

ORIGINAL ARTICLE

Evaluation of the Behaviors of Physicians Working in Primary Healthcare Institutions About Secondhand Smoke

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Main Points

- A very small percentage of primary care physicians (13.2%) asked patients about their passive smoke exposure.
- The frequency of advising patients to be protected from passive smoke (34.8%) was higher than the frequency of asking patients about their exposure to passive smoke (13.2%).
- Only 12.0% of the physicians received training on passive smoking.
- Male physicians and those who received training on secondhand smoke asked patients about their exposure to secondhand smoke significantly more frequently.

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Abstract

The aim of this study was to evaluate the behaviors of physicians working in primary healthcare institutions in Elazığ province about secondhand smoke. This cross-sectional study was conducted on 250 physicians working in primary healthcare institutions in Elazığ. For data collection, a questionnaire was used. Obtained data were evaluated with frequency, percentage, mean \pm standard deviation, chi-square, Mann – Whitney *U*-test, and binary logistic regression analysis. The mean age of the physicians was 40.86 ± 10.58 years and 68.0% of them were male. Of the physicians, 12% received training on secondhand smoke, 13.2% asked patients about secondhand smoke exposure, and 34.8% advised that patients be protected from secondhand smoke exposure. Male physicians (odds ratio: 3.00, 95% Confidence Interval: 1.10 – 8.18) and physicians trained in secondhand smoke (odds ratio: 3.55, 95% Confidence Interval: 1.44 – 8.78) stated that they asked patients more frequently about their exposure to secondhand smoke. As a result, very few of the primary care physicians ask about the exposure of their patients to secondhand smoke and very few of them have received training on secondhand smoke. The number of trained physicians should be increased in order for physicians to ask patients about secondhand smoke exposure and to provide counseling on this issue.

Keywords: Smoking cessation, secondhand smoke, primary health care, physician, preventive health care

Introduction

Secondhand smoke is smoke from burning tobacco products such as cigarettes, cigars, or pipes and also exhaled by a smoker. Secondhand smoke exposure is also defined as passive smoking (T. C. Sağlık Bakanlığı, 2013).

Secondhand smoke causes more than 1.2 million premature deaths and serious cardiovascular and respiratory diseases annually worldwide. About

half of children regularly breathe tobacco smoke-contaminated air in public places, and 65,000 children die from diseases related to secondhand smoke each year. Moreover, secondhand smoke increases the risk of sudden infant death syndrome in infants and causes pregnancy complications and low birth weight in pregnant women (World Health Organization, 2021).

The second component of the MPOWER (Monitoring, Protect, Offer, Warn, Enforce, Raise)

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policy package is to protect the public from passive cigarette smoke and thus to provide 100% smoke-free air space, especially in indoor areas (T. C. Sağlık Bakanlığı, 2016). However, available local reports indicated that this target has not been fully achieved and individuals are exposed to substantial secondhand smoke. According to the Global Adult Tobacco Survey 2016 Türkiye report, 26.7% of adults were exposed to tobacco smoke at home; 28.0% in cafes, coffee houses, or tea houses; and 12.7% in restaurants. In addition, it was stated in the report that 10.6% of adults working indoors were exposed to tobacco smoke at work (Küresel Yetişkin Tütün Araştırması, Türkiye, 2016). Furthermore, in the 2017 Türkiye report of the Global Youth Tobacco Survey, it was stated that 46.1% of young people between the ages of 13 and 15 were exposed to tobacco smoke at home and 51.8% in closed public places prohibited by law (T. C. Sağlık Bakanlığı, 2017).

Thirdhand smoke is residual pollutants of tobacco smoke that remain in dust and on surfaces (furniture, walls, skin, clothing) after tobacco combustion (Sleiman et al., 2010). The effects of thirdhand smoke on human health have not been fully studied, but evidence suggests it can adversely affect health. A study showed that exposure to thirdhand smoke causes significant deoxyribonucleic acid damage in human cells (Hang et al., 2013).

Since the number of smokers decreases as a result of effective smoking cessation counseling, passive smoking (Heard et al., 2011) and the health effects associated with passive smoking decrease (Bacheller et al., 2021), counseling about smoking cessation and passive smoking are complementary and should not be separated. In addition, since being a passive smoker increases the risk of becoming an active smoker in the future (Shadmehr et al., 2019), it is very important to provide counseling about secondhand smoke, as well as smoking cessation counseling.

The fact that primary healthcare institutions constitute the first medical contact point of individuals with the health system (Türkiye Aile Hekimleri Uzmanlık Derneği (TAHUD), 2011), that family physicians meet with individuals older than 18 years of age at least once a year in their registered population (T. C. Sağlık Bakanlığı, 2021), and that 35% of visits to a physician according to the 2019 Health Statistics yearbook are in primary health care (T. C. Sağlık Bakanlığı, 2019) shows that primary care has an important place in health service delivery. Therefore, it is an important opportunity to provide counseling about passive smoking when patients apply to primary healthcare institutions (Bartsch et al., 2016).

Studies examining the counseling of healthcare professionals about secondhand smoke generally focus on the parents of children, the exposure of pregnant women to secondhand smoke, and the smoking behavior of pregnant women (Kaur et al., 2019; Mejia et al., 2010). There is very limited literature examining physician-provided passive smoking counseling to protect non-smokers from exposure to secondhand smoke (Kaur et al., 2019). Therefore, in this study, the aim was to examine the frequency of primary care physicians in Elazığ province to ask about their patients' exposure to secondhand smoke and related factors, the education and knowledge levels of physicians about secondhand smoke, and their beliefs about secondhand smoke.

Methods

The data collection phase of this cross-sectional study was carried out in primary healthcare institutions (Family Health Centers, Healthy Life Centers, Community Health Centers, and District Health Directorates) in Elazığ province between March and May 2021. The population of the study consisted of 262 physicians working in primary care in the province of Elazığ. In the study, the aim was to reach the entire population without using any sample selection method, and 250 physicians (95.4%) were reached.

For data collection, a questionnaire was used. The dependent variable was the frequency of physicians asking patients about their exposure to secondhand smoke. One of the smoking cessation counseling intervention models is the 5A (Ask, Advise, Assess, Assist, Arrange) model (T. C. Sağlık Bakanlığı, 2010). In this study, the first two steps of the 5A model (Ask and Advise) were used to evaluate physicians' counseling about passive smoking to patients. The "Ask" step was asked in the questionnaire as follows: "How often do you ask patients about their passive smoking status?" The "Advise" step was asked as follows: "How often do you advise patients to avoid being passive smokers?" The two questions were independent of each other. There were five options in the questionnaire (never/rarely/sometimes/often/always), and two categories were created out of five options for analysis (never – rarely – sometimes and often – always). Independent variables: gender, age, marital status, having children, number of children, having a child younger than 1 year old, smoking status, smoking permission at home, frequency of physician's own exposure to secondhand smoke, the state of knowing the concepts of passive smoking, secondhand smoke and thirdhand smoke, receiving training on passive smoking outside of undergraduate education, knowledge questions about passive smoking, and beliefs about passive smoking. Smoking status was classified as (Centers for Disease Control and Prevention, 2017): Current smoker: has smoked at least 100 cigarettes in her/his lifetime and is still a current smoker. Former smoker: she/he smoked at least 100 cigarettes in her/his lifetime, but quit during the interview. Never smoker: never smoked or smoked less than 100 cigarettes in her/his life. The state of knowing the concepts of secondhand smoke and passive smoking was asked on the questionnaire respectively as follows: "Have you heard of the concept of "secondhand cigarette smoke" before?" and "Have you heard of the concept of "passive smoking" before?" After these questions, the following explanation text was given on the questionnaire: "Secondhand cigarette smoke is the smoke from burning tobacco products such as cigarettes, cigars, or pipes and also exhaled by the smoker. Exposure to secondhand smoke is also defined as passive smoking (Do not respond to this definition)." The state of knowing the concept of thirdhand smoke was asked on the questionnaire as follows: "Have you heard of the concept of "thirdhand smoke" before?" Following this question, the following explanation text was given on the questionnaire: "Thirdhand cigarette smoke is smoke produced by tobacco and accumulated in the form of waste on surfaces such as furniture, textiles or food (Do not respond to this definition)." The status of receiving education about passive smoking outside of undergraduate education was asked in the survey as follows: "Have you

received any training other than your undergraduate education in order to provide information to patients about passive smoking? Conference, seminar, meeting, etc.” There were four options (strongly disagree/disagree/agree/strongly agree) for the statements of belief about passive smoking and thirdhand smoke.

The ethics committee approval of the study was obtained from the Firat University Non-Interventional Research Ethics Committee with the letter dated 11.12.2020 and numbered 428932, and the institutional permission was obtained from the Elazığ Provincial Health Directorate with the commission decision dated 14.01.2021.

After obtaining the ethics committee and institutional permissions for the research, the data collection process was started. After the necessary information was given about the study and verbal informed consent was obtained, the participants were asked to fill in the questionnaire. The questionnaire was applied mainly with a printed questionnaire, but an online questionnaire was sent to the physicians working in places that could not be reached due to geographical distances and/or physical access difficulties. Of the physicians included in the study, 187 (74.8%) filled out a printed questionnaire and 63 (25.2%) filled out an online questionnaire.

Statistical Analyses

Data were evaluated using the IBM Statistical Package for the Social Sciences for Windows version 21.0 software (IBM SPSS Corp.; Armonk, NY, USA). Descriptive statistics were presented as frequency (n) and percentage (%) for categorical variables, mean ± standard deviation (mean ± SD) and/or median and minimum (min) – maximum (max) for continuous variables. The chi-square test was used to compare categorical variables. The conformity of the continuous variables to the assumption of normal distribution was evaluated with the Shapiro – Wilk test, and since the data were not normally distributed, the Mann – Whitney U-test was used to compare the continuous variables between two independent groups. Binary logistic regression analysis was performed to determine the effect of statistically significant independent variables on the dependent variable in the chi-square and Mann – Whitney U-tests. Odds ratio (OR) was given together with a 95% Confidence Interval (CI) as a result of regression analysis. In statistical analyses, *p* < .05 was accepted as significant.

Results

The majority of primary care physicians (68.0%, *n* = 170) were male, and the mean age of all participants was 40.86 ± 10.58 (min = 24, max = 67, median = 41). Of the physicians 77.2% (*n* = 193) were married and 67.6% (*n* = 169) had children. Of those who had children, 8.3% (*n* = 14) had a child younger than 1 year old. Of the physicians, 30.4% (*n* = 76) were current smokers, 17.6% (*n* = 44) were former smokers, and 52.0% (*n* = 130) were never smokers. More than half of all physicians allowed smoking in their own homes (*n* = 138, 57.5%). The majority of those who allowed smoking in the home (*n* = 129, 53.8%) allowed smoking in some parts of the house (including the balcony and kitchen) or at some times. Of the physicians, 12% (*n* = 30) received training on passive smoking outside of undergraduate education. Frequencies of physicians’ own exposure to cigarette smoke were as follows:

5.2% (*n* = 13) never, 27.6% (*n* = 69) rarely, 32.8% (*n* = 82) sometimes, 28.0% (*n* = 70) frequently, and 6.4% (*n* = 16) always.

The frequency of knowing the concepts by the physicians was as follows: 99.6% (*n* = 249) “passive smoking,” 28.8% (*n* = 72) “secondhand smoke,” and 13.2% (*n* = 33) “thirdhand smoke.”

The distribution of frequency of physicians’ counseling to patients about passive smoking is shown in Figure 1. Of the physicians, 13.2% stated that they asked the patients about their passive smoking status “often – always.” In addition, 34.8% of the physicians stated that they advised patients to avoid passive smoking “often – always.”

The health problems related to secondhand smoke, which are most frequently mentioned by physicians, were “cough in children” and “lung cancer in adults” with 90.8% (*n* = 226; Figure 2).

Table 1 shows the frequency of agreeing/strongly agreeing with statements used to evaluate physicians’ beliefs about passive smoking. Of the participants 97.2% (*n* = 243) marked “agree” or “strongly agree” for the following statements: “Smoking should not be allowed if there are children in the vehicle” and “Smoking should not be allowed if there are non-smoker adults in the vehicle.”

The evaluation of the variables related to the physicians’ asking about the patients’ exposure to secondhand smoke is given in Table 2. Gender (*p* = .026) and receiving training on passive smoking outside of undergraduate education (*p* = .004) were found to be significantly associated with physicians asking patients about their exposure to passive cigarette smoke. There was no significant relationship between the age of the physicians and the frequency of asking patients about their exposure to secondhand smoke (*p* > .05).

40.6% (*n* = 69) of male physicians and 21.3% (*n* = 17) of female physicians stated that they are frequently – always exposed to secondhand smoke, and this difference was statistically significant (*p* = .003; not shown in table).

Logistic regression analysis, which predicted the asking of patients by physicians about passive smoking exposure, was performed with independent variables (gender and training about passive smoking) that were significant in bivariate analyses (Table 3). Male physicians (OR: 3.00, 95% CI: 1.10 – 8.18, *p* = .032), physicians who received training on passive smoking (OR:

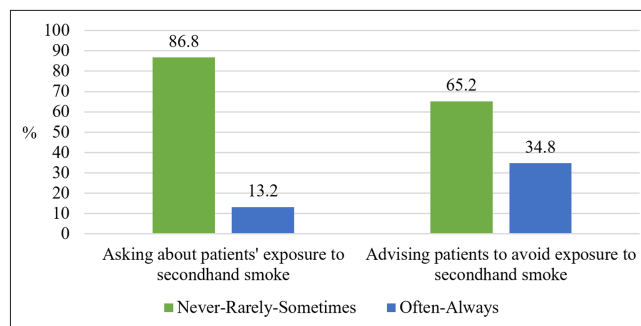


Figure 1. Physicians’ Counseling Patients About Passive Smoking.

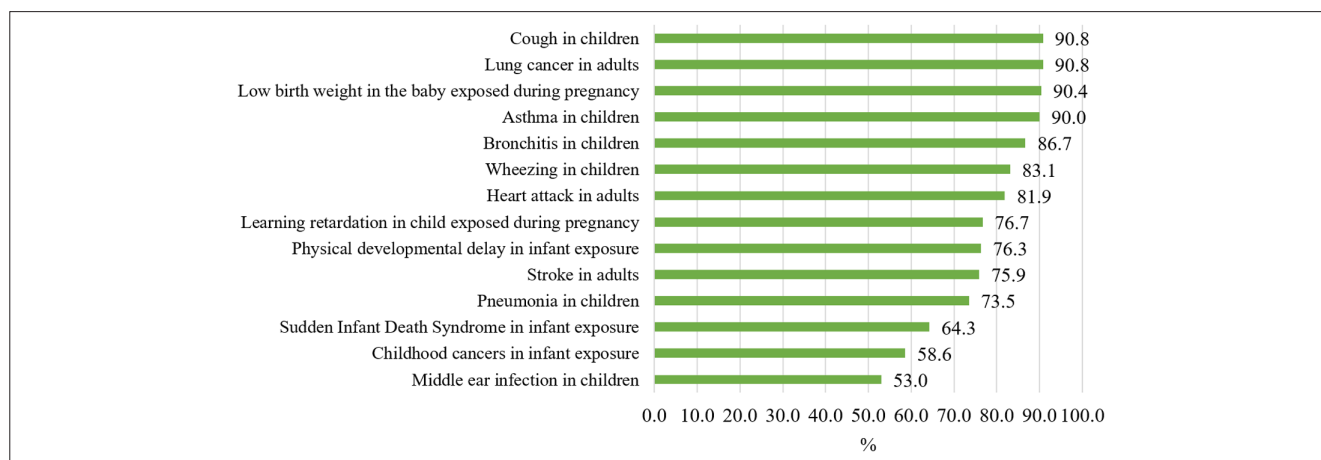


Figure 2. Frequency of Physicians Knowing Health Problems Caused by Passive Smoking.

3.55, 95% CI: 1.44 – 8.78, $p = .006$) asked about the patients’ exposure to secondhand smoke more frequently.

Discussion

Although it states the same concept, in this study, the concept of passive smoking (99.6%) was more known than the concept of secondhand smoke (28.8%). In addition, when compared to the frequency of knowing the concepts of secondhand smoke (28.8%) and passive smoking (99.6%), it is seen that much fewer physicians know the concept of thirdhand smoke (13.2%). Since the concept of thirdhand smoke was first used in a scientific article in 2009 (Winickoff et al., 2009), this concept is relatively new and may therefore be known to fewer physicians. However, in a study conducted in healthcare professionals in the USA, published in 2016, it was stated that 35% of the participants had heard of the concept of thirdhand smoke before the study (Darlow et al., 2017). Accordingly, although our study was conducted 5 years after the study in the USA, it is seen that thirdhand smoke is less frequently known by the physicians in our study.

In the current study, it was found that a very small percentage of primary care physicians (13.2%) asked patients about their

passive smoke exposure “often – always” (Figure 1). In a study conducted in the USA, which examined the health records of patients in primary care regarding the asking of secondhand smoke exposure, it was found that 33.07% of the patient records contained information about a smoke-free house and 22.44% about a smoke-free car (LeLaurin et al., 2020). Since exposure to secondhand smoke will likely require nonsmokers to seek medical attention, healthcare professionals, especially physicians, are in an ideal position to reduce the harms associated with secondhand smoke and to provide consultancy on this issue (Jones & McEwen, 2015). However, this issue has very little place on the agenda in terms of practice.

In our study, it was found that the frequency of advising patients to be protected from passive smoke (34.8%) was higher than the frequency of asking patients about their exposure to passive smoke (13.2%) (Figure 1). This finding is consistent with the results of a systematic review of 20 studies examining secondhand smoke practices in primary care (Kaur et al., 2019).

Physicians most frequently cited respiratory system-related health problems for health problems caused by passive smoking (Figure 2). Similarly, in studies conducted in Türkiye, Argentina, and China, the effects of passive smoking, which physicians

Table 1.
Physicians’ Beliefs Regarding Passive Smoking

Beliefs	Agree/Strongly Agree	
	n	%
Smoking should not be allowed if there are children in the vehicle.	243	97.2
Smoking should not be allowed if there are non-smoker adults in the vehicle.	243	97.2
Smoking should not be allowed if there are children in closed areas.	241	96.4
Smoking should not be allowed if there are non-smoker adults in closed areas.	240	96.0
Smoking should not be allowed if there are children in open areas.	218	87.2
Physicians should routinely advise smokers not to smoke in the presence of children.	214	85.6
Passive smokers are more likely to start smoking.	189	75.6
Smoking should not be allowed if there are non-smoker adults in open areas.	181	72.4
Smoking should be prohibited in open-air public areas.	154	61.6
To reduce the frequency of passive smoking, the price of tobacco products should be increased sharply.	132	52.8

Table 2.
Physicians Asking Patients' Exposure to Passive Smoke According to Some Characteristics of Physicians

Variables	n (%) [*]	Asking About Patients' Exposure to Passive Smoke, n (%) ^{**}		p
		Never – rarely – sometimes	Often – Always	
Gender (n = 250)				
Male	170 (68.0)	142 (83.5)	28 (16.5)	.026
Female	80 (32.0)	75 (93.8)	5 (6.3)	
Marital status (n = 250)				
Married	193 (77.2)	167 (86.5)	26 (13.5)	.482
Divorced	9 (3.6)	9 (100.0)	0 (0)	
Single	48 (19.2)	41 (85.4)	7 (14.6)	
Having children (n = 250)				
Yes	169 (67.6)	145 (85.8)	24 (14.2)	.499
No	81 (32.4)	72 (88.9)	9 (11.1)	
Having a child younger than 1 year old (n = 169)				
Yes	14 (8.3)	11 (78.6)	3 (21.4)	.424
No	155 (91.7)	134 (86.5)	21 (13.5)	
Smoking status (n = 250)				
Current smoker	76 (30.4)	64 (84.2)	12 (15.8)	.717
Former smoker	44 (17.6)	39 (88.6)	5 (11.4)	
Never smoker	130 (52.0)	114 (87.7)	16 (12.3)	
Smoking permission at home (n = 240) ^{***}				
Smoking is allowed throughout the house.	9 (3.7)	8 (88.89)	1 (11.11)	.546
Smoking is allowed in some parts of the house (including the balcony and kitchen) or smoking is sometimes allowed in the home.	129 (53.8)	115 (89.1)	14 (10.9)	
Smoking is not allowed anywhere in the house.	102 (42.5)	86 (84.3)	16 (15.7)	
Receiving training on passive smoking (n = 250)				
Yes	30 (12.0)	21 (70.0)	9 (30.0)	.004
No	220 (88.0)	196 (89.1)	24 (10.9)	

Note: ^{*}Column percentage.

^{**}Row percentage.

^{***}Ten people did not answer this question.

Table 3.
Logistic Regression Analysis With Variables Related to Physicians' Asking of Patients' Exposure to Passive Cigarette Smoke

Variables	Asking Passive Smoke Exposure			
	Unadjusted OR (95% CI)	p	Adjusted OR (95% CI) [*]	p
Gender				
Male	2.96 (1.10 – 7.97)	.032	3.00 (1.10 – 8.18)	.032
Female	1		1	
Receiving training on passive smoking				
Yes	3.50 (1.44 – 8.51)	.006	3.55 (1.44 – 8.78)	.006
No	1		1	

Note: ^{*}Model $\chi^2 = 12.485, p < .001$. Nagelkerke $R^2 = .092$. Hosmer and Lemeshow test, $p = .799$.OR: Odds Ratio, CI: Confidence Interval

know most frequently, were those related to the respiratory system (Gokirmak et al., 2010; Huang et al., 2015; Morello et al., 2010). This may be because the most common effect of secondhand smoke is respiratory system disorders (Fischer & Kraemer, 2015). In order for physicians to have more information about the effects of passive smoking on other systems, these topics can be included more in training on passive smoking.

Physicians most frequently agreed with the statements that smoking should not be allowed in vehicles and then in closed areas (Table 1). Likewise, studies conducted in Türkiye and China have also shown that nine out of ten physicians support the idea that smoking should not be allowed in vehicles and indoor areas (Gokirmak et al., 2010; Huang et al., 2015; Sonmez et al., 2015). Moreover, in our study, the frequency of agreeing with the statement no smoking in vehicles and closed areas was higher than the frequency of agreeing with the statement no smoking in open

areas (Table 1). The reason for this may be the prohibition of using tobacco products in all closed areas, except for residences, which has been implemented since 2009 in Türkiye (T. C. Sağlık Bakanlığı, 2009). In addition, 85.6% of the physicians included in our study agreed/strongly agreed with the following statement: “Physicians should routinely advise smokers not to smoke in the presence of children.” (Table 1). Similarly, the frequency of agreeing of physicians in this statement was reported as 97.7% and 93%, respectively, in studies conducted in Türkiye (Sonmez et al., 2015) and China (Huang et al., 2015). Furthermore, statements with the lowest frequency of agreement among all belief statements related to passive smoking were prohibiting smoking in open areas and increasing the price of tobacco products (Table 1). In two similar studies conducted in Türkiye, the statement that physicians least frequently agreed about passive smoking was related to increasing the price of tobacco products (Gokirmak et al., 2010; Sonmez et al., 2015).

In the current study, it was determined that only 12.0% of the physicians received training on passive smoking (Table 2). Similar to this finding, in a study conducted in Belgium, it was stated that very few of the family physicians (9%) had received training on passive smoking (Hutchinson et al., 2014). The fact that education on secondhand smoke is usually provided as part of tobacco control or smoking cessation counseling education and is not specific to secondhand smoke (Kaur et al., 2019) may explain why few physicians have received education on passive smoking.

Male physicians and those who received training on secondhand smoke asked patients about their exposure to secondhand smoke significantly more frequently (Tables 2 and 3). Similar results were found in a study investigating secondhand smoke counseling for pregnant women by obstetricians in Argentina (Mejia et al., 2010). In the current study, the reason why male physicians ask patients about their exposure to secondhand smoke more frequently than female physicians may be that male physicians are more frequently exposed to secondhand smoke than female physicians, and therefore this issue is more frequently on the agenda of male physicians. Furthermore, in our study, only 13.2% of physicians asked patients “often – always” about passive smoke exposure (Figure 1), and only 12.0% received training on passive smoking. The paucity of practice by physicians on passive smoking was due to the need for more information on practical strategies needed to support effective passive smoking reduction (Kaur et al., 2019).

Limitations

This study has some limitations. First of all, the fact that the data about the participants’ behaviors were collected by the participants through a questionnaire, not by observation, may have caused the results to be over-reported. Second, the fact that some of the participants filled out the printed questionnaire and some of the online questionnaire may have caused a difference in the answers of these two groups. Third, the results of this study are limited to primary care physicians in Elazığ province and cannot be generalized to primary care physicians working in different geographies. Finally, the cross-sectional design of this study precludes us from making causal inferences.

More work is needed to find causal relationships between variables.

As a result, very few of the primary care physicians in Elazığ province asked about the exposure of their patients to secondhand smoke, and very few of them had received training on secondhand smoke. Physicians believe that exposure to secondhand smoke should be prevented in many areas. Gender and education were factors associated with physicians asking patients about their exposure to secondhand smoke. The number of trained physicians should be increased in order for them to ask patients about passive smoking exposure and to provide counseling on this issue. Further studies are needed to examine the underlying reasons why gender is associated with physicians asking patients about passive smoke exposure.

Ethics Committee Approval: Ethical committee approval was received from the Ethics Committee of University of Firat (Approval No: 428932, Date: 11.12.2020).

Informed Consent: Verbal informed consent was obtained from the participants who agreed to take part in the study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – F.N.K., E.P.; Design – F.N.K., E.P.; Supervision – F.N.K., E.P.; Resources – F.N.K.; Materials – F.N.K., E.P.; Data Collection and/or Processing – F.N.K.; Analysis and/or Interpretation – F.N.K.; Literature Search – F.N.K.; Writing – F.N.K.; Critical Review – F.N.K., E.P.

Declaration of Interests: The authors have no conflict of interest to declare.

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Karaçorlu and Piriñçi. Primary Healthcare and Secondhand Smoke

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