Euras J Fam Med 2024;13(4):155-61. doi:10.33880/ejfm.2024130402 **Original Research**

The Place of Quaternary Prevention Practices in Primary Care in Edirne

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ABSTRACT

Aim: The aim of this study was to investigate the physician-related factors leading to excessive medical interventions in the primary care setting.

Methods: A total of 126 physicians working in the Family Medicine centers in the primary care setting in Edirne Province, Türkiye were included in this study between September 2019 and November 2019. The data were collected with a questionnaire prepared by the researcher. The questionnaire consisted of 61 questions in total including four questions about the sociodemographic characteristics of the participants, 39 questions examining the factors that may lead to excessive medical intervention, and the Defensive Medicine Practices Attitude Scale, which had 18 questions.

Results: According to physicians' scores from the Defensive Medicine Practices Attitude Scale, the mean was 41.05±9.91 (min=14, max=62). We found that defensive medicine practices attitudes were very good in 10.3% (n=12) of physicians, good in 35.3% (n=41), moderate in 49.2% (n=57), and poor in 5.2% (n=6).

Conclusion: The lack of knowledge is attributed to the difficulty in accessing reliable information and a lack of trust in the articles. This implies that article providers need to implement reforms in how they select and distribute these articles to physicians. The heightened fear of litigation among physicians also highlights the need for legal reforms.

Keywords: quaternary prevention, malpractice, family practice, defensive medicine

Date of submission: 23.11.2023 / **Date of acceptance:** 23.12.2024

How to cite: Kara AS, Caylan A, Dagdeviren HN, Kara KS. The place of quaternary prevention practices in primary care in Edirne. Euras J Fam Med 2024;13(4):155-61. doi:10.33880/ejfm.2024130402.

Conflict of interest: No conflict of interest was declared by the authors.
Financial disclosure: No financial disclosure was declared by the authors.

Introduction

The concept of prevention has been defined as actions aimed at preventing, eliminating, or minimizing the effects of diseases and the damage they cause or, if none of these are possible, delaying the progression of disease and disability. Prevention or preventive actions are generally defined by dividing them into several main categories. However, no matter how many categories the prevention is divided into, the boundaries of preventive actions cannot be clearly defined as they are all interconnected. The concept of prevention has long been defined by categorizing it from primordial to quaternary prevention (1,2).

The concept of quaternary prevention can be defined as identifying patients who may be exposed to excessive medical intervention, preventing unnecessary interventions for these patients, providing them with the necessary care, and providing care procedures within medically acceptable limits (1,3-5).

Considering the physician-related factors that may lead to excessive medical intervention and overdiagnosis, the main culprits include the mistakes made by physicians during prevention interventions, lack of knowledge, shortcomings in education, uncertainty regarding the accuracy of the information, excessive confidence in test results, and the fear of overlooking a diagnosis (6,7). In the present study, we aimed to investigate the physician-related factors leading to excessive medical interventions in the primary care setting.

Methods

This single-center, descriptive, cross-sectional study was conducted at Family Medicine centers located in Edirne Province, Türkiye between September 1st, 2019 and November 1st, 2019. Before the study, written informed consent was obtained from each participant. The study protocol was approved by the institutional Ethics Committee (TÜTF-BAEK 2019/234) and the Republic of Türkiye, Ministry of Health, Public Health Directorate of Edirne. The study was conducted in accordance with the principles of the Declaration of Helsinki.

In an attempt to reach all physicians as the study sample, a total of 126 physicians working in the Family Medicine centers in the primary care setting in Edirne Province were included in this study. All participants were given questionnaires, and they were asked to fill them. Inclusion criteria were physicians working in the primary care setting in Edirne Province and consenting to participate in the study. Of a total of 126 physicians, 116 agreed to participate in the study, and all participating physicians were included in the analysis.

Data including sociodemographic characteristics of the participants were collected using a questionnaire prepared by the investigator. The questionnaire consisted of 61 questions in total including four questions regarding the sociodemographic characteristics of the participants, 39 questions examining the factors that may lead to excessive medical intervention, and 18 questions regarding the Defensive Medicine Practices Attitude Scale scores. In addition, the number of enrollments and the total number of tests in September and October were retrieved from the Republic of Türkiye, Ministry of Health, Public Health Directorate of Edirne.

The Defensive Medicine Practices Attitude Scale was developed to measure the attitudes of physicians toward defensive medicine practices, and its Turkish validity and reliability studies were conducted by Başer et al. in 2014 (8). According to the reliability analysis, the internal consistency of the scale was high with a Cronbach alpha of 0.853. The Cronbach alpha values calculated for the subscales were also high, with 0.685 for positive defensive medicine practices and 0.918 for negative defensive medicine practices (8).

Statistical analysis was performed using the SPSS version 19.0 software (IBM Corp., Armonk, NY, USA). The normality of the variables was evaluated using the Kolmogorov-Smirnov test. Visual (histogram and probability graphs), analytical (skewness and kurtosis values), and normality tests were also used to evaluate the distribution. Non-parametric tests were used, as the study data did not fit the normal distribution. Descriptive data were presented in mean±standard deviation (SD), median (min-max) or number and frequency, where

applicable. The Pearson chi-square, Mann-Whitney U, and Kruskal-Wallis H tests were used for descriptive statistics. A *p*-value of <0.05 was considered statistically significant.

Results

Table 1 demonstrates the distribution of participants by age, sex, marital status, workplace and working time in the profession.

Table 1. Characteristics of physicians

Age	Mean	45.35±7.932
	Minimum	27
	Maximum	64
Gender	Female	%37.9 (n=44)
	Male	%62.1 (n=72)
Marital status	Married	%87.9 (n=102)
	Single	%7.8 (n=9)
	Divorced	%4.3 (n=5)
Workplace	Center	%57.8 (n=67)
	District	%42.2 (n=49)
Working time in the profession	<1 Year	%0 (n=0)
	1-5 Years	%3.4 (n=4)
	6-10 Years	%6.9 (n=8)
	>10 Years	%89.7 (n=104)
	Practitioner	% 93.1 (n=108)

Table 2 shows the number of participants, number of tests per month, and number of individuals examined per month.

Table 2. Data on physicians received from the Public Health Directorate

	Mean	Minimum	Maximum
Total number of enrollees	3616.67±705.27	1324	5442
Number of tests per month	1027.12±526.57	93.5	2437.5
Number of people examined per month	1234.31±376.78	415	2978.5

According to physicians' scores from the Defensive Medicine Practices Attitude Scale, the mean was 41.05±9.91 (min=14, max=62). Their scores from the scale were calculated. Defensive medicine practice attitudes were determined similarly to Başer et al (9), who organized the scale. In this vein, those with 70-56 points were evaluated as "very good", those between 55-42 points as "good", those between 41-28 points as "moderate", and those between 27-14 points as "poor". As a result, we found that defensive medicine practices attitudes were very good in 10.3% (n=12) of physicians, good in 35.3% (n=41), moderate in 49.2% (n=57), and poor in 5.2% (n=6).

Table 3 demonstrates the questions examining physicians' lack of knowledge and the distribution of their answers.

Table 3. Physicians' lack of knowledge

	Never	Seldom	Sometimes	Often	Always
	n (%)	n (%)	n (%)	n (%)	n (%)
I have had cases where i thought i was inadequate due to a lack of knowledge	21 (18.1)	63 (54.3)	31 (26.7)	1 (0.9)	0 (0)
I keep my level of knowledge up-to-date by following the developments and changes in medicine	0 (0)	10 (8.6)	19 (16.4)	69 (59.5)	18 (15.5)

We found a significant relationship between the questions "I have had cases where I thought I was inadequate due to a lack of knowledge" and "I have had cases where I thought I was inadequate due to lack of experience" (χ^2=98.036, p<0.001) and "I keep my level of knowledge up-to-date by following the developments and changes in medicine" (χ^2=19.937, p=0.001).

We found a significant relationship between the questions "I have had cases where I thought I was inadequate due to a lack of knowledge" and "I think that the practical education we receive in medical schools is sufficient" (χ^2=1.366, p=0.018) and "I can easily access sources of information that I think are reliable" (χ^2=12.341, p=0.045).

There was no significant relationship between the questions "I have had cases where I thought I was inadequate due to a lack of knowledge" and "I think that the theoretical education we receive in medical schools is sufficient" (χ^2=10.968, p=0.069).

We found a significant relationship between the question "I keep my level of knowledge up-to-date by following the developments and changes in medicine"

and the mean number of physicians' examinations (χ^2:7.254, p=0.027) and the mean number of temporary patient examinations (χ^2=8.503, p=0.014).

We found a significant relationship between the questions of "I keep my level of knowledge up-to-date by following the developments and changes in medicine" and "I can easily access sources of information that I think are reliable" (χ^2=37.974, p<0.001).

Table 4 shows the questions we asked about the shortcomings in education and the access of physicians to information and their answers to these questions.

Table 4. Shortcomings in education and access to information by physicians

	Never	Seldom	Sometimes	Often	Always
	n (%)	n (%)	n (%)	n (%)	n (%)
I think that the practical education we receive in medical schools is sufficient	19 (16.4)	19 (16.4)	22 (19)	43 (37.0)	13 (11.2)
I can easily access sources of information that I think are reliable	2 (1.7)	8 (6.9)	21 (18.1)	49 (42.3)	36 (31)
I think that theoretical education we receive in medical schools is sufficient	5 (4.3)	6 (5.2)	22 (19)	62 (53.4)	21 (18.1)

Table 5 presents the questions and answers examining physicians' lack of confidence in information. We found a significant relationship between the questions "I trust the accuracy of the information of the published articles" and "I believe that the published scientific articles have been prepared meticulously and properly and in accordance with scientific norms" (χ^2=22.722, p<0.001).

Table 5. Physicians' lack of confidence in information

	Never	Seldom	Sometimes	Often	Always
	n (%)	n (%)	n (%)	n (%)	n (%)
I trust the accuracy of the information in the published articles	1 (0.9)	13 (11.2)	32 (27.6)	52 (44.8)	18 (15.5)
I trust the accuracy of the information in the published guidelines	1 (0.9)	4 (3.4)	12 (10.3)	69 (59.5)	30 (25.9)

Table 6 shows the question examining physicians' overconfidence in tests and the distribution of their answers. There was no significant relationship between the questions "I trust the results of tests and imaging done to patients" and the mean number of tests (χ^2=1.651, p=0.438).

Table 6. Physicians' overconfidence in tests

	Never	Seldom	Sometimes	Often	Always
	n (%)	n (%)	n (%)	n (%)	n (%)
I trust the results of tests and imaging	0 (0)	5 (4.3)	11 (9.5)	86 (74.1)	14 (12.1)

Table 7 shows the questions examining physicians' fear of missing a diagnosis and their answers to these questions.

Table 7. Physicians' fear of missing a diagnosis

	Never	Seldom	Sometimes	Often	Always
	n (%)	n (%)	n (%)	n (%)	n (%)
I request additional tests for the patient for fear of missing a diagnosis	10 (8.6)	22 (19)	54 (46.5)	21 (18.1)	9 (7.8)
I refer the patients to the upper level of care for fear of missing a diagnosis	6 (5.2)	20 (17.2)	61 (52.6)	19 (16.4)	10 (8.6)

There was no significant relationship between the question "I request additional tests for the patient for fear of missing a diagnosis" and the number of enrollees (χ^2=2.313, p=0.315).

We found a significant relationship between the question "I request additional tests for the patient for fear of missing a diagnosis" and the number of wanderers (χ^2=6.193, p=0.045).

We found a significant relationship between the questions "I request additional tests for the patient for fear of missing a diagnosis" and "I refer the patients to the upper level of care for fear of missing a diagnosis" (χ^2=64.407, p<0.001).

There was no significant relationship between the defensive medicine scale score and "I request additional tests for the patient for fear of missing a diagnosis" (χ^2=7.302, p=0.292).

We found a significant relationship between the scale score and "I refer the patients to the upper level of care for fear of missing a diagnosis" (χ^2=15.081, p=0.018).

Discussion

In the present study, we investigate the physician-related factors leading to excessive medical interventions in the primary care setting. Our study results showed that the physicians who reported a lack of knowledge kept their knowledge less up-to-date than the other physicians. Since medical science is constantly developing and being updated, physicians need to keep themselves up-to-date. Therefore, keeping their knowledge up-to-date is one of the leading factors to keep their knowledge at a high level. On the other hand, the reasons why physicians cannot keep their knowledge up-to-date should be examined. In our study, the mean number of participants and the mean number of examinations were lower for the physicians who kept themselves up-to-date. This finding suggests that some of our physicians could not keep their knowledge up-to-date due to their current workload, thereby leading to a lack of knowledge.

In the current study, we examined the shortcomings in education and found that while the rate of physicians who considered that the theoretical education in medical schools was sufficient was 71.5%, the rate of those who considered that the practical education was sufficient was only 48.5%. In addition, the fact that physicians who found their practical education insufficient sometimes lacked knowledge, suggests that practical education is insufficient for physicians in the field.

Furthermore, only 71.2% of the physicians had easy access to reliable sources of information. Considering information providers and facilities thanks to rapid technological advancements in today's world, this rate seems low. In addition, we found that physicians who lacked adequate access to information sources occasionally exhibited gaps in their knowledge. This finding indicates that the lack of access to reliable sources of information is one of the main factors in the formation of a lack of knowledge in physicians.

Considering the uncertainty regarding the accuracy of the information, the rate of physicians who were uncertain about the accuracy of the information in the articles was at a high level, about 40%. These participants reported that the articles were not prepared meticulously in accordance with scientific norms. This finding indicates that there are considerable problems both with the authors and the providers of these articles.

In the current study, we also examined whether physicians' excessive confidence in test results affected their test numbers. As a result, there was no significant relationship between the physicians' mean number of tests and their excessive confidence in test results. Accordingly, we can speculate that the excessive confidence of participating physicians in test results does not have a significant impact on the number of tests.

In the present study, we examined the physicians' fear of overlooking a diagnosis. With the increasing fear of litigation among physicians, the patients were being referred to higher-level care out of caution. This finding suggests that the physicians in our study may fear overlooking a diagnosis due to litigation concerns. As a result, rather than opting for excessive medical interventions, they practice negative defensive

medicine by referring patients to higher-level care. According to the Defensive Medicine Attitude Scale scores of our participants, the rate of physicians with a moderate or higher score, that is, more defensive medicine attitudes, was 94.8%, while the rate of physicians with a poor scale score, that is, less defensive medicine attitudes, was 5.2%. A study conducted with specialists who were considered high-risk in Pennsylvania found that 93% of physicians applied defensive medicine (9,10). In another study in Israel including board-certified physicians from different medical disciplines (*i.e.*, internal medicine, pediatrics, general surgery, family medicine, obstetrics and gynecology, orthopedic surgery, cardiology, and neurosurgery), 60% reported practicing defensive medicine (11). A survey of gastroenterologists in Japan found that 98% of respondents practiced defensive medicine. Among the European countries, Italy, where 80% of the physicians practice defensive medicine, takes the lead as the country that uses defensive medicine most frequently (12,13). The studies involving family physicians indicated that the rates of practicing defensive medicine were high. In Italy, the study by Catinoet al. (14), including general practitioners, showed that 77.9% of the participants practiced at least one form of defensive medicine. The results of our study showed that our participants had high defensive attitude scores, which is similar to the results of previous studies. This can be attributed to the fear of litigation, which is also included in the definition of defensive medicine. Since family medicine is primary care medicine, it may not come to mind at first among high-risk specialties compared to other specialties in secondary or tertiary care settings. However, family medicine is a branch which grows horizontally, not vertically, unlike other specialties. In other words, it is a branch which requires sufficient knowledge of various diseases from many specialties, from psychiatry to obstetrics; as the initial point of contact, it requires effective management of any complaint, no matter what complaint the patient has. We believe that the defensive approach of family physicians is high due to all these reasons.

Conclusion

The reason for the lack of knowledge is that it is difficult to access reliable sources of information and there is a lack of trust in the articles. This suggests that article providers should make some reforms in article selection and delivery of these articles to physicians.

The high fear of litigations among physicians indicates that reforms should be made in the field of law.

Acknowledgments

The authors would like to acknowledge the Public Health Directorate in Edirne for providing the data on physicians for this study.

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