ORIGINAL ARTICLE

DOI: 10.4274/nkmj.galenos.2022.40085
Nam Kem Med J 2022;10(4):357-368

Evaluation of Factors Affecting the Selection of Histology and Embryology in the Medical Specialization Examination

Tıpta Uzmanlık Sınavı'nda Histoloji ve Embriyoloji Branşının Seçimini Etkileyen Faktörlerin Değerlendirilmesi

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ABSTRACT

Aim: The medical specialty preference process is a complex and dynamic process that includes many direct and indirect variables. Investigating the factors that affect physicians' specialization preferences is important for physicians who will choose their specialty in the future. We aimed to define the importance of the factors affecting the selection of Histology and Embryology in the medical specialization.

Materials and Methods: In this descriptive, cross-sectional study, a questionnaire was applied to residents and specialist physicians in Histology and Embryology. A total of 108 participants were included in the study, and the statistical analysis of the obtained data was done with Statistical Package for the Social Sciences program version 22.0.

Results: The mean age was 35±9 years and 64.8% were married. The most effective factors in choosing Histology and Embryology were determined as ability to take time for themselves (52.8%), night shift number/intensity (48.10%), patient intensity (46.30%), number of on-call duty (41.7%), and less probability of exposure to violence (38.9%), respectively. 38.89% of the physicians were considering working abroad, and 50% of them thought of resigning from this branch. Exposure to mobbing was found to increase the thought of resignation. The current professional title and gender affected the idea of working abroad.

Conclusion: The thought of choosing the branch of Histology and Embryology is influenced by various factors. It is essential to improve the working conditions, to make economic arrangements, and take measures to prevent mobbing and burnout of physicians working in the field of Histology and Embryology.

Keywords: Specialization in medicine, career choice, histology, embryology

ÖZ

Amaç: Tıpta uzmanlık tercih süreci, doğrudan ve dolaylı birçok değişkeni barındıran karmaşık ve dinamik bir süreçtir. Hekimlerin uzmanlık alan tercihlerini etkileyen faktörlerin araştırılması, bu eğitim ve öğretimi planlayanlar ve gelecekte uzmanlık alan tercihi yapacak olan hekimler için önem taşımaktadır. Bu çalışmada, tıpta uzmanlıkta Histoloji ve Embriyoloji'nin seçimini etkileyen faktörlerin öneminin tanımlanması amaçlanmıştır.

Gereç ve Yöntem: Tanımlayıcı, kesitsel tipteki bu araştırmada, Histoloji ve Embriyoloji alanında uzmanlık eğitimi alan araştırma görevlilerine ve uzman hekimlere anket uygulandı. Toplam 108 katılımcı çalışmaya dahil edilerek, elde edilen verilerin istatistiksel analizi Statistical Package for the Social Sciences programı versiyon 22.0 ile yapıldı.

Bulgular: Çalışmaya dahil edilen 108 katılımcının ortalama yaşı 35±9 yıl idi ve %64,8'i evliydi. Histoloji ve Embriyoloji alanında çalışan hekimlerin bu branşı seçmesini etkileyen faktörler incelendiğinde; %52,8 ile "kendine vakit ayırabilme", %48,10 ile nöbet sayısı/yoğunluğu, %46,30 hasta yoğunluğu, %41,7 ile icap sayısı, %38,9 ile şiddete maruz kalma ihtimali olduğu bulundu. Histoloji ve Embriyoloji alanında çalışan hekimlerin %38,89'u yurt dışında çalışmayı düşünürken, %50'si bu branştan istifa etmeyi düşünmekteydi. Mobbinge maruziyetin, istifa düşüncesini artırdığı görüldü.

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Received: 29.06.2022 **Accepted**: 13.09.2022

Sonuç: Histoloji ve Embriyoloji branşını seçme düşüncesi çeşitli faktörlerden etkilenmektedir. Histoloji ve Embriyoloji alanında çalışan hekimlerin iş ve çalışma koşullarının iyileştirilmesi, ekonomik anlamda düzenlemeler yapılması ve mobbing ve tükenmişliğin önüne geçmek için önlemler alınması oldukça önemlidir.

Anahtar Kelimeler: Tıpta uzmanlık, kariyer seçimi, histoloji, embriyoloji

INTRODUCTION

Profession of a doctor is one of the critically important professions that require discipline, theoretical knowledge, skills, abilities and attention[1,2]. The legal basis for the profession of medicine is stated in the Law on the Practice of Medicine and Medical Arts of 1928/1219: "Those who have the qualifications indicated in this law for the practice of medicine in Turkey generally have the right to treat the diseases. However, in order for any branch to be specialized in medicine and to be able to declare that title, it must have a specialization certificate issued from the Turkish Medical Faculty or an institution to be accepted and announced by the Ministry of Health, or given from a well-known hospital or laboratory in foreign countries and approved by the Turkish Medical Faculty." explained in Article 8. In the 1st article of the same law, it is stated that "it is necessary to have a diploma from the medical faculty to practice medicine and to treat patients in any way within the Republic of Turkey" and it is stated that they have the title of "physician" only after graduating from medical school, and in this case, they can obtain the right to give treatment[3]. Basic features of professionalism include having theoretical knowledge, using theoretical knowledge in practice, having connection with the values of the society, education, ethical rules, accountability, self-sacrifice, excellence, honesty, honor and respect for others[4,5].

Specialization education in medicine has a structure created and maintained with the participation of multiple stakeholders. In this educational structure, there are many stakeholders such as students receiving specialization training, faculty members, universities and training and research hospitals providing specialization education, the Board of Specialization in Medicine, which regulates the infrastructure of education, and the Ministry of Health. This education is an important process that has both a service delivery dimension and a health service delivery dimension[6]. The main purpose of specialization education in medicine is to train specialist physicians that society needs and to provide health services by increasing the competence of these physicians in their field of specialization. To receive specialization education in Turkey, it is necessary to take the Medical Specialization Examination (TUS) and get a certain level a score, then make a choice and be eligible for training in the relevant department. Both state and foundation university hospitals and training and research hospitals carry out this education as formal education[7]. TUS was made by "Ölçme, Seçme Ve Yerleştirme Merkezi" (ÖSYM) for the first time in September 1987, in accordance with the Regulation on Medical Specialization Education Entrance Exams and the decision of the Higher Education Executive Board dated 25.12.1986 and numbered 86.50.1164, protocols signed between the Ministry of Health and the Higher Education Council, and between the General Staff and the Higher Education Council[8]. TUS, which has been applied uninterruptedly for 35 years since the first year, is applied twice a year by OSYM with multiple choice test method, and the institution and branch where the training will be held according to the scores obtained after the exam are determined by OSYM with the central system according to the preference of the candidates.

The science that we call tissue science in Turkish is called Histology, derived from the Greek words "*histo*" meaning membrane or tissue and "*logos*" meaning science, which examines the cell units, which are the most important building blocks of tissue, and the properties of these cells in different tissues, body tissues and the arrangements of these tissues to form organs[9]. The science of histology is a branch that deals with the functions performed at the cell and tissue level by examining and teaching normal cells, tissues and organs microscopically and it has an important place in medical education since it forms the basis of physiology and pathology[10].

Although embryology means the branch of science that studies the embryo, this term refers to prenatal development, that is, both embryo and fetus development[11]. All developmental events in the process from fertilization to birth constitute the subject of embryology. Human embryology investigates the development and functioning of cells different from the zygote formed by sperm fertilization of the oocyte, tissues and organs, and the underlying causes of abnormal development. Because it clarifies the origins of various pathological cases and diseases, it can be a guide for clinical applications of gynecology and obstetrics, pediatrics, pediatric surgery, teratology, plastic and reconstructive surgery, as well as being in close relation with anatomy, histology, physiology, genetics and pathology. In addition, "Assisted Reproductive Techniques" applied in the treatment of infertility is the laboratory application area of embryology[12,13].

In the career possibilities specified in the Histology and Embryology Specialization Education Core Curriculum of the Medical Specialization Board Curriculum Creation and Standard Setting System, it is stated that "Histology and

Table 1. Questionnaire items					
Your gender?					
Your age?					
Your age at the time when you have chosen the department?					
Place of birth?					
Do you have a specialization other than Histology and Embryology?					
If you have a specialization other than Histology and Embryology, what is it?					
Have you worked as a resident in another field?					
If you worked as a resident in another field, which branch/branches were they? How long did it take?					
What is your marital status?					
What was your marital status when you entered the department?					
Did you have children when you entered the department?					
Did you have a child after entering the department?					
If you had a child after completing the department, was it during the residency or after getting the specialization?					
Which medical faculty did you graduate from (Bachelor's degree)? Graduation year?					
Where did you get your specialization? What was the year?					
Have you worked as a general practitioner?					
If you worked as a general practitioner, how long did you work?					
If you were a general practitioner, in which unit did you do it? (More than one can be selected)					
Your current professional title?					
Are you considering being an academic?					
Are you considering doing your job abroad?					
Was Histology and Embryology your first choice as a branch in the Medical Specialization Exam?					
If the branch of Histology and Embryology was not your first choice in the Medical Specialization Exam, which branch was your first choice?					
Indicate to what extent the following factors influenced your choice of this specialization (1: never, 5: very much)					
[Loving the branch]	Never affected	Not affected	Undecided	Affected	Very much affected
[TUS score]	Never affected	Not affected	Undecided	Affected	Very much affected
[The prestige of the department in society]	Never affected	Not affected	Undecided	Affected	Very much affected
[Personal talent and interest]	Never affected	Not affected	Undecided	Affected	Very much affected
[Advice from people with knowledge on the subject]	Never affected	Not affected	Undecided	Affected	Very much affected
[Professional satisfaction opportunity]	Never affected	Not affected	Undecided	Affected	Very much affected
[Academic advancement/possibility to do research]	Never affected	Not affected	Undecided	Affected	Very much affected
[Financial return]	Never affected	Not affected	Undecided	Affected	Very much affected
[Patient intensity]	Never affected	Not affected	Undecided	Affected	Very much affected
[Workload or stress brought by the department]	Never affected	Not affected	Undecided	Affected	Very much affected
[Department's level of risk/responsibility/malpractice]	Never affected	Not affected	Undecided	Affected	Very much affected
[Communication between seniors]	Never affected	Not affected	Undecided	Affected	Very much affected
[Possibility of exposure to violence]	Never affected	Not affected	Undecided	Affected	Very much affected
[Possibility to be assigned to city centers/major cities]	Never affected	Not affected	Undecided	Affected	Very much affected
[Length of residency]	Never affected	Not affected	Undecided	Affected	Very much affected
[Order of working hours]	Never affected	Not affected	Undecided	Affected	Very much affected
[Number and intensity of shifts]	Never affected	Not affected	Undecided	Affected	Very much affected
[Opportunity to set aside time for oneself]	Never affected	Not affected	Undecided	Affected	Very much affected
[Number of standby duties]	Never affected	Not affected	Undecided	Affected	Very much affected

[Need to provide emergency service]	Never affected	Not affected	Undecided	Affected	Very much affected
[Performance system]	Never affected	Not affected	Undecided	Affected	Very much affected
[Choosing a specialty so as not to be a general practitioner]	Never affected	Not affected	Undecided	Affected	Very much affected
[Preference of branches with teamwork]	Never affected	Not affected	Undecided	Affected	Very much affected
[Whether it requires physical strength]	Never affected	Not affected	Undecided	Affected	Very much affected
[The possibility of using high-end technology]	Never affected	Not affected	Undecided	Affected	Very much affected
[Comfort of residency training]	Never affected	Not affected	Undecided	Affected	Very much affected
[The possibility of preparing for TUS again after entering the department]	Never affected	Not affected	Undecided	Affected	Very much affected
[My gender suitable for the branch]	Never affected	Not affected	Undecided	Affected	Very much affected
[Possibility of benefiting infertile patients with the applied treatments]	Never affected	Not affected	Undecided	Affected	Very much affected
Have you considered resigning during your residency or specialization?					
If you have considered resigning during your residency or specialization, what has compelled you to do so? (More than one can be selected)					
Were you exposed to mobbing while you were a research assistant or specialist in your branch?					
If you were exposed to mobbing while you were a research assistant or specialist in your branch, can you explain?					
Considering the techniques applied by Histology and Embryology specialists today, which does the branch of Histology and Embryology belong to? (More than one answer may be given.)					
Is there any additional factor you would like to specify in choosing the branch of Histology and Embryology?					
TUS: Medical Specialization Examination					

Embryology specialists are employed as an embryologist in assisted reproductive technical laboratories and in andrology laboratories within the framework of legal regulations, as well as working as lecturers in universities. They work in stem cell centers, cellular therapies, cord blood banking, bioengineering, in producing artificial organs for research and therapy, and they provide consultancy at the clinical diagnosis and research level regarding developmental anomalies". The branch of Histology and Embryology is one of the ideal branches to be preferred by physicians who are passionate about doing research and have the ability to follow the literature. During the specialization training process of this branch, in addition to classical Histology and Embryology training, studies are carried out in areas such as stem cells, cord blood, bioengineering, artificial organs, developmental anomalies, various types of microscopes, molecular techniques, cell culture, organ culture, immunohistochemistry, and immunofluorescence[14].

Among the most important choices made in human life, the choice of profession is the first. Choosing a profession that enables individuals to realize their expectations and wishes, directs and concerns their lives is a very complex process[15-17]. In this study, it was aimed to define the factors affecting the selection of Histology and Embryology as the branch in TUS and to emphasize their importance.

MATERIALS AND METHODS

The study was approved by Muğla Sıtkı Koçman University Medical and Health Sciences Ethics Committee (protocol no: 220041, decision no: 39, date: 28.04.2022). Research assistants who were in the process of specialization training in medicine in the field of Histology and Embryology and specialist physicians who had completed their specialization training formed the population of the study. All of the people who met these qualifications and constituted the study population in Turkey were reached, and 108 people who agreed to participate in the study were included.

The research was carried out by filling out the online questionnaire prepared via Google forms. Volunteering consent form was obtained through the Google form and the participants were informed at the beginning of the form that the approximate time required to answer the questionnaire was 6-10 minutes. These questionnaires did not contain any identifying information, and no questions that could reveal the identities of the volunteers were asked. Demographic data such as gender, age, and marital status were recorded. Questions about subjects such as considering working abroad, and resigning during the residency and specialization process in Histology and Embryology were prepared and presented as multiple choice items. In Table 1, the questions are given in detail. In order to determine the factors affecting the preferences of specialization in medicine, Nazife Öztürk developed the "Physicians' Preference Tendencies of Specialty Branch Scale", consisting of 42 items and 7 dimensions, based on qualitative data, within the scope of the research conducted in 2019 with a total of 502 people who were medical faculty students and preparing for the specialization exam[18]. In our study, these scales were made suitable for physicians working in the field of Histology and Embryology and some revisions were made, and the factors affecting the choice

of specialty were prepared as 29 questions. Responses to the statements in the questionnaire were structured as a 5-point Likert type, and they were listed as 1: Never affected, 2: Not Affected, 3: Undecided, 4: Affected 5: Very much affected. All questionnaires were administered in Turkish.

Statistical Analysis

Descriptive statistics were expressed as mean, standard deviation, median, and minimum-maximum values for continuous data, and percentage (%) and frequency (n) for discrete variables. The conformity of continuous data to normal distribution was evaluated with the Kolmogorov-Smirnov test and the Shapiro-Wilk test. The Mann-Whitney U test was used to compare two independent groups, and the Kruskal-Wallis test was used to compare more than two groups for non-parametric data. For parametric data, the Student's t-test was used to compare two independent groups, and the ANOVA test was used to compare more than two groups. The Pearson chi-square test was employed to compare categorical data. For statistical significance, p-values below 0.05 at the 95% Confidence interval were considered significant. IBM Statistical Package for the Social Sciences, Chicago, IL, USA version 22.0 was used for statistical analysis.

RESULTS

Demographic Features of the Participants

The mean age of the participants was 35±9 years, and the mean age was found as 29±5 years at the time when they chose the department. Of the Histology and Embryology physicians participating in the study, 82 (75.92%) were women. While 46.3% of the participants were married when they entered the department, 53.7% were single. When the survey was conducted, the rate of those who were married reached 64.8%. While 6.5% of the participants had children after residency, 29.6% had children during residency, and 63.9% did not have children (Table 2).

Professional Characteristics of the Participants

While 23% of the participants had a residency in another field, only 2.8% had specializations other than Histology and Embryology. The fields from which they resigned and transferred to Histology and Embryology were child health and diseases with 21.7%, anesthesiology and reanimation with 17.40%, and family medicine with 8.7%, respectively. It was observed that the average duration of being a resident in another department before the resignation was 12±10 months. 81.20% of the participants had worked as general practitioners and the average duration of working as a general practitioner was found to be 4±4 years. When the current professional titles of the participants were examined, it was detected that 46.30% of them were research assistant physicians, 3.70% were instructor physicians, 32.40% were specialist physicians, 9.30% were assistant professors, 3.70% were associate professors, and 4.60% were professors. While 33.3% of the participants were considering working as an academician in the future, 13% did not. 18.5% of them are still working as academicians. While 39.8% of the participants preferred the Histology and Embryology branch in the first place in TUS, 60.2% of the participants preferred the other branches shown in detail in Table 3.

Views of Participants About the Profession

While 50% of the study participants were considering resigning during their residency and specialization, the other 50% did not consider it. When the reasons for resigning were examined, it was found that 24.19% of the participants stated that they had concerns for the future. 23.38% of the participants were considering resigning due to 'unsatisfaction with the branch', 21.77% due to 'financial return', 15.32% due to 'mobbing' and 8% due to 'wanting another branch'. In addition, among the reasons for considering resignation were 'Loss of Prestige', ' Non-Medical Branches' Being More Advantageous', 'Wanting to Change University', 'Stressful Work Environment', 'Child Care', 'Lack of Education' and 'Problematic Team Workers'. 34.3% of the participants stated that they thought they were exposed to mobbing. When the participants were asked about the scope of their specialization, Histology and Embryology were thought to be involved in Basic Sciences by 81 participants, in Surgical Sciences by 57 participants, and in Internal Medicine Sciences by 33 participants (Table 4).

While 38.89% of the physicians working in the field of Histology and Embryology were considering working abroad, 25.93% were not considering working abroad. 35.19% of the participants were undecided on this issue (Figure 1).

Table 2. Demographic features of the participants

		Mean±SD/N (%)
Age		35±9
Age at the time of choosing the department		29±5
Gender	Male	26 (24.08%)
	Female	82 (75.92%)
Marital status (current)	Single	38 (35.2%)
	Married	70 (64.8%)
Marital status (at the time when the department was won)	Single	58 (53.7%)
	Married	50 (46.3%)
Time of having child	Not have a child	69 (63.9%)
	During residency	32 (29.6%)
	After specialization	7 (6.5%)

SD: Standard deviation

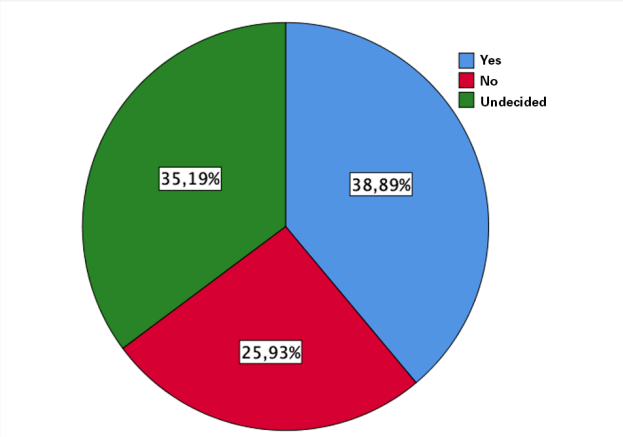

Figure 1. Evaluation of the thought of working abroad

Factors Affecting Choosing the Field of Specialization

When the factors affecting the choice of the specialization field of physicians working in the field of Histology and Embryology were examined, it was determined that the factor that affected the most was 'setting aside time for oneself' with the rate of 52.8%. The following most affecting factors were 'Number/Intensity of Shifts' with the rate of 48.10%, 'Patient Intensity' with the rate of 46.30%, 'Number of Standby Duty' with the rate of 41.7%, 'Probability of Exposure to Violence' with the rate of 38.9%, 'Order of Working Hours' with the rate of 38%, 'Risk/Responsibility/Malpractice Level of the Department' with the rate of 37%, and 'Workload Stress Brought by the Department' with the rate of 36.10%. It was determined that the factor that affected the choice of specialization the least was 'Possibility to Prepare for TUS again after Winning

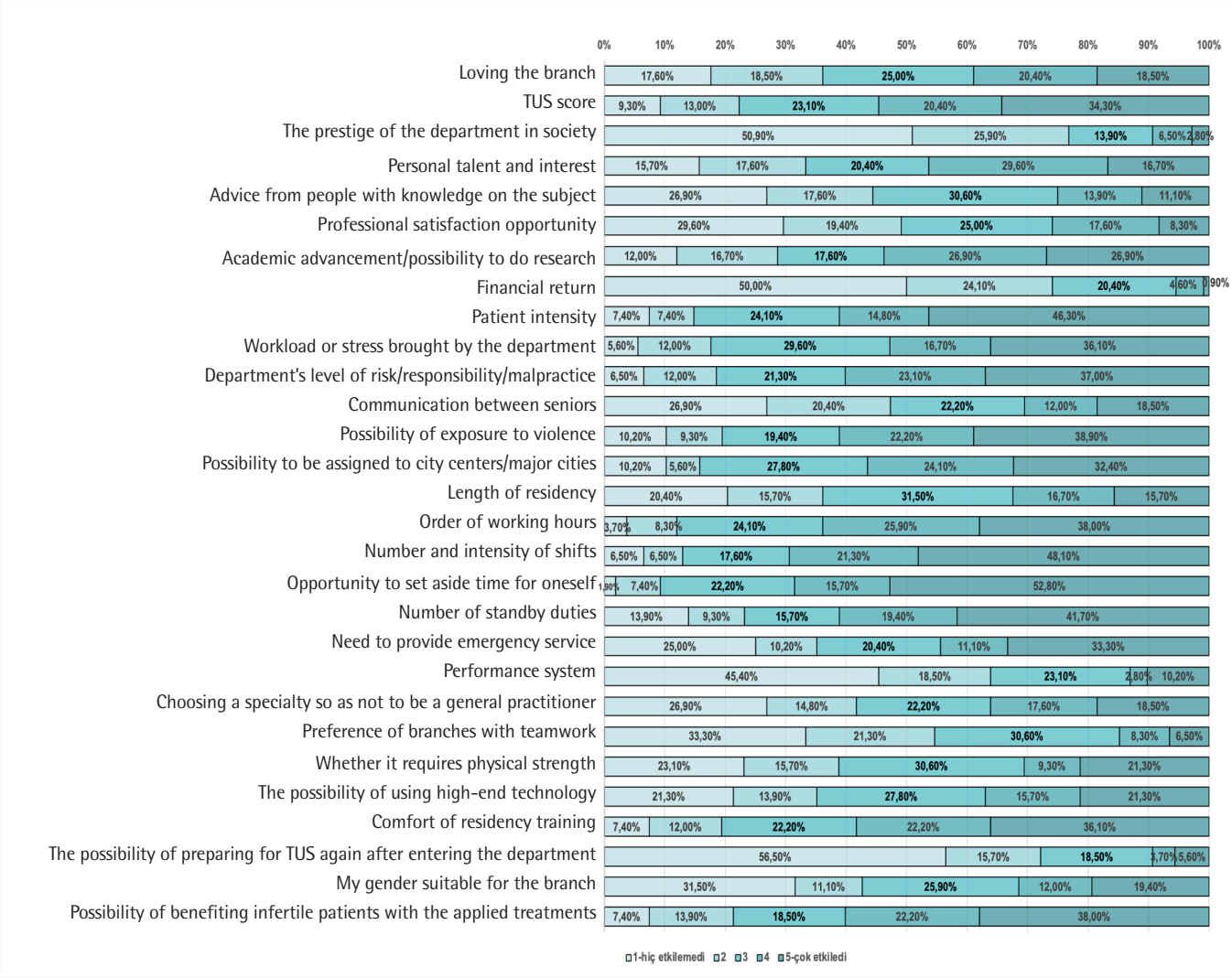

Figure 2. Factors affecting the choice of specialization

TUS: Medical Specialization Examination

Table 3. Evaluation of participants' professional characteristics

		Number/ Mean±SD	Percentage %
Specialization branch other than Histology and Embryology	None	105	97.20%
	Family medicine	1	0.90%
	Child health and diseases	2	1.90%
Being resident in another branch	Yes	25	23.10%
	No	83	76.90%
Department of residency	Ophthalmic diseases	1	4.30%
	Cardiology	1	4.30%
	Family medicine	2	8.70%
	Anesthesiology and reanimation	4	17.40%
	Child health and diseases	5	21.70%
	Neurology	1	4.30%
	Chest diseases	1	4.30%
	Gynecology and obstetrics	1	4.30%
	Internal diseases	1	4.30%
	Pediatric surgery	1	4.30%
	Public health	1	4.30%
	Medical pathology	1	4.30%
	Emergency medicine	3	13.00%
Duration of residency (month)		12±10	
Working as a general practitioner	Yes	88	81.50%
	No	20	18.50%
Duration of working as a general practitioner (year)		4±4	
Current professional title	Research assistant (for the Ministry of Health)	20	18.50%
	Research assistant (Foreign Nationality)	2	1.90%
	Research assistant (for the Higher Education Board)	28	25.90%
	Lecturer physician	4	3.70%
	Specialist physician	35	32.40%
	Assistant professor	10	9.30%
	Associate professor	4	3.70%
	Professor	5	4.60%
Thought of being academician	Already academician	20	18.50%
	Yes	36	33.30%
	No	14	13.00%
	Undecided	38	35.20%
The firstly preferred branch in TUS	Histology and embryology	43	39.80%
	Other	65	60.20%

TUS: Medical Specialization Examination, SD: Standard deviation

the Department' with the rate of 56.5%. Apart from this, it was determined that the least influencing factors were the 'Reputation of the Department in the Society' with the rate of 50.90%, 'Its Financial Return' with the rate of 50%, and 'Performance System' with the rate of 45.5% (Figure 2).

There was no statistically significant difference between age and thinking that the branch of Histology and Embryology belonged to internal sciences, surgical sciences or basic sciences ($p>0.05$). There was no statistically significant difference between thinking of being an academician and thinking that the branch of Histology and Embryology belonged to internal sciences, surgical sciences or basic sciences ($p>0.05$). A statistically significant difference was found between the academic title and the thought that the Histology and Embryology branch belonged to internal sciences, surgical sciences or basic sciences ($p=0.030$). While 80% of professors and 50% of associate professors thought that histology was a branch of basic sciences, most of the assistant professors, research assistants, lecturers and specialists thought that histology included more than one branch (Table 5).

Table 4. Evaluation of participants' views on the profession

		Number	Percentage
Thought of resigning	Yes	54	50.00%
	No	54	50.00%
Reason for the thought of resigning	Mobbing	19	15.32%
	Financial return	27	21.77%
	Concern for future	30	24.19%
	Unsatisfaction with the branch	29	23.38%
	Wanting another branch	10	8.00%
	Wanting to change the university	1	0.80%
	Stressful work environment	1	0.80%
	Child care	1	0.80%
	Lack of education	1	0.80%
	Loss of reputation	2	1.60%
	Non-medical branches' being more advantageous	2	1.60%
	Problematic team workers	1	0.80%
	Total	124	100.00%
Thought of being exposed to mobbing	Yes	37	34.30%
	No	71	65.70%
Participants' views for the branch of Histology and Embryology	Basic sciences	81	47.36%
	Internal sciences	33	19.29%
	Surgical sciences	57	33.33%
	Total	171	100%

Table 5. Investigation of factors affecting the choice of Histology and Embryology branch

		Scope of Histology and Embryology branch								
		Surgical		Internal		Basic		More than one		
		N%/M±SD		N%/M±SD		N%/M±SD		N%/M±SD		p
Age		40±9		35±10		35±9		34±8		0.065[1]
Thought of being academician	Already academician	3	15.00%	2	10.00%	7	35.00%	8	40.00%	0.636[2]
	Yes	4	11.10%	1	2.80%	10	27.80%	21	58.30%	
	No	4	28.60%	0	0.00%	4	28.60%	6	42.90%	
	Undecided	7	18.40%	4	10.50%	8	21.10%	19	50.00%	
Title	Research assistant	5	10.00%	4	8.00%	17	34.00%	24	48.00%	**0.030[2]**
	Specialist physician	10	28.60%	1	2.90%	4	11.40%	20	57.10%	
	Lecturer physician	0	0.00%	1	25.00%	0	0.00%	3	75.00%	
	Assistant professor	2	20.00%	0	0.00%	2	20.00%	6	60.00%	
	Associate professor	1	25.00%	0	0.00%	2	50.00%	1	25.00%	
	Professor	0	0.00%	1	20.00%	4	80.00%	0	0.00%	

[1]Kruskal-Wallis, [2]Pearson chi-square.
M: Mean, SD: Standard deviation, n: Number

While 83% of those who thought they were exposed to mobbing were considering resigning from Histology and Embryology residency or specialization, 32% of those who were not exposed to mobbing were considering resigning for different reasons. A statistically significant difference was found between the two groups (p=0.001). The thought of being exposed to mobbing can increase the thought of resigning. Respectively, 38% of the research assistants, 100% of the lecturer physicians, 68% of the specialist physicians, 40% of the assistant professors, 50% of the associate professors and 20% of the professors thought to resign in sometime of their professional life in Histology and Embryology. There was a statistically significant difference between the professional title and the thought of resigning (p=0.016). There was no significant difference in terms of other factors (p>0.05) (Table 6).

It was observed that the current professional title and gender affected the thought of working abroad. Of the participants, 69% of men and 29% of women thought to work abroad. A statistically significant difference was found between both groups (p=0.001). There was no significant difference in terms of other factors (p>0.05) (Table 7).

DISCUSSION

How the physicians having graduated from the faculty of medicine continue their careers is very important both for their own future and for the appropriate evaluation of the human resources in the health system they are involved in. Physicians in Turkey graduate with the title of general practitioner after completing 6 years of medical education. All graduated physicians are appointed as general practitioners by the Ministry of Health within the first two months following graduation. Physicians can specialize in a branch according to the scores they get by entering the TUS, which is held twice a year throughout the country. There are many factors that affect the branch to be preferred in specialization education. In this study, we aimed to evaluate the reasons for choosing this branch, the factors affecting the selection of the branch, and the current views of the residents and specialist doctors who prefer the Histology and Embryology branch.

While the mean age of the participants in our study was 35 years, the mean age was 29 years when they preferred the branch of Histology and Embryology. Considering that the average age for graduation from medical faculties in Turkey is 24 years[19], it is seen that this department is preferred 5 years after graduation. Considering the reasons for this, it was seen that 23% of the participants worked as an assistant in another department after graduation, then changed their departments and preferred Histology and Embryology. The fields from which they resigned and transferred to Histology and Embryology were Child Health and Diseases with 21.7%, anesthesiology and reanimation with 17.40%, and Family Medicine with 8.7%, respectively. These departments are clinical branches that deal intensively with patients, and it can be said that Histology and Embryology come to the forefront as a branch that physicians head after leaving these departments.

Of the Histology and Embryology physicians participating in our study, 75.92% were women. Yılmaz et al.[20] (2021) reported in their study that gender was effective in determining the fields of specialization in medicine and that Histology and Embryology was the third most preferred branches by female physicians. In this respect, our findings are compatible with the literature.

Table 6. Examining the factors affecting the thought of resignation

		Thought of resignation				
		Yes		No		
		Number%/M±SD		Number%/M±SD		p
Gender	Male	9	34.60%	17	65.40%	0.072[1]
	Female	45	54.90%	37	45.10%	
Age		35±8		36±10		0.605[2]
Age at the time of choosing the department		30±5		29±4		0.675[2]
Specialization apart from Histology and Embryology	Yes	0	0.00%	3	100.00%	0.079[1]
	No	54	51.40%	51	48.60%	
Being resident in another branch	Yes	11	44.00%	14	56.00%	0.494[1]
	No	43	51.80%	40	48.20%	
Marital status	Single	19	50.00%	19	50.00%	1[1]
	Married	35	50.00%	35	50.00%	
Working as a general practitioner	Yes	44	50.00%	44	50.00%	1[1]
	No	10	50.00%	10	50.00%	
Duration of working as a general practitioner (year)		4±4		4±5		0.188[2]
Histology as the first choice in TUS	Yes	17	39.50%	26	60.50%	0.077[1]
	No	37	56.90%	28	43.10%	
Thought of being academician	Already academician	9	45.00%	11	55.00%	0.080[1]
	Yes	13	36.10%	23	63.90%	
	No	7	50.00%	7	50.00%	
	Undecided	25	65.80%	13	34.20%	
Current professional title	Research assistant	19	38.00%	31	62.00%	**0.016**[1]
	Specialist physician	24	68.60%	11	31.40%	
	Lecturer physician	4	100.00%	0	0.00%	
	Assistant professor	4	40.00%	6	60.00%	
	Associate professor	2	50.00%	2	50.00%	
	Professor	1	20.00%	4	80.00%	
Thought of being exposed to mobbing	Yes	31	83.80%	6	16.20%	**0.001**[1]
	No	23	32.40%	48	67.60%	

[1]Pearson chi-square, [2]Mann-Whitney U.
M: Mean, SD: Standard deviation, TUS: Medical Specialization Examination

When the factors affecting the choice of the specialty department of the physicians working in the field of Histology and Embryology were examined, it was determined that the factor that affected the most was 'setting aside time for oneself' with the rate of 52.8%. The following most affecting factors were 'Number/Intensity of Shifts' with the rate of 48.10%, 'Patient Intensity' with the rate of 46.30%, 'Number of Standby Duty' with the rate of 41.7%, 'Probability of Exposure to Violence' with the rate of 38.9%, 'Order of Working Hours' with the rate of 38%, 'Risk/Responsibility/Malpractice Level of the Department' with the rate of 37%, and 'Workload Stress Brought by the Department' with the rate of 36.10%.

In the literature, Cansever et al.[21] (2020), in their study investigating the factors that affected medical students' preferences for specialization in medicine, reported that the factors that most affected their preferences in the pre-specialization period were 'interest/ability for the specialization field', 'perception/view of society' and 'family desire/pressure'. The authors stated that the factors that mostly affected the preferences of people who started to receive specialization training in any field, after starting their education, were 'financial satisfaction', 'working conditions (number of shifts, working hours, easiness of the work)', 'academic career opportunity', 'professional satisfaction', 'personal development and career chances' and 'malpractice'. In the study of Balcı Yapalak et al.[22] (2019), in which they examined the factors affecting the specialization preferences of medical faculty students in all state and foundation universities in Istanbul, they reported that the most important factors in choosing the department were 'liking the department', 'personal talent and interest' and 'professional satisfaction', respectively. Açıkgöz et

al.[23] (2019) reported that 85.7% of medical faculty students had a career plan based on specialization. In this study, the authors stated that the main reasons for seeking specialization in medical faculty students were "the desire to work in a specific field that will provide professional satisfaction", "status and career expectation" and "financial concerns". The reasons for these choices of students who did not think of specialization and wanted to work as general practitioner were reported as 'existence of the Medical Specialization Exam', 'difficulty of the residency process' and 'health policies in our country'. In the study in question, the authors did not specifically ask a question about Histology and Embryology in choosing the branch. Ergin et al.[24] (2011) evaluated the post-graduation career choices of students studying in the first, third and sixth grades of the medical faculty. Accordingly, the most important reason for students to want to become a 'specialist physician' after graduation was reported as 'professional satisfaction'. In another study, the factors that most affected the specialty preferences of senior medical school students were reported as their own interests (80.3%), TUS scores (72.1%), presence and number of shifts (59.0%), intensity of working hours (57.9%), financial return (51.9%) and malpractice risk (42.6%)[25].

Table 7. Examining the factors affecting the thought of working abroad

		Thought of working abroad						
		Yes		No		Undecided		
		Number%/Mean±SD		Number%/ Mean±SD		Number%/ Mean±SD		p
Gender	Male	18	69.20%	5	19.20%	3	11.50%	**0.001**[1]
	Female	24	29.30%	23	28.00%	35	42.70%	
Age		35±7		40±12		33±7		0.172[2]
Age at the time of choosing the branch		30±4		30±5		29±5		0.684[2]
Marital status	Single	16	42.10%	8	21.10%	14	36.80%	0.691[1]
	Married	26	37.10%	20	28.60%	24	34.30%	
Specialization apart from Histology and Embryology	Yes	1	33.30%	1	33.30%	1	33.30%	0.955[1]
	No	41	39.00%	27	25.70%	37	35.20%	
Working as a general practitioner	Yes	32	36.40%	23	26.10%	33	37.50%	0.470[1]
	No	10	50.00%	5	25.00%	5	25.00%	
Duration of working as a general practitioner (year)		4±4		5±6		4±4		0.557[2]
Current professional title	Research assistant	24	48.00%	11	22.00%	15	30.00%	**0.009**[1]
	Specialist physician	13	37.10%	9	25.70%	13	37.10%	
	Lecturer physician	1	25.00%	0	0.00%	3	75.00%	
	Assistant professor	4	40.00%	1	10.00%	5	50.00%	
	Associate professor	0	0.00%	2	50.00%	2	50.00%	
	Professor	0	0.00%	5	100.0%0	0	0.00%	
Working as a resident in another branch	Yes	11	44.00%	5	20.00%	9	36.00%	0.717[1]
	No	31	37.30%	23	27.70%	29	34.9%0	
Thought of being academician	Already academician	4	20.00%	7	35.00%	9	45.00%	0.261[1]
	Yes	18	50.00%	5	13.90%	13	36.10%	
	No	6	42.90%	5	35.70%	3	21.40%	
	Undecided	14	36.80%	11	28.90%	13	34.20%	
Histology as the first choice in TUS	Yes	14	32.60%	9	20.90%	20	46.50%	0.133[1]
	No	28	43.10%	19	29.20%	18	27.70%	
Thought of being exposed to mobbing	Yes	15	40.50%	10	27.00%	12	32.40%	0.911[1]
	No	27	38.00%	18	25.40%	26	36.60%	
Thought of resigning	Yes	20	37.00%	14	25.90%	20	37.00%	0.905[1]
	No	22	40.70%	14	25.90%	18	33.30%	

[1]Pearson chi-square, [2]Kruskal-Wallis.

M: Mean, SD: Standard deviation, TUS: Medical Specialization Examination

In our study, 39.8% of the participants preferred Histology and Embryology in the first place in TUS. On the other hand, it is striking that 50% of the residents and specialists, who participated in the study, had the thought of resigning, despite the fact that some left other departments and transferred to the Histology and Embryology branch. Among the reasons for considering resignation, 'concern for the future' was stated as the most common reason. 'Not being satisfied with the branch' and 'financial return' were expressed as some other reasons. 38% of research assistant doctors, 68% of specialist doctors, 100% of lecturer doctors, 40% of assistant professors, 50% of associate professors and 20% of professors stated to have considered resigning in their professional life. 34.3% of the participants thought that they were subjected to mobbing. As expected, thinking of being exposed to mobbing significantly increases the thought of resigning. Dikmetaş et al.[26] (2011) investigated burnout and occupational mobbing levels on 270 residents. While the highest level of mobbing was 5, the average level of mobbing was 1.87 among residents. Researchers evaluated this as 'low mobbing average'. In studies conducted abroad, it has been reported that there is a serious relationship between mobbing and burnout. Grunau[27] (2007), in his study, published a report about that mobbing could be held responsible for 25% of this situation in people with burnout. Erol et al.[28] (2007), in their study on resident physicians, reported that higher number of working hours and shifts increased emotional burnout. In the same study, the authors also determined that as job satisfaction increased, burnout decreased. As a result, mobbing and burnout are the situations that are frequently encountered in healthcare workers, especially physicians, and that pose a serious threat and should be considered as occupational health and safety risks. All these situations may cause physicians to resign. In our study, it is a remarkable finding that all of the instructor physicians (100%) have considered resigning at sometime. Working conditions should be improved in order to reduce the rate of resignation thoughts and people to be more productive in the jobs and positions they work. Limiting the daily working hours and the number of monthly shifts may be effective in reducing burnout in research assistant physicians[28].

38.89% of physicians working in the field of Histology and Embryology are considering working abroad. It has been observed that the current professional title and gender affect the thought of working abroad. While professors do not think about working abroad, men think more than women. Human resources in the field of health constitute an extremely important qualified manpower for all countries. Considering the difficulty of the training process of health workers and especially physicians, it is extremely important for the health policies of the relevant country that they stay in the country where they are educated. In a study on the migration of healthcare workers in 2021, it was reported that physicians could migrate for various reasons, even from developed countries. Healthcare professionals and physicians' staying in the country where they are educated and of which they are citizens or immigrating with the intention of working abroad is a very complex issue that can be affected by global, regional and personal factors[29]. In the health system, it is known that the age, work relations, working conditions and economic conditions of the employees can be effective in their migration decision. It has been reported that approximately 25% to 50% of physicians working in the United Kingdom work for increasing hours, their work-life balance is deteriorating and therefore their job satisfaction is reduced[30]. In a study conducted in Poland, it was determined that one third (34%) of physicians wanted to immigrate to a different country. When asked about their reasons, the physicians stated that they wanted to work abroad because they thought that there was "better working conditions abroad, higher financial gains, better educational opportunities" and "a chance to get rid of the problems arising from their current job"[31]. It has been stated that the reasons for physicians in Ireland wanting to immigrate stem from dissatisfaction with their working conditions[30]. Many research findings in Europe show that physicians can give up their thoughts of migration if working conditions in the workplace are improved[31].

Study Limitations

Not all physicians who chose the Histology and Embryology specialization at TUS and worked actively were not included in the study, so our study may not reflect the views of all research assistant doctors and specialist doctors. Since our study is a cross-sectional study, the cause-effect relationship is not clear. Since the study was carried out in a certain time period, it reflects the conditions specific to the period in which it was made.

CONCLUSION

As a result, it has been determined that the most common factors affecting the reasons for choosing the Histology and Embryology branch of the physicians participating in our study are those such as 'setting aside time for oneself', 'number/intensity of shifts', 'patient intensity', 'number of standby duty' and 'probability of exposure to violence'. It is very important to improve the working conditions of physicians working in the field of Histology and Embryology, to make arrangements in working conditions in which they can set aside time for themselves and economic conditions, and to take measures in all stages for preventing mobbing and burnout. In future studies, studying the factors affecting the choice of specialization of physicians working in different specialties with a larger sample will contribute to the clarification of this issue.

Ethics

Ethics Committee Approval: The study was approved by the Muğla Sıtkı Koçman University Medical and Health Sciences Ethics Committee (protocol no: 220041, decision no: 39, date: 28.04.2022).

Informed Consent: Voluntary consent was obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: D.Ç., H.E., Design: D.Ç., H.E., Data Collection or Processing: D.Ç., H.E., E.N.K., Analysis or Interpretation: E.N.K., S.Y., Literature Search: D.Ç., E.N.K., S.Y., Writing: D.Ç., H.E., E.N.K., S.Y.

Conflict of Interest: The authors declared no conflict of interest regarding this article.

Financial Support: No financial support was received from any institution or person for our study.

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