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TITLE: Effects of defensive medicine practices on health care in southeast Turkey

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PAGES: 399-409

ORIGINAL PDF URL: <https://dergipark.org.tr/tr/download/article-file/2128406>

Effects of defensive medicine practices on health care in southeast Turkey

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Cite this article as: Bakır Ş, Ünal S, Eratilla V. Effects of defensive medicine practices on health care in southeast Turkey. J Health Sci Med 2022; 5(2): 399-409.

ABSTRACT

Aim: In our country, the stress experienced by physicians due to their working conditions and intense workload plays a role in the formation of medical errors, therefore, physicians want to protect themselves from litigation processes with defensive medicine practices. The aim of our study is to evaluate the effects of defensive medicine practices on health service delivery.

Material and Method: In our study, the knowledge and attitudes of a total of 175 dentists working in Dicle University Faculty of Dentistry and Diyarbakir Oral and Dental Health Hospital and its affiliated centers about defensive medicine practices, age, physician (service) duration, gender, institution, title and specialty areas, if any, the relationship was examined using the knowledge level measurement questionnaire. While performing statistical analysis, Chi-square Test was used for comparisons.

Result: It was observed that 32% of the physicians in the 26-40 age group, who constitute the vast majority (71.4%) of the participants in the study, were not aware of the concept of defensive medicine. It was found that 36.6% of the participants, 84.4% of those with 1-5 years of medical experience, and 83.3% of the specialty students with the largest share, with the largest share, did not know this concept at all.

Conclusion: It is found that most of the physicians do not have the necessary knowledge about medical errors and malpractice. While the level of knowledge is increased through in-service training programs, seminars and conferences about malpractice, medical errors, defensive medicine practices, the experience of experienced physicians can be used in preventing and solving problems.

Keywords: Malpractice, defensive medicine practices, healthcare personnel awareness

INTRODUCTION

In the provision of healthcare services, despite all kinds of precautions and interventions in accordance with the standards, complications that will inevitably occur can be encountered. The complications arising from the complications cannot be attributed to the physician and therefore there is no legal liability (1). However, some complications that are not noticed on time and cannot be taken adequate precautions can turn into medical errors. Medical errors occur due to physicians' misdiagnosis and treatment approaches, professional inexperience, imprudence, negligence, misuse of equipment, lack of attention or care, or lack of information, technical equipment and communication (2). These mistakes put the health and safety of the patients at risk and may lead to prolongation of the recovery period (3). Despite the lack of personnel, the excess number of patients, fatigue and stress due to the length of the working period,

problems in the distribution of duties and powers, lack of education and motivation also play an important role in the emergence of these errors (4).

Not all medical errors are harmful to the patient. In medical malpractice, although it is predictable and preventable, it is possible to harm the patient because it is not done by the healthcare worker, and in return, punitive/legal sanctions are imposed (5). In addition, a result that is accepted as a complication by the physician may be perceived as malpractice by the patient and their relatives. In short, while every malpractice is a medical error, not every medical error is a malpractice (6).

The increase in malpractice cases in recent years has adversely affected the performance of healthcare professionals, as well as leading to defensive medicine practices with defense psychology (7). The concept of defensive medicine is defined as the healthcare professionals

who want to be protected from malpractice accusation, resort to non-standard procedures without considering the benefit of the patient due to fears such as complaints/disciplinary punishment/being sued/being subjected to violence, or referring patients at risk of complications to another physician/institution (8). The degree of defensive medicine is directly proportional to the malpractice risk level. Some physicians use defensive medicine deliberately, while others do it without realizing it (9).

It is possible to examine defensive medicine in two subgroups as positive and negative applications. Positive defensive medicine is physicians' requesting additional tests, examinations and consultations without medical value with the motive of preventing negligence and protecting their reputation, prescribing unnecessary medications, making detailed explanations, keeping detailed records or hospitalizing more than necessary (7). In short, it is possible to provide extra health services beyond the need (10). The main reason for applying positive defensive medicine is the desire of the physician to convince the patients that he fulfills the standards of care during the procedures, and to prove on legal grounds that the regulations and procedures are not left incomplete, on the contrary, the extra application is made. In addition to risking the safety of patients, this may also cause side effects (11).

Negative defensive medicine is avoiding procedures that will benefit the patient for fear of malpractice, avoiding patients with high risk of complications and litigation, refusing them or referring them unnecessarily (7). As a result of the deprivation of health services, there may be a risk of chronic illness, disability or death. The main reason for applying negative defensive medicine is that the physician wants to avoid legal sanctions that may arise by discarding his responsibility (12). While the common point of defensive medicine practices is to be protected from malpractice cases, negative defensive medicine, whose prevalence has increased rapidly recently, although it is not as common as positive defensive medicine, is more likely to harm the patient (7,10).

Today, people who have increased awareness of patients' rights and malpractice have started to question the health services provided and demand high compensation in malpractice cases, increasing the pressure on healthcare professionals (12) and prompting physicians to worry and uneasiness (10). Press and social media's suppression of healthcare professionals plays a major role in the increase in defensive medicine practices (9). The fact that health news, which only includes patient rights, are exaggerated due to ratings or other reasons, discredits healthcare professionals in the eyes of the public. The fact that all healthcare professionals get used to news of violence, especially against physicians, negatively affects

the patient-physician relationship (13).

Defensive medicine practices are not only physician sourced, but also patient, system and administrative. Considering the unfavorable conditions of the health system, insufficient attention to patient-physician communication in the education curriculum (14), inexperience of new graduates and insufficient support from the management (9), the performance criteria applied and the lack of expertise in health law (13), physicians themselves it turns towards defensive medicine applications with its protection reflex (9). As a result, physicians make unnecessary examinations or refer patients to other institutions by acting as guarantees to avoid problems. Defensive medicine practices that adversely affect the efficiency and quality of healthcare services put patients at risk and cause unnecessary cost increases. These non-standard practices impose a macro or micro burden on the national economy (15).

MATERIAL AND METHOD

Participants were informed about the purpose of the study and their consent was obtained by paying attention to the voluntary principle. It has also been ensured that the information about the participants is kept confidential. The study was Approval for the study was given by the Ethics Committee of Dicle University Faculty of Dentistry (Date: 26.06.2019, Decision No: 2019/29-2). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

Participants

In our study, a total of 175 dentists working in Dicle University Faculty of Dentistry and Diyarbakir Oral and Dental Health Hospital and affiliated centers and determined by random sampling method were included. The relationship of defensive medicine practices performed by dentists with general characteristics such as age, physician (service) duration, gender, institution, title and specialty, if any, are examined. It is hoped that our research will contribute to the literature with different samples and findings.

Evaluation of Questionnaire

In our study, in which the volunteering principle of the physicians participating in the study was taken into consideration, the questionnaire, which is one of the quantitative data collection techniques, was used. The questionnaire, which is prepared by four academicians who are competent in their field and includes thirty-one questions in total, consists of two parts. The first part consists of six descriptive questions about the dentists who participated in the study. These questions regarding the age, duration of dentistry, gender, institution, title and specialty of dentists, if any, are shown in **Table 1**.

Item No	Questions	Responses	n	(%)
1	How old are you?	25 years and under	6	(3.4%)
		26 to 40 years old	125	(71.4%)
		41 to 55 years old	42	(24%)
		56 years and older	2	(1.1%)
2	How many years are you a physician?	1-5 years	64	(36.6%)
		6-10 years	45	(25.7%)
		11-15 years	21	(12%)
		16-20 years	12	(6.9%)
		21 years and above	33	(18.9%)
3	Your gender?	Male	60	(34.3%)
		Female	115	(65.7%)
4	Which health institution do you work in?	Oral and dental health center	73	(41.7%)
		University Hospital	102	(58.3%)
5	What is your job title?	General practitioner	63	(36%)
		Specialist physician	14	(8%)
		Residency student	72	(41.1%)
		Faculty Member	26	(14.9%)
6	If yes, what is your area of expertise?	Oral diagnosis and radiology	4	(2.3%)
		Oral and Maxillofacial Surgery	11	(6.3%)
		Orthodontics	8	(4.6%)
		Restorative Dentistry	21	(12%)
		Pediatric Dentistry	25	(14.3%)
		Periodontology	10	(5.7%)
		Prosthodontics	23	(13.1%)
		Endodontics	8	(4.6%)
		I do not have expertise	65	(37.1%)

The second part consists of twenty-five questions aimed at determining the level of knowledge and attitude of dentists about the concept of defensive medicine (**Table 2**).

Statistical analysis

While the data were analyzed statistically, a frequency distribution table was created for general characteristics. Chi-square Test was applied to compare the answers given to the questions with categorical data and general characteristics, which are categorical variables. A confidence interval of 95% was applied. A value of $p < 0.05$ was accepted as statistically significant.

RESULTS

"Have you heard of the concept of defensive medicine (recessive medicine) before?" and "Do you ever prescribe extra medication to protect yourself from medical malpractice claims?" When the answers given by the participants to the question were analyzed, the difference between the individuals in terms of duration of practice, institution and title categories was found to be statistically significant ($p < 0.05$). (**Tables 3 and 4**).

Questions	General Features	I heard	I did not hear	X2	p
Have you heard of the concept of defensive medicine (recessive medicine) before?	Age			6.874	0.076
	25 years and under	0 (0%)	6 (100%)		
	26 to 40 years old	40 (32%)	85 (68%)		
	41 to 55 years old	20 (47.6%)	22 (52.4%)		
	56 years and older	1 (50%)	1 (50%)		
	Duration of Medicine			18.679	0.001
	1-5 years	10 (15.6%)	54 (84.4%)		
	6-10 years	17 (37.8%)	28 (62.2%)		
	11-15 years	11 (52.4%)	10 (47.6%)		
	16-20 years	6 (50%)	6 (50%)		
	21 years and above	17 (51.5%)	16 (48.5%)		
	Gender			0.093	0.760
	Male	20 (33.3%)	40 (66.7%)		
	Female	41 (35.7%)	74 (64.3%)		
	Institution			5.907	0.015
	Oral and dental health center	33 (45.2%)	40 (54.8%)		
	University Hospital	28 (27.5%)	74 (72.5%)		
	Title			19.408	0.000
	General practitioner	28 (44.4%)	35 (55.6%)		
	Specialist physician	6 (42.9%)	8 (57.1%)		
	Residency student	12 (16.7%)	60 (83.3%)		
	Faculty Member	15 (57.7%)	11 (42.3%)		
	Expertise			10.083	0.259
	Oral diagnosis and radiology	0 (0%)	4 (100%)		
	Oral and Maxillofacial Surgery	5 (45.5%)	6 (54.5%)		
	Orthodontics	2 (25%)	6 (75%)		
	Restorative Dentistry	8 (38.1%)	13 (61.9%)		
	Pediatric Dentistry	6 (24%)	19 (76%)		
	Periodontology	1 (10%)	9 (90%)		
	Prosthodontics	7 (30.4%)	16 (69.6%)		
	Endodontics	4 (50%)	4 (50%)		
	I do not have expertise	28 (43.1%)	37 (56.9%)		

Table 2. Level of knowledge and attitude of dentists about the concept of defensive medicine				
Item No	QUESTIONS	RESPONSES	n	(%)
7	Have you heard of the concept of defensive medicine (recessive medicine) before?	I heard	61	(34.9%)
		I did not hear	114	(65.1%)
8	Do you know enough about the concept of defensive medicine practices?	Definitely yes	5	(2.9%)
		Yes	14	(8%)
		I am indecisive	30	(17.1%)
		No	91	(52%)
		Definitely no	35	(20%)
9	Do you believe there is an increase in the number of medical malpractice cases?	Definitely yes	62	(35.4%)
		Yes	96	(54.9%)
		I am indecisive	11	(6.3%)
		No	6	(3.4%)
		Definitely no	0	(0%)
10	Will the medical malpractice case to be filed against you reduce your physician performance?	Definitely yes	46	(26.3%)
		Yes	86	(49.1%)
		I am indecisive	32	(18.3%)
		No	9	(5.1%)
		Definitely no	2	(1.1%)
11	Have you ever been sued for the alleged medical fault?	Never happened	165	(94.3%)
		Once	10	(5.7%)
		Twice	0	(0%)
		Three times	0	(0%)
		More than three	0	(0%)
12	Do you ever prescribe extra medication to protect yourself from medical malpractice claims?	Always	0	(0%)
		Most of the time	11	(6.3%)
		Sometimes	44	(25.1%)
		Rarely	35	(20%)
		Never	85	(48.6%)
13	To protect yourself from medical malpractice claims, do you ever avoid patients who are likely to sue?	Always	10	(5.7%)
		Most of the time	30	(17.1%)
		Sometimes	63	(36%)
		Rarely	44	(25.1%)
		Never	28	(16%)
14	Do you ever ask for extra consultation to protect yourself from medical malpractice claims?	Always	10	(5.7%)
		Most of the time	67	(38.3%)
		Sometimes	54	(30.9%)
		Rarely	28	(16%)
		Never	16	(9.1%)
15	Do you ever take any procedure without indications to protect yourself from medical malpractice claims?	Always	0	(0%)
		Most of the time	5	(2.9%)
		Sometimes	13	(7.4%)
		Rarely	34	(19.4%)
		Never	123	(70.3%)
16	To protect yourself from medical malpractice claims, do you ever avoid patients with complex medical problems?	Always	3	(1.7%)
		Most of the time	27	(15.4%)
		Sometimes	61	(34.9%)
		Rarely	51	(29.1%)
		Never	33	(18.9%)
17	Do you use imaging studies more often to protect yourself from medical malpractice claims?	Always	30	(17.1%)
		Most of the time	94	(53.7%)
		Sometimes	28	(16%)
		Rarely	11	(6.3%)
		Never	12	(6.9%)
18	Do you ever explain medical practices in more detail to protect yourself from medical malpractice claims?	Always	52	(29.7%)
		Most of the time	91	(52%)
		Sometimes	22	(12.6%)
		Rarely	6	(3.4%)
		Never	4	(2.3%)
19	Do you ever avoid high-complication treatments to protect yourself from medical malpractice claims?	Always	4	(2.3%)
		Most of the time	45	(25.7%)
		Sometimes	70	(40%)
		Rarely	35	(20%)
		Never	21	(12%)
20	Do you ever keep records in more detail to protect yourself from medical malpractice claims?	Always	41	(23.4%)
		Most of the time	88	(50.3%)
		Sometimes	28	(16%)
		Rarely	13	(7.4%)
		Never	5	(2.9%)
21	Do you ever place more emphasis on informed consent forms to protect yourself from medical malpractice claims?	Always	69	(39.4%)
		Most of the time	74	(42.3%)
		Sometimes	25	(14.3%)
		Rarely	7	(4%)
		Never	0	(0%)
22	In order to protect yourself from medical malpractice claims, do you refer patients at risk even though you have treatment?	Always	4	(2.3%)
		Most of the time	22	(12.6%)
		Sometimes	55	(31.4%)
		Rarely	46	(26.3%)
		Never	48	(27.4%)
23	What is your risk of facing a medical malpractice case at any time, depending on your circumstances?	Extremely high	31	(17.7%)
		Very high	36	(20.6%)
		High	63	(36%)
		Not very high	40	(22.9%)
		Not high at all	5	(2.9%)

24	Are you taking out a medical malpractice insurance policy?	I have never done	14	(8%)
		I have been doing it for the last year	45	(25.7%)
		I have been doing it for the last two years	21	(12%)
		I have been doing it for the last three years	14	(8%)
		I have been doing it for the last four years	72	(41.1%)
		I had it before, now I don't have insurance	9	(5.1%)
25	Did you feel uneasy in your practice after the new " Turkish Penal Code " came into force on June 1, 2005 (deprivation of practice of profession and art for up to three years, to be imposed upon the completion of the actual punishment for physicians even in their minor negligence)?	Definitely yes	47	(26.9%)
		Yes	67	(38.3%)
		I am indecisive	37	(21.1%)
		No	23	(13.1%)
		Definitely no	1	(0.6%)
26	Do you think a document stating "I accept all medical interventions to be made, I will not sue my doctor in case of damage" relieves the physician from responsibility?	Definitely yes	5	(2.9%)
		Yes	29	(16.6%)
		I am indecisive	48	(27.4%)
		No	74	(42.3%)
		Definitely no	19	(10.9%)
27	Have you read the "patient rights regulation" published in the official newspaper?	I've never heard of	37	(21.1%)
		I've heard, I've never read	64	(36.6%)
		I partially read	58	(33.1%)
		I read all of it	16	(9.1%)
28	Do you think that the distinction between complications and malpractice cannot be made clearly?	Definitely yes	64	(36.6%)
		Yes	79	(45.1%)
		I am indecisive	17	(9.7%)
		No	13	(7.4%)
		Definitely no	2	(1.1%)
29	Would having " medical malpractice insurance " make your medical practices more comfortable?	Definitely yes	11	(6.3%)
		Yes	67	(38.3%)
		I am indecisive	59	(33.7%)
		No	32	(18.3%)
		Definitely no	6	(3.4%)
30	Are you worried about making medical mistakes?	Always	34	(19.4%)
		Most of the time	41	(23.4%)
		Sometimes	73	(41.7%)
		Rarely	24	(13.7%)
		Never	3	(1.7%)
31	Do you use defensive medicine to protect patients and their relatives from verbal and physical violence?	Always	8	(4.6%)
		Most of the time	32	(18.3%)
		Sometimes	72	(41.1%)
		Rarely	43	(24.6%)
		Never	20	(11.4%)

Table 4. "Do you ever prescribe extra medication to protect yourself from medical malpractice claims?" Answers to the question

Questions	General Features	Always	Most of the time	Sometimes	Rarely	Never	X2	p
Do you ever prescribe extra medication to protect yourself from medical malpractice claims?	Age						7.573	0.578
	25 years and under	0 (0%)	0 (0%)	3 (50%)	1 (16.7%)	2 (33.3%)		
	26 to 40 years old	0 (0%)	9 (7.2%)	30 (24%)	29 (23.2%)	57 (45.6%)		
	41 to 55 years old	0 (0%)	2 (4.8%)	11 (26.2%)	5 (11.9%)	24 (57.1%)		
	56 years and older	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (100%)		
	Duration of Medicine						30.021	0.003
	1-5 years	0 (0%)	2 (3.1%)	17 (26.6%)	20 (31.3%)	25 (39.1%)		
	6-10 years	0 (0%)	1 (2.2%)	13 (28.9%)	9 (20%)	22 (48.9%)		
	11-15 years	0 (0%)	5 (23.8%)	4 (19%)	1 (4.8%)	11 (52.4%)		
	16-20 years	0 (0%)	2 (16.7%)	4 (33.3%)	2 (16.7%)	4 (33.3%)		
	21 years and above	0 (0%)	1 (3%)	6 (18.2%)	3 (9.1%)	23 (69.7%)		
	Gender						5.730	0.125
	Male	0 (0%)	1 (1.7%)	20 (33.3%)	11 (18.3%)	28 (46.7%)		
	Female	0 (0%)	10 (8.7%)	24 (20.9%)	24 (20.9%)	57 (49.6%)		
	Institution						12.020	0.007
	Oral and dental health center	0 (0%)	8 (11%)	25 (34.2%)	11 (15.1%)	29 (39.7%)		
	University Hospital	0 (0%)	3 (2.9%)	19 (18.6%)	24 (23.5%)	56 (54.9%)		
	Title						26.001	0.002
	General practitioner	0 (0%)	8 (12.7%)	20 (31.7%)	9 (14.3%)	26 (41.3%)		
	Specialist physician	0 (0%)	0 (0%)	6 (42.9%)	4 (28.6%)	4 (28.6%)		
	Residency student	0 (0%)	2 (2.8%)	16 (22.2%)	20 (27.8%)	34 (47.2%)		
	Faculty Member	0 (0%)	1 (3.8%)	2 (7.7%)	2 (7.7%)	21 (80.8%)		
	Expertise						26.748	0.316
	Oral diagnosis and radiology	0 (0%)	0 (0%)	0 (0%)	2 (50%)	2 (50%)		
	Oral and Maxillofacial Surgery	0 (0%)	1 (9.1%)	2 (18.2%)	3 (27.3%)	5 (45.5%)		
	Orthodontics	0 (0%)	0 (0%)	1 (12.5%)	1 (12.5%)	6 (75%)		
	Restorative Dentistry	0 (0%)	0 (0%)	4 (19%)	2 (9.5%)	15 (71.4%)		
	Pediatric Dentistry	0 (0%)	2 (8%)	8 (32%)	7 (28%)	8 (32%)		
	Periodontology	0 (0%)	0 (0%)	2 (20%)	2 (20%)	6 (60%)		
	Prosthodontics	0 (0%)	0 (0%)	4 (17.4%)	5 (21.7%)	14 (60.9%)		
	Endodontics	0 (0%)	0 (0%)	3 (37.5%)	3 (37.5%)	2 (25%)		
	I do not have expertise	0 (0%)	8 (12.3%)	20 (30.8%)	10 (15.4%)	27 (41.5%)		

"Do you know enough about the concept of defensive medicine practices?", "Do you have a medical malpractice insurance policy?" and "Are you worried about making medical mistakes?" When the answers given by the participants to the question were analyzed, the difference between individuals in age, duration of practice and title categories was found to be statistically significant ($p < 0.05$).

"Do you believe there is an increase in the number of medical malpractice cases?" and "Do you ever avoid patients who are likely to sue, in order to protect yourself from medical malpractice claims?" When their answers to the question were analyzed, the difference between individuals in the category of the institution they worked at was found to be statistically significant ($p < 0.05$).

"Will the medical malpractice case filed against you decrease your physician performance?" When the answers given by the participants to the question were analyzed, it was found that the difference between individuals in terms of duration of practice and the categories of the institution worked was statistically significant ($p < 0.05$).

The participants were asked "Do you ever avoid treatments with high complications in order to protect yourself from medical malpractice claims?" When their answers to the question were analyzed, the difference between individuals in the age category was found to be statistically significant ($p < 0.05$) (Table 5).

"To protect yourself from medical malpractice claims, do you ever refer patients at risk even though you have treatment?" When the answers given by the participants to the question were analyzed, the difference between individuals in the institution and title categories was found to be statistically significant ($p < 0.05$) (Table 6).

"Have you ever been sued for medical malpractice?", "Do you pay more attention to informed consent forms in order to protect yourself from medical malpractice claims?" , "Do you think that the distinction between complications and malpractice cannot be made clearly?" and "Do you use defensive medicine to protect patients and their relatives from verbal and physical violence?" When the answers given by the participants to the questions were analyzed, the difference between individuals in the specialty category was found to be statistically significant ($p < 0.05$) (Table 7).

Table 5. "Do you ever avoid treatments with high complications in order to protect yourself from medical malpractice claims?" Answers to the question

Questions	General Features	Always	Most of the time	Sometimes	Rarely	Never	X2	p
Do you ever avoid high-complication treatments to protect yourself from medical malpractice claims?	Age						22.239	0.035
	25 years and under	0 (0%)	0 (0%)	1 (16.7%)	5 (83.3%)	0 (0%)		
	26 to 40 years old	3 (2.4%)	38 (30.4%)	48 (38.4%)	22 (17.6%)	14 (11.2%)		
	41 to 55 years old	1 (2.4%)	7 (16.7%)	19 (45.2%)	8 (19%)	7 (16.7%)		
	56 years and older	0 (0%)	0 (0%)	2 (100%)	0 (0%)	0 (0%)		
	Duration of Medicine						15.963	0.456
	1-5 years	1 (1.6%)	18 (28.1%)	21 (32.8%)	19 (29.7%)	5 (7.8%)		
	6-10 years	1 (2.2%)	15 (33.3%)	19 (42.2%)	6 (13.3%)	4 (8.9%)		
	11-15 years	1 (4.8%)	5 (23.8%)	9 (42.9%)	2 (9.5%)	4 (19%)		
	16-20 years	0 (0%)	2 (16.7%)	7 (58.3%)	2 (16.7%)	1 (8.3%)		
	21 years and above	1 (3%)	5 (15.2%)	14 (42.4%)	6 (18.2%)	7 (21.2%)		
	Gender						1.568	0.815
	Male	1 (1.7%)	14 (23.3%)	23 (38.3%)	15 (25%)	7 (11.7%)		
	Female	3 (2.6%)	31 (27%)	47 (40.9%)	20 (17.4%)	14 (12.2%)		
	Institution						4.806	0.308
	Oral and dental health center	3 (4.1%)	19 (26%)	33 (45.2%)	11 (15.1%)	7 (9.6%)		
	University Hospital	1 (1%)	26 (25.5%)	37 (36.3%)	24 (23.5%)	14 (13.7%)		
	Title						9.205	0.685
	General practitioner	3 (4.8%)	18 (28.6%)	28 (44.4%)	8 (12.7%)	6 (9.5%)		
	Specialist physician	0 (0%)	3 (21.4%)	6 (42.9%)	3 (21.4%)	2 (14.3%)		
	Residency student	1 (1.4%)	19 (26.4%)	25 (34.7%)	19 (26.4%)	8 (11.1%)		
	Faculty Member	0 (0%)	5 (19.2%)	11 (42.3%)	5 (19.2%)	5 (19.2%)		
	Expertise						45.924	0.053
	Oral diagnosis and radiology	0 (0%)	2 (50%)	0 (0%)	0 (0%)	2 (50%)		
	Oral and Maxillofacial Surgery	0 (0%)	6 (54.5%)	0 (0%)	2 (18.2%)	3 (27.3%)		
	Orthodontics	1 (12.5%)	4 (50%)	2 (25%)	1 (12.5%)	0 (0%)		
	Restorative Dentistry	0 (0%)	2 (9.5%)	7 (33.3%)	8 (38.1%)	4 (19%)		
	Pediatric Dentistry	0 (0%)	5 (20%)	12 (48%)	7 (28%)	1 (4%)		
	Periodontology	0 (0%)	2 (20%)	6 (60%)	2 (20%)	0 (0%)		
	Prosthodontics	0 (0%)	5 (21.7%)	9 (39.1%)	6 (26.1%)	3 (13%)		
	Endodontics	0 (0%)	1 (12.5%)	5 (62.5%)	1 (12.5%)	1 (12.5%)		
	I do not have expertise	3 (4.6%)	18 (27.7%)	29 (44.6%)	8 (12.3%)	7 (10.8%)		

Table 6. "In order to protect yourself from medical malpractice allegations, do you refer patients at risk even though you have treatment?" Answers to the question

Questions	General Features	Always	Most of the time	Sometimes	Rarely	Never	X2	p
In order to protect yourself from medical malpractice claims, do you refer patients at risk even though you have treatment?	Age						9.424	0.666
	25 years and under	0 (0%)	0 (0%)	2 (33.3%)	2 (33.3%)	2 (33.3%)		
	26 to 40 years old	3 (2.4%)	17 (13.6%)	43 (34.4%)	31 (24.8%)	31 (24.8%)		
	41 to 55 years old	1 (2.4%)	5 (11.9%)	10 (23.8%)	11 (26.2%)	15 (35.7%)		
	56 years and older	0 (0%)	0 (0%)	0 (0%)	2 (100%)	0 (0%)		
	Duration of Medicine						15.184	0.511
	1-5 years	2 (3.1%)	5 (7.8%)	24 (37.5%)	15 (23.4%)	18 (28.1%)		
	6-10 years	1 (2.2%)	7 (15.6%)	13 (28.9%)	14 (31.1%)	10 (22.2%)		
	11-15 years	0 (0%)	5 (23.8%)	8 (38.1%)	3 (14.3%)	5 (23.8%)		
	16-20 years	0 (0%)	3 (25%)	4 (33.3%)	2 (16.7%)	3 (25%)		
	21 years and above	1 (3%)	2 (6.1%)	6 (18.2%)	12 (36.4%)	12 (36.4%)		
	Gender						3.676	0.452
	Male	3 (5%)	8 (13.3%)	16 (26.7%)	16 (26.7%)	17 (28.3%)		
	Female	1 (0.9%)	14 (12.2%)	39 (33.9%)	30 (26.1%)	31 (27%)		
	Institution						22.492	0.000
	Oral and dental health center	1 (1.4%)	15 (20.5%)	31 (42.5%)	17 (23.3%)	9 (12.3%)		
	University Hospital	3 (2.9%)	7 (6.9%)	24 (23.5%)	29 (28.4%)	39 (38.2%)		
	Title						34.479	0.001
	General practitioner	1 (1.6%)	14 (22.2%)	26 (41.3%)	15 (23.8%)	7 (11.1%)		
	Specialist physician	0 (0%)	1 (7.1%)	8 (57.1%)	2 (14.3%)	3 (21.4%)		
	Residency student	3 (4.2%)	7 (9.7%)	17 (23.6%)	21 (29.2%)	24 (33.3%)		
	Faculty Member	0 (0%)	0 (0%)	4 (15.4%)	8 (30.8%)	14 (53.8%)		
	Expertise						42.587	0.100
	Oral diagnosis and radiology	0 (0%)	0 (0%)	1 (25%)	1 (25%)	2 (50%)		
	Oral and Maxillofacial Surgery	0 (0%)	2 (18.2%)	3 (27.3%)	1 (9.1%)	5 (45.5%)		
	Orthodontics	1 (12.5%)	0 (0%)	1 (12.5%)	3 (37.5%)	3 (37.5%)		
	Restorative Dentistry	0 (0%)	2 (9.5%)	9 (42.9%)	4 (19%)	6 (28.6%)		
	Pediatric Dentistry	0 (0%)	3 (12.0%)	7 (28%)	9 (36%)	6 (24%)		
	Periodontology	0 (0%)	0 (0%)	1 (10%)	4 (40%)	5 (50%)		
	Prosthodontics	2 (8.7%)	0 (0%)	5 (21.7%)	7 (30.4%)	9 (39.1%)		
	Endodontics	0 (0%)	1 (12.5%)	2 (25%)	1 (12.5%)	4 (50%)		
	I do not have expertise	1 (1.5%)	14 (21.5%)	26 (40%)	16 (24.6%)	8 (12.3%)		

Table 7. "Do you use defensive medicine to protect patients and their relatives from verbal and physical violence?" Answers to the question

Questions	General Features	Definitely Yes	Yes	I am indecisive	No	Definitely No	X2	p
Do you use defensive medicine to protect patients and their relatives from verbal and physical violence?	Age						10.740	0.551
	25 years and under	0 (0%)	3 (50%)	1 (16.7%)	2 (33.3%)	0 (0%)		
	26 to 40 years old	6 (4.8%)	22 (17.6%)	55 (44%)	29 (23.2%)	13 (10.4%)		
	41 to 55 years old	2 (4.8%)	7 (16.7%)	16 (38.1%)	11 (26.2%)	6 (14.3%)		
	56 years and older	0 (0%)	0 (0%)	0 (0%)	1 (50%)	1 (50%)		
	Duration of Medicine						17.174	0.374
	1-5 years	4 (6.3%)	11 (17.2%)	26 (40.6%)	17 (26.6%)	6 (9.4%)		
	6-10 years	1 (2.2%)	8 (17.8%)	24 (53.3%)	10 (22.2%)	2 (4.4%)		
	11-15 years	2 (9.5%)	6 (28.6%)	6 (28.6%)	2 (9.5%)	5 (23.8%)		
	16-20 years	0 (0%)	3 (25%)	4 (33.3%)	4 (33.3%)	1 (8.3%)		
	21 years and above	1 (3%)	4 (12.1%)	12 (36.4%)	10 (30.3%)	6 (18.2%)		
	Gender						1.398	0.844
	Male	3 (5%)	11 (18.3%)	24 (40%)	13 (21.7%)	9 (15%)		
	Female	5 (4.3%)	21 (18.3%)	48 (41.7%)	30 (26.1%)	11 (9.6%)		
	Institution						5.762	0.218
	Oral and dental health center	4 (5.5%)	18 (24.7%)	31 (42.5%)	13 (17.8%)	7 (9.6%)		
	University Hospital	4 (3.9%)	14 (13.7%)	41 (40.2%)	30 (29.4%)	13 (12.7%)		
	Title						19.811	0.071
	General practitioner	4 (6.3%)	16 (25.4%)	28 (44.4%)	10 (15.9%)	5 (7.9%)		
	Specialist physician	0 (0%)	2 (14.3%)	5 (35.7%)	4 (28.6%)	3 (21.4%)		
	Residency student	3 (4.2%)	14 (19.4%)	29 (40.3%)	21 (29.2%)	5 (6.9%)		
	Faculty Member	1 (3.8%)	0 (0%)	10 (38.5%)	8 (30.8%)	7 (26.9%)		
	Expertise						48.467	0.031
	Oral diagnosis and radiology	0 (0%)	0 (0%)	2 (50%)	1 (25%)	1 (25%)		
	Oral and Maxillofacial Surgery	0 (0%)	2 (18.2%)	6 (54.5%)	3 (27.3%)	0 (0%)		
	Orthodontics	2 (25%)	3 (37.5%)	2 (25%)	1 (12.5%)	0 (0%)		
	Restorative Dentistry	0 (0%)	4 (19%)	8 (38.1%)	8 (38.1%)	1 (4.8%)		
	Pediatric Dentistry	1 (4%)	2 (8%)	10 (40%)	10 (40%)	2 (8%)		
	Periodontology	1 (10%)	1 (10%)	5 (50%)	3 (30%)	0 (0%)		
	Prosthodontics	0 (0%)	3 (13%)	6 (26.1%)	5 (21.7%)	9 (39.1%)		
	Endodontics	0 (0%)	1 (12.5%)	5 (62.5%)	1 (12.5%)	1 (12.5%)		
	I do not have expertise	4 (6.2%)	16 (24.6%)	28 (43.1%)	11 (16.9%)	6 (9.2%)		

"Do you ever ask for extra consultation to protect yourself from medical malpractice claims?" When the answers given by the participants to the question were analyzed, the difference between individuals in age, duration of practice and gender categories was found to be statistically significant ($p < 0.05$).

"Do you ever take any procedure without indications to protect yourself from medical malpractice claims?" When the answers given by the participants to the question were analyzed, the difference between individuals in the gender category was found to be statistically significant ($p < 0.05$).

"Did you feel uneasy in your medical practice after the new Turkish penal code came into force on 1 June 2005 (the penalty of deprivation of practice of profession and art for up to three years, to be applied to physicians after the completion of the actual punishment, even in the slightest negligence)?" When the answers given by the participants to the question were analyzed, the difference between the individuals in terms of duration of medicine, title and field of specialty was found to be statistically significant ($p < 0.05$).

"Have you read the patient rights regulation published in the official newspaper?" When the answers given by the participants to the question were analyzed, the difference between individuals in all categories was found to be statistically significant ($p < 0.05$).

"Does taking medical malpractice insurance make your medical practices more comfortable?" When the answers given by the participants to the question were analyzed, it was found that the difference between individuals in age, duration of practice, institution and title categories was statistically significant ($p < 0.05$).

"To protect yourself from medical malpractice claims, do you ever avoid patients with complex medical problems?", "Do you use imaging tests more frequently to protect yourself from medical malpractice claims?" "Do you ever keep records in more detail to protect yourself from medical malpractice claims?" and "Do you think I accept all medical interventions, I will not sue my physician when the damage occurs "" would a document relieve the physician from responsibility? " When the answers given by the participants to the questions were analyzed, the difference between individuals in any category was not found to be statistically significant ($p > 0.05$).

DISCUSSION

In recent years, many researches have been conducted on examining the reasons for defensive medicine practice and reducing its effectiveness in order to increase the quality and efficiency of healthcare services. Studies have

shown that healthcare professionals tend to practice positive and negative defensive medicine as a result of a medical error, due to the fear of being subjected to violence, complaints or litigation, fear of protecting their reputation, or pressures based on the business environment and media (8).

Johnston (14) claimed that medical school students were directed to defensive medicine during their education. In a study conducted by O'Leary et al. (16), It was determined that 96% of the assistant physicians and 34% of the 4th grade students of the Faculty of Medicine had applied to positive defensive medicine at least once in the past. In a study involving 100 specialist physicians, Motta et al. stated that 50% of the doctors were leaning towards the practice of defensive medicine due to legal concerns (17). In our study, the rate of those who answered "I am indecisive" to the question "Do you use defensive medicine to protect against verbal and physical violence by patients and their relatives?" was higher than those who answered "yes" or "no" in many categories.

Studies have shown that physicians do not have enough information about possible future malpractice litigation processes. Arikan et al. (18) reported that the knowledge level of the newcomers to the medical profession is less than the experienced ones. In a study conducted in our country, it was stated that approximately 58% of the physicians were not aware of malpractice procedures (19).

In our study, 32% of the physicians in the 26-40 age group, who constitute the vast majority (71.4%) of the participants, stated that they were not aware of the concept of defensive medicine. It was understood that only 10.85% of them had knowledge about the content of the malpractice concept. 84.4% of those with 1-5 years of medical experience, 36.6% of the participants, and 83.3% of the specialty students with the largest share, with 41.1%, emphasized that they do not know this concept at all. Among those who have partially or completely read the patient rights regulation published in the official newspaper, those who have a medical service period of 21 years or more (69.7%) take the lead.

Yildirim et al. (20) concluded in a study involving 125 physicians that 69.7% of the doctors practiced defensive medicine. Bishop et al. (21) emphasized that 91% of the physicians acted defensively in a study in which 1231 doctors participated. Ozata et al. (22), in their study in which 173 physicians participated, concluded that approximately 93% of the doctors used defensive medicine in the past. In a study conducted on 117 gynecologists, Ali et al. (23) found that approximately 41% of the physicians used positive and 31% negative defensive medicine. In a similar study, it was found that 98% of the research assistants

working at Dicle University Medical Faculty Hospital were practicing positive and 92% negative defensive medicine (24). In a study conducted among family physicians in Izmir, it was reported that 100% of physicians practiced defensive medicine (25), and in another study conducted on dentists, this rate was 93.9% (26).

In a study conducted on 229 physicians, Ozata et al. (27) stated that male physicians were more afraid of high-risk patients, while Moosazadeh et al. (15) reported that female physicians mostly turned to negative defensive medicine. Solaroglu et al. (28) concluded that there is no significant relationship between the rate of defensive medicine application and gender.

In our study conducted on 175 dentists, the rate of being anxious about medical mistakes was found to be equally high in men and women (98.3%). Physicians under 25 years of age (100%) and doctors with 1-5 years of experience (98.4%) are the leading ones who are worried about making medical mistakes. Oral and Maxillofacial Diseases and Surgery (81.8%) and Pedodontics (80%) are the leading areas of uneasiness after the enactment of the new Turkish Penal Code dated June 1, 2005. Most of the physicians in almost all categories think that the complication-malpractice distinction cannot be made clearly. Only 5.71% of the participants in the study stated that a malpractice lawsuit was filed against them before, and only a very small portion (6.28%) stated that the malpractice lawsuit to be filed against them would not affect their physician performance.

In our study, it was observed that male (86.7%) and female (82.6%) participants avoided similar rates of patients with a high probability of filing a malpractice case. While the rate of physicians working in the Oral and Dental Health Center to avoid patients with high probability of filing malpractice cases is 93.2%, this rate is 77.5% for those working at the University Hospital. While 45% of male physicians can perform procedures without indication to avoid malpractice claim, it has been determined that this rate is 21.7% for female participants. Periodontology (90%) and Orthodontics (87.5%) physicians were the leading specialists who avoided performing unindicated procedures for the purpose of defensive medicine.

Consistent with these findings, the participants explained the medical practices for positive defensive medicine to their patients in more detail (96.7% for men, 98.3% for women and 90.9% for Oral and Maxillofacial Surgeons who needed detailed explanation), they gave more importance to informed consent forms (95% in men, 96.5% in women, 100% in physicians with 16-20 years of experience and 96.15% in faculty members) and they kept the records more detailed (93.3% in men, 99.1% in women, while those who kept the records less detailed

Endodontics doctors 87.5%). 90.28% of the participants agreed that there has been an increase in the number of malpractice cases in recent years. We are of the opinion that the high rates are due to the fear of high compensation for malpractice cases, which have increased recently, or the fear of physicians being subjected to administrative penalties.

In a study conducted with the participation of 307 physicians, Catino (8) reported that young physicians were more inclined to practice defensive medicine. In a study conducted on 425 physicians, Akinci et al. (29) reported that inexperienced physicians avoided patients inclined to sue, and the rate of requesting more examinations decreased following the increase in experience. In a study conducted on 204 doctors with different specialties, Ortashi et al. (30) stated that 78% of the participants applied defensive medicine by making unnecessary examinations or referring patients to other physicians, but physicians with professional experience used this method less.

In a study conducted with the participation of 131 gastroenterologists, Hiyama et al. (11) stated that 98% of physicians used defensive medicine, 68% referred patients unnecessarily, 54% recommended unnecessary invasive procedures, 36% requested additional examinations, 16% explained that he was prescribing unnecessary medication. He stated that experienced doctors were less inclined to negative defensive medicine practices, although 75% of the participants avoided some interventional procedures and 53% avoided high-risk patients. Mete et al. (31), in their study, in which 234 physicians participated, reported that as professional experience increased, physicians were less afraid of risky patients. It was found that physicians requested less examination and consultation or applied less referral procedures. It was understood that doctors who had previously encountered malpractice cases avoided making mistakes in order not to encounter a new complaint.

In our study, it was concluded that participants with less than 16 years of medical experience required more consultations than experienced physicians to avoid malpractice claims. It was observed that the areas of expertise requiring the most consultation for the purpose of defensive medicine were Oral Diagnosis and Radiology (100%), Prosthetic Dentistry (95.7%) and Restorative Dentistry (95.2%). It has been observed that additional drug prescribing behavior decreases with increasing age (66.7% for 25 years and below vs. 42.9% for 41-55 years) and with increasing medical experience (e.g. 60.9% for 1-5 years vs. 30.3% for 21 years and over). It was determined that the specialty areas that mostly wrote extra drugs were Endodontics (75%) and Pedodontics (68%).

Studdert et al. (32) in a study conducted on 824 physicians, found that 93% of the participants had used defensive medicine in the past, 42% of them reduced the practices to be performed with risk anxiety, 59% requested additional examinations and 52% made unnecessary referrals (10). In a study involving 877 physicians, Asher et al. stated that 59% of the doctors had unnecessary examinations, 50% requested a consultation even though it was not necessary, and 24% suggested unnecessary invasive procedures.

In the study conducted by Başer et al. (25) with the participation of 81 family physicians, it was determined that 70% of the doctors practiced defensive medicine in order to avoid legal problems. It was observed that 37% of the physicians had unnecessary examinations, 61% requested a consultation even though it was not necessary, 78% prescribed unnecessary drugs, 68% made detailed explanations and approximately 94% kept detailed records. Approximately 55% of the participants admitted that they hesitated from the patients with a tendency to sue and 71% from the treatments with high risk of complications.

In our study, for the purpose of defensive medicine, those who avoided the patients with complex medical problems the most and wanted the most imaging examinations were Orthodontics and Periodontology. The branches of specialization with the lowest rate of avoiding treatments with high complications are Oral Diagnosis and Radiology (50%) and Oral and Maxillofacial Diseases and Surgery (72.7%). It was found interesting that all specialties referred at least 50% of patients at risk despite having treatment possibilities, albeit lower than those without expertise (87.7%).

Being subjected to complaints or being sued can lead to emotional reactions in healthcare professionals such as embarrassment, guilt, anger and depression. Even if the lawsuit will result in favor of the physician, it will cause loss of reputation, and professional liability insurance for such situations cannot prevent the implementation of defensive medicine practices (33). Studdert et al. (10) stated that physicians who think that malpractice insurance cannot compensate for the damage are twice as inclined to apply positive and negative defensive medicine compared to other specialist physicians.

In our study, "What is your risk of encountering a medical malpractice case at any time according to the conditions you are in?" Oral and Maxillofacial Diseases and Surgery physicians answered the question with an extremely high rate of 54.5% and a very high answer of 45.5% (total 100%). Oral Diagnosis and Radiology (75%) and Endodontics have reported that they do not see a high risk at a rate of 50%. "Does taking malpractice insurance make your medical practices more comfortable?" those

who give a positive answer to the question are mostly young physicians under the age of 25 (100%), those over 56 years old (100%) and those with 1-5 years of experience (64.1%). 12 physicians (9.6%) in the 26-40 age group and 2 physicians (4.8%) in the 41-55 age group stated that they had never had a malpractice insurance policy, while 25% of Endodontics specialty physicians had declared that he is not. The rate of those who think that signing a document stating that patients will not sue their physician when medical damage occurs will not relieve the physician from responsibility is slightly more than half of the participants working both in the Oral and Dental Health Center and University Hospital.

In recent years, studies have come to the fore on which branches defensive medicine practices are concentrated on and how they can be prevented. Studies show that physicians complain the most among healthcare professionals of patients. Increasing malpractice cases in our country have been particularly effective in doctors preferring less risky departments when determining their specialty (34).

In the light of all these evaluations, it can be said that health services always involve risks that may lead to medical malpractice cases and these cases put a great pressure on healthcare professionals who do not have sufficient equipment. For this reason, malpractice litigation procedures should never rise to a level that discourages physicians from their profession and hurts their lives. Healthcare professionals, on the other hand, should take care to do their profession in the best possible way, not with hesitation, should know their legal responsibilities and show the necessary sensitivity.

CONCLUSION

Especially in our country, the stress experienced by healthcare professionals due to their working conditions and heavy workload plays an important role in the formation of medical errors. We believe that increasing the quality and efficiency of healthcare services can only be possible by eliminating the worries that healthcare professionals feel while performing their duties. We believe that improving working conditions and providing a peaceful and safe environment will lead to a decrease in defensive medicine practices.

Since the vast majority of physicians in our country do not have the necessary knowledge about medical errors and malpractice, regular training programs, seminars and conferences should be planned in this regard, and the experience of experienced physicians should be utilized in solving the problems. In new researches about defensive medicine applications, it would be appropriate to examine the effect of malpractice concern on the choice of specialty and the economy of our country.

ETHICAL DECLARATIONS

Ethics Committee Approval: Approval for the study was given by the Ethics Committee of Dicle University Faculty of Dentistry (Date: 26.06.2019, Decision No: 2019/29-2).

Informed Consent: All physicians signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

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

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

Acknowledgements: We would like to thank all healthcare professionals that agreed to share their perspectives.

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