

## ORIGINAL INVESTIGATION

# Status of Exposure to Second-Hand Smoke at Home in Children under Five Years of Age: An Example from Ankara Province

Dilek Aslan<sup>1</sup>, Didem Daymaz<sup>1</sup>, Nalan Gürsoy<sup>2</sup>, Gülsüm Kartal<sup>2</sup>, Mümtaz Yavuz<sup>3</sup>

<sup>1</sup>Department of Public Health, Hacettepe University Faculty of Medicine, Ankara, Turkey

<sup>2</sup>Ankara Directorate of Public Health, Family Health Centre, Ankara, Turkey

<sup>3</sup>Ankara Directorate of Public Health, Division of Tobacco and Other Addictive Substances, Ankara, Turkey

## Abstract

**OBJECTIVES:** The present study aimed to investigate smoking status of households having children under 5 years of age and any changes in their smoking habits after the enforcement of the anti-tobacco Law Nb. 4207 and after the birth of the child based on the records of two Family Health Centres in Ankara.

**MATERIAL AND METHODS:** Within the scope of this cross-sectional study, 192 houses, in which 228 children under five years of age were living, were evaluated. Data were collected via face-to-face interview. Data collection form included information regarding socio-demographic characteristics, health status, smoking habits, status of exposure to second-hand smoke. Data transfer to the computer and data analyses were performed using the SPSS 15.0 statistical package program.

**RESULTS:** According to the statements of the study participants, the rate of smoking in the balcony, kitchen, toilet-bathroom, and rooms of the house decreased after the enforcement of the anti-tobacco Law Nb. 4207. Similar decrease was valid also for working environment. The decrease in the rate of smoking was the least in "Balconies" at both home and working environments. Birth of a child was also a factor that decreased the rate of smoking. A decrease was observed in almost all parts (bedroom, kitchen, balcony, and toilet-bathroom) of the houses after birth of a child.

**CONCLUSION:** Exposure to second-hand smoke at homes, where children under the age of five years were living, could not be completely (100%) prevented. Health care workers' persistent study on this issue may contribute to the awareness of parents in preventing exposure to second-hand smoke.

**KEY WORDS:** Comprehensive tobacco control law, exposure to second-hand smoke, indoor environment

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## INTRODUCTION

Smoking has been one of the leading causes of preventable diseases and deaths [1]. Depending on calculations, one individual dies in every six seconds due to smoking. Cigarette poses a threat not only for smokers but also for all people. Each year, 600,000 individuals die due to exposure to second-hand smoke (SHS) [2]. Exposure to SHS occurs due to inhalation of smoke that spreads through the tip of a burning cigarette or the air exhaled together with other tobacco products by a smoker [3]. Therefore, the World Health Organization (WHO) has developed effective intervention methods to prevent deaths within the scope of tobacco control activities [4].

In Turkey, the most recent legal regulation for tobacco control is the anti-tobacco Law Nb. 4207, which was agreed on January 03, 2008 [5]. Prevention of exposure to SHS is within the goals of this Law which prohibits smoking in closed public areas. A decrease in cigarette sale was demonstrated in one of the studies showing a decrease in the rate of smoking along with this Law in Turkey [6].

There are studies revealing that comprehensive legal regulations have favourably influenced smoking at home, where children and babies in particular are most commonly exposed to cigarette smoke. One of these studies found that prohibition of smoking in working environment was significantly associated with the individual's not smoking at home [7]. However, according to another study, regulations that prohibit smoking in cluster housings are less supported by smokers than by non-smokers [8].

It is still currently known that children and babies are, in particular, at risk for exposure to SHS due to smoking at home worldwide and there are ongoing studies within this scope. In a study conducted in 2009 in Turkey, it was demonstrated



**Address for Correspondence:** Didem Daymaz, Department of Public Health, Hacettepe University Faculty of Medicine, Ankara, Turkey Phone: +90 312 305 15 90 E-mail: dokdemaz@hotmail.com  
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that half of the participant students were exposed to cigarette smoke at home [9], and another study demonstrated that level of knowledge and social and cultural relations are effective on smoking at home [10].

The present study aimed to determine smoking status of households having children under the age of 5 years based on the records of two Family Health Centres (FHC) in Eryaman and Kecioren districts of Ankara province, to investigate the risk for babies and children to be exposed to SHS, and to evaluate any changes in their attitudes and behaviours concerning smoking at home after birth of the child and after the enforcement of the Law in 2008.

## MATERIAL AND METHODS

The target population of this cross-sectional study was determined using the records of two FHCs, which were located in Eryaman and Kecioren districts of Ankara province, between July and October 2013. Seventy-six children aged <5 years from 65 residences registered in Eryaman FHC (FHC-1) and 152 children aged <5 years from 127 residences registered in Kecioren No. 19 FHC (FHC-2) were reached. The total number of residences was 192 and the total number of children aged <5 years was 228.

Consent of Ankara Provincial Tobacco Control Board, approval of Ankara Provincial Directorate of Public Health, and approval of the Non-interventional Clinical Researches Ethics Board of Hacettepe University (No: GO 13/303-12) were obtained for the study. Verbal consents of the participants that agreed to participate were obtained after they informed about the aim of study.

The study was conducted by 5 researchers. Two of the researchers were the members of Ankara Provincial Tobacco Control Board, two were the physicians working at FHCs, and one was a physician having Public Health Specialization training.

Data were collected using face-to-face interview technique. Data collection form consisted of four sections: the first section included questions to identify sociodemographic characteristics of the participants, the second section included questions to identify health status, the third section included questions to identify smoking behaviours, and the fourth section included questions to identify level of exposure to SHS.

## Statistical Analysis

Data transfer to computer and data analyses for statistical evaluation were performed using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA) version 15.0. Study data were expressed as frequency tables and percentages.

## RESULTS

Seventy-six children under the age of 5 from 65 residences registered in FHC-1 and 152 children under the age of 5 from 127 residences registered in FHC-2 were reached. Accordingly, the total number of residences was 192 and the total number of children under the age of 5 was 228.

Of the families in 192 houses, 174 (90.6%) were nuclear family and 18 (9.4%) were extended family. There were 1

(0.5%) residence with 2 households, 69 (35.9%) residences with 3 households, 81 (42.2%) residences with 4 households, 28 (14.6%) residences with 5 households, 8 (4.2%) residences with 6 households, and 5 (2.6%) residences with 7 households (Table 1).

Of the 228 children under the age of 5, 136 (59.6%) were girls and 92 (40.4%) were boys. Of the 80 children under one year of age, 51 (56.6%) were girls and 39 (43.3%) were boys. Females accounted for 92.7% of the participants interviewed in the houses. Education statuses of the participants interviewed in the houses were as follows: 3 (1.6%) were illiterate, 51 (26.6%) were primary school graduate, 22 (11.5%) were secondary school graduate, 77 (40.1%) were high school graduate, and 39 (20.3%) were university-college graduate. Education statuses of spouses of the participants interviewed were as follows: 30 (15.6%) were primary school graduate, 19 (9.9%) were secondary school graduate, 83 (43.2%) were high school graduate, and 60 (31.3%) were university-college graduate. While 148 (77.5%) participants were unemployed, only 14 (7.4%) spouses were unemployed (Table 1).

Of the participants interviewed, 171 (89.1%) stated that they had no chronic disease and 21 (10.9%) stated that they had a chronic disease. The number of participants reporting that they had no disease in the last month was 183 (95.3%), whereas the number of those having a disease was 9 (4.7%) (Table 2).

Among the children under the age of 5 in the houses, six of eight children with chronic disease had cardiac murmur, gastric ulcer, allergic rhinitis, bronchitis, impaired hepatic function test, and asthma. Fifteen of the children under the age of 5 living in the houses had a disease in the last month (Table 2).

While 137 (71.4%) of the participants stated that they had never smoked, there were 18 (9.4%) quitters, 35 (18.2%) current smokers, and 2 (1%) participants who only tried. Among 49 participants who were current smokers and quitters, the smoking duration was ≤1 in 4 (8.2%), between 1-5 years in 9 (18.4%), between 6-10 years in 17 (34.7%), between 11-15 years in 15 (30.6%), and >15 years in 4 (8.2%). The number of cigarettes smoked daily was between 1-5 in 14 (29.8%) participants, 6-10 in 22 (46.8%) cigarettes, and >10 in 11 (23.4%) participants. While 16 (41%) participants reported no change in their smoking status, 20 (51.3%) participants reported a decrease in their smoking status after the enforcement of the antitobacco law nb.4207 has come into force in 2008. Moreover, 8 (21.6%) participants reported no change in their smoking status, whereas 26 (70.3%) participants reported a decrease in their smoking status after having a child (Table 3).

Of 192 participants, 173 (90.1%) completely agreed with the prohibition of smoking in coffee houses, whereas 18 (9.4%) agreed, and 1 disagreed with the same opinion. One hundred and seventy five (91.1%) participants completely agreed with the prohibition of smoking in restaurants. The number of individuals who were fully agree, agree, and disagree with the prohibition of smoking in café was 174

**Table 1.** Certain characteristics of the households [2 FHCs (Family Health Centres), October 2013]

Characteristics	Number	%
<b>Family type (n=192)</b>		
Nuclear	174	90.6
Extended	18	9.4
<b>Number of households (n=192)</b>		
2	1	0.5
3	69	35.9
4	81	42.2
5	28	14.6
6	8	4.2
7	5	2.6
<b>Gender of children aged &lt;1 year (n=90)</b>		
Girl	51	56.6
Boy	39	43.4
<b>Gender of children aged &lt;5 years (n=228)</b>		
Girl	136	59.6
Boy	92	40.4
<b>Gender of the participants interviewed (n=192)</b>		
Female	178	92.7
Male	14	7.3
<b>Education status of the participants interviewed (n=192)</b>		
Illiterate	3	1.6
Primary school	51	26.6
Secondary school	22	11.5
High school	77	40.1
University-college	39	20.3
<b>Education status of the spouse of the participant interviewed (n=192)</b>		
Primary school	30	15.6
Secondary school	19	9.9
High school	83	43.2
University-college	60	31.3
<b>Employment status of the participant interviewed (n=191)*</b>		
Unemployed	148	77.5
Employed	43	22.5
<b>Employment status of spouse of the participant interviewed (n=191)*</b>		
Unemployed	14	7.4
Employed	176	92.6

\*One of the participants was not specified working status of neither his/her own or spouse

(90.6%), 17 (8.9%) and 1, respectively. The prohibition of smoking in hospital was completely agreed by 183 (95.3%) and agreed by 9 (4.7%) participants (Table 4).

The rate of smoking in the rooms other than the bedroom was 5.7% before and 3.1% after the Law No. 4207. While the rate of smoking in the bedroom was 2.1% before the Law,

**Table 2.** Information on health status of the households and their children [2 FHCs (Family Health Centres), October 2013]

Characteristics	Number	%
<b>Presence of chronic disease</b>		
No	171	89.1
Yes	21	10.9
<b>Having disease in the last month</b>		
Disease (-)	183	95.3
Disease (+)	9	4.7
<b>Presence of chronic disease in the children aged &lt;5 years*</b>		
No	184	95.8
Yes	8	4.2
Cardiac murmur	1	
Gastric ulcer	1	
Allergic rhinitis	1	
Bronchitis	1	
Impaired HFT	1	
Asthma	1	
<b>Having a disease in children aged &lt;5 years in the last month</b>		
No	177	92.2
Yes	15	7.8
Tonsillitis	2	
Diarrhoea	2	
Pharyngitis	1	
URTI	9	
Pneumonia	1	
<b>Total</b>	<b>192</b>	<b>100.0</b>

\*Two of the participants expressed that the child aged <5 years had a chronic disease but not specified the disease.

HFT: hepatic function test; URTI: upper respiratory tract infection

it was found to be 0.5% after the Law. The rate of smoking was 33.3% in the kitchen before the Law, whereas it was 22.4% after the Law. The rate of smoking in the balcony was 66.5% before the Law and it was 66% after the Law. The rate of smoking in the toilet-bathroom was 16.2% before the Law and it was 10.8% after the Law (Table 5).

The rate of participants reporting cigarette smoking in the working room was 52.4% before the Law and 7.1% after the Law. The rate of participants reporting cigarette smoking in the shared areas was 48.0% before the Law and 4.9% after the Law. The rate of participants reporting cigarette smoking in the restroom in the working environment was 41.5% before the Law and 7.3% after the Law. The rate of participants reporting cigarette smoking in the balcony of the working environment was 51.2% before the Law and 38.1% after the Law (Table 5).

Among those smoking cigarette in any place at home other than the balcony before the Law, the rate of smoking cigarette after the Law in any room other than the bedroom was 8.7%, in the bedroom was 1.4%, in the kitchen was 62.3%, in the toilet-bathroom was 30.8%, and in the balcony was 88.2% (Table 6).

**Table 3.** Smoking status of the households [2 FHCs (Family Health Centres), October 2013]

Characteristics	Number	%
<b>Smoking status (n=192)</b>		
Never smoked	137	71.4
Quitter	18	9.4
Current smoker	35	18.2
Tried only	2	1.0
<b>Duration of smoking (year) (n=49)*</b>		
≤1	4	8.2
1-5	9	18.4
6-10	17	34.7
11-15	15	30.6
>15	4	8.2
<b>Daily number of cigarettes (n=47)*</b>		
1-5	14	29.8
6-10	22	46.8
>10	11	23.4
<b>Smoking status before and after the enforcement of the anti-tobacco Law Nb. 4207 in 2008 (n=39)</b>		
Not changed, as is before	16	41.0
Less than before	20	51.3
More than before	1	2.6
Not paid attention, not aware of, not remember	2	5.2
<b>Smoking status before and after having a child (n=37)</b>		
Not changed, as is before	8	21.6
Less than before	26	70.3
More than before	1	2.7
Not remember	2	5.4

\*Four of 53 participants who were quitters and current smokers did not respond to this question.

\*Six of 53 participants who were quitters and current smokers did not respond to this question

The rate of smoking in the rooms other than the bedroom was 6.2% before the birth of a child, whereas it was 3.1% after the birth. The rate of smoking in the bedroom was 2.1% before the birth and 0.5% after the birth. The rate of cigarette smoking in the kitchen was 31.8% before the birth and 16.2% after the birth. The rate of cigarette smoking in the balcony was 62.3% before the birth and 60.7% after the birth. The rate of cigarette smoking in the toilet-bathroom was 14.1% before the birth and 9.2% after the birth (Table 7).

## DISCUSSION

Today, smoking and exposure to SHS are still considered as public health problems [1]. In the present study, when the study participants were specifically evaluated regarding smoking, 18.2% of them were still smoking. This rate is lower when compared to the data of 2012 (27.1%) in Turkey. However, it should be taken into account that 92.7% of the participants were female and the frequency of smoking among females in 2102 was 13.1% [4]. The fact that the

**Table 4.** Opinions of the participants on exposure to second-hand smoke [2 FHCs (Family Health Centres), October 2013]

Opinions on prohibition for smoking in public domains	Number	%
<b>Coffee house</b>		
Completely agree	173	90.1
Agree	18	9.4
Disagree	1	0.5
<b>Restaurant</b>		
Completely agree	175	91.1
Agree	16	8.3
Disagree	1	0.5
<b>Café</b>		
Completely agree	174	90.6
Agree	17	8.9
Disagree	1	0.5
<b>Hospital</b>		
Completely agree	183	95.3
Agree	9	4.7
<b>City hall/district governorship/school/courthouse</b>		
Completely agree	186	96.9
Agree	6	3.1
<b>Total</b>	192	100.0

**Table 5.** Smoking status in any part of the house and in the working environment before and after the enforcement of the anti-tobacco Law Nb. 4207 [2 FHCs (Family Health Centres), October 2013] (%)

Smoking status	Before	After
<b>House</b>		
Balcony (n=191)	66.5	66.0
Kitchen (n=192)	33.3	22.4
Toilet-bathroom (n=185)	16.2	10.8
Rooms other than bedroom (n=192)	5.7	3.1
Bedroom (n=192)	2.1	0.5
<b>Working environment (n=41)</b>		
Balcony	51.2	38.1
Restroom	41.5	7.3
Working room	52.4	7.1
Shared areas (hallway)	48.0	4.9

study group, which was determined based on the FHC records, had children under the age of 5 defines a different position/situation from the general population in terms of frequency of smoking. These justifications can explain the “frequency” found in the present study, which is not in line with the data in Turkey.

In the present study, smoking status was also questioned before and after the enforcement of the anti-tobacco Law Nb. 4207 in 2008. The significant category of the responses to this question was “less than before” (51.3%). Another

**Table 6.** Smoking status in any place at home other than balcony after the anti tobacco Law nb. 4207 [2 FHCs (Family Health Centres), October 2013] (%)

Smoking status in any place at home	Yes	No
Balcony (n=68)*	88.2	11.8
Kitchen (n=69)	62.3	37.7
Toilet-bathroom (n=65)*	30.8	69.2
Rooms other than bedroom (n=69)	8.7	91.3
Bedroom (n=69)	1.4	98.6

\*One of the participants did not respond to question related to who were smoking in any part of the house other than balcony before the Law.

\*Four of the participants did not respond to question related to smoking status in the toilet-bathroom of house after the Law

**Table 7.** Smoking status in any place at home before and after the birth of a child (2 FHCs (Family Health Centres), October 2013) (%)

Smoking status	Before	After
Balcony (n=191)	62.3	60.7
Kitchen (n=192)	31.8	16.2
Toilet-bathroom (n=184)	14.1	9.2
Rooms other than the bedroom (n=192)	6.2	3.1
Bedroom (n=192)	2.1	0.5

comparison on this subject was the evaluation concerning the period after the birth of a child. Three out of each 10 individuals stated that they decreased the frequency of smoking after having a child. Based on the statements of participants on both categories, it can be thought that having a child under the age of 5 is more effective than the “single” effect of the Law. Nevertheless, it is a notable point that there is another group influenced neither by the Law nor by having a child.

Substantial proportion of the participants (90% and higher) supported the approach that prohibits smoking in the coffee house, café, hospital, and governmental institutions. Although this seems as a favourable outcome, it should be taken into account that there is a group not interiorized this process. The whole population’s 100% supporting the Law is of critical importance for the success of the Law [3]. From the point of health promotion, “community participation” is an extremely valuable step for any intended health behaviour to be successfully implemented in the population [11]. Nobody who “does not support” prohibition in hospital and governmental buildings was determined in the present study and this is promising particularly for overcoming the deficiency in “social support” in obeying the Law.

Based on the statements of participants interviewed, the rate of smoking in certain parts (balcony, kitchen, toilet-bathroom, and rooms) of the house decreased after the Law. Similar decrease was also observed for the working environment. “Balcony” was the place where the “least” change in smoking status occurred both at home and at work. A significant decrease was determined after the Law in the rate of

smoking in any part of the house other than balcony in the participants smoking in any part of the house before the Law. It was observed that the smokers were using balcony for smoking after the anti-tobacco Law. This might be considered as an important improvement. Not obtaining detailed information on balcony (open/closed design) within the scope of the present study can be considered as a limitation. Nevertheless, the “perception” of closed area particularly in the working environment has usually excluded the balcony and thereby smoking in this area has not decreased as expected. Prohibition of smoking in the closed public areas is also against the soul and certain items of the Framework Convention on Tobacco Control and the anti tobacco Law Nb. 4207 [5,12].

There are studies that investigate smoking status at home worldwide. A study from Australia determined low socio-economic level of the family, larger household size, and being a single parent as the main factors that enhanced exposure to SHS at home for children under the age of 12 years [13]. In another study investigating risk of exposure to SHS in infants, it was demonstrated that even a few-month old babies, whose mothers were smoking and who had siblings, were exposed to SHS [14]. In the present study, according to the statements of the participants interviewed, a decrease was observed in the rate of smoking in almost all parts of the house (bedroom, kitchen, balcony, and toilet-bathroom) after the birth of a child. It was observed that the decrease was the least for “balcony”. Such a decrease is favourable; however, smoking in none of the parts of house is the basic recommendation to completely (100%) prevent exposure to SHS [3]. In fact, the results of the present study were behind this recommendation. The decrease in the frequency of smoking at home and/or in balcony was not adequate despite the presence of such an important motivation as “birth of a baby”.

In the present study, detailed inquiry concerning the design of balcony (closed/open) was lacking. Further epidemiological analyses such as regression analysis could not be performed because of inadequate number of data. These could be considered as the “limitations”.

In conclusion, developing attitudes and behaviours is recommended to prevent effects of exposure to SHS at home. Moreover, audits that are more effective are needed to completely (100%) implement the Law in order to prevent exposure to SHS in the working environment.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the non-interventional ethics committee of Hacettepe University (Permission no: GO 13/303-12).

**Informed Consent:** Informed consent was obtained from participants.

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- D.D., D.A.; Writer - D.A., D.D., M.Y., G.K., N.G.; Critical Review - D.A., D.D.

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