

## Retraction Notice

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**History**

Expression of Concern:

yes, date: 2023-06-16

no

Correction:

yes, date: yyyy-mm-dd

no

**Comment:**

This article has been retracted to straighten the academic record. In making this decision the Editorial Board follows [COPE's Retraction Guidelines](#). Aim is to promote the circulation of scientific research by offering an ideal research publication platform with due consideration of internationally accepted standards on publication ethics. The Editorial Board would like to extend its sincere apologies for any inconvenience this retraction may have caused.

# Evaluation of Attitudes of Family Physicians toward Occupational Health and Occupational Diseases in Türkiye

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## Abstract

**Background/Aim:** This study evaluated family physicians' attitudes toward occupational health and disease in Türkiye. **Materials and Methods:** The study is cross-sectional and descriptive in a quantitative research design. The "Attitude Scale for Physicians toward Occupational Health and Occupational Diseases" developed by Kolcu *et al.* was used in the study (Cronbach's  $\alpha$  0.94). Our study aimed to sample the entire country using the stratified sample selection based on geographical region. 349 family physicians were included in the study according to sample size (n: 349). **Results:** The mean age of the participants in the study was  $37.77 \pm 8.96$  (min: 27, max: 65 years). Of the participants, 65.2% were male. Of the physicians, 33.8% were family medicine specialists, and 38.8% had occupational physician certificates. It was determined that the level of attitude of family physicians toward occupational diseases was insufficient. It was also found that awareness increased as age increased, and awareness and attitude levels did not change according to gender. No significant difference was found in the scale total scores and subdimensions of family physicians' occupational health and occupational disease attitudes according to the regions they worked in Türkiye. **Conclusion:** It has been concluded that there is no difference in awareness among family physicians in regions where it is much more important to diagnose an occupational disease, especially in industrial regions. The number of family physicians with occupational physician certificates was very insufficient, and a significant number of those who had occupational physician certificates did not practice occupational medicine.

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## Keywords

Family Medicine, Occupational Health, Occupational Disease, Attitude Scale

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### 1. Introduction

According to the definition made by the International Labor Organization (ILO) and the World Health Organization (WHO) in 1950, occupational health is keeping, maintaining, and improving the physical, mental and social well-being of employees in all occupations at the highest level. Failure to meet well-being defined in the occupational health system has negative consequences at individual and societal levels.

In terms of individual consequences, occupational diseases and work accidents are the most prevalent [1]. Using the definition of “hidden epidemic” by the ILO drew attention to the fact that the diagnosis and notification of occupational diseases are still far below what was expected [2].

It has been acknowledged that occupational disease data are essential in countries’ Occupation Health and Safety (OHS) profiles.

Based on the ILO data, 5.6 deaths from occupational diseases are expected compared to 1 death as a result of an occupational accident. It has been determined that 5% - 10% of deaths due to cardiovascular and cerebrovascular diseases and 10% of deaths due to chronic respiratory system diseases are occupationally related. Statistics show that approximately one in 10 deaths is due to occupational causes [3]. According to the SSI statistical annuals 2019 data, 22,000,964 employees are employed in 1,891,512 workplaces in Türkiye. It was determined that 422,463 of them had a work accident, 1088 of them were diagnosed with an occupational disease (those who were entitled to act with the SSI Health Board report), 4664 people became permanently incapacitated as a result of work accidents and occupational diseases, and 1147 people died in work accidents [4]. While 4 - 12 new occupational diseases are expected for every 1000 workers in a year, this rate is 31 per 100,000 (0.31 per 1000) in our country [5]. It can be thought that family physicians are insufficient in recognizing and reporting notifiable occupational diseases or in managing the process correctly (such as awareness and self-efficacy) because the figures in Türkiye are lower than expected.

In the occupational disease diagnosis and notification process carried out by the Social Security Institution (SSI) in Türkiye, family physicians can refer employees with a preliminary diagnosis of occupational disease to health service providers authorized by the SSI [6]. Furthermore, in the activities of the General Directorate of Public Health, Department of Employees, training modules were created for occupational disease awareness of family physicians in 2021. “The ‘Occupational Exposure Data Package’ numbered 269 was added to the Health Management System (HMS) in 2017 to ensure early detection of occupational

exposures in primary and secondary healthcare providers, to increase occupational disease awareness, and to increase the occupational/occupational inquiry ratio of healthcare providers” and “In February 2018, the ‘Occupational Exposure Inquiry Screen’ was added to the AHBS and HIMSS applications, and the data coming from the application, which was put into use in 81 provinces, were classified using predetermined variables in the Health Statistics and Causal Analysis (HSCA) platform”, and the information was shared with the physicians in the training module [7]. Considering these data, it is seen that family medicine is an essential partner in an advanced understanding of OHS service.

In this regard, the work to be performed in this step is very important for developing the basic OHS service. As far as the role of family physicians in the diagnosis notification process is concerned, there are no statistics available within the SSI system. However, occupational disease prediagnosis statistics reported by family physicians are not published in Türkiye [8]. The place of family physicians as a data source in the OHS system in our country cannot be predicted. Additionally, studies on the attitudes and perceptions of family physicians regarding the diagnosis and notification of occupational diseases are insufficient. This study will evaluate the perspective of family medicine, which is an essential part of the national OHS policy, on occupational disease and OHS services.

This study aims to assess family physicians’ attitudes toward occupational health and disease in Türkiye.

## 2. Materials

The study is cross-sectional and descriptive in a quantitative research design. After the study design, ethics committee approval was obtained from the non-interventional ethics committee of Suleyman Demirel University with the date 20.09.2022 and number 18/254.

In the study, the score of the “Attitude Scale toward Occupational Health and Occupational Diseases for Physicians” was determined as the dependent variable; age, gender, working time in family medicine, regional distribution, specialization status, occupational physician certificate status, and active workplace physician status were determined as independent variables.

This study was conducted on family physicians working in primary health care services in Türkiye in 2020 (N: 26594) (6). In this study, the sample size was determined to be 379 with a 95% confidence interval and an acceptable margin of error of 5% (N: 379).

Participants were selected from family physicians in the regions using the “proportionately stratified systematic random sampling” method. After the family physicians were stratified according to the regions, the same proportion of samples was selected from each stratum. Number starting from 1 is assigned to the family medicine unit in every geographical region. One out of every 20 of these numbers was included in our study. For example: (1, 21, 41, 61, etc.) The family physician was contacted by phone and asked about his willingness to participate in the study. The questionnaire was sent online to those who accepted.

Instead of those who did not agree to participate in the study, the next family physician was included in the study by asking the family physician of the next unit.

Inclusion criteria in the study were actively working as a family physician in a family health center and volunteering to participate in the study. The study had no exclusion criteria.

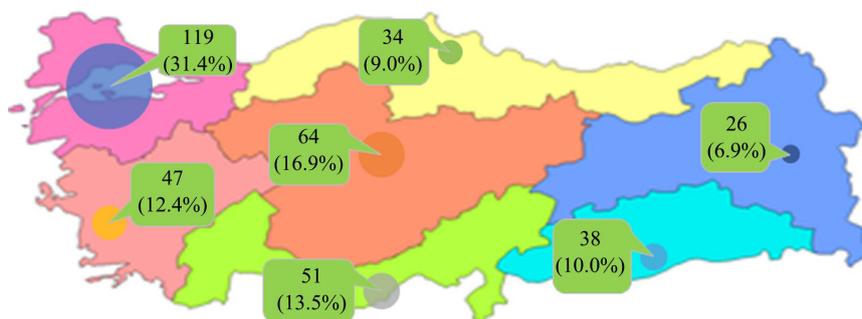
The “Attitude Scale for Physicians toward occupational health and occupational diseases” developed by Kolcu *et al.* [9]. This scale aims to measure physicians’ attitudes toward occupational health and occupational diseases. The scale consists of a total of 19 items: the self-efficacy subdimension consists of seven items, the readiness subdimension consists of four items, the awareness subdimension consists of four items, and the contribution subdimension consists of four items. Items are scored using a 5-point Likert-type scale. No question has a negative score. For example, the self-efficacy subdimension scored 7 - 35 points, the readiness subdimension scored 4 - 20 points, the awareness subdimension scored 4 - 20 points, the contribution subdimension scored 4 - 20 points, and the full scale scored 19 - 95 points. The Cronbach’s  $\alpha$  was 0.94 for this scale [9]. Since the scale used in the study was not used in any study before, we accepted the median mean of the scale as the threshold value as the success criterion. Values below the median mean on the scale were considered unsuccessful, and values above it were considered successful.

Statistical analysis was conducted using SPSS and JASP software. The mean and frequency distributions were calculated for descriptive data. T tests and ANOVA were performed as confirmatory tests to compare the groups. Correlation analysis was applied to the relationship between the age and working years of the family physicians participating in the study with the scale and its subgroups.  $P < 0.05$  was considered significant in the study.

### 3. Results

The number of family physicians participating in the study was 379 (N: 379). The mean age of the participants was  $37.77 \pm 8.96$  (min: 27, max: 65 years). Of the participants in the study, 65.2% were male (N = 247). The working period of physicians as family physicians was calculated as  $7.17 \pm 4.72$  years (min: 0, max: 16 years). A total of 128 (33.8%) were family medicine specialists, and 251 (66.2%) were family physicians. Of the participants in the study, 38.8% had occupational physician certificates (N = 147). Of the participants, 24.5% were actively working as workplace doctors (N = 93), while 286 (75.5%) were not. The regional distribution of family physicians participating in the study is shown on the map (Map 1).

Based on the scale, the mean total score of the family physicians was  $66.51 \pm 14.56$ . We observed that the mean scores of family physicians were higher than the median only when it came to the “contribution” subdimension, while the mean scores of the other subdimensions and the total scores were found to be below the median (Table 1).



**Map 1.** Regional distribution of family physicians participating in the study.

**Table 1.** Average scores of family physicians in Türkiye according to the subdimensions of the scale.

	Min	Max	Mean ± SD	Median
<b>Self-efficacy</b>	7.00	35.00	21.68 ± 6.56	22
<b>Readiness</b>	4.00	20.00	14.73 ± 4.01	15
<b>Awareness</b>	4.00	20.00	13.57 ± 4.02	14
<b>Contribution</b>	4.00	20.00	16.52 ± 3.24	16
<b>Total</b>	23.00	95.00	66.51 ± 14.56	66

The relationship between the total mean scores and subdimensions of family physicians showed that awareness increased only as age increased ( $P = 0.043$ ;  $r = 0.104$ ). Additionally, it was determined that the other subdimensions and the general average total scores they received from the scale were unrelated to age ( $P > 0.05$ ).

In the comparison of the subdimensions of the scale and the total average scores by gender, although the total mean scores of male family physicians were slightly higher than those of female family physicians, no significant difference was found in the subdimensions and total mean score according to gender ( $P > 0.05$ ). The relationship between the total average scores and subdimensions of family physicians and their working time was examined, and it was found that readiness increased ( $P = 0.017$ ;  $r = 0.122$ ) as the working time (experience) of the subdimensions increased. It was determined that the other subdimensions and the general average total scores were not related to the working time (experience) of the family physicians ( $P > 0.05$ ).

No significant difference was found in the family physicians' scale total scores and subdimensions regarding attitudes toward occupational health and occupational disease according to the regions where they worked in Türkiye ( $P > 0.05$ ).

The number of family medicine specialists who received specialized training in the study was 128 (33.77%). The general average scores and scores in all subdimensions of those who did family medicine as general practitioners who did not receive specialty training were higher than those who worked in family

health centers as family medicine specialists (**Table 2**).

The study included 147 family physicians (38.79%) holding occupational physician certificates.

Except for the contribution subdimension, the overall total score of the scale and the mean score in all other subdimensions were significantly higher than those with certificates (**Table 3**).

There were 93 (24.54%) family physicians who were active part-time workplace physicians. They had significantly higher overall mean scores on the scale and mean scores in all subdimensions versus those who did not (**Table 4**).

**Table 2.** Family physicians' specialization training affects their attitudes toward occupational health and occupational diseases.

	Family Physician	N	Mean ± SD	P
Self-efficacy	Yes	128	20.91 ± 6.73	<0.05
	No	251	22.08 ± 6.45	
Readiness	No	128	14.14 ± 4.35	=0.046
	Yes	251	15.04 ± 3.79	
Awareness	No	128	13.76 ± 4.13	>0.05
	Yes	251	13.20 ± 3.97	
Contribution	No	128	16.70 ± 3.33	>0.05
	Yes	251	16.18 ± 3.19	
Total	No	128	67.57 ± 15.44	=0.40
	Yes	251	64.42 ± 14.01	

**Table 3.** Comparison of family physicians' occupational physician certificates with the scale total mean scores and subdimension mean scores.

	Occupational Physician Certificate	N	Mean ± SD	P
Self-efficacy	Yes	147	22.52 ± 6.26	<b>=0.046</b>
	No	232	21.15 ± 6.71	
Readiness	Yes	147	15.40 ± 3.69	<b>=0.027</b>
	No	232	14.37 ± 4.17	
Awareness	Yes	147	14.37 ± 3.74	<b>=0.002</b>
	No	232	13.10 ± 4.13	
Contribution	Yes	147	16.88 ± 3.03	>0.05
	No	232	16.30 ± 3.36	
Total	Yes	147	69.07 ± 13.44	<b>=0.006</b>
	No	232	64.88 ± 15.04	

**Table 4.** Comparison of scale scores of family physicians who are active part-time occupational physicians and those who are not.

	Being an Active Occupational Physician	N	Mean $\pm$ SD	P
Self-efficacy	Yes	93	23.04 $\pm$ 6.30	=0.021
	No	286	21.24 $\pm$ 6.60	
Readiness	Yes	93	15.96 $\pm$ 3.17	=0.001
	No	286	14.34 $\pm$ 4.17	
Awareness	Yes	93	15.05 $\pm$ 3.43	>0.001
	No	286	13.09 $\pm$ 4.09	
Contribution	Yes	93	17.44 $\pm$ 2.73	=0.002
	No	286	16.22 $\pm$ 3.34	
Total	Yes	93	71.49 $\pm$ 12.29	>0.001
	No	286	64.89 $\pm$ 14.89	

#### 4. Discussion

To provide an effective occupational health and safety service, all parties must take an active role. The results of our study, in which we evaluated the attitudes of family physicians working in primary healthcare regarding occupational diseases, indicate a need to improve the attitudes of family physicians. Low subdimensions of the attitudes of even doctors working as family physicians close to the industry have been identified as a critical subtitle. Based on this result, it was concluded that encountering possible cases did not produce sufficient awareness. Compared to those who did not practice part-time as workplace physicians, family physicians who actively practiced part-time had significantly higher mean scores overall and in each subdimension. In light of these two significant findings, it can be concluded that adding theoretical and practical objectives related to the diagnosis notification process of occupational diseases can contribute to this process.

In the literature, the role of family physicians in occupational health services has been emphasized in countries that provide effective services. The provision and surveillance of primary health care is also an excellent opportunity for occupational health and safety service delivery. For example, the UWV unit in the Netherlands, which carries out the same SSI practices in Türkiye, conducts training and studies for family physicians and maintains a system that encourages them to stay up-to-date on occupational diseases and take an active role in the system. According to the data of the Public Health and Healthcare Unit, 430,000 occupational diseases were reported by family physicians in the Netherlands.

Similarly, Belgium has a very active family medicine system related to occupational health and disease. Approximately 20,000 reports of occupational diseases

are written by family physicians each year. The Records of Family Physicians Archive (NZR) is the most critical component of the notification system [10] [11].

Carder *et al.* evaluated which occupational disease surveillance systems exist and how they compare to facilitate collaborative research across the European Union to improve occupational health public policies and reduce the incidence of occupational disease [12]. They mentioned a notification system in many countries where primary care physician notification is a stakeholder. For example, any doctor caring for a patient with a suspected occupational disease in Finland must report the case to the regional general directorate of occupational health and safety. Any doctor caring for a patient with a suspected occupational disease in the Czech Republic is legally obliged to refer the patient to one of the 15 (authorized) occupational disease centers to be evaluated by a specialist doctor (who will then determine the approval/compensation). In Lithuania, compulsory health checks and preventive health services in the workplace are provided by family physicians, occupational physicians, and, when necessary, those who have completed at least 36 hours of medical training and whose program is approved by the Lithuanian Ministry of Health. It is carried out in consultation with other doctors [13] [14]. In Türkiye, they can be certified after specific training and work as an occupational physician for 30 hours a week [15].

Aside from their current work schedule, occupational health is our country's most common area of practice for family physicians. This situation constitutes an essential part of the occupational physicians working in workplace physicians in Türkiye and the family physicians working in family health centers [16]. In a study conducted in Türkiye, only 22.9% of physicians stated that this training was sufficient for occupational disease education [8]. In another study conducted in Türkiye, 44.1% of family physicians stated that they had a detailed occupational history during the medical examination. Physicians who have a detailed occupational history, discuss the health of the patient with the occupational physician, have received training on occupational disease and indicate that they want to receive training on occupational disease are more likely to refer their patients. However, more than half of the family physicians stated that they found their level of attitudes to be insufficient [17].

Approximately one-third of the family physicians participating in this study were family medicine specialists. The attitude scale scores of family medicine specialists on occupational health and occupational disease were lower than those of general practitioner family physicians despite their approximately four years of education.

As a result, it can be said that there is no practical training available to the candidates during their specialty training in family medicine. Family physicians continue to see patients in this field throughout their work as general practitioners. In turn, this increases their experience and attitude.

We think that family physicians can explain the lack of knowledge in this area if adequate and effective training is not provided during the four-year specializa-

tion training, which was away from the field in the same period. To obtain the Occupational Medicine certificate in Türkiye, after medical education, physicians must apply to these certificate programs from private education institutions with their means and be successful in a central examination conducted by the Ministry of Labor and Social Security. Our study determined that four of the ten family physicians had occupational medicine certificates. Furthermore, it has been determined that family physicians who have received this certificate have higher general average scores, including all subdimensions of the scale, and higher awareness than those who have not. Therefore, we think this training should be given to all family physicians in the field as a part of medical education. In Türkiye, physicians who obtain this certificate are not obliged to work as workplace doctors. However, suppose he is a full-time physician in any health institution. In that case, he must resign from his other duty to become an occupational physician, even if he has a workplace doctor certificate.

Furthermore, it was found that only awareness subdimension scores increased as age increased; all other subdimensions and general mean total scores did not change. In our opinion, one of the most important reasons for this finding is that no matter what level of attitudes family physicians have when they graduate from medical faculties, we think that as their working hours increase, their experience increases and their level of attitudes increases as they face this problem in the field [3].

As the working time of family physicians in FHCs increased (as their experience increased), it was found that only the Readiness subscore of the scale increased, the general average score, and none of the subdimensions changed. In this context, we think that the desired goals cannot be reached only with experience and that training programs should be organized at certain intervals while family physicians practice family medicine.

The regions where family physicians work are essential. Therefore, it should be expected that the awareness of family physicians working in regions such as Marmara and Aegean, where the industrial region is dense, and their attitudes about occupational health and diseases will be higher and more accurate. Interestingly, significant differences were found in family physicians' attitudes according to their work regions. Diagnosing an occupational disease requires knowing the characteristics of work-related diseases and the work areas in which the workers work and having excellent medical knowledge of the health problems the work may cause for the employee. Due to a lack of knowledge, family medicine specialists have not answered about the relationship between work exposure and health results. For example, approximately 20% of all occupational diseases in England and 10% - 15% in the USA are occupational dermatoses diagnosed yearly [18] [19]. In Türkiye, dermatoses are generally not associated with the occupation and are not diagnosed as occupational diseases. Although there are many reasons for this, there is a need to improve the attitudes levels and awareness of the physicians who work as occupational physicians to establish this professional connection [20].

Therefore, there is a need for measures to increase the attitudes of family physicians, especially those working in industrial areas.

Family physicians working as part-time workplace physicians were approximately one-fourth of the total family physicians in the study. In other words, although 4 out of every ten family physicians have a workplace doctor certificate, only 2.5 of these people practice workplace medicine. According to the scale results, all subdimensions and the general average of family physicians working in the field, especially in the field. The total scores were significantly higher than those who did not. The only department that had a certificate but had no significant difference in subdimensions was the contribution subdimension. This situation makes us think that family physicians do not see themselves at the level of contribution in this field. It should be ensured that they contribute to the field of occupational medicine by organizing training programs encouraging and addressing their needs for this group.

## 5. Conclusion

The study concluded that family doctors' attitudes, particularly those of family medicine specialists who practice family medicine in Türkiye, should be addressed with regard to occupational health and disease. This situation is actively reflected in their attitudes. In regions where it is more crucial to diagnose an occupational disease, particularly in industrial regions, there is no awareness difference among family physicians, and the lack of attitudes of family physicians working in these regions poses a serious risk of omitting occupational disease diagnoses. It was concluded that occupational medicine certificate training significantly impacted family physicians' attitudes. However, the number of family physicians with occupational medicine certificates was insufficient, and many of those with the certificate did not practice occupational medicine.

## 6. Suggestions

We recommend that occupational health and occupational disease training be included in medical education, as in certificate programs. Family physicians working in industrial zones organize training and programs to increase their awareness and include them in the process. More family physicians should be actively involved in studies in this field by developing programs that encourage certified physicians who do not practice workplace medicine and increase their knowledge and self-confidence.

## Data Availability

Data used for analyses in this study were used under a data sharing agreement license and are not publicly available. Restrictions apply to the availability of the primary study datasets. They may be available from primary study authors upon reasonable request and with permission of the appropriate institutions' ethics review board.

## Conflicts of Interest

All authors declare that they have no conflict of interest.

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