



# International Approaches to Tobacco-Use Cessation Programs and Policy for Adolescents and Young Adults in Saudi Arabia

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## Abstract

**Purpose of Review** In this review, we are aiming to explore the recent literature regarding the current state of smoking and control plans and the recent changes in regulations in the Kingdom of Saudi Arabia.

**Recent Findings** Despite the strong efforts of tobacco control agencies in the Kingdom of Saudi Arabia to curb smoking rates, prevalence rates among youth are still around 12.1% with no indicators for a decline. The main reasons that could lead to smoking are peer pressure, stress, easy access, media influence, and lack of knowledge of harmful effects of smoking. School programs, religious background, and health concerns are considered as the main protective factors from smoking in the Saudi community. Most primary health care physicians report that they did not receive any smoking cessation training in medical school or in residency program.

**Summary** There is a strong need for school- and community-based anti-smoking awareness and cessation programs. Allocation of sufficient funds is necessary to reinforce laws combating smoking. Accessibility to smoking cessation clinics is very important and needs to improve significantly. Structured training for health care providers about cessation programs is pivotal. The availability of nicotine replacement therapy in all pharmacies is strongly needed.

**Keywords** Smoking · Policies · Prevalence · Saudi Arabia · Impact · Smoking cessation

## Introduction

Tobacco smoking has become a worldwide epidemic with nearly one billion—constituting 80%—users from middle- to low-income countries. According to the World Health Organization (WHO), tobacco smoking is responsible for six million deaths annually making it a serious concern for governments and policy makers. Approximately one million

deaths annually are attributed to secondhand smoke, extending the health damage of this epidemic beyond primary smokers [1]. Moreover, smoking has become the single leading cause of preventable deaths worldwide [2]. The effects of this problem are not only related to the health of individuals, but even extending to cause a huge economic burden which includes providing medical care for smoking-induced diseases and early loss of life [3]. Globally, the economic burden of tobacco smoking alone reached up to 1400 billion US dollars, an equivalent of 1.8% of global gross domestic product (GDP) [4]. In 2005, the WHO Framework Convention on Tobacco Control (WHO FCTC) started as a response to the tobacco-smoking epidemic. It is considered the most powerful tool in place to counteract the negative impacts of smoking worldwide [5]. In the last decade, many countries have implemented various policies to control smoking in their respective nations. Recent studies suggest that there are observed changes in smoking behaviors that correlate with the different policies implemented. For example, high socioeconomic groups have shown to reduce their tobacco consumption in response to flyers and written information campaigns, while higher price policies were more effective in low socioeconomic groups [6].

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Despite all the above-stated measures, the projected number of smokers is still rising. This constitutes an alarming signal for policy makers to implement a management plan aiming to reduce smoking in the society. In the meantime, there is a dire need to reassess the progress and outcome of smoking control programs and policies in order to improve and maximize their effects. In this study, we are aiming to explore the recent literature regarding the current state of smoking, control plans, and the recent regulatory changes in the Kingdom of Saudi Arabia. To our knowledge, there has not been a recent review that addresses this topic.

## Epidemiology

According to a recent WHO report, the current tobacco smokers in Saudi Arabia are 12.2% [7•]. This is nearly identical to the local statistics by the Saudi Ministry of Health published in 2014 which shows that 12.1% of the population above the age of 15 are smokers [8•]. However, a review study conducted in the kingdom by Bassiony examined 32 published studies (1987–2008) that investigated the epidemiology of tobacco smoking and found that the range of current tobacco smokers ranges from 2.4–52.3% (average = 17.5%). Moreover, male smokers outnumbered female smokers by a significant margin, and they concluded that current adult smoking prevalence is 23.7 and 1.5%, among males and females, respectively. The percentage of female smokers ranged from 1 to 16% (average = 9%) [9]. It was estimated that current tobacco smoking in youth was found to be 13% among males and 5% among females [7•]. The most common forms of tobacco smoking were jirak (hookah or shisha) followed by cigarettes and roll-your-own cigarettes. According to tobacco control program statistics, filtered cigarettes accounted for 82.7% of all tobacco use, shisha for 11.6%, and roll-your-own cigarettes was 1% [10]. In addition, the percentage of adolescents exposed to secondhand smoke in Saudi Arabia is estimated to be 32.7% at homes and 49.3% outside with an overall prevalence of 25% [11].

## Tobacco Control History in Saudi Arabia

In 1984, Saudi Arabia started to adopt new laws to control smoking, with the first step being the prohibition of smoking in government offices, ministries, and institutions [8•]. In 2002, the Smoking Control Program was established. This program was created to improve awareness and provide scientific and advisory services on smoking. Moreover, the program supervises tobacco control clinics throughout the kingdom [10]. This program set a number of goals that included protecting the society from smoking, helping smokers recover, protecting non-smokers from secondhand smoke, and

implementing the latest evidence-based findings for the improvement of rehabilitation and training. The next step taken towards tobacco control was the ratification of the WHO Framework Convention Tobacco Control in 2004 [10]. This was followed in 2007 by the formation of the National Tobacco Control Committee (NTCC, which was formed of representative of different ministry members with specific goals aiming to decrease tobacco use in the society with particular focus on younger age groups. In 2015, The Anti-Smoking Law Royal Decree Number M/56 was implemented. This law aimed to combat smoking by taking all necessary measures at the levels of the state, community, and individuals in order to curb the habit of smoking among individuals of all ages. This article contains various information regarding the new policies targeting smoking control.

The NTCC created the coordinating committee for the anti-smoking associations. This committee is responsible for coordinating and supporting tasks among its seven associating members to help in the prevention of diseases caused by smoking through improving community awareness. These associating members are Naqa association, Kafa association, Aman association, Tdark association, Safa center, and Hayat center. The committee coordinates between the different anti-smoking associations in order to achieve complementarity of roles and avoid duplication of efforts among the different members. Additionally, the committee assists the anti-smoking associations to overcome the obstacles that they may encounter, in addition to, encouraging research and studies in the fields of smoking cessation, awareness and prevention, and treatment programs [12].

## Methodology

In this study, we included published reports and journal articles as the main source of data. We also included data from different online resources and websites including the World Health Organization, the Saudi Ministry of Health, the Saudi Tobacco Control Program, and the Coordinating Committee for the Anti-Smoking Associations. Our literature search was conducted using PubMed and Medline as data sources for the literature review. Search terms used were “smoking Prevalence,” “Saudi Arabia,” “impact,” “Smoking policies,” “smoking cessation,” and “Youths.”

The inclusion criteria were the following: (1) studies that have been published in the past 5 years with the inclusion of some prominent studies related to smoking prevention and cessation from the past 10 years; (2) studies that address prevalence, risk factors, and the new policies and their impact on smoking trends and; (3) review articles addressing risk factors and prevalence of smoking in the Kingdom of Saudi Arabia. Exclusion criteria were the following: (1) studies focusing on the medical and psychological aspects of smoking, (2) small

sample studies that are not representative of the general population, (3) any field studies that have been conducted outside the KSA.

The study was carried out from July till October 2017.

## Results

Our online search criteria resulted in 36 articles that were published between 2012 and 2017. After screening, 27 articles met our inclusion criteria. These were the articles that investigated smoking prevalence among youths, risk factors, and new policies and their impact on smoking trends. Some articles were excluded due to either focusing on a very specific sub-population and hence were not generalizable to the Saudi population or investigating a topic beyond the scope of our study. We also included two prominent articles, “GYTS” from 2010 and “Smoking in Saudi Arabia” from 2009 due to their nationwide representative results.

## Prevention and Awareness

The preventive measures against smoking in Saudi Arabia are represented by certain policies and tobacco control programs. To date, there are no demand reduction programs currently in place. Laws for banning and fining smoking in government offices, educational institutions, restaurants, and cafés have been implemented since 2002, which might help delay the onset of smoking among youths [13•]. However, there is no specific funding allocated towards the enforcement of such laws. The increase in prices and taxes has proven to be one of the most cost-effective and least-utilized measures by many countries to control tobacco [8•, 10, 13•, 14•]. In Saudi Arabia, the price of tobacco has been increased in the past, yet it did not prevent the number of smokers from rising [15]. However, a recent 100% hike in taxes has been imposed on tobacco products starting from June 2017 [16].

Although Saudi Arabia considers smoking socially and religiously unacceptable and in spite of the efforts exerted to curb smoking, the number of new youth smokers is still on the rise [17•]. A recent review found that 20–50% of current smokers started smoking before the age of 15 [9]. According to the two Global Youth Tobacco Surveys (GYTS) in Saudi Arabia which were carried out in 2001 and 2007, awareness levels and anti-smoking messages have improved since 2001 yet smoking rates have increased 6% in 2007 compared to 2001. This could be explained by the widespread display of items with cigarettes brands logo on it which could possibly encourage participants to buy more cigarettes and the lack of accessibility to awareness and treatment programs that are already in place [18•]. Additionally, studies conducted in 2001 showed that 58.3% of boys and 42.6% of girls thought

that smokers have more friends. In 2007, these perceptions went down to 44.1 and 32.2%, respectively. In 2001, 36% of boys and 27.1% of girls thought that smokers look less attractive while in 2007, this percentage fell among boys to 32.9% and to 24.6% among girls, which denotes that smoking is becoming more socially acceptable among youths. Regarding accessibility to cigarettes, in 2001, 46.7% of boys reported that they personally bought their own cigarettes from stores, in contrast to 2007 in which the percentage increased to 52.9%. In 2001, 84.2% of stores refused to sell cigarettes to underage teens compared to 73.2% in 2007 [19]. The increase of smoking rates among youth from 2001 to 2007 even with the improvement in awareness may point to a possible deficiency in the implementation of outreach anti-smoking programs as well as, laws punishing the sale of tobacco to youths. In GYTS, 30–60% of participants reported that they were not aware of these programs, not to mention that programs were not updated to better utilize preventive measures and address risks. Additionally, in 2007, boys gained more access to cigarettes compared to 2001. Moreover, a study by Al Moamary and colleagues reported that age restrictions implemented on selling tobacco significantly reduced the prevalence of smoking among the adolescent study participants [20]. A study by Abdel Rahim and colleagues in Jazan region in Saudi Arabia found that 63.4% of male subjects and 28% of female subjects reported that obtaining cigarettes was very easy [21].

Subjective social and cultural perceptions towards certain types of tobacco appear to play an important role in the prevalence of tobacco smoking in Saudi Arabia. For example, it has been shown that 58% of study participants reported that water pipe smoking would be more accepted by their parents compared to cigarettes and 91% reported that water pipe smoking is more acceptable by their society than cigarettes. Furthermore, water pipe smoking was perceived by study participants as less harmful and less addicting than cigarettes [22]. The same study reported that 76% of study participants reported that they smoked water pipe seeking pleasure and 78% for dealing with pressure and only 50% of participants were aware of the harmful effects of water pipe smoking [22]. Another study addressing the prevalence of tobacco smoking in Saudi Arabia found that adolescents that have easy access to tobacco were three times more likely to smoke than those that had difficult access. The same study reported that the percentage of smokeless tobacco use was a low as 2% and this was attributed to the presence of laws banning the use of smokeless tobacco in the kingdom [23].

A review study exploring risk factors and early intentions of smoking among students found that the main reason behind smoking among adolescents was the influence of their friends, while for college students, it was peer pressure, followed by stress then media influence. Furthermore, the same study found that religious prohibition was the main deterrent against

smoking for adolescents, yet health concerns were the main deterrent for college students [17•]. On the other hand, Abdel Rahim and colleagues found that cigarette smoking was mainly motivated by the need for stress reduction, seeking fun, and imitating parents [21]. A cross-sectional school-based study looking at prevalence and indicators for smoking among Saudi adolescents found that adolescent smokers receive more pocket money, live among more affluent families, and tend to underperform academically. The same study demonstrated that smokers had more positive perceptions towards smoking and that smoking was desirable and pleasant and improves their confidence level. When comparing the effect of social influence among smokers and non-smokers, smokers reported feeling more pressure and experiencing more social norms from friends and classmates. The study further concluded that peers and brothers had a significant influence on smoking behavior [24].

The recent GYTS questionnaire study that explored other factors that might have influenced smoking behaviors among adolescents found that 29.9% of study participants have been exposed to smoke at home, while 38.9% have been exposed to smoke outside home. Furthermore, 60.9% of the study participants reported seeing tobacco advertisements on billboards while 59.8% have seen advertisements on newspapers or magazines in the last 30 days. Of study participants, 11.7% have objects with cigarette logos imprinted on it, while 47.6% of current smokers reported usually buying cigarettes by themselves, 76.4% of current underage smokers were not denied cigarettes at sale points due to their age, and 7.9% have been offered free cigarettes by tobacco representatives [18•]. The Saudi law mandates a standardized packaging of cigarettes which comes with graphic pictures attached as a health warning [13•]. However, the pictures on the package are not graphic as depicted in Fig. 1. It contains an image of a cigarette labeled “Smoking causes early death.” In comparison to the UK which enforces a standard package that contains a very disturbing picture with a description of the effect of smoking and a helpline to contact in case the smoker is seeking help to

quit smoking. For the sake of improving and designing prevention programs, risk factors and protective factors need to be considered.

Secondhand smoke has been reported to be as dangerous as active smoking [25, 26]. Studies have shown that there is a negative correlation between the level of education of parents and exposure of adolescents to secondhand smoke. Moreover, there is a 25% reduction in exposure to secondhand smoke at home among adolescents who believe that smoking is harmful. [11] Moreover, it was reported that the level of exposure to secondhand smoke at schools and work among governmental and non-governmental employees was 24.6 and 29.9%, respectively [13•].

Despite the initiation of the Framework Convention on Tobacco Control (FCTC), there is no momentum yet to promote smoking prevention. As a result, there is a clear lack of evidence-based smoking prevention programs. A new program was developed on the basis of smoking analysis and determinants. This program concluded that programs are mainly aimed for boys but not for girls as boys constitute the higher percentage of smokers compared to girls. A randomized controlled trial aiming to assess the outcome of a 6-month school-based smoking prevention program on the initiation of smoking. The program followed 1318 students in 19 schools after receiving various lectures and activities on smoking prevention based on the European smoking prevention framework approach (ESFA). The overall prevalence of smoking after the intervention was significantly less for the experimental group (20.8%) compared to the control group (29.6%) [27•].

Saudi Arabia is going through a period of modernization. Evolvement of values among social and traditional contexts is expected. Adolescents, specifically females, started to be more independent which could mean that they are more bound to spend more time out of home, possibly, in argil cafes/restaurants which are increasing in number. That along with ineffective tobacco-use policies and low levels of awareness of the harmful effects of tobacco makes adolescents more

**Fig. 1** **a** Pictures of a standard package of cigarettes in the UK, wused with kind permission from the Action on Smoking and Health (ASH) (London, UK). **b** Picture of a standard package of cigarettes in the KSA



vulnerable to smoking. The need for developing a school-based smoking prevention program is highly needed. Programs should be tailored to fit the society from sociocultural context, while taking into consideration the gender differences while designing these programs. Also, the inclusion of parents in the school programs should improve the general knowledge and awareness in the society [28].

## Cessation

The Saudi Ministry of Health has taken a few steps to reduce the numbers of smokers. Currently, there are 10 mobile clinics and 40 anti-smoking centers that have helped more than 2000 smokers to quit [29]. There are 78 clinics scattered around the country, and only 16 of them are available in hospitals [30]. These clinics provide treatment services (pharmacological and non-pharmacological) for smokers including youths. Moreover, an official website was created by the Ministry of Health for the Tobacco Control Program. This website helps smokers book appointments at smoking treatment clinics, provides information regarding the negative effects of cigarettes and other forms of tobacco on one's health, and highlights the risk factors associated with smoking and ideas for debunking smoking advertisement tricks. Furthermore, this website provides several short clips that could help enhance tobacco control awareness at schools and universities. Additionally, the website contains a library section that provides posters, comics for youths, and flyers that could be useful for anti-smoking campaigns. There is also a questionnaire-based nicotine-dependence assessment tool that serves to assist the smoker in identifying his nicotine dependency level [8].

Based on a recent study by Al Zalabani and colleagues, it has been reported that 71.7% of current student smokers have an intention to quit. The same study found that preserving health and saving money were the main two motives for quitting smoking. Additionally, the same study demonstrated that students that had an intention to quit smoking received more messages from home and school regarding the harmful consequences of smoking than those who were unwilling to quit (79.1 vs. 63.2% and 56.8 vs 46%, respectively). Interestingly, it was found that there is no solid association between anti-smoking advertisements and intention to quit smoking [31]. These findings are in concordance with the Saudi Ministry of Health report that 71.7% of current smokers want to quit smoking and 62.3% of them tried to quit smoking over the last year; 17% received no help to quit whereas 35.5, 23.6, and 23.8% received help from anti-smoking program professionals, friends, and family members, respectively [32]. Another cross-sectional study reported that more than 50% of study participants have tried at least once to quit smoking and 25% are willing to try. It also investigated the perception of participants towards the most successful cessation

programs in the kingdom and they ranked the school awareness programs to be the best. [33] Based on several studies, the success rate for cessation was 13–38.3% after following-up for 6 months. However, the utilization of these clinics is still relatively poor [9]. As for the role of doctors and dentists in smoking prevention for their patients, two studies were conducted in Riyadh to examine the attitude of physicians towards smoking treatment [34, 35]. A self-reported study addressing the attitude of primary care physicians in Central Saudi Arabia reported that physicians with a positive attitude towards smoking cessation were six times more likely to advise patients of the smoking cessation tools. The same study reported that physicians with higher levels of education exhibited a more positive attitude towards the usefulness of smoking cessation [36]. Most of family physicians reported that they did not receive any smoking cessation training in medical school or in residency program, but many of them had read, heard, or used the guidelines to manage smokers. 66.9% identified lack of training as a barrier to smoking treatment [35]. On the other hand, a study performed in three medical schools to assess the knowledge and attitude of students regarding the smoking cessation found that 79% of students reported that they have not had any clinical training in smoking cessation or awareness of any formal smoking cessation programs. Furthermore, only 8% of medical students reported discussing quitting smoking with their patients [37]. As for dentists, more than one third reported that they had attended a formal training on smoking cessation and prevention, while 60.6% of dentists believed that it would be better to refer smokers to a smoking cessation clinic [34].

In 2014, the Saudi Ministry of Health reported that 53.9% of smokers acknowledged that they have been advised by a physician or a health care provider to quit smoking in the last 12 months [8]. As for patients who were able to quit smoking, data to evaluate the outcomes of cessation programs are very scarce. Reports show that the majority of smokers are interested in quitting smoking, but only 53.9% of them received advice from health care providers [32].

## Conclusions: Discussion and Recommendations

There is a strong need to address the rise in youth tobacco smokers in Saudi Arabia through school- and community-based structured programs. These programs should be tailored to fit the sociodemographic characteristics of the Saudi community as well as gender differences. More reinforcements of laws prohibiting the sale of cigarettes to underaged groups and prohibiting the importation of items with tobacco brands and logos are warranted. Accessibility of adolescents to tobacco products should be strictly prohibited and the laws and regulations in place should be more reinforced through allocating

the necessary funding dedicated to achieve that goal. Although explicit pro-smoking advertisements are banned, there are several forms of concealed advertisements that act as priming factors for adolescents. These forms of advertisements should be addressed among policy makers in order to limit their negative effects. It should be noted that the impact of recent hikes in taxes on tobacco products is encouraging; however, the full impact of such actions needs more time to be thoroughly assessed. Smoking cessation clinics in large general hospitals are fairly limited and hence, special attention and resources should be directed towards opening more smoking cessation clinics. To our knowledge, there are currently no tobacco cessation programs being offered in private hospitals. The accessibility and the marketing of cessation treatment need to be addressed and improved. Almost all community pharmacies do not provide nicotine replacement therapy to the public despite its approval for use by the Saudi Federal Drug Authority. Smoking cessation training programs directed towards medical students, and primary care physicians, are currently insufficient and need to be more structured and integrated in the different medical training programs in order to have a more robust impact on smoking cessation rates. Finally, we strongly believe that special funding should be allocated towards clinical and epidemiological research that is directed towards assessing the efficacy and outcomes of the different interventions in place.

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare they have no conflict of interest.

**Human and Animal Rights and Informed Consent** This article does not contain any studies with human or animal subjects performed by any of the authors.

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