Prevalence of Home Smoking Bans and its Determinants in Families with Infants

Azam Baheiraei[1], *Morvarid Ghasab Shirazi[2], Ziba Raisi Dehkordi[3], Abbas Rahimi Foroushani[4], Saharnaz Nedjat[5]

[1]Community Based Participatory Research Center, Iranian Institute for Reduction of High-Risk Behaviors, Tehran University of Medical Sciences, Tehran, Iran. [2]PhD in Reproductive Health, Guilan University of Medical Sciences, Rasht, Iran. [3]Department of Midwifery, School of Nursing and Midwifery, Shahrekord University of Medical Sciences, Shahrekord, Iran. [4]Department of Epidemiology and Biostatistics, Tehran University of Medical Sciences, Tehran, Iran. [5]School of Public Health, Knowledge Utilization Research Center, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Background
Exposure to cigarette smoke has numerous health risks for infants and children. Home smoking ban is a simple way to reduce the detrimental impacts of cigarette smoke. This study aimed to determine the prevalence of cigarette smoking bans in homes as well as associated factors in families with infants in Tehran, Iran.

Materials and Methods
This study was a population-based cross-sectional survey on 1,112 families with infants, selected through stratified-cluster sampling. In this study, a researcher made questionnaire including four parts: sociodemographic characteristics, smoking status, smoking restrictions, and parental awareness and belief, was completed. The multivariable logistic regression was used to investigate the relationship between smoking bans in homes and associated factors.

Results
Complete smoking ban in homes was 37.3%. In the multivariable logistic regression, cigarette smoking ban in homes was significantly higher for employed mothers (odds ratio [OR] = 3.03, 95% confidence interval [CI]: 1.2–7.2, P<0.001), for those who did not have any smoker friends or relatives (OR = 2.3, 95% CI: 1.3–4.4, P<0.001), for those smoking a smaller number of cigarettes (OR = 2.7, 95% CI: 1.4–5.3, P=0.003), and for parents who concurred with the impacts of thirdhand cigarette smoke on infant health (OR = 4.7, 95% CI: 1.4–14.9, P<0.001).

Conclusion
This study indicates that complete smoking ban is not established in many households with infants in Iran. Furthermore, it is necessary to perform health interventions for reducing infant exposure to cigarette smoke, while considering the factors associated with smoking ban.

Key Words: Environmental tobacco smoke, Home Smoking Ban, Infant.

Corresponding Author:

Dr. Morvarid Ghassab Shirazi, Guilan University of Medical Sciences, Rasht, Iran.

Email: morvashirazi@gums.ac.ir AND morvashirazi@yahoo.com

1- INTRODUCTION

Exposure to cigarette smoke entails numerous health risks for infants and children, including respiratory infection, recurrent otitis media, severe asthma, attention-deficit/hyperactivity disorder, behavioral disorders, dental problems, metabolic syndrome, and sudden infant death syndrome (1-4). Because infants have 3–8 times higher respiration rates and 10–20 times lower body weight than adults, the dosage of secondhand smoke (SHS) exposure may accumulate to the levels of active adult smoking (5). Children become contaminated with thirdhand smoke (THS) through breathing in the environment, crawling, playing in the environment, and touching and tasting smoke-smeared surfaces (6). The neology THS has been coined for the residual substances of cigarette smoke; the toxic substances in cigarettes that remain in the environment as dust, exhaled gases, and fine films on surfaces for days, weeks, and even months after the cigarette has been consumed (6, 7); so exposure to cigarette smoke is a major challenge in public health, particularly in children (8).

The most important source of cigarette smoke exposure for infants is parents smoking at home (1, 9, 10), where the enclosed space intensifies the issue (11). Exposure to cigarette smoke is easily preventable; banning smoking in enclosed spaces is a simple way to reduce SHS exposure and the detrimental impacts of cigarettes (12, 13). Thus, smoking bans can be extended to the individual's life as well (14). Smoking bans are classified as complete, partial, and no ban (6, 15). Effective establishment of a complete ban is the only efficient way to protect people against exposure to environmental tobacco smoke (16). In previous studies, different factors have been related to the prevalence of smoking bans in homes (6, 15, 17, 18). The family's economic status (19), level of education (9, 20), non-smoking parents

(21), presence of children in the family (22), parents ethnicity (23), awareness (24, 25) and belief in the impacts of cigarette smoke (6, 17) were associated with restrictions on cigarette smoking in homes. In Iran, tobacco consumption is considered a major public health concern and anti-tobacco laws have been extensively implemented in public places (26). However such legislations do not cover smoking in private residences like homes (10). Thus for reaching better outcomes, tobacco-control programs need to begin at childhood and with a focus on families (27). Considering the lack of previous studies on the prevalence of smoking bans in families with infants and associated factors as well as the detrimental effects of infants' exposure to cigarette smoke in Iran, this study was conducted to determine the prevalence of cigarette smoking bans in homes and the associated factors in families with infants referred to healthcare centers in Tehran.

2- MATERIALS AND METHODS

2-1. Study design and population

This was a population-based cross-sectional study on 1,112 families with infants referred to healthcare centers from July 2016 to March 2017, selected through stratified-cluster sampling. Ten centers were randomly selected from the main healthcare centers of Tehran, Iran.
Sample size was estimated, using the formula:

$$n = \frac{Z^2 \times P(1-P)}{d^2}$$

Previous studies have reported that the prevalence of complete home smoking ban in families with infant were between 10% to 80% (6, 14); so to determine the sample size, the prevalence of complete smoking ban (P), was considered to be 50%. The Z value associated with a 95% confidence interval was 1.96, and distance from mean to one side of the range (d) was considered

0.03. Considering 45 families for potential dropout, the study aimed to recruit 1,112 families with infant.

2-2. Methods

Data was collected by completing a researcher made questionnaire through a face-to-face interview with families.

2-3. Measuring tools: validity and reliability

The questionnaire included four parts: sociodemographic characteristics, smoking status of parents, smoking restrictions, and parental awareness and belief. The sociodemographic characteristics include age, education, social class, ethnicity, the infant's gender, wealth and crowding index, and family income sufficiency. On the basis of paternal occupation, the family's social class was determined as high, middle, worker, or low. Furthermore, in order to determine the wealth index, the principle components were combined. Following the principle component analysis, the units were described as very poor, poor, neither poor nor affluent, affluent, and very affluent.

The smoking member of the family could be the father, mother, or other adults in the family (18 years or older). Smoking restrictions were assessed at home, at the workplace, and in public places. Smoking restrictions at home were evaluated by posing the question "How is cigarette smoking restricted at home?" The response options were "Smoking is permitted everywhere" "Smoking is permitted in certain places at home", and "Smoking is not permitted anywhere at home". For the purpose of this data analysis, smoking bans in homes were categorized as no, partial, or complete ban (6). Smoking bans at the workplace and in public places were categorized similarly with an extra option provided for people who were not employed or had not visited public places during the last 6 months (28).

Parental awareness of the impacts of cigarette smoke and the related diseases (respiratory infection, otitis media, asthma, growth disorders, and sudden infant death) on infant health were assessed through six questions. The total score for awareness was 6; 2 or less was considered as "Weak", 3 or 4 considered as "Average", and 5 or 6 considered as "Strong". Parental belief in the impacts of SHS and THS on infant health was assessed using two questions. The answers were categorized as "I agree completely" and "I agree", forming the agreement group; "I disagree" and "I disagree completely", forming the disagreement group; and "I do not know", forming the third group (6).

In the present study, the validity of the questionnaire was evaluated using content validity. The reliability of the data collecting tool was assessed using test-retest. The interclass correlation coefficient was determined (0.68-1) with Cronbach's α coefficients of 0.88 for smoking status, 0.9 for smoking bans at home, 0.86 for smoking bans at the workplace and in public places, 0.9 for parental awareness of the impacts of SHS and THS smoke on infant health, and 0.87 for parental belief in the impacts of SHS and THS smoke on infant health.

2-4. Ethical consideration

Informed consent was obtained from all participants, and the study was approved by the Ethics Committee of the Tehran University of Medical Sciences (code number: 88-04-28-9810).

2-5. Inclusion and exclusion criteria

The inclusion criteria was having healthy infants aged 1 year or younger, residing in Tehran, and having an Iranian nationality; participants with physical or mental disorders were excluded from the study.

2-6. Data Analyses

In order to investigate the association of related factors and smoking ban at home,

the Chi-square and Fisher's tests were employed for univariate analysis followed by the multivariate logistic regression analysis with backward strategy. Those factors which indicated significant relationship with independent variables on Chi-square and Fisher's tests (p < 0.05) entered the multivariable logistic regression model. The independent variables included smoking bans at home, and the dependent variables included the sociodemographic characteristics, smoking status, smoking bans at the workplace and in public places, and parental awareness and belief in the impacts of SHS and THS smoke on infant health. All data were quantitative and were analyzed using SPSS software version 19.0.

3- RESULTS

This study was conducted to determine the prevalence of cigarette smoking bans in homes and the associated factors in families with infants. A total of 1,112 families successfully completed the questionnaires representing a response rate of 100%.

3-1. Participants' sociodemographic characteristics

In the present study, most mothers (82.6%) were housewives, and (76.3%) of families were of the middle social class. About 45% of mothers and 42% of fathers had a high school diploma. Most parents (98.8%) were married, and less than half the number of participants reported their income as sufficient for their expenses. Almost half the number of infants was girls. About 58% were of low crowding index.

3-2. Smoking status

About 21% of families were smokers. In most of the smoker families (88.4%), the father was the smoker; in 2% of the families, the mother; and in 9.4%, the other family members were smokers. Most of the smokers (75.7%) smoked cigarettes

every day. The number of cigarettes smoked by the families was 10.4 ± 8.1 (mean ± SD; range: 1-60), and the period of smoking was 128.7 ± 105.7 (mean ± SD; range: 3-600 months). In 46.6% of the cases, a smoker friend or relative visited the household.

3-3. Parental awareness and belief in the impacts of SHS and THS on infant health

Parental awareness of the impacts of SHS and THS on infant health was 2.33 ± 1.34 (mean ± SD; range: 0-6); most parents (64.6%) were inadequately aware of the effects of cigarette smoke on their infant's health. Furthermore, 79.6% of parents completely agreed with the impacts of SHS exposure on their infant's health, and 42.4% of parents completely agreed with the effects of THS exposure on their infant's health.

3-4. Smoking bans at home

About 37% of families completely restricted smoking at home. Maternal occupation, parental education and ethnicity, social class, wealth and crowding index were significantly related to complete smoking ban at home (**Table.1**).

Complete smoking ban in homes had a significant relationship with having smokers as family members, friends, or relatives, smoking status of the family members, and the number of cigarettes smoked (**Table.2**). Smoking ban at the workplace and in public places were significantly related to complete smoking ban at home (**Table.3**). In addition, parental awareness of the effects of cigarette smoke on infant health had a significant relationship with complete cigarette ban at home. Only parental belief in the effects of THS on infant health was significantly related to complete smoking ban in homes (**Table.4**).

3-5. Factors associated with smoking ban

The final multivariable logistic regression modeling indicated that in the case of employed mothers the odds of achieving complete smoking ban in homes were threefold as compared to housewife mothers (Odds ratio [OR] = 3.03, 95% CI: 1.2-7.2). Families who did not have smoker friends or relatives were twice as more likely to completely ban smoking at home as families who did (OR = 2.3, 95% CI: 1.3-4.64). The decrease in the number of cigarettes smoked by family members increased the odds of establishing complete smoking ban at home (OR = 2.7, 95% CI: 1.4-5.3). Complete smoking ban at the workplace increased the odds of enforcing complete smoking ban at home by 6 times (OR = 6.3, 95% CI: 1.4-26.5). Believing in the impacts of THS on infant health increased the probability of having complete smoking ban at home (OR = 4.7, 95% CI: 1.4–14.9) (**Table.5**).

Table-1: The relationship between smoking bans in homes and sociodemographic characteristics

Variables	Home smoking ban Number (%)		P- value
	Complete	Partial/No	
Maternal age, year			
≤35	623 (4.64%)	375 (6.37%)	0.6
>35	74 (9.64%)	40 (1.35%)	
Paternal age, year			
≤35	474 (5.62%)	285 (5.37%)	0.8
>35	*222 (1.63%)	130 (9.36%)	
Maternal occupation			
Housewife	557 (3.60%)	366 (7.39%)	<0.001
Employed	140 (1.74%)	49 (9.25%)	
Social class (based on paternal occupation)			
Low class	4 (6.28%)	10 (4.71%)	
Working class	115 (9.56%)	87 (1.43%)	0.006
Middle class	551 (9.64%)	298 (1.35%)	
High class	*26 (5.56%)	20 (5.43%)	
Maternal education			
Illiterate/elementary	25 (4.42%)	34 (6.57%)	
Secondary/high School	58 (46%)	68 (54%)	<0.001
Diploma	295 (1.59%)	204 (9.40%)	
University	319 (5.47%)	109 (5.25%)	
Paternal education			
Illiterate/Elementary	35 (4.57%)	26 (6.42%)	
Secondary/High School	69 (6.46%)	79 (4.53%)	<0.001
Diploma	267 (6.56%)	205 (4.43%)	
University	*325 (6.75%)	105 (4.24%)	
Maternal ethnicity			
Persian	481 (9.64%)	260 (1.35%)	0.03
Non-Persian	216 (2.58%)	155 (4.24%)	
Wealth index			
Very Poor	108 (1.55%)	88 (9.44%)	
Poor	216 (2.58%)	132 (41%)	
Neither Poor nor Affluent	84 (8.56%)	64 (2.43%)	<0.001
Affluent	247 (4.68%)	114 (6.31%)	
Very Affluent	68 (80%)	17 (20%)	
Income sufficiency for expenses			
Sufficient	-	-	
Relatively Sufficient	147 (3.65%)	78 (7.34%)	0.4
Insufficient	294 (5.63%)	79 (5.36%)	

Crowding index			
Low population	425 (6.65%)	223 (4.34%)	
Medium population	234 (2.60%)	155 (8.39%)	0.01
High population	38 (7.50%)	37 (3.49%)	
Infant gender			0.3
Female	344 (4.61%)	216 (6.38%)	
Male	353 (9.63%)	199 (1.36%)	
Infant age, months			
<6	362 (1.64%)	204 (9.35%)	0.3
≥6	335 (4.16%)	211 (6.38%)	

* In one case, the father was not alive.

Table-2: The relationship between smoking bans in the home and smoking status

Variables	Home smoking ban, Number (%)	
	Complete	Partial/No
Smoker family members		
Yes	69 (4.29%)	166 (6.70%)
No	628 (6.71%)	249 (4.28%)
Smoking friends/relatives		
Yes	206 (8.39%)	312 (2.60%)
No	491 (7.82%)	103 (3.17%)
Frequency of smoking*		
Everyday	45 (3.25%)	133 (7.74%)
Sometimes	24 (1.42%)	33 (9.57%)
Number of cigarettes*		
<10	50 (8.36%)	86 (2.63%)
≥10	19 (2.19%)	80 (8.80%)
Duration of smoking, (months)*		
3–60	21 (2.38%)	34 (2.63%)
≥60	48 (7.26%)	132 (3.73%)

* Measured for smoking individuals.

Table-3: The relationship between smoking bans in the home and smoking bans at the workplace and in public places

Variables	Home smoking ban, Number (%)		P-value
	Complete	Partial/No	
Ban in workplace			
Complete	138 (78%)	39 (22%)	
Partial/No	77 (4.55%)	62 (6.44%)	<0.001
Not employed	482 (6.60%)	314 (4.39%)	
Ban in public places			
Complete	242 (3.69%)	107 (7.30%)	
Partial/No	345 (3.69%)	243 (3.41%)	0.005
Not visited public places in the last 6 months	110 (9.62%)	65 (1.37%)	

Table-4: The relationship between smoking bans at home and parental awareness and belief in the impacts of cigarette smoke on infant health

Variables	Home smoking ban, Number (%)		P-value
	Complete	Partial/No	
Parental awareness of the impacts of cigarette smoke on infant health			<0.001
≤2 (Weak)	411 (2.57%)	307 (8.42%)	
3–4 (Average)	214 (9.70%)	88 (1.29%)	
≥5 (Strong)	72 (3.78%)	20 (7.21%)	
Parental belief in the impacts of SHS on the infant's health			0.7
Agree	4 (7.66%)	2 (3.33%)	
Disagree	689 (8.62%)	409 (2.37%)	
Do not know	4 (50%)	4 (50%)	
Parental belief score of impacts of THS on the infant's health			<0.001
Agree	59 (9.39%)	89 (1.60%)	
Disagree	523 (2.68%)	244 (8.31%)	
Do not know	115 (4.58%)	82 (6.41%)	

Table-5: Multivariable logistic regression analysis for factors associated with complete smoking ban in homes

Variables	Complete home smoking ban OR (95% CI)
Maternal occupation	
Occupied	3.03(1.2-7.2)
Housewife (reference)	1
Smoking friends/relatives	
No	2.3(1.3-4.64)
Yes (reference)	1
Number of cigarettes smoked by family	
<10	2.7(1.4-5.3)
≥10 (reference)	1
Parental belief in the impacts of THS on infant health	
Agree	4.7(1.4-14.9)
Do not know	2.5(0.9-7.2)
Disagree (reference)	1

OR: Odds Ratio; CI: Confidence Interval.

4- DISCUSSION

This is the first study to assess the prevalence of establishing smoking bans in homes and the associated factors in families with infants in Iran. The findings of this study indicate that smoking was not completely banned in many households with infants. The existence of complete smoking bans in homes, was associated with maternal occupation, smoking friends or relatives, number of cigarettes smoked by family and parental belief in the impacts of THS on infant health. Thus, it is necessary to conduct interventions with regard to these factors associated with smoking bans in families. Based on the smoking status, the fathers were responsible for most of the smoking in the family. These findings are consistent with the findings of previous studies on smoking status in Iran (13, 29, 30). Complete smoking ban was enforced in less than half the number of homes, which underscores the fact that many infants are

exposed to SHS and THS at home. It is difficult to compare our findings with those of other studies because of the small number of similar studies in Iran, limitations of studies dealing with smoking bans in families with infants, differences in sociodemographic characteristics of the population, and different tools and time periods used in other studies. Nevertheless, comparing the findings with previous studies that are almost similar to the present study in terms of tools and the ages of the study samples indicates that the prevalence of complete smoking ban in this study was less than other studies.

In this regard, Ossip et al. showed that 54.3% of parents surveyed reported having a strict smoke-free home policy (21). Heck et al. reported that the prevalence figures of 60% to 87% in European countries (17), Gonzales et al. (15), and Kegler and Malcoe (31), which reported the prevalence figures of 43% to 77% in the United States, respectively. The prevalence reported in a similar Chinese study was 14.34% (19), which is much lower than the reported prevalence of our study. The difference between the study mentioned, may be accounted for by the cultural differences (32), and the lack of attention to enforcing complete smoking ban in the home. Only a small study conducted in low-income families in southern Tehran reported the smoking ban is not established in many households with infants; this could be owing to families with low socioeconomic status (33, 34).

Based on the association between sociodemographic characteristics and complete smoking bans in homes, maternal employment increases the likelihood of having a complete smoking ban in the home. This may be due to the better socioeconomic status of the family associated with maternal occupation. Previous studies have shown that families with a high socioeconomic status are more likely to establish a complete smoking ban

at home (1, 21, 24, 28). With regard to smoking status and smoking bans, the findings of this study indicated that complete smoking bans were more prevalent in households without smoker friends or relatives, consistent with previous studies (15, 21, 32). In the Iranian culture, smoking bans are not easily enforced on friends and relatives. Previous studies have indicated that achieving complete smoking bans is related to a family member's smoking pattern (28, 35). Based on the pattern of cigarette smoking by family members, this finding indicated that reducing the number of cigarettes smoked by family members to less than 10 a day increases the likelihood of having complete smoking bans in homes, which is consistent with the results of similar study (21). Borland et al. indicated that complete smoking ban at the workplace encourages individuals to ban smoking in their families (28).

In the present study, smoking bans in public places did not have a significant relationship with complete smoking bans at home. This may be due to the fact that smoking is more strictly banned in workplaces as compared to public places. In addition, the findings of the present study indicate a significant relationship between parental belief in the impacts of THS on infant health and complete smoking ban at home. However, parental belief in the impacts of SHS on infant health was not significantly related to establishing complete smoking bans at home. This may be due to the fact that a great number of parents completely agreed with the impacts of SHS on their infants; this is consistent with the findings of Winickoff et al. (6). Thus, effective tobacco control programs can be introduced with more emphasis on the effects of THS on fetal health. Owing to the cross-sectional nature of the study, relationships between smoking bans at home and the associated factors cannot be

interpreted as causal. Further studies to investigate the factors associated with enforced smoking bans in homes are recommended.

5- CONCLUSION

In conclusion, considering the factors associated with establishing smoking bans at home, infants in some families are exposed to more cigarette smoke. It is essential to ban smoking in the household in order to reduce the infant exposure to cigarette smoke. Furthermore, interventions aimed at enhancing smoking bans in households require an understanding of the associated factors. The findings of this study may serve as a basis for future studies to pave the way for designing interventions aimed at enhancing smoking bans in families with infants, which will ultimately result in promoted family and infant health.

6- CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.

7- ACKNOWLEDGMENTS

8- REFERENCES

1.   Bolte G, Fromme H, Group GS. Socioeconomic determinants of children's environmental tobacco smoke exposure and family's home smoking policy. The European Journal of Public Health. 2008;19(1):52-8.

2.   Ma GX, Tan Y, Fang CY, Toubbeh JI, Shive SE. Knowledge, attitudes and behavior regarding secondhand smoke among Asian Americans. Preventive medicine. 2005;41(2):446-53.

3.   Jaakkola JJ, Jaakkola MS. Effects of environmental tobacco smoke on the respiratory health of children. Scandinavian journal of work, environment and health. 2002; 28 Suppl 2:71-83.

4.   Zarepur E, Imanian M, Ghasemzadeh MJ, Zarepur A, Sarbandi Farahani R, Sarbandi Farahani R. Association of pneumonia with parental smoking in hospitalized children under 10 years old in Ayatollah Golpayegani hospital in Qom 2016. International Journal of Pediatrics. 2016.

5.   Matt GE, Bernert JT, Hovell MF. Measuring secondhand smoke exposure in children: an ecological measurement approach. Journal of Pediatric Psychology. 2007;33(2):156-75.

6.   Winickoff JP, Friebely J, Tanski SE, Sherrod C, Matt GE, Hovell MF, et al. Beliefs about the health effects of "thirdhand" smoke and home smoking bans. Pediatrics. 2009;123(1):e74-e9.

7.   Matt GE, Quintana PJ, Destaillats H, Gundel LA, Sleiman M, Singer BC, et al. Thirdhand tobacco smoke: emerging evidence and arguments for a multidisciplinary research agenda. Environmental health perspectives. 2011;119(9):1218.

8.   Lloyd AC, Denton JE. Proposed Identification of Environmental Tobacco Smoke as a Toxic Air Contaminant. Part B: Health Effects California Environmental Protection Agency, Office of Environmental Health Hazard Assessment https://escholarshiporg/uc/item/8hk6960q. 2005.

9.   Wamboldt FS, Balkissoon RC, Rankin AE, Szefler SJ, Hammond SK, Glasgow RE, et al. Correlates of household smoking bans in low- income families of children with and without asthma. Family process. 2008;47(1):81-94.

10.   Physicians RCo. Passive smoking and children. A report by the Tobacco Advisory Group. London: RCP. 2010.

11.   Thomson G, Wilson N. Public attitudes to laws for smoke-free private vehicles: a brief review. Tobacco control. 2009;18(4):256-61.

12.   Rivero LR, Persson JL, Romine DC, Taylor JT, Toole TC, Trollman CJ, et al. Towards the world-wide ban of indoor

cigarette smoking in public places. International journal of hygiene and environmental health. 2006;209(1):1-14.

13. Organization WH, Control RfIT. WHO report on the global tobacco epidemic, 2008: the MPOWER package: World Health Organization; 2008.

14. Ouedraogo E, Turcotte F, Ashley M, Brewster J, Ferrence R. Factors associated with the adoption of a smoking ban in Quebec households. Chronic Dis Can. 2009;29(3):128-35.

15. Gonzales M, Malcoe LH, Kegler MC, Espinoza J. Prevalence and predictors of home and automobile smoking bans and child environmental tobacco smoke exposure: a cross-sectional study of US-and Mexico-born Hispanic women with young children. BMC Public Health. 2006;6(1):265.

16. Organization WH, Initiative TF. Protection from exposure to second-hand tobacco smoke: policy recommendations: World Health Organization; 2007.

17. Heck JE, Stücker I, Allwright S, Gritz ER, Haglund M, Healton CG, et al. Home and workplace smoking bans in Italy, Ireland, Sweden, France and the Czech Republic. European Respiratory Journal. 2010;35(5):969-79.

18. Mills AL, White MM, Pierce JP, Messer K. Home smoking bans among US households with children and smokers: opportunities for intervention. American journal of preventive medicine. 2011;41(6):559-65.

19. Huang K, Chen H, Liao J, Nong G, Yang L, Winickoff JP, et al. Factors associated with complete home smoking ban among Chinese parents of young children. International journal of environmental research and public health. 2016;13(2):161.

20. King BA, Hyland AJ, Borland R, McNeill A, Cummings KM. Socioeconomic variation in the prevalence, introduction, retention, and removal of smoke-free policies among smokers: findings from the International Tobacco Control (ITC) Four Country Survey. International journal of environmental research and public health. 2011;8(2):411-34.

21. Ossip DJ, Chang Y, Nabi-Burza E, Drehmer J, Finch S, Hipple B, et al. Strict smoke-free home policies among smoking parents in pediatric settings. Academic pediatrics. 2013;13(6):517-23.

22. Hyland A, Higbee C, Borland R, Travers M, Hastings G, Fong GT, et al. Attitudes and beliefs about secondhand smoke and smoke-free policies in four countries: findings from the International Tobacco Control Four Country Survey. Nicotine & Tobacco Research. 2009;11(6):642-9.

23. Binns HJ, O'Neil J, Benuck I, Ariza AJ, Group PPR. Influences on parents' decisions for home and automobile smoking bans in households with smokers. Patient education and counseling. 2009;74(2):272-6.

24. Zheng P, Berg CJ, Kegler MC, Fu W, Wang J, Zhou X, et al. Smoke-free homes and home exposure to secondhand smoke in Shanghai, China. International journal of environmental research and public health. 2014;11(11):12015-28.

25. Yang T, Yu L, Jiang S, Feng X, Xian H, Cottrell RR, et al. Household smoking restrictions among urban residents in China: individual and regional influences. International journal of public health. 2015;60(4):479-86.

26. Sharifi H, Ramezankhani A, Tafti SF, Kashani BS, Padyab M, Heydari GR. Public awareness about framework convention on tobacco control (FCTC) in Tehran. Tanaffos. 2009;8(4):26-32.

27. Kelishadi R, Shahsanai A, Qorbani M, Motlagh ME, Jari M, Ardalan G, et al. Tobacco Use and Influencing Factors Among Iranian Children and Adolescents at National and Subnational Levels, According to Socioeconomic Status: The Caspian-IV Study. Iranian Red Crescent Medical Journal. 2016;18(5): e21858..

28. Borland R, Yong HH, Cummings KM, Hyland A, Anderson S, Fong GT. Determinants and consequences of smoke-free homes: findings from the International Tobacco Control (ITC) Four Country Survey. Tobacco control. 2006;15(suppl 3):iii42-iii50.

29. Meysamie A, Ghaletaki R, Haghazali M, Asgari F, Rashidi A, Khalilzadeh O, et al.

Pattern of tobacco use among the Iranian adult population: results of the national Survey of Risk Factors of Non-Communicable Diseases (SuRFNCD-2007). Tobacco control. 2010;19(2):125-8.

30. Kharaghani R. The effect of counselling with smoker parents on infants' exposure to second-hand smoke based on urinary cotinine levels and parents' reports. 2009.

31. Kegler MC, Malcoe LH. Smoking restrictions in the home and car among rural Native American and white families with young children. Preventive medicine. 2002;35(4):334-42.

32. Ji M, Ding D, Hovell MF, Xia X, Zheng P, Fu H. Home smoking bans in an urbanizing community in China. American journal of preventive medicine. 2009;37(2):132-6.

33. Baheiraei A, Kharaghani R, Mohsenifar A, Kazemnejad A, Alikhani S, Milani HS, et al. Reduction of secondhand smoke exposure among healthy infants in Iran: randomized controlled trial. Nicotine & tobacco research. 2011;13(9):840-7.

34. Baheiraei A KR, Mohsenifar A, Kazemnejad A, Mota A, Sharifi Milani H, Alikhani S. Factors associated with secondhand smoke exposure in infants. Tanaffos. 2010;9(2):43-9.

35. King K, Martynenko M, Bergman MH, Liu Y-H, Winickoff JP, Weitzman M. Family composition and children's exposure to adult smokers in their homes. Pediatrics. 2009;123(4):e559-e64.