

Review Article

Pattern of Smoking Cessation: A Study among Workers Attending Smoking Cessation Clinic in Shuaiba Industrial Area, Kuwait

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INTRODUCTION

Smoking is the leading cause of death and preventable diseases such as cancer, heart disease, stroke, lung diseases, type 2 diabetes, and other chronic health conditions [1,2]. Smoking tobacco is an epidemic health issue that kills more than 8 million people yearly around the world, as over 80% of tobacco users are in low- and middle- income countries. More than 7 million if those death result from direct use of direct tobacco, whereas 1.2 million death result from exposed to secondhand smoking [3]. According to Center for Disease Control and Prevention (CDC) current smoking is “An adult who has smoked 100 cigarettes in his or her lifetime and who currently smokes cigarettes. Beginning in 1991 this group was divided into “everyday” smokers or “somedays” smokers [4]. Smoking is associated with increased economic burden on the society through direct costs on the health service and indirect costs on the morbidity and mortality rates [5].

The prevalence of smoking in adult Kuwaiti population in 2014 based in WHO-STEPS survey male was 49.9% among male compared to 4.4% among females. In addition, the prevalence of current smokers in men and women were 39.2% and 3.3% respectively [6]. However, the global prevalence of daily smoking was 25% which is lower than the prevalence of adult male Kuwaiti population [7]. Based on data from the 2000 National Health Interview Survey, the prevalence of smoking among blue-collar workers found to be higher than white-collar workers according analyzed [8]. The high rate of smoking among blue-collar workers are associated with occupational exposure to asbestos, silica, radon, cadmium, and arsenic which increase the risk of disease related to smoking [9].

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When Smoking associated with occupational exposure, the situation will recognize as a synesthetic health effect among industrial workers. It has been noticed that tobacco smoking interacts with occupational and non-occupational carcinogens and increased the risk of lung cancer [2-10]. Smoking cessation interventions is the crucial steps to the reduce the risk of cardiovascular disease, respiratory disease, cancer, and other health issues. In addition, quit smoking improves the health status and enhances quality of life, as well as the reduce the finical burden on people, health care system and society [11]. In Babb, et al, study, It has been noticed that 68.0% of adult smokers wanted to quit smoking during the period 2000-2015 [12]. However, only less than 10% of smokers of these have succeeded in quitting for 6 months or longer [12].

In a Kuwait, Gaafar and Basiony investigated the pattern of smoking habit and the quit attempts among industrial workers, and they found the quit rate to be 22%. Quitting was significantly associated with older age of smoking initiation and less duration of smoking [13]. The interventions for smoking cessation and treatment for nicotine dependence include several behavioral treatments such as individual, group, and telephone counseling and pharmacotherapies approved by the U.S. Food and Drug Administration (FDA) [14]. Although much research has discussed the prevalence of smoking and quit patterns in general population, yet there has been limited research on smoking patterns, quit behavior, and smoking environment among industrial workers [15]. Thus, this study was conducted to detect the prevalence of smoking among workers in Shuaiba industrial area in Kuwait and the pattern of quit smoking. So, the aim of our study was to assess the frequency of smoking cessation and identify factors associated with smoking cessation and relaps.

SUBJECTS AND METHODS

Study Design

A cross-sectional study was conducted in Shuaiba industrial medical center quit smoking clinic. This design was chosen because it provides results relatively short time.

Subjects

Smoking workers who attended quit smoking clinic in Shuaiba industrial medical center in the interval from July till December 2022.

Inclusion Criteria

Workers who are working in the companies in Shuaiba industrial area and who attended the quit smoking clinic.

Exclusion Criteria

Workers who were on leave due to sickness, annual leave during the study period will be excluded.

Research Tools

All smokers in this study were subjected to the following tools:

Interviewing Questionnaire: The questionnaire was used in all Kuwait quit smoking clinic and is structured by the National Anti-Smoking Program in Kuwait which is divided into 3 sections:

- Sociodemographic features: To collect information about personal and workplace characteristics e.g., age, sex, marital status, nationality, job, place of work, and residential area,
- Smoking habits: Tobacco use; types of smoking, cigarette types, reasons of smoking, average daily cigarette intake, time of starting smoking, and Smoking in work environment,
- Fagerstrom Nicotine Dependence scale [16].

Data Collection: Before collection of data, a pilot study was conducted to:

- Assess the tools and methods of data collection.
- Estimates average time needed for each worker to answer the questionnaire.
- Direct the researcher on how to organize the collection of data.

Ethical Clearance

Informed consents were obtained from all workers before being interviewed. The interview was carried out in a suitable place with adequate privacy. Data collected was confidentially kept.

RESULTS

Our study was conducted on 139 workers using Shuaiba smoking cessation clinic. The majority of study participants were middle age (25 years to less than 45 years) with mean age 40.22 ± 9.39 and 82.7 % of them were married. About half of them had school education and 26.6% were skilled workers followed by the clerical and service workers 21.6%. Most of the participants 71.2 % had no chronic disease and 18 % of them had Hypertension (Table 1).

Results showed that the mean age of starting smoking was 22.0 ± 7.83 and 29.5 % of smoking cessation clinic participants smoked 10 cigarettes or less/day while 26.6 % smoked 30 cigarettes and more/day. The mean years being a smoker were 18.26 ± 8.59 and the majority 94.2 % smoked cigarettes. Most of the participants had a smoker among family member or friends (63.3 % and 90.6% respectively) and nearly half of them had a co-worker smoking and were allowed to smoke in workplace (Table 2).

Majority of study participants 85.6% had low nicotine addiction while only 9.4% were highly addicted to nicotine (Table 3). Studying the association between smoking cessation and different socioeconomic and occupational factors, our study found no relation with age, marital status or educational level also, no relation found regarding their occupation or having a

Table 1: Sociodemographic Characteristics of the Studied Participants.

Characteristic	Total N. 139
	n. (%)
Age	
< 25 years	5 (3.6)
25-<45 years	83 (59.7)
≥ 45 years	51 (36.7)
Mean ± SD	40.22 ± 9.39
Ethnicity	
Arabian	83 (56.7)
Non-Arabian	56 (40.3)
Marital status	
Single	24 (17.3)
Married	115 (82.7)
Educational level	
Illiterate	4 (2.9)
Read and write	1 (0.7)
School education	75 (54.0)
Higher education	59 (42.4)
Occupation	
Managers & Professionals	23 (16.5)
Technicians	15 (10.8)
Clericals & services	30 (21.6)
Skilled	37 (26.6)
Engineers	7 (5.0)
Drivers	27 (19.4)
Chronic Diseases	
Non	99 (71.2)
Hypertension	25 (18)
Diabetes	13 (9.4)
Asthma	2 (1.4)

Table 2: Smoking Habit and Environmental Factors.

Variables	Total N. 139	
	n. (%)	
Age of starting smoking		
< 20 years	64 (46.0)	
20-40 years	68 (48.9)	
≥ 40 years	7 (5.0)	
Mean ± SD	22.0 ± 7.83	
Number of cigarettes/day		
≤ 10	41 (29.5)	
Nov-20	38 (27.3)	
21-30	23 (16.5)	
≥ 31	37 (26.6)	
Duration of smoking		
< 10 years	23 (16.5)	
10-20 years	56 (40.3)	
≥ 20 years	60 (43.2)	
Mean ± SD	18.26 ± 8.59	
Types of smoking		
Cigarette	131 (94.2)	
Chewing gum	6 (4.3)	
Shisha	1 (0.7)	
E cigarette	1 (0.7)	
Smokers among family members		
Yes	88 (63.3)	
No	51 (36.7)	
Smokers among friends		
Yes	126 (90.6)	
No	13 (9.4)	
Smokers among co-workers		
Yes	71 (51.1)	
No	68 (48.9)	
Allowed to smoke in workplace		
Yes	66 (47.5)	
No	73 (52.5)	

Table 3: Nicotine Dependence Scale among Studied Participants.

Classification of dependence	Total N. 139	
	n. (%)	
High addiction (7-10)	13 (9.4)	
Moderate addiction (5-6)	7 (5.0)	
Low (0-4)	119 (85.6)	

chronic disease (Table 4). Our study showed a highly significant association between smoking cessation and nicotine dependence as the relapse frequency was higher among workers with low addiction to nicotine (Table 5).

DISCUSSION

According to 2014 data, Kuwait is classified at the top level for cessation programs, with many services available that are cost-covered. Kuwait is considered to provide smoking cessation treatment in some health care facilities. Smoking quit line and nicotine replacement therapy are available [17]. At the same year, 2014, Alali and his colleagues highlighted that the prevalence of “ever smoker” in adult Kuwaiti men and women was 49.9% and 4.4%, respectively, whereas the prevalence of “current smoker” was 39.2% and 3.3%, respectively [6]. In Kuwait, growing

Table 4: Relation between Quitting Smoking and Some Sociodemographic & Occupational Characteristics.

Characteristics	Smoking clinic users N.139		P-value
	Quitting N.30	Relapse N.109	
	n.(%)	n.(%)	
Age (years)			
< 25	1 (3.3)	4 (3.7)	0.676
25-<45	20 (66.7)	63 (57.8)	
≥ 45	9 (30.0)	42 (38.5)	
Marital status			
Single	4 (13.3)	20 (18.3)	0.52
Married	26 (86.7)	89 (81.7)	
Educational level			
Illiterate	0	4 (3.7)	0.572
Read and write	0	1 (0.9)	
School education	15 (50.0)	60 (55.0)	
Higher education	15 (50.0)	44 (40.4)	
Occupation			
Managers & Professionals	6 (20.0)	17 (15.6)	0.592
Technicians	4 (13.3)	11 (10.1)	
Clericals & services	8 (26.7)	22 (20.2)	
Skilled	4 (13.3)	33 (30.3)	
Engineers	2 (6.7)	5 (4.6)	
Drivers	6 (20.0)	21 (19.3)	
Chronic Diseases			
Non	20 (66.7)	79 (72.5)	0.465
Hypertension	8 (26.7)	17 (15.6)	
Diabetes	2 (6.7)	11 (10.1)	
Asthma	0	2 (1.8%)	

Table 5: Relation between Quitting Smoking and Some Smoking Habit Characteristics.

Characteristics	Smoking clinic users N.139		P-value
	Quitting N.30	Relapse N.109	
	n.(%)	n.(%)	
Age of starting smoking			
< 20 years	15 (50.0)	49 (45.0)	0.823
20-40 years	14 (46.7)	54 (49.5)	
≥ 40 years	1 (3.3)	6 (5.5)	
Number of cigarettes/day			
≤ 10	6 (20.0)	35 (32.1)	0.373
Nov-20	7 (23.3)	31 (28.4)	
21-30	6 (20.0)	17 (15.6)	
≥ 31	11 (36.7)	26 (23.9)	
Duration of smoking			
< 10 years	2 (6.7)	21 (19.3)	0.073
10-20 years	10 (33.3)	46 (42.2)	
≥ 20 years	18 (60.0)	42 (38.5)	
Nicotine dependence			
High addiction	6 (20.0)	7 (6.4)	0
Moderate addiction	5 (16.7)	2 (1.8)	
Low addiction	19 (63.3)	100 (91.7)	

research were conducted in the era of smoking cessation in last years [18-21]. However, these studies were incomparable to the current study in terms of the target group.

This research aim was to assess the frequency of smoking cessation and identify the associated factors in smoking cessation clinic of Shuaiba industrial medical center in Kuwait. All clinic attendants during the period of 6 months were included in the

study. A total of 139 workers utilized smoking cessation services in the form of counselling and nicotine replacement therapy. To our knowledge, the only previous study comparable to ours was a cross sectional study conducted in Sabhan industrial area, Kuwait, at the end of 2010. Gaafar and Basiony, 2013 investigated the prevalence and pattern of smoking among industrial workers belonged to that area [13]. In our sample, the mean age of starting smoking was 22.0 ± 7.83 which was higher than that in Gaafar and Basiony study (16.3 ± 5.2 in Kuwaiti and 18.9 ± 5.8 in expatriates). Participants of Hamadeh, et al. 2017 study started smoking at earlier age (15.9 ± 4.4 in cigarette smokers and 19.7 ± 7.4 in shisha smokers) [22]. Moreover, in a Turkish study by Esen, et al. 2020, the mean age of starting smoking was 17.6 ± 5.0 years [23].

Of our participants, 29.5% smoked 10 cigarettes or less/day while 26.6 % smoked 30 cigarettes and more/day. The mean years being a smoker were 18.26 ± 8.59 and the majority (94.2%) smoked cigarettes. Over three-quarters of the participants (83.5%) reported smoking for ≥ 10 years and only 9.4% were highly addicted to nicotine. Most of the participants had a smoker among family member or friends (63.3 % and 90.6% respectively) and nearly half of them had a co-worker smoking and were allowed to smoke in workplace.

The mean duration of smoking in this study was comparable to that found among expatriate workers in the study of Gaafar and Basiony, 2013 (18.4 ± 5.2), while in the later study, participants who had smoking policy at workplace and those had smoking partners were only 20.7% and 23.1% respectively [13]. In a Chinese study by Xie, et al. 2021, the average smoking duration was 22.87 ± 12.29 years. Over three-quarters of the participants (77.9%) reported smoking for ≥ 10 years. Moreover, 18.3% reported smoking 10 cigarettes or less per day. The average FTND score was 4.32 ± 2.10 , and 14.8% of participants were categorized as highly dependent while 49.4% as moderately dependent [24]. This average nicotine dependence score was comparable to that of Esen, et al. study (6.5 ± 2.2) [23].

In this study, out of 139 current smoker, 30 (21.6%) had quit smoking at the end of six months period by the aid of both nicotine replacement therapy and counselling service. This quitting rate was comparable to that found by Gaafar and Basiony, 2013, in their study, 201 smoker out of 2620 succeeded to quit smoking giving quit rate 22% [13]. Xie, et al. 2021. Showed that 26.5% of participants quit in one month period and the rate was higher after completing six months of follow-up [24]. In the study of Zamzuri, et al. 2021 [25], 30.2% quit smoking at the end of six-month program. Meanwhile, 42.9% of participants of Lin et al., 2021 study had successfully quit smoking by the end of the same period. In current study, most of quitters were of middle age group, married, working clericals and in service sector and having no chronic disease. It was not surprising, as more than two thirds of our sample did not have any chronic disease. This could be attributed to the healthy worker effect. Also, it is well known that worker in industrial areas, tends to keep their health in good status to earn a living.

The presence of comorbid conditions, such as cardiovascular, pulmonary and psychiatric disorders, has not been shown to have a positive or negative effect on smoking cessation [26-29]. Of participants in Argüder, et al. study [27], 47.9% with chronic disease and 44.4% of those without chronic diseases were current smokers, and there was no statistically significant difference between the two groups. However, the presence of underlying smoking-related disease may have increased the smoking cessation rate. In one study, smoking cessation rates were significantly higher in the group that reported pathological findings on chest radiography [30]. In contrast to our results, Monso, et al. [31] reported that people with chronic respiratory and cardiac disease had lower rates of smoking cessation success. In Esen, et al. 2020 study [23], after one year, 45.3% participants were abstinent. Smoking cessation rate of the patients with a Fagerström score < 6 (less dependent on nicotine) was significantly higher than that with a Fagerström score ≥ 6 (more dependent on nicotine).

A Korean study by Hwang, 2019 [32] revealed that the higher the patient's dependence on nicotine before participating in the cessation program, the lower the probability of cessation success. Other Korean study by Eum et al., 2022 [33] found a similar inverse relationship between nicotine dependence and smoking cessation success rates. They found that average nicotine dependence score (based on the FTND) in the successful group was lower than the average score in the unsuccessful group. However, in the current study, relapse frequency was higher among workers with low addiction to nicotine. This was contrary to our expectation but could be explained in the context of absence of adverse health effects, which begin to manifest with high nicotine dependence and/or long duration of smoking, makes them more reluctant in their decision about smoking cessation. Additionally, having financial restrictions to support their families, made smokers cannot go far in consuming tobacco products. This had a reflection on the nicotine dependence scale in the way that most of our participants had low nicotine addiction. Our study had limitations:

- 1) Not all currently smoking workers agreed to register in the clinic even who had the intension to quit smoking as most of them worked in remote industrial areas with high transportation cost. Thus, commitment with regular follow up visit to the clinic was difficult. Subsequently, our sample was relatively small.
- 2) Follow up for longer period, availability of additional lines of therapy could have altering the rate of relapse.
- 3) The cross-sectional design of the study.

CONCLUSION

Based on our results, a tailored approach should be carried out targeted to industrial workers. Stricter smoke-free workplace regulations, including psychological professionals for motivation and behavioral therapy and to help workers to manage stress. Furthermore, encouraging employers to facilitate workers

transportation to the clinics, all could increase the success rate. Additionally, from WHO point of view, implementing stronger set of policies, in line with the WHO Framework Convention on Tobacco Control (FCTC), could reduce smoking prevalence within 5 years. A large tax increase accompanied by comprehensive marketing restrictions, strong health warnings, a comprehensive cessation programs, and mass media campaigns would reduce smoking prevalence about 40% by 2025, thus meeting the global target [17].

REFERENCES

- Health Effects of Cigarette Smoking USA: CDC. (CDC) CoDCaP. 2021.
- Saha SP, Bhalla DK, Whayne TF Jr, Gairola C. Cigarette smoke and adverse health effects: An overview of research trends and future needs. *Int J Angiol.* 2007; 16: 77-83.
- Tobacco Geneva WHO. WHO. 2021.
- National Health Interview Survey USA: CDC. (CDC) CoDCaP. 2017.
- Rezaei S, Akbari Sari A, Arab M, Majdzadeh R, Mohammad Poorasl A. Economic burden of smoking: a systematic review of direct and indirect costs. *Med J Islam Repub Iran.* 2016; 30: 397.
- Alali WQ, Longenecker JC, Alwotyan R, AlKandari H, Al-Mulla F, Al Duwairi Q. Prevalence of smoking in the Kuwaiti adult population in 2014: a cross-sectional study. *Environ Sci Pollut Res Int.* 2021; 28: 10053-10067.
- GBD 2015 Tobacco Collaborators. Smoking prevalence and attributable disease burden in 195 countries and territories, 1990-2015: a systematic analysis from the Global Burden of Disease Study 2015. *Lancet.* 2017; 389: 1885-1906.
- Barbeau EM, Krieger N, Soobader MJ. Working class matters: socioeconomic disadvantage, race/ethnicity, gender, and smoking in NHIS 2000. *Am J Public Health.* 2004; 94: 269-278.
- Hong O, Duffy SA, Choi SH, Chin DL. The association between occupational exposures and cigarette smoking among operating engineers. *Arch Environ Occup Health.* 2014; 69: 172-179.
- Howard J. Smoking is an occupational hazard. *Am J Ind Med.* 2004; 46: 161-169.
- Prevention CfDca. Benefits of Quitting USA: CDC. 2020.
- Babb S, Malarcher A, Schauer G, Asman K, Jamal A. Quitting Smoking Among Adults - United States, 2000-2015. *MMWR Morb Mortal Wkly Rep.* 2017; 65: 1457-1464.
- Gaafar MA BL. Pattern of Smoking Habit and Quit Attempts among Industrial Workers in Kuwait. *Occupational Medicine & Health Affairs.* 2013; 1: 6.
- United States Public Health Service Office of the Surgeon General; National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health. Smoking Cessation: A Report of the Surgeon General [Internet]. Washington (DC): US Department of Health and Human Services; 2020. PMID: 32255575.
- Pinsker EA, Hennrikus DJ, Hannan PJ, Lando HA, Brosseau LM. Smoking patterns, quit behaviors, and smoking environment of workers in small manufacturing companies. *Am J Ind Med.* 2015; 58: 996-1007.
- Heatherton TF, Kozlowski LT, Frecker RC, Fagerström KO. The Fagerström Test for Nicotine Dependence: a revision of the Fagerström Tolerance Questionnaire. *Br J Addict.* 1991; 86: 1119-1127.
- World Health Organization. Effects of meeting MPOWER requirements on smoking rates and smoking attributable deaths: Egypt (No. WHO-EM/TFI/170/E). World Health Organization. Regional Office for the Eastern Mediterranean. 2018.
- Waheedi M, Al-Tmimy AM, Enlund H. Preparedness for the smoking cessation role among health sciences students in Kuwait. *Med Princ Pract.* 2011; 20: 237-243.
- Khalaf M. Smoking cessation practices in Kuwaiti general dental clinics. *Med Princ Pract.* 2013; 22: 576-582.
- Omu FE, Al-Kandari I, RabeaAl-Marzouk DP, Rajagopal M, Omu PJ. Tobaccofree Campus Initiative: A Quitting Strategy for Kuwait Nursing College Student Smokers. *International Journal of Nursing.* 2015; 2: 144-156.
- Alajmi B, Abu-Hammad O, Al-Sharrad A, Dar-Odeh N. Tobacco cessation support among dentists: A cross-sectional survey in Saudi Arabia and Kuwait. *Tob Prev Cessat.* 2017; 3: 121.
- Hamadeh RR, Ahmed J, Al-Kawari M, Bucheeri S. Quit tobacco clinics in Bahrain: smoking cessation rates and patient satisfaction. *Tob Induc Dis.* 2017; 15: 7.
- Esen AD, Soylem Y, Arica S, Belgin G, Gonultas N. Factors affecting success and abstinence within a smoking cessation clinic: A one-year follow-up study in Turkey. *Tob Prev Cessat.* 2020; 6: 71.
- Xie J, Zhong R, Zhu L, Chang X, Chen J, Wang W, et al. Smoking cessation rate and factors affecting the success of quitting in a smoking cessation clinic using telephone follow-up. *Tob Induc Dis.* 2021; 19: 99.
- Zamzuri MA, Kamarudin SA, Ariffin AH, Ibrahim AA, Othman MH, Johari A, et al. Rate of smoking cessation and factors associated with successful quit smoking in Seremban District of Malaysia. *Clinical Epidemiology and Global Health.* 2021; 12: 100862.
- Lin CJ, Huang WH, Hsu CY, Tjung JJ, Chan HL. Smoking Cessation Rate and Its Predictors among Heavy Smokers in a Smoking-Free Hospital in Taiwan. *Int J Environ Res Public Health.* 2021; 18: 12938.
- Argüder E, Karalezli A, Hezer H, Hatice Kılıç, Mükremin, Hatice Canan Hasanoglu, et al. Factors Affecting the Success of Smoking Cessation. *Türk Toraks Derg.* 2013; 14: 81-87.
- Kanatsız B, Başlılar Ş, Şaylan B, Albay A, Başat SU. Evaluation of the Factors Affecting Success Rate and Medical Treatments in Smoking Cessation. *Euras J Fam Med.* 2017; 6: 65-71.
- Şahbaz S, Kılınç O, Günay T, Ceylan E. The Effects of Smoking Properties and Demographic Properties on the Results of Smoking Cessation Therapy. *Tur Toraks Derg.* 2007; 8: 110-114.
- Balbay Ö, Annakkaya AN, Aytar G, Bilgi C. The Results of Smoking Cessation Programmes in Chest Diseases Department of Duzce Medical Faculty. *Düzce Tıp Fakültesi Dergisi.* 2003; 3: 10-14.
- Monsó E, Campbell J, Tønnesen P, Gustavsson G, Morera J. Sociodemographic predictors of success in smoking intervention. *Tob Control.* 2001; 10: 165-169.
- Hwang EJ. Related Factors of Smoking Cessation Success and Maintenance of Patients using Smoking Cessation Clinic at a Public Hospital: focused on patient demographics and smoking related factors. In Korean. *Journal of the Korea Academia Industrial Cooperation Society.* 2019; 20: 535-543.
- Eum YH, Kim HJ, Bak S, Lee SH, Kim J, Park SH, et al. Factors related to the success of smoking cessation: A retrospective cohort study in Korea. *Tob Induc Dis.* 2022; 20: 15.