graduation?
2. Do you plan to take specialized training?
3. Why do you want to get specialty training?
4. What is your main specialty training branch?
5. What are the factors affecting your choice of specialty?
6. What is your learning style according to the questionnaire?

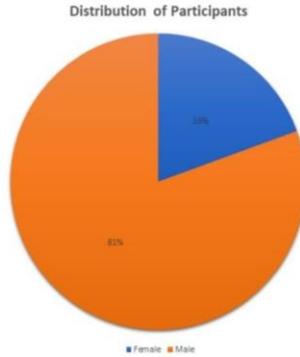
At the end of the clerkship, the same questionnaire apart from the 6th question was applied to the students. Two new questions were added. The first one was “Did you change your specialty preference after the clerkship training?”. If the answer was yes, the student was asked “Why?”. And the other one was “Do you think that there is a relation between learning style and participant’s specialty choice?”.

After the data collection tools related to the research were applied as a questionnaire, each data set was controlled by the researchers and transferred to a database software. The data obtained are analyzed using SPSS (version 20) © Copyright SPSS Inc. package program. The chi-square test was used for the nominal variables and the t test was used for continuous variables in independent groups for statistical analyses.

## RESULTS

A total of 108 (76%) 4th year medical students in General Surgery clerkship who gave their consent has participated in the study. The mean age was 23.0 (min21-max38) (23.6±0.5). The distribution of participants is shown in the

figure below (Figure 1). The number of male participants was 87 and 21 for female.



**Figure 1.** The Distribution of Participants

104 (96%) of the participants stated that they would like to receive medical speciality training. Analyzing the reasons why the participants did not want to get a speciality training, one of them stated that he did not want to perform medical profession, while another stated that he wanted to work in a pharmaceutical company. The other 2 participants did not answer this question. The reasons for planning medical speciality training were asked before and after the

clerkship. Family- social environmental pressure, professional satisfaction, high financial income, social status requirement and career desire were evaluated as the reasons. The most common reason was professional satisfaction (64%) and was followed by academic career desire by 11.9%. Others have also been, respectively, the necessity of social status, family-environmental pressure and high financial income.

**Table 1.** Changes in Specialty Preference Before and After the Clerkship

		Medical Speciality Choice After the Clerkship (MSCAC)				<i>p</i> *	
		Internal Medicine	Surgical Sciences	Basic Medical Science	Total		
Medical Speciality Choice Before the Clerkship (MSCBC)	Internal Medicine	n	41	18	0	59	0,01
		% within MSCBC	69,50%	30,50%	0,00%	100,00%	
		% within MSCAC	83,70%	32,10%	0,00%	55,70%	

		Medical Speciality Choice After the Clerkship (MSCAC)				p*	
		Internal Medicine	Surgical Sciences	Basic Medical Science	Total		
Medical Speciality Choice Before the Clerkship (MSCBC)	Surgical Sciences	n	5	38	1	44	0,01
		% within MSCBC	11,40%	86,40%	2,30%	100,00%	
		% within MSCAC	10,20%	67,90%	100,00%	41,50%	
	Basic Medical Science	n	3	0	0	3	
		% within MSCBC	100,00%	0,00%	0,00%	100,00%	
		% within MSCAC	6,10%	0,00%	0,00%	2,80%	
	Total	n	49	56	1	106	
		% within MSCBC	46,20%	52,80%	0,90%	100,00%	
		% within MSCAC	100,00%	100,00%	100,00%	100,00%	

\*: \*:chi-square

A hundred six students answered both before and after questionnaire. The participants were asked whether general surgery clerkship training had an impact on their major speciality choices. The distribution of the participants according to and specialty choices is shown in Table 1. Among students who noted influence of clerkship training on the selection of major speciality, 18 students choosing internal branches prior to clerkship training has changed their mind to surgical branches, 3 students choosing basic sciences before clerkship training has changed their mind to internal medical branches after clerkship training. Previously, 4 students who were considering surgery stated that they wanted to make a choice in an internal branch and one in the field of basic

sciences after the clerkship training. During verbal discussions with the students who changed their mind to choice of surgical branches, most commonly expressed mind-changing factor was the communication and approach of faculty member to both patients, research assistants and students (67%). This was followed by high financial income of those surgical branches (44%). In 2 students who changed their mind of choice from surgery to other branches, the reason was the intensity of working hours. Others had not expressed an opinion.

When the factors affecting the participants' preference for the specialty were evaluated both before and after the clerkship, the most important reason was the area of interest (87%

and 90%, respectively). This was followed by the intensity of working hours, duty rate, risk of malpractice and National Branching

Examination in Medicine scores (NBEM), respectively.

**Table 2.** The Distribution of The Participants According to Their Gender, Specialty Choices According to Learning Styles Before the Clerkship

		VARK				p*
		Visual	Auditory	Read/Write	Kinesthetic	
Gender (n:108)	Female	6 (5,5%)	5(4,6%)	4(3,7%)	6(5,5%)	p>0.05
	Male	13(12%)	37(34,2%)	9(8,3%)	28(25,9%)	
Medical speciality choice before the clerkship (n:106)	Internal medical sciences	12(11,3%)	26(24,5%)	8(7,5%)	13(12,3%)	p≤0.05
	Surgical sciences	5(4,7%)	13(12,3%)	5(4,7%)	21(19,8%)	
	Basic medical sciences	0	3(2,8%)	0	0	

\*:chi-square

Participants filled the VARK learning Preferences Inventory before the study. The distribution of the participants according to their gender, specialty choices and learning styles is shown in Table 2. The most common learning styles among female students were kinesthetic and visual, while the most common learning style among male students was auditory. The kinesthetic learning style was more prominent in those who chose surgical specialization before the clerkship.

After the clerkship, the proportion of those who said yes to the question related to relation between learning style and participant's speciality choice was 79%. This rate was not significant compared to the pre-clerkship rate.

## DISCUSSION

In this study, the effect of general surgery clerkship in a university medical school hospital on the specialty preferences of 4th year medical students was evaluated. In a study conducted in 2021 in Turkey, when doctors working in all hospitals were evaluated in terms of gender according to the branches they chose, the percentage of female and male were 58.9% to 41.5% respectively. The distribution of preferences conducted in terms of internal

sciences, surgical sciences and basic sciences, men's selection rates appeared to be 50.9%, 73% and 46.2%, respectively, while in women's rates were 49.1%, 27% and 53.8%, respectively (4). However, in another study we see that the participants have a different distribution in terms of gender. 59% of the participants in the study were female, while the remaining 41% were male (3). In our study, 19% of the participants were female and the remaining 81% were male. Besides it does not show an equal distribution in terms of gender, female's surgical speciality choice has decreased after clerkship training compared to rates before clerkship, due to the intensity of working hours. Although not statistically significant, we consider that the results were remarkable.

It is assumed that every student who enters the medical faculty wants to master in his/her chosen medical field. In our study, this rate was seen as 96%. It has been evaluated that there are different reasons for claiming to get a medical speciality training. In the studies conducted, different factors such as professional satisfaction, family-environmental pressure, high financial income, social status requirement and career desire are often encountered

(2,16,17). In our study, we questioned the most common factors defined in other studies. The rate of "professional satisfaction" answer was significantly high both before and after the clerkship. This was followed by "career desire" factor. The factor "professional satisfaction" came first and it was like "what we have also expected." Because the individual wants to develop his/her profession after making his/her profession choice, besides, he/she will be more connected to his/her job with a sense of satisfaction towards his/her profession (18). We considered the desire to be specialized naturally in this aspect.

Students were evaluated in terms of the major specialization area, they wanted to choose in their specialty training and the effect of clerkship. We did not expect students to change their choices, but some of them did at the end of the clerkship. This ratio was slightly higher, especially in favor of surgical sciences. When we examined this situation with students who changed their preferences, we observed that role models were effective in this change. They have stated that the approach of the faculty members to both the patients, residents, students and the other team members, was effective in changing their opinions. They wanted to become such doctors in the future as a role model in a sense. Role modelling in medical education has been defined as a process in which "faculty members demonstrate clinical skills, model expert decision-making processes, and demonstrate positive professional characteristics" (19). Research shows that, in fact, 90% of medical graduates remember the role models that have shaped their professional attitudes. (20). The role model that students are engaged to in the clinic should show positive examples of behaviour and approach, should have a good knowledge about the general medicine, show empathy to patients and treat them with respect in order to provide the information in an effective learning environment, allowing students to understand and to give meaningful feedback in terms of the concept of the

importance of role models (21,22). Interestingly, the positive role models could encourage and support women who interested a surgical career to identify with the role (23). In particular, the doctor's clinical competence, his/her relationship with his/her patients and colleagues, his/her inspirational influence and personality, as well as his/her educational behaviour with the students contribute to being a role model. However, it should not be forgotten that in addition to the existing features, the surgical role model will show important features such as research ability, leadership, teamwork, professionalism, and commitment to excellence in the workplace environment, which will have an impact on students in planning their future professions (24). In our study, we obtained significant results due to this effect, especially in the general group. It was remarkable that although the choice of surgical branches has decreased today, the approach style of the educators could have such an effect (25). We think this is important for the future of surgery.

The other thing, we were curious about in our study was the effect of learning styles whether it is a challenging situation or a learning style relation. When we analyzed whether learning styles would have an effect on the medical school student's choice of specialty in one part of the study, we found that the kinesthetic style, which is more effective for learning by applying it in those who choose the surgical branch, was prevailed. Although recent publications have shown that learning effectiveness does not increase when teaching methods are designed according to one's learning style (26,27), it is stated that the application of combined teaching methods increases effectiveness of learning (28). But it is necessary for the individual to know what kind of learning style he has during the decision-making period related to his own professional future. Knowing one's own strengths and weaknesses allows one to evaluate the different situations he will face and guide his metacognition. The highest level of knowledge,

skills, and attitude in the performance of the profession will allow one to avoid problems that may arise in the forthcoming period. In this study, we applied VARK model inventory in the evaluation of learning style. Because it was thought to be easier and more understandable for the student to answer and interpret the result for students. In a previous study, it was seen that surgical branch preference status of individuals with a certain learning style was evident. In particular, they have stated that the kinesthetic group in unimodal group was prone to surgery (29).

Medical speciality preference was also one of the other parameters we evaluated. Here we have tried to evaluate the 5 most common factors that we have reached as a result of literature research. In our study, the most important factor affecting the specialization branch preference both before and after the clerkship was the area of interest within medical sciences (87%-90%). This was followed by the intensity of working hours, duty rate, risk of malpractice and NBEM scores. NBEM score as a factor was considered to be in front rank or middle in other studies, while in our study it almost took place in the end. In a study conducted by Yapalak et al, the most common first and second factors were liking the speciality area and secondly personal ability and interest, respectively(2). In another study, the leading factors were self confidence about ability to practice in the speciality, being interested in patient's diseases related to the specialty and characteristics of the patient group in the specialty (30). However, in another study, interest in the speciality area and NBEM scores were mentioned as the leading factors (3). Similarly to these studies, in our study, the most common specialty branch preference of medical school students was the one in their field of interest. The fact that the students choose this factor as the dominant factor among all the factors revealed that they wanted to specialize in the field of their interest for future

professional life.

In our study, there were some limitations. As the 5 most common reasons that were mentioned in the literature review were asked in the question-and-answer sections of the survey, there may not be enough options in terms of alternative answers that can be given. We also had other constraints, such as the duration of the clerkship not being long enough to see some impacts. This period may be particularly meaningful in terms of the reflection of the effect on attitude.

## **CONCLUSIONS**

In addition to providing an effective clerkship education to medical students, the approach style of instructors who are role models is also effective on the student's choice of specialization in medicine. Especially for those who want to choose a surgical branch, revealing surgery-specific role models may be effective in the preference of students. Also, it was observed that kinesthetic learning style was higher in students who preferred surgery. It is thought that this study will be useful as a basis and background for new multicenter studies to be organized with wide participation in the field of specialty selection in the coming period.

## ***Declarations***

Ethical approval and consent to participate: "This study was approved by the University of Health Sciences Gulhane Non-Interventional Research Ethics Committee (date:04.12.2018-decision no:2018/320)." Informed consent was obtained from all subjects and/or their legal guardian(s)

## ***Competing interests***

The authors declare that they have no conflicts of interest.

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## **Authors' Contributions**

AKC: Study conception, literature search, study design, collection and analysis of the data, practical work, writing, in the article. ZYC: Writing, shared in the article. IIB: Supervision on the practical work, writing, shared in the article. All authors read and approved the final manuscript.

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