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Smoking in Saudi Arabia and its relation to coronary artery disease

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Abstract Objectives: The health hazards related to smoking are well known. Smoking is a recognized risk factor for coronary artery disease (CAD). Despite rejection of smoking by the Saudi community, we are still seeing smokers in our population. This study is designed to determine the prevalence of smoking in the Kingdom of Saudi Arabia (KSA), and to find out its relation to CAD. This study is part of the Coronary Artery Disease In Saudis (CADIS) study.

Methods: This health survey was conducted by collecting data regarding smoking status among adult Saudis aged between 30 and 70 years of both sexes in KSA over a five year period from 1995 up to 2000. The study sample was of normal distribution and representative of all regions

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of KSA. The data were analyzed to provide the prevalence of smoking and its relation with CAD. *Results:* The total number of subjects was 17,350, and current smokers were 2217; accordingly the overall prevalence of smoking among Saudis was 12.8%. Males (1555) were significantly smoking more than females (662) with a prevalence of 18.7% and 7.3%, respectively ($P < 0.0001$). Smoking is more prevalent among Saudis living in urban, northern, western, and eastern regions compared to other regions of KSA. Smokers are more likely to develop CAD compared to non-smokers ($P < 0.0001$).

Conclusions: Smoking is a prevalent health problem among Saudis that requires intervention for eradication. We found clear association between cigarettes smoking and CAD particularly among males. Persistent education of the health hazards related to smoking is recommended particularly at early age in-order to prevent initiation of smoking.

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1. Introduction

Tobacco is manufactured and produced in several different forms to make it suitable for smoking such as; cigarettes, cigars, pipe, or water pipe (sheesha). While the awareness of health hazards related to smoking is certainly well known to the public, one still sees smoking affecting large number of different age groups in both sexes. Several studies have shown the risk of smoking in the development of CAD, moreover, the disease risks associated with cigarette smoking are proportional to the intensity and duration of smoking (Tresch and Aronow, 1996; Bittner, 2002; Brown and Mensah, 2007; Burns, 2003; Jacobs et al., 1999; Jousilahti et al., 1999; Scheidt, 1997; Abrams et al., 1995; Rigotti and Pasternak, 1996; Woodward et al., 1999).

Cigarette smoking has been shown to be the leading preventable cause of death in the United States of America (USA), with increasing prevalence among young adults as nearly 80% of tobacco users initiate its use before the of age 18 years and cigarette smoking was the most prevalent form of tobacco use (Marshall et al., 2006).

Previous reports on smoking in KSA did not clearly address the problem of smoking epidemiologically as a risk factor for the development of CAD. Therefore, we designed this study to provide an estimated prevalence of smoking among different age groups of both sexes in urban and rural communities in KSA, with main emphasis on its statistical correlation with other risk factors of CAD. Moreover, we intended to identify the social as well as the educational backgrounds of smokers to target high risk individuals who are vulnerable for acquiring the habit of smoking in-order to develop preventive strategy. This study is part of the Coronary Artery Disease In Saudis (CADIS) study.

2. Methods

A 5-year national epidemiological health survey regarding CAD and its well known risk factors was conducted between 1995 and 2000 in KSA. Male and female Saudi adults aged (30–70-years), in rural and urban areas of KSA formed the target population for this study. For the purpose of the study, a Saudi is identified as a person holding a Saudi Nationality Identification Card (SNIC) or a dependent of a holder. A sample size of 20,000 participants was the target of the study to ensure a high reliability of our estimates of the prevalence of smoking in KSA.

The subjects were selected using two stages, stratified cluster sampling procedure, urban and rural areas being the stratifying factors. For practical and logistic reasons, the study population was drawn from the local primary health care centers' catchments areas. The catchments population of each primary care center was taken as a cluster. KSA is subdivided into 14 administrative regions and samples were selected from each region. The first stage sampling units were 1623 primary health care centers (PHCC) uniformly distributed in KSA. Since the establishment of the PHCC was dictated by the population in each region, the allocation of the required number of PHCC were made proportional to be the number of PHCC in each region. Then, each region was stratified into urban and rural communities and a simple random sample of PHCC was selected. A total of 66 PHCC were selected from urban and 58 from rural areas. Then block (blocks) was randomly selected from the catchments areas of each selected primary health care center and used as a cluster. One hundred households from urban PHCC and 50 households from rural PHCC were selected from these blocks. All subjects (males and females) of age group 30–70 years of selected households were interviewed and examined.

The study protocol consisted of interviews, clinical examinations, laboratory tests, electrocardiograms (ECGs), and laboratory measurements. The questionnaire used included basic demographic and socio-economic data; a meticulous history of CAD and its risk factors. A person was defined as having anginal chest pain of ischemia secondary to CAD if the chest pain was typical in character, occurred on effort (exertional), and relieved by rest or sublingual nitroglycerine (Al-Nozha et al., 2004). Additional detailed history of smoking such as current, passive or ex-smoking was obtained, as well as the type of tobacco smoked, quantity, and the duration of smoking.

Well trained primary care physicians were responsible for filling up the questionnaire form. The questionnaire was developed, pre-tested, and validated in a pilot study. A complete physical examination was conducted at the primary health care center, included height, weight, blood pressure (BP), waist and hip circumferences. Weight was measured using ordinary scales with indoor clothing on without shoes on to the nearest 0.1 kg. Height, waist and hip measurements were carried out to the nearest mm by using a measuring tape.

Laboratory data included a fasting blood sample for glucose (FBG), total cholesterol (TC), triglycerides (TG), high-density lipoprotein (HDL) and low-density lipoprotein

(LDL). A 12 leads electrocardiographic tracing was carried out for every participant.

The data were analyzed using the Statistical Package for Social Sciences (Version 10.0) on PC. Both univariate and multivariate analysis were carried out. The frequency distribution tables of the variables measured in various age groups, gender, rural, and urban areas are presented. The estimate of smoking prevalence rate was calculated for the total sample, and subgroups of gender, area of residence and age groups. A risk assessment model was developed using logistic regression.

3. Results

The total number of subjects included for final analysis was 17350 Saudi adults. Eight thousands three hundreds and seven subjects (47.9%) were males, while 11,812 were living in urban areas. Current male and female smokers were 2217; accordingly the overall prevalence of smoking among Saudis obtained from this study was 12.8%. Among current smokers, males (1555) were smoking significantly more than females (662) with a prevalence of 18.7% and 7.3%, respectively ($P < 0.0001$). Approximately three quarters (75.3%) of the respondents never smoked either actively or passively (Table 1). Urban males and females reported higher rates of smoking compared to their rural counterparts (Table 1). The highest rate of current smoking (23.7%) was reported by males in the age group between 40 and 49 years (Table 1).

About 20% of male subjects of monthly income less than SR 10,000 were current smokers. Both male and female subjects of

monthly income group of more than SR 15,000 were found to have the lowest prevalence of smoking (Table 2a). Semi-skilled, unskilled workers and businessmen had the highest prevalence of smoking compared to other professions (Table 2b). Divorced subjects were more likely to be current smokers compared to other groups of marital status (Table 2c).

Saudi males living in northern region had the highest prevalence of smoking followed by eastern and western regions (Table 2d). In contrary, only 6.6% of Southern region's males were current smokers (Table 2d).

Cigarettes were the most common type of tobacco smoked by our subjects compared to other types of tobacco. The percentages of different types of tobacco smoking for cigarette, sheesha, cigar and pipe were 84.6%, 19.9%, 1.9% and 3.6%, respectively. Virtually 10% of current smokers used more than one type of smoking. Our data showed that 87.3% of males smoked cigarettes compared to 77.3% of females. Current smokers reported an average amount of 23.3 cigarettes per day (nearly one pack) for an average of 30 years duration. About 7% of males were smoking sheesha nearly 11 times per day for approximately 25 years.

Table 3 shows the correlation between smoking and CAD. Among Saudi males who had CAD; 63.9% were cigarettes smokers compared to 59.5% of non-smokers ($P < 0.0001$). On the contrary, among Saudi females who had CAD; 37.9% were cigarettes smokers compared to 80.7% of non-smokers (Table 3). Overall; 55.7% of cigarettes smokers had CAD compared to 68.5% of non-smokers, while 48.3% of cigarettes smokers had no evidence of CAD compared to 75.7% of non-smokers (Table 3). There was no statistically significant

Table 1 Prevalence of smoking categorized by age, gender, residence in KSA.

Factor	Never smoked	Current smoker	Ex-smoker	Passive smoker	P-value	Total
<i>Gender</i>						
Male	5226 (62.9)	1555 (18.7)	1375 (16.6)	151 (1.8)	< 0.0001	8307 (47.9)
Female	7832 (86.6)	662 (7.3)	181 (2.0)	368 (4.1)		9043 (52.1)
<i>Residence</i>						
Urban						
Male	3498 (61.2)	1155 (20.2)	940 (16.5)	119 (2.1)	< 0.0001	5712 (48.4)
Female	5197 (85.2)	476 (7.8)	126 (2.1)	301 (4.9)		6100 (51.6)
Rural						
Male	1728 (66.6)	400 (15.4)	435 (16.8)	32 (1.2)	< 0.0001	2595 (46.9)
Female	2635 (89.5)	186 (6.3)	55 (1.9)	67 (2.3)		2943 (53.1)
<i>Age groups</i>						
30–39						
Male	1409 (64.4)	396 (18.1)	309 (14.1)	75 (3.4)	< 0.0001	2189 (36.4)
Female	3374 (88.0)	171 (4.5)	77 (2.0)	211 (5.5)		3833 (63.6)
40–49						
Male	1251 (57.3)	518 (23.7)	374 (17.1)	41 (1.9)	< 0.0001	2184 (44.7)
Female	2321 (85.9)	255 (9.4)	36 (1.3)	89 (3.3)		2701 (55.3)
50–59						
Male	1253 (63.4)	335 (17.0)	372 (18.8)	15 (0.8)	< 0.0001	1975 (56.5)
Female	1293 (85.2)	144 (9.5)	37 (2.4)	44(2.9)		1518(43.5)
60–70						
Male	1313 (67.0)	306 (15.6)	320 (16.3)	20 (1.0)	< 0.0001	1959 (66.4)
Female	844 (85.2)	92 (9.3)	31 (1.3)	24 (2.4)		991 (33.6)
Total	13,058 (75.3)	2217 (12.8)	1556 (9.0)	519 (3.0)		17,350

Table 2a Prevalence of smoking categorized by income.

Factor	Never smoked	Current smoker	Ex-smoker	Passive smoker	P-value	Total
<i>Income</i>						
Less than SR 2500						
Male	1250 (62.5)	375 (18.8)	338 (16.9)	37 (1.9)	< 0.0001	2000 (42.1)
Female	2366 (86.0)	240 (8.7)	65 (2.4)	80 (2.9)		2751 (57.9)
SR 2500–4999						
Male	1795 (62.0)	564 (19.5)	486 (16.8)	48 (1.7)	< 0.0001	2893 (50.6)
Female	2438 (86.4)	185 (6.6)	65 (2.3)	133 (4.7)		2821 (49.4)
SR 5000–7499						
Male	1174 (63.7)	338 (18.3)	301 (16.3)	29 (1.6)	< 0.0001	1842 (51.6)
Female	1491 (86.3)	121 (7.0)	28 (1.6)	88 (5.1)		1728 (48.4)
SR 7500–9999						
Male	468 (60.5)	147 (19.0)	134 (17.3)	24 (3.1)	< 0.0001	773 (51.4)
Female	640 (87.4)	56 (7.7)	8 (1.1)	28 (3.8)		732 (48.6)
SR 10,000–14,999						
Male	398 (67.1)	100 (16.9)	88 (14.8)	7 (1.2)	< 0.0001	593 (49.4)
Female	517 (85.2)	47 (7.7)	11 (1.8)	32 (5.3)		607 (50.6)
SR 15,000 and above						
Male	125 (66.8)	30 (16.0)	26 (13.9)	6 (3.2)	< 0.0001	187 (46.9)
Female	190 (89.6)	11 (5.2)	4 (1.9)	7 (3.3)		212 (53.1)

Table 2b Prevalence of smoking categorized by occupation.

Factor	Smoked	Current smoker	Ex-smoker	Passive smoker	P-value	Total
<i>Occupation</i>						
Skilled						
Male	151 (62.7)	39 (16.2)	44 (18.3)	7 (2.9)	< 0.0001	241 (73.7)
Female	72 (83.7)	4 (4.7)	3 (3.5)	7 (8.1)		86 (26.3)
Semi-skilled						
Male	1853 (60.7)	616 (20.2)	17 (16.9)	67 (2.2)	< 0.0001	3053 (95.4)
Female	105 (71.4)	22 (15.0)	8 (5.4)	12 (8.2)		147 (4.6)
Unskilled						
Male	840 (60.6)	270 (19.5)	251 (18.1)	24 (1.7)	< 0.0001	1385 (87.2)
Female	182 (89.2)	11 (5.4)	8 (3.9)	3 (1.5)		204 (12.8)
Unemployed						
Male	670 (67.3)	156 (15.7)	158 (15.9)	12 (1.2)	< 0.0001	996 (81.8)
Female	192 (86.5)	14 (6.3)	12 (5.4)	4 (1.8)		222 (18.2)
Business						
Male	684 (59.3)	236 (20.5)	216 (18.7)	17 (1.5)	< 0.0001	1153 (97.6)
Female	18 (64.3)	8 (28.6)	2 (7.1)			28 (2.4)

correlation between CAD and sheesha, cigar, or pipe smoking among our subjects in this study (Table 3).

The correlation between smoking and CAD is further simplified in Figs. 1 and 2 that clearly show the effect of smoking in the development of CAD. Among patients with CAD of our population, 68.5% were non-smokers compared to 16.3% who were smokers, 12.1% were ex-smokers, and 3.1% were passive smokers (Fig. 1). Alternatively, among all subjects in our study, only 5% of non-smokers had CAD compared to 7% of smokers, 7.5% of ex-smokers, and 5.7% of passive smokers (Fig. 2).

4. Discussion

Our study clearly demonstrates that smoking is an active problem among adult population in KSA. Despite lower rates of

current and active smoking among females compared to males, our data show that Saudi females are significantly more likely to be exposed to passive smoking from actively smoking male relatives. Passive smoking has been reported to carry similar health hazards as active smoking (He et al., 1999; He and Whelton, 1999; Coggins, 1998; Wells, 1994).

The predominance of cigarette smoking compared to other types of smoking is likely to be explained by ease of access (availability and price) to cigarettes.

Clearly, the factors that contribute to the increase of smoking prevalence can be identified from our study by being first; more commonly affecting males compared to females probably due to more social acceptance for males to smoke compared to females. Second; more prevalent in northern, eastern, and western regions compared to other regions of KSA is likely to be

Table 2c Prevalence of smoking categorized by marital status.

Factor	Smoked	Smoker	Ex-smoker	Smoker	P-value	Total
<i>Marital status</i>						
<i>Single</i>						
Male	114 (68.3)	32 (19.2)	18 (10.8)	3 (1.8)	< 0.0001	167 (44.3)
Female	189 (90.0)	7 (3.3)	2 (1.0)	12 (5.7)		210 (55.7)
<i>Married</i>						
Male	5021 (62.8)	1490 (18.6)	1344 (16.8)	145 (1.8)	< 0.0001	8000 (51.0)
Female	6695 (86.9)	535 (6.9)	147 (1.9)	323 (4.2)		7700 (49.0)
<i>Divorced</i>						
Male	19 (52.8)	11 (30.6)	4 (11.1)	2 (5.6)	< 0.0001	36 (17.6)
Female	134 (79.3)	17 (10.1)	9 (5.3)	9 (5.3)		169 (82.4)
<i>Widowed</i>						
Male	26 (72.2)	8 (22.2)	2 (5.6)	0 (0.0)	< 0.0001	36 (4.4)
Female	667 (85.1)	89 (11.4)	15 (1.9)	13 (1.7)		784 (95.6)

Table 2d Prevalence of smoking categorized by region.

Factor	Never smoked	Smoker	Ex-smoker	Smoker	P-value	Total
<i>Region</i>						
<i>Central</i>						
Male	1339 (65.5)	346 (16.9)	327 (16.0)	32 (1.6)	< 0.0001	2044 (51.0)
Female	1840 (93.7)	72 (3.7)	20 (1.0)	31 (1.6)		1963 (49.0)
<i>Northern</i>						
Male	352 (49.8)	196 (27.7)	145 (20.5)	14 (2.0)	< 0.0001	707 (45.6)
Female	654 (77.4)	118 (14.0)	31 (3.7)	42 (5.0)		845 (54.4)
<i>Southern</i>						
Male	1262 (73.9)	112 (6.6)	312 (18.3)	22 (1.3)	< 0.0001	1708 (47.5)
Female	1801 (95.3)	30 (1.6)	20 (1.1)	39 (2.1)		1890 (52.5)
<i>Western</i>						
Male	1585 (59.2)	608 (22.7)	441 (16.5)	45 (1.7)	< 0.0001	2679 (48.2)
Female	2416 (84.1)	286 (10.0)	74 (2.6)	98 (3.4)		2874 (51.8)
<i>Eastern</i>						
Male	688 (58.9)	293 (25.1)	150 (12.8)	38 (3.3)	< 0.0001	1169 (44.3)
Female	1121 (76.2)	156 (10.6)	36 (2.4)	158 (10.7)		1471 (55.7)

Table 3 Correlation of CAD with type of smoking.

Factor	Cigarettes	P-value	Sheesha	P-value	Cigar	P-value	Pipe	P-value	Non-smoker	P-value
<i>CAD</i>										
Male	193 (63.9)	< 0.0001	40 (19.1)	0.491	3 (1.5)	0.074	6 (3.1)	< 0.0001	322 (59.5)	< 0.0001
Female	53 (37.9)		18 (22.8)		3 (3.8)		6 (7.5)		322 (80.7)	
<i>No CAD</i>										
Male	2284 (60.5)	< 0.0001	527 (21.8)	0.055	52 (2.2)	0.244	30 (1.3)	0.101	4817 (63.2)	< 0.0001
Female	763 (30.2)		193 (18.9)		13 (1.3)		98 (9.6)		7394 (86.9)	
<i>Total</i>										
CAD	246 (55.7)	0.003	58 (20.1)	0.756	6 (2.2)	0.803	12 (4.3)	0.680	644 (68.5)	< 0.0001
No CAD	3047 (48.3)		720 (20.9)		65 (2.0)		128 (3.8)		12211 (75.7)	

due to influence of cultural exposures to expatriates who are smokers and come in direct contact with Saudis living in these areas. Third; the presence of social stress either by occupation or by marital problems, as our study showed higher prevalence among divorcee & widowed, may be a major contributing factor to smoking initiation or continuation. Fourth; Saudi males and females are more likely to initiate smoking at their fourth

decade, probably due to lack of health hazards education at the time of initiation of smoking; while Saudis above the age of 50 are less likely to smoke because it is considered an anti-social behavior back then. Finally; smoking is not influenced by income or occupations in KSA.

Smoking is a worldwide prevalent problem that has been recognized and addressed by many countries and health

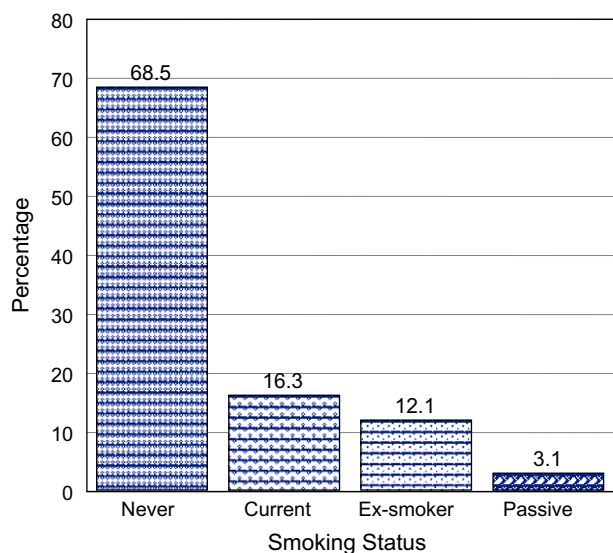


Figure 1 Percentage of smokers & non-smokers among patients with CAD.

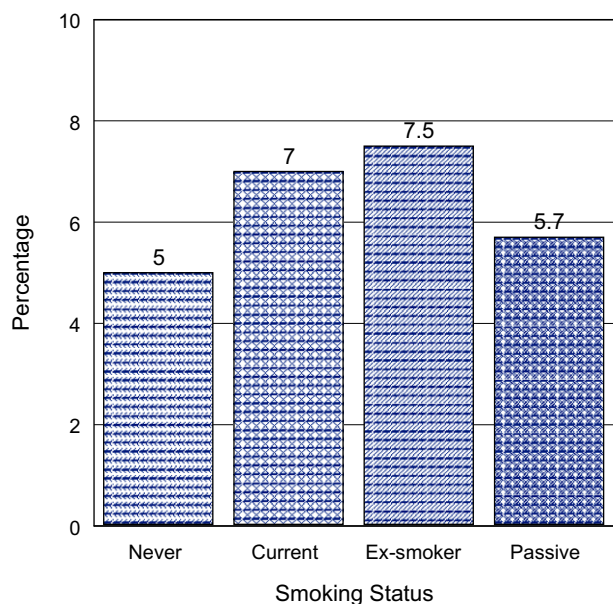


Figure 2 Prevalence of CAD among smokers & non-smokers.

authorities with variable control and success. For instance, in USA, findings from the National Youth Tobacco Survey indicate that the prevalence of smoking is up to 34.5% among high school students, and cigarette smoking is the most prevalent form of tobacco use (National Youth Tobacco Survey Investigators, 2000). Another study in USA surveyed a sample of 2816 adolescents reported the prevalence of cigarette smoking among Vietnamese males (27.9%) which was similar to that for Caucasian males (28.3%) but was higher than that for Hispanic males (19.7%) or African-American males (18.9%) (Wiecha, 1996).

Recent survey from Pakistan (random sample of 576 male college students) reported rather very high prevalence of smoking reaching 65% among adolescents more than or equal to 21 years of age (Rozi et al., 2007). One more recently published

study on school students from Cyprus reported a prevalence of current cigarettes smoking of 36% among males and 23% among females in high schools (Christophi et al., 2008). Moreover, the overall reported prevalence of smoking in Nairobi (Kenya) among a sample of 5311 students attending high schools was 38.6% of males and 17.9% of females (Kwamanga et al., 2003).

Previously published data from KSA were different from our current study in either methodology or selected samples that were not reflecting community based survey. One study conducted in the northern region of KSA (sample of 1505 secondary school students' in Tabuk) reported smoking prevalence of 34% for males, and 11.1% for females (Abdalla et al., 2007). Moreover, another study from KSA reported an overall 25.3% prevalence of smoking in a sample of 1534 adults aged 15 years and above residing in Riyadh (Saeed et al., 1996). The prevalence of smoking in Bahrain was reported as follows; cigarettes (21.0%), water-pipes (13.0%) and cigars (1.6%) among male secondary school students in Bahrain (Al-Haddad and Hamadeh, 2003). Similar rates of estimated smoking prevalence were reported from Yemen; 15.5% among females and 21.9% among males in a sample of 1000 secondary-school students (Bawazeer et al., 1999).

The data obtained from our study may reflect a more realistic prevalence of smoking habit in KSA due to the normal distribution of the sample selected as well as covering all the regions of KSA, despite being less than most would expect, or previously reported rates either from KSA or other countries.

Saudi Adults must be aware of the extent of smoking-related risks and the benefits of smoking cessation as an important intervention. Furthermore, despite the fact that most smokers expressed a strong desire to stop smoking, only few succeeded to achieve this goal. Therefore, it is important to emphasize that preventing initiation of smoking is more important task than achieving cessation.

The correlation between cigarettes smoking and the development of CAD is evident from the results of our study among current and passive smokers; nonetheless, it is less obvious particularly among females, probably due to their low smoking prevalence. Moreover, we were expecting to see reversal of the relationship upon cessation of smoking expressed as reduction of CAD among ex-smokers. However, our data actually showed a higher percentage of CAD among ex-smokers compared to current smokers.

Possibly, this finding may be explained by failure to maintain smoking cessation among ex-smokers leading to more percentage of CAD in this group along with longer duration of cigarettes smoked, enforcing the fact that not to start smoking is unquestionably much better than trying to stop smoking.

In summary, smoking is current and active problem in Saudi Arabia, more prevalent in males than females. Despite lower prevalence of smoking in KSA compared to other countries, the higher rates of other risk factors particularly diabetes mellitus and hypertension, makes any additional risk factor for CAD, such as smoking, of major adversity. Moreover, we found indisputable relationship between cigarettes smoking and CAD among Saudi males participated in this study, and this relationship extends to ex-smokers as well as passive smokers.

We recommend aggressive campaign addressing the health hazards of smoking beginning at younger than starter age that is estimated to be less than 12 years of age to prevent initiation

of a deadly habit. Moreover, active measures should be established to provide professional help to quit smoking addiction rather than just advising against smoking.

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التدخين في المملكة العربية السعودية و علاقته بأمراض الشرايين الاكليلية

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ملخص

الاهداف:

الأضرار الصحية التي لها علاقة بالتدخين معروفة. يعتبر التدخين عامل خطورة معروف للاصابة بأمراض القلب الشريانية الاكليلية وبالرغم من رفض المجتمع السعودي للتدخين الا اننا لازلنا نرى المدخنين بين أفراد المجتمع. ولذلك فان الغرض من تصميم هذه الدراسة هو معرفة مدى انتشار التدخين بين السعوديين و علاقته بأمراض الشرايين الاكليلية. هذه الدراسة هي جزء من الدراسة الوطنية الكبرى عن أمراض الشرايين الاكليلية في المملكة العربية السعودية.

الطرق:

هذه الدراسة المجتمعية تمت بعمل مسح صحي و استخلاص بيانات التدخين للسعوديين البالغين من أعمار 30 سنة الى 70 سنة خلال خمس سنوات من عام 1995 الى عام 2000م في المملكة العربية السعودية. استخلصت البيانات من عينة بتوزيع احصائي طبيعي كي تمثل جميع مناطق المملكة العربية السعودية. تم تحليل البيانات لمعرفة معدل انتشار التدخين عند السعوديين و علاقته بأمراض الشرايين الاكليلية.

النتائج:

اجمالي عدد السعوديين بالدراسة كان 17350 شخصا , وكان عدد المدخنين المستمرين في التدخين هو 2217 , وعليه فان المعدل الكلي لانتشار التدخين في المملكة العربية السعودية هو 12.8%. و كان الرجال (1555) يدخنون أكثر من النساء (662) حيث كان معدل الانتشار هو 18.7% للرجال بالمقارنة بنسبة 7.3% للنساء. و لوحظ أن المعدل أعلى للسعوديين المقيمين بالمدن و المناطق الشمالية و الغربية و الشرقية مقارنة بمناطق المملكة الأخرى. المدخنون هم أكثر عرضة للاصابة بأمراض الشرايين الاكليلية بالمقارنة مع غير المدخنين.

خاتمة:

التدخين هو مشكلة صحية منتشرة بين السعوديين و تحتاج للتدخل للتخلص منها. أظهرت الدراسة وجود علاقة بين تدخين السجائر و حدوث أمراض الشرايين الاكليلية خاصة عند الرجال السعوديين. ننصح بالتوعية الصحية المستمرة عن أضرار التدخين و خاصة عند المراهقين لمنع بدء التدخين.

مفتاح الكلمات: التدخين , معدل المرض , المملكة العربية السعودية , أمراض الشرايين الاكليلية