

Pattern of Smoking Habit and Quit Attempts among Industrial Workers in Kuwait

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Abstract

Objectives: To investigate the prevalence and characteristics of smoking habit among industrial workers in Kuwait, and to identify the demographic, behavioral and environmental factors predicting smoking quitting.

Subjects and methods: A cross-sectional study was conducted in the last 3 months of the year 2010. All responded employees (n=2620) of randomly selected three factories in Sabhan Industrial Area, Kuwait participated in the study, using a self-administered anonymous questionnaire modified from the standard World Health Organization (WHO) questionnaire. All participants were males. Demographic, behavioral and environmental data regarding smoking and quitting were collected. Results: The overall prevalence of smoking among participants was (34.8%). The highest and significant prevalence was observed in age group (30-39 years), divorced and widowed workers, undergraduate workers, blue-collar workers, workers more than 10 years work duration and workers in production sectors ($P < 0.05$). The majority were cigarette smokers (95.8%). The mean age of starting smoking was about 16 years in Kuwaiti (16.3 ± 5.2) and 19 years in expatriates (18.9 ± 5.8), ($p < 0.001$), whereas, the average duration of smoking was about 15 years in Kuwaiti (14.8 ± 4.8) and 18 years in expatriates (18.4 ± 5.2), ($p < 0.05$). Smoking quit rate is (22%), quitting increased twice among the age group (40-49 years). People with less duration of smoking (< 10 years) were more likely to quit smoking by 1.88 times than those (≥ 20 years). Also, people started smoking at age of twenty years and above were more likely to quit smoking by 4.13 times than those started smoking at age (≤ 14 years). Physical active were 2.44 times more likely to quit smoking than physically inactive. The presence of smoking policy at work and absence of smoking partner at home increase the likelihood to quit smoking (OR=3.58 and 2.11 respectively). The most common reasons for quitting were the harmful effects of smoking on health (61.2%) followed by scientific evidence of the hazards of smoking (51.7%) and being prohibited by religion (46.8%).

Conclusion: Effective measures must be taken to prevent initiation of smoking, promoting smoking cessation program and support policy of smoking cessation at workplace.

Keywords: Environmental factors; Demographic; Smoking cessation program

Introduction

Smoking has been described as the single greatest preventable cause of death in the world, and up to half of all cigarette smokers may be killed by their addiction. Smoking-related diseases such as cancer and cardiovascular disease are the main cause of premature death globally [1]. It is estimated that almost 1.3 billion people are currently smokers, tobacco use is expected to be the cause of death of about 10 million people per year by 2030 (up from 4.8 million in 2006) [2]. Each day, nearly 4800 adolescents smoke their first cigarette, of them nearly 2000 will become regular smokers [3].

The World Health Organization (WHO) had reported widely different prevalence of smoking among young people in the Arab countries: 7% in Oman, 18% in Kuwait, 23% in Iraq, 25% in Saudi Arabia and Jordan, 31% in Syrian Arab Republic, 43% in Yemen and 53% in Lebanon [4]. A study done in Kuwait revealed that, smoking prevalence among adult males (18-60 yrs) was 34.4%, while smoking prevalence among youth (10-18 yrs) was reported as 23.1% [5]. Seventy percent of male smokers had started smoking before they reached age 20 years [6]. Stopping smoking before middle age avoids more than 90% of the risk attributable to smoking. While many adolescents want to quit smoking, only a small number of them succeed [7].

Nowadays, smoking is a key issue in occupational medicine [8]. Smoking habit is recognized as an additional important risk factor for health among industrial workers. In some instances, it has been demonstrated that tobacco smoke can interact with other occupational or non-occupational carcinogens, and can increase the risk of developing lung cancer in a multiplicative manner [9]. This is the case for occupational exposure to asbestos, radon, cadmium and arsenic: the risk of lung cancer is amplified if such an exposure is combined

with tobacco smoke [10,11]. Environmental tobacco smoke at work is also a key issue in contemporary occupational health. There is evidence that passive smoke in workplace is a significant risk factor for lung cancer [12].

Besides the effects of tobacco smoking on worker's health, smoking causes significant economic costs due to increased absenteeism and reduced productivity [13]. So, the control of workers smoking habits is a crucial point of health promotion in the workplace. The job-related growing disparities in the prevalence of smoking are a real challenge for the initiatives to control the smoking habit in the workplace [14].

Several studies had addressed the factors associated with successful quitting [15,16]: 1) Demographic factors as age, sex, marital status and education. Hymowitz et al. [17] found that being older, male and having higher income predict smoking cessation, Borland et al. [18] found that having higher education was a factor associated with successful smoking quitting. 2) Behaviors factors related to quitting smoking determine maintaining the practice of quitting. Past studies in Kuwait were limited to specific population like as physicians, students and not informed the general population [5,6]. Recognizing the dynamic process of smoking behavior, the number of quit attempts and cigarettes smoked daily were predictors of smoking cessation [19,20]. 3)

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Environmental factors are significant predictors for smoking cessation. Several studies found that being in daily contact with other smokers reduced the likelihood of smoking quitting [21,22]. Farkas [23] found that smoking control in both the workplace and in the home were significant factors of successful quitting.

This study aims to investigate the prevalence and pattern of smoking habit among industrial workers, and to identify some demographic, behavioral and environmental predictors of smoking quitting.

Subjects and Methods

This cross-sectional study was conducted in Sabhan Industrial Area, Kuwait, in the last 3 months of the year 2010. All employees (n=2886) of randomly selected three factories were invited to participate in the study, only (2620) agreed to enroll giving a response rate of (90.8%). All employees were males. An anonymous self administered Arabic and English questionnaire modified from the standard WHO questionnaire [24], was used. A sample questionnaire was piloted on a group of workers prior to initiation of the study.

The questionnaire consisted of four parts: (1) socio demographic characteristics (age, marital status, level of education and nationality), (2) occupational characteristics (blue or white collar, work shift, duration of work, and working in production or maintenance sector), (3) smoking behavior and attitudes (age of starting smoking, number of cigarettes smoked daily, duration of smoking and reasons for smoking), (4) quitting behavior and attitudes (number of quit attempts, physically activity, smoking policy at work, presence of smoker partner at home and reasons for quitting).

Respondents were classified as current smokers and non-smokers. Current smoker defined as those smoking at the time of survey and/or had smoked more than 100 cigarettes in their lifetime; Non-smokers

defined as those had never smoked or had smoked fewer than 100 cigarettes in their lifetime [25]. All the smokers who want to quit were visiting the smoking cessation clinic and used Nicotine Replacement Therapy (NRT) (nicotine patches) during their weekly visits. It helps the smokers to quit, avoid withdrawals symptoms particularly when combined with counseling by physician. This counseling has a role in behavior modification and change towards cessation. Quitting is considered if smoker quit smoking completely for at least 3 months during follow up of routine visits.

Statistical analysis

Chi square was used to test the significance of differences between two or more categorical values. The multivariate logistic regression analysis was performed using adjusted odds ratio and 95% Confidence intervals. Statistical significance implies P value <0.05 and the statistical analysis were performed using SPSS software (version 17.0).

Ethical issues

All workers were informed about the main aims of the study and consecutively were asked to provide a written informed consent to participate in the study. Ethical clearance was provided by the Ethics Committee of factories.

Results

Among the participants, 912 (34.8%) were current smokers. The highest smoking prevalence (31.5%) was observed in the age group (30-39 years), while the lowest prevalence (17.8%) was observed among age group (≥ 50 years). Highly statistically significant difference was observed between smokers and non smokers regarding age group ($p < 0.0001$).

Divorced and widowed were more likely to smoke than those who

Characteristics		Smoker (n=912)		Non-smoker (n=1708)		p-value
		No.	%	No.	%	
Socio-demographic	Age (years):					<0.0001
	18-29	241	26.4	305	17.9	
	30-39	287	31.5	372	21.8	
	40-49	222	24.3	463	27.1	
	≥ 50 years	162	17.8	568	33.2	
	Marital status:					<0.0001
	Single	318	34.9	715	41.9	
	Married	308	33.8	795	46.5	
	Divorced and widowed	286	31.3	198	11.6	
	Educational level:					<0.0001
Undergraduate and less	625	68.5	692	40.5		
Graduate and above	287	31.5	1016	59.5		
Nationality:					>0.05	
Kuwaiti	92	10.1	213	12.5		
Non-Kuwaiti	820	89.9	1495	87.5		
Occupational	Occupation:					<0.0001
	Blue collar	708	77.6	1148	67.2	
	White collar	204	22.4	560	32.8	
	Work shift:					>0.05
	Day shift	436	47.8	885	51.8	
	Night shift	476	52.2	823	48.2	
	Job duration (years):					<0.05
	Up to 10	410	45.0	842	49.3	
More than 10	502	55.0	866	50.7		
Nature of work:					<0.05	
Production	548	60.1	945	55.3		
Maintenance	364	39.9	763	44.7		

Table 1: Socio-demographic and occupational characteristics of the studied workers (n=2620).

were currently married or single (31.3% versus 11.6%, $p < 0.0001$). Undergraduate workers recorded a higher smoking prevalence in comparison with graduate and above workers and the difference was statistically significant (68.5% versus 40.5%, $p < 0.0001$). Kuwaiti individuals represent only 11.6% of the study sample. No significant difference was found regarding nationality ($p > 0.05$).

Most of the participants (70.8%) were blue-collar workers, they reported a higher prevalence of smoking in comparison with white-collar workers, and the difference was statistically significant (77.6% versus 67.2%, $p < 0.0001$). Also, workers more than 10 years work duration and workers in production sectors, reported a higher prevalence of smoking, and the difference was statistically significant ($p < 0.05$). Night shift workers reported a higher prevalence of smoking (52.2%) in comparison with day shift workers (48.2%), but the difference was not statistically significant ($p > 0.05$) (Table 1).

The majority of tobacco smokers were cigarette smokers (95.8%), the percentage of cigarette smokers (to other tobacco smokers), was nearly the same for both Kuwaiti and expatriates ($p > 0.05$). The mean age of starting smoking was about 16 years in Kuwaiti smokers (16.3 ± 5.2) and 19 years in expatriates (18.9 ± 5.8), ($p < 0.001$), whereas, the average duration of smoking was 15 years for Kuwaiti (14.8 ± 4.8) and 18 years for expatriates (18.4 ± 5.2) ($p < 0.05$). The mean number of smoked cigarettes per day and the average number of quit attempts was nearly the same for Kuwaiti and expatriates, (27.6 ± 7.4 versus 28.2 ± 8.2 and 2.3 ± 1.8 versus 2.7 ± 2.0 , respectively), and no statistically significant difference was found between the two groups ($p > 0.05$) (Table 2).

The most common reasons for smoking for all participants were to relieve boredom (58.3%) followed by the need to feel relaxed (46.9%), to relieve anger and frustration (42.2%), to relieve pressure of working hard (27.2%), to concentrate at work (24.2%), and to mix in social situations (24.1%) (Table 3).

Two hundred and one smokers quit smoking, giving quit rate (22%). Age group (40-49 years) represents the highest percentages (48.4%) among who quit smoking, on the other hand, (64.5%) of not quit smokers were in the age group (18-39 years). There was a significant difference in the age group regarding smoking quitting ($p < 0.0001$). On

Smoking pattern	Kuwaiti (N=62)	Expatriates (N=850)	p-value
Number and percent of cigarette smokers	58 (93.5%)	816 (96.0%)	> 0.05
Mean age at first cigarette smoking (years)	16.3 ± 5.2	18.9 ± 5.8	<0.001
Mean duration of smoking (years)	14.8 ± 4.8	18.4 ± 5.2	<0.001
Mean no. of smoked cigarettes/day	27.6 ± 7.4	28.2 ± 8.2	> 0.05
Mean no. of attempts to quit	2.3 ± 1.8	2.7 ± 2.0	> 0.05

Table 2: Smoking patterns of the current smokers according to nationality (n=912).

Reasons of smoking	Number	Percent (%)
Relax	428	46.9
Relieve boredom	532	58.3
Relive anger, frustration	385	42.2
Concentrate at work	312	24.2
Relieve pressure of working hard	248	27.2
Mix in social situations	220	24.1
Enjoy pleasant events	194	21.3
Get going in the morning	108	11.8
Boost self confidence	56	6.1

Table 3: Number and percent distribution of the current smokers by reasons of smoking (n=912).

	Quit smoking (n=201)		Not quit Smoking (n=711)		P-value
	No.	%	No.	%	
Age (years):					
18-29 [^]	29	14.4	212	29.8	P <0.0001
30-39	40	19.9	247	34.7	
40-49	98	48.8	124	17.5	
≥50 years	34	16.9	128	18.0	
Marital status:					
Married [^] (n=306)	138	68.7	484	68.1	P > 0.05
Not married (n=151)	63	31.3	227	31.9	
Behavioral factor: (Life time quit attempts)					
0-3 [^]	62	30.9	206	29.0	P > 0.05
>3	139	69.1	505	71.0	
Age of starting smoking:					
≤14 years [^]	50	24.9	312	43.9	P < 0.0001
15-19	67	33.3	179	25.2	
≥20 years	84	41.8	220	30.9	
Duration of smoking:					
< 10 years [^]	80	39.8	79	11.1	P < 0.0001
10-19	69	34.3	255	35.9	
≥ 20	52	25.9	377	53.0	
Physically activity:					
Inactive [^]	72	35.8	398	56.0	P < 0.0001
Active	129	64.2	313	44.0	
Environmental factors:					
1) Smoking policy at work					
No [^]	79	39.3	465	65.4	P < 0.0001
Yes	122	60.7	246	34.6	
2) Other partner smoked at home					
Yes [^]	89	44.3	517	72.7	P < 0.0001
No	112	55.7	194	27.3	

Table 4: Selected demographic, behavioral and environmental factors according to quit attempts (n=912).

Reasons for quitting	Number	Percent (%)
Harmful effects on health	123	61.2
Scientific evidence of smoking hazards	104	51.7
Messiness of the habit	69	34.3
Influence of spouse family members	55	27.4
Prohibited by religion	94	46.8
Being a bad example to children	64	31.8
Did not really enjoy smoking	51	25.4
To improve sense of taste or smell	36	17.9
Advised by physician	25	12.4
Cost of cigarette	13	6.5

Table 5: Number and percent distribution of the smoking quitters by reasons of quitting (n=201).

the other hand, no significant differences were found regarding marital status or behavioral factors (number of quit attempts) between the two groups ($p > 0.05$).

Age of starting smoking, duration of smoking, and physical activity showed significant differences among those who quit and not quit smoking ($p < 0.0001$). Regarding the environmental factors, (60.7%) of quitter have smoking policy at workplace, compared to (34.6%) of non quitter, also (72.7%) of non quitter have other people smoke at home compared to (44.3%) of non quitter. The differences between the two groups were statistically significant ($p < 0.0001$) (Table 4).

The most common reasons for quitting were the harmful effects of smoking on health (61.2%) followed by scientific evidence of the hazards of smoking (51.7%) and being prohibited by religion (46.8%) (Table 5).

Variable	Adjusted OR	95% CI	p-value
Age (40-49 years)	2.36	(1.85-4.87)	<0.001
Marital status (married)	0.7	(0.67-1.53)	>0.05
Quit attempts (>3)	0.5	(0.35-1.32)	>0.05
Age of starting smoking (\geq 20 years)	4.13	(2.76-9.84)	<0.0001
Duration of smoking (<10 years)	1.88	(1.24-4.72)	<0.001
Physically activity	2.44	(1.46-5.82)	<0.001
Smoking policy at work	3.58	(2.38-8.52)	<0.0001
Smoking partner at home	4.11	(2.45-9.28)	<0.0001

OR: Odds Ratio, CI: Confidence Interval.

Table 6: Regression analysis of factors predicting smoking quitting.

Adjusted odds of smoking quitting increased twice among the age group (40–49 years). As regard to smoking patterns people with less duration of smoking (<10 years) were more likely to quit smoking by 1.88 times than those \geq 20 years duration of smoking. Also, people started smoking at age of twenty years and above were more likely to quit smoking by 4.13 times than those started smoking at age (\leq 14 years).

Regarding physical activity, physically active people were 2.44 times more likely to quit smoking than physically inactive. The two environmental factors associated with smoking quitting were the presence of smoking policy at work and absence of smoking partner at home. They were more likely to quit smoking (OR, 3.58 and 4.11 respectively) (Table 6).

Discussion

Previous studies on epidemiology of smoking in Kuwait had been restricted to specific groups such as physician, university students, married couples and health care workers. These studies had reported prevalence rate (38.1%) in physician [26], (30%) in male student [27], (37%) in married men and (0.5%) in married women [28], and (16.8%) among health care workers [29]. To our knowledge, no previous studies published on the epidemiology of smoking among industrial workers in Kuwait and so, this study focused on patterns of smoking and quit attempts among this group regarding various socio-demographic, behavioral and environmental factors.

A lower smoking prevalence was found among participants aged 50 years and above in this study, which is in accordance with estimates from other studies in Korea [30] and Albania [31]. Possible explanations for this include having more time to encounter smoking-related health problems, increased health consciousness with age, more time to be exposed to anti-smoking efforts, and a sense of vulnerability that is less pronounced in the younger age groups. This sense of vulnerability, in addition to having a greater likelihood of experiencing adverse health events from smoking, tend to make older people more receptive to public health messages and medical advice, and therefore more likely to quit smoking [32].

The divorced and widowed group showed a high prevalence of smoking (31.3%). This is consistent with findings reported by other studies [33-35]. These findings may be explained by the 'marriage protection' and 'marriage selection' theories [36], which posit that emotional distress due to divorce cause divorcees to turn to smoking for relief. Moreover, married people tend to have more economic advantages, and receive more social and psychological support which can make quitting smoking more likely. It is also possible that the healthier non smokers are more likely to get and stay married than those who are divorced as posited by the marriage selection theory.

Current study showed an inverse relation between education and smoking prevalence, respondents with less education were more likely to smoke than those with more education. This is consistent with other studies [34-38] and can be explained by that the better educated one is, the more concerned one would be about health and therefore the lesser the likelihood to smoke.

Type of occupation was significantly associated with smoking status in the present study, blue collar workers and production workers had a higher tendency to smoke than white collar and those in maintenance and other professional occupations. This finding is consistent with what reported from previous studies in Europe and Asia [37,39,40], where it had been postulated that lower level occupational groups face more physical and psychosocial stressors compared to the managerial and professional classes and therefore, are more likely to engage in high risk health behaviors such as smoking. It is likely that individuals with low education and low level occupation have less access to adequate health care information and face financial difficulties that increase their stress levels, making them more susceptible to partake in unhealthy lifestyle or health risks such as smoking. Previous studies had shown that smoking is often used as a coping mechanism to deal with stress [41]. Therefore, social disparities in smoking need to be addressed into future health policies.

Vast majority of smokers were cigarette smokers (95.8%), and began smoking in early adolescence. The mean age of smoking initiation was less than twenty years; it was lower among Kuwaiti smokers (16.3 ± 5.8) years. This finding was consistent with results of other studies in Kuwait [5,19]. Furthermore, other studies suggest that individuals who initiate cigarette smoking during childhood are at higher risk of becoming long term smokers than those who initiate smoking later [42,43].

To better guide the process of successful cessation, we must understand the underlying dynamic of the quitting process not only to the demographic characteristics, but also with the behavioral and environmental living and working characteristic related to smoking. This study showed that older age of smoking initiation and less duration of smoking were significant factor of smoking quitting (OR=4.13, 95% CI=2.76-9.84 and OR=1.88, 95% CI=1.24-4.72, respectively). These findings were consistent with results of other studies [42,43]. Regarding behavioral factors, no significant association was found between number of quit attempts and smoking cessation. This was in agreement with the findings of other studies [10,34].

The current study revealed a significant influence of two environmental factors, absence of other partner smoke at home and presence of smoking policy at work. People who had a smoke-free home were nearly four times as likely to be successful quitters as those who lived in a home where smoking took place. This environmental factor may affect young people attitude regarding smoking, also the influence of family member and friends [44]. This is an important issue concerning the health consequent of passive smoking on children and other family members. Workers having smoking policy at workplace, have nearly three times likelihood of successful cessation. This finding is supported by other studies [45]. Borland et al. [46] and Derby et al. [47] reported the positive influence of the social support of smoking cessation after the implementation of smoking policy for workers. So, protecting non smokers from exposure to environmental tobacco use is a major goal for most tobacco control programs [48,49].

About reasons for quitting smoking: knowledge of the harmful effects of smoking on health was the highest percentage. Siddiqui and Ogbeide [50] reported that awareness regarding the harmful effect of

smoking was 96%. This awareness regarding harmful effects may be due to strong social and cultural consensus against smoking. Conversely, the lowest percentages of reasons were the cost of cigarettes and advice from a physician (6.5%, 12.4% respectively) which raise a big question about the role of physicians in helping their patients to stop smoking. Many studies have shown that the role of physicians in helping their patients stop smoking is crucial and can have a significant impact on helping patients to stop smoking by giving them strong recommendations to quit [51,52].

Conclusion and Recommendations

Due to the reported high prevalence of smoking among industrial workers in this study, it is suggested that interventions must be taken:

- Cessation programs should take a multi-sectoral approach, these effective programs should involve family members and colleagues at workplace
- The role of smoking stop clinics should be promoted for effective counseling.
- Impact of a no-smoking policy in the workplace.

Limitations of the Study

This study is a cross-sectional design which limits study findings to the reporting of associations between current smoking status and exposure. In addition, smoking status is based on self-reporting and is not validated by objective measurements like biochemical markers of smoking. This could result in underestimating the actual prevalence of smoking.

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