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Abstract

Background: Exposure to second-hand tobacco smoke is a public health problem in countries with high prevalence of active smoking such as Pakistan. However, few studies have assessed the prevalence and risk factors for exposure to second-hand tobacco smoke.

Aims: To estimate the prevalence and factors associated with exposure to second-hand tobacco smoke in Pakistan.

Methods: This study used data from the 2017–2018 Pakistan Demographic and Health Survey to calculate the prevalence and determinants of second-hand tobacco smoke exposure. Sociodemographic characteristics, family size and exposure to media by the respondents were the independent variables. The chi-square test and logistic regression analyses were used to evaluate the relationship between exposure to second-hand tobacco smoke and the independent variables.hy9

Results: The survey included 61 940 adults, of which 30 027 (48.5%) were males and 31 913 (51.5%) females. The overall prevalence of exposure to second-hand tobacco smoke was 34.3%: 35.6% among males and 33.2% among females. Higher education level and rural residence were significantly positively associated with exposure to second-hand tobacco smoke among both sexes. Having a radio was inversely associated with exposure while having a television was positively associated with exposure among both sexes. Large family size was inversely associated with exposure. Currently and previously married females had significantly greater risk of exposure than never-married females.

Conclusion: Tailored health interventions and policies are needed that target populations at high-risk of exposure to second-hand tobacco smoke. Strict smoking bans in public places should be implemented to limit exposure to second-hand tobacco smoke in Pakistan.

Keywords: second-hand smoking, tobacco smoke pollution, prevalence, risk factors, Pakistan.

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Introduction

Tobacco smoke is one of the leading causes of death worldwide. It affects the health of the smokers and it is a threat to the lives of people inhaling second-hand smoke (1). According to the Global Burden of Disease Study 2013, second-hand tobacco smoke causes 600 000 deaths a year worldwide (2). Second-hand smoke exposure is associated with a risk of several diseases including cancer, diabetes, stroke and asthma (3–5). In children, second-hand tobacco smoke causes sudden infant death syndrome and other respiratory diseases, and is associated with preterm deliveries and lower weight of newborn babies in pregnant women (6).

The prevalence of exposure to second-hand tobacco smoke is considerably higher in low- and middle-income countries such as Pakistan (7). Tobacco is used in many different forms in Pakistan including as hookah and shisha. According to the 2014 Global Adult Tobacco Survey, the prevalence of active smoking in Pakistan was 19.1% while exposure to second-hand tobacco smoke was 69.1% and 48.3% at the workplace and home, respectively (8). In the Pakistan Demographic and Health Survey for 2012–2013, 39.1% of people were exposed to indoor tobacco smoke every day (8). Tobacco consumption including second-hand smoking is the fourth leading cause of death and disability in Pakistan (9). Second-hand tobacco smoke exposure caused 33 524 deaths in Pakistan in 2017, which was 2.37% of the total deaths (9).

As second-hand tobacco smoke exposure is a major public health threat in Pakistan, calculating the precise prevalence and identifying high-risk population groups can support evidence-based policies on banning smoking. However, adequate research in this field is lacking in Pakistan. Previously, most of the studies in Pakistan focused on the prevalence and determinants of active smoking (8,10). The few studies on second-hand tobacco smoke mostly focused on knowledge and attitude of people towards active and passive smoking (11,12). Some studies analysed the relationship between second-hand tobacco smoke and specific diseases such as respiratory diseases and pregnancy outcomes (13,14), and a few calculated the prevalence of exposure to second-hand tobacco smoke in a specific region or age group (12,15). We found only one study that calculated second-hand tobacco smoke prevalence at the national level in Pakistan (16). However, this study did not consider all the factors that can affect the prevalence of exposure to second-hand tobacco smoke. Most of these previous studies are outdated and are not based on the latest information on second-hand tobacco smoke exposure in Pakistan.

Therefore, this study aimed to calculate the prevalence of second-hand tobacco smoke exposure in Pakistani adults, disaggregated by sex, using the latest data from the 2017–2018 Pakistan Demographic and Health Survey. We analyzed the association between socioeconomic characteristics, family type and media-related factors and the prevalence of exposure to second-hand tobacco smoke. The results of this study will be useful for policymakers' interventions focusing on high-risk groups.

Methods

Data source

This study used secondary data from the 2017–2018 Pakistan Demographic and Health Survey (17), a nationally representative household survey which provides the most recent and reliable data on a wide range of indicators, including maternal health, women's empowerment, domestic violence and HIV and AIDS. The data are freely accessible. This survey included four provinces of Pakistan: Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan, as well as Azad Jammu and

Kashmir and the former Federally Administered Tribal Areas, which were not included in the previous surveys.

The Pakistan Demographic and Health Survey included 16 240 households selected by two-stage, stratified, random sampling. In the first stage, all the regions were separated into urban and rural populations and divided further into small areas called enumeration blocks. In the second stage, households were selected from each block using random sampling design (17). For this study, we included males and females aged 15 years and older, both smokers and non-smokers.

Variables

The outcome variable was exposure to second-hand tobacco smoke. Respondents were asked how frequently household members smoked inside the house with four response categories: never, daily, weekly and monthly. We recoded the responses into no or yes.

The independent variables were sociodemographic characteristics of the respondents, family and media-related factors. Sociodemographic variables included: age group (15–35, 36–59, ≥ 60 years); level of education (no education, primary or secondary level, higher education); wealth index measured in quartiles (poor, middle, rich); place of residence (urban, rural); and region of residence (Punjab, Sindh, Balochistan, Khyber Pakhtunkhwa, other). Others included Gilgit Baltistan, Azad Jammu Kashmir, Federally Administered Tribal Areas and Islamabad Capital Territory. Family-related factors included family size (2, 3–5, > 5 members) and marital status (never married, currently married, previously/ever married). Media-associated variables were having a radio, a television, the internet; responses for all three categories were coded no or yes.

Statistical analysis

SPSS version 20 was used to analyse the data. To account for complex sampling design, weighted data were used to produce nationally representative results. Descriptive statistics were calculated and the chi-square test was used to assess the association between exposure to second-hand tobacco smoke and the independent variables. Binary logistic regression analysis was used to calculate the adjusted effects of the different variables on the prevalence of exposure to second-hand tobacco smoke. Results were presented separately for males and females.

Ethical considerations

No ethical approval was needed for this study because we used secondary data from the Pakistan Demographic and Health Survey. These data are publicly available (17). Consent was not needed from subjects because we used already collected anonymized data from a national survey.

Results

The total sample size was 61 940; 30 027 (48.5%) males and 31 913 (51.5%) females. Respondents were aged 15–85 years. Of the total sample, 34.3% (21 271/61 940) were exposed to second-hand tobacco smoke. Of males, 35.6% (10 686/30 027) were exposed to second-hand tobacco smoke compared with 33.2% (10 585/31 913) of females. Table 1 shows prevalence of exposure to second-hand tobacco smoke in males and females by independent variables. In the younger population, the prevalence of exposure to second-hand tobacco smoke was higher in females while exposure in the older age group was greater in males (P