



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES<http://doi.org/10.5281/zenodo.3597939>Available online at: <http://www.iajps.com>

Research Article

**SUCCESS RATE AND DETERMINANTS OF SMOKING
CESSATION AMONG PATIENTS ATTENDING MINISTRY
OF HEALTH SMOKING CESSATION CLINICS PROGRAM
IN JEDDAH, SAUDI ARABIA 2018**Mohammed Ahmed Jumah ¹, Yusuf al-Harbi ², Najat Islami ³¹ Family Physician, Ministry of Health, Saudi Arabia² Family Medicine Consultant, Ministry of Health, Saudi Arabia³ Family Medicine Consultant, Jeddah TCP Director

Article Received: October 2019 Accepted: November 2019 Published: December 2019

Abstract:

Background: Smoking in Saudi Arabia is one of the most significant health issues. The Ministry of Health worked along with other governmental institutions to decrease the impact of this problem by offering a free consultation and management at smoking cessation clinics around the country and advertise for

that through different channels in media. **Objectives:** To estimate the success rate of smoking cessation and the factors associated with it in the Ministry of health smoking cessation program in Jeddah. **Subjects and methods:** A cross-sectional study among a sample of Saudi smokers attending the smoking cessation clinic in Ministry of Health primary health care centers in Jeddah city 2018 between 1st January until the 30 th June. A

Self-administered validated questionnaire was utilized for data collection including two main parts; the demographic data of the participants and questions about the factors and the determinants that faced the participants in the smoking cessation process. **Results:** The study included 169 participants out of targeted 208 giving a response rate of 81.3%. Majority of the participants (83.4%) were current smokers and the remaining 16.6% were ex-smokers. The mean age at starting smoking is 17.7±3.8 years. Successful cessation of smoking was found among 30.8% of the respondents. More than a quarter (26.9) of those reported successful smoking trials had more than three smoking cessation trials. Regarding the reasons for smoking cessation trials, medical reasons ranked first (75%), followed by social reasons (25%). However, as regards the reasons of re-smoking

after cessation, psychological reasons ranked first (63.5%), followed by social reasons (42.3%). The only significant factor with successful smoking cessation was the duration of treatment as 58.3% of participants who were treated for more than one month compared to 23.1% of those treated for a week and 5.6% of never treated participants expressed successful smoking cessation, $p<0.001$. **Conclusion:** A considerable proportion of smokers attending the smoking cessation clinic, Jeddah had a successive smoking cessation. However, most of them reported a history of re-smoking after successful smoking cessation. The reasons of re-smoking after cessation in the present study revealed that psychological reasons ranked first.

Corresponding author:**Mohammed Ahmed Juma,**

Family Physician, Ministry of Health, Saudi Arabia

QR code



Please cite this article in press Mohammed Ahmed Juma et al., *Success rate and determinants of smoking Cessation Among Patients Attending Ministry Of Health Smoking Cessation Clinics Program In Jeddah, Saudi Arabia 2018.*, Indo Am. J. P. Sci, 2019; 06(12).

1.INTRODUCTION:

The definition of smoking cessation is the process of discontinuing tobacco smoking. Tobacco contains nicotine, which is very addictive. Nicotine makes the process prolonged and difficult to quit. ⁽¹⁾

1.1 Background:

Smoking in Saudi Arabia is one of the most significant health issues. People who smoke affect their health and their relationships with beloved ones. Furthermore, they spend a lot of money buying smoke products that affect their financial status. For that purpose, The Ministry of Health in Saudi Arabia worked along with other governmental institutions to decrease the impact of this problem in the society by offering a free consultation and management at smoking cessation clinics around the country and advertise for that through different channels in media. However, these clinics need to be evaluated regarding their benefits.

1.2 Literature review

-A study conducted by Alzalabani et al. in 2015 in Almadinah, Saudi Arabia among intermediate and secondary school students with cohort study design included 307 current smoker students in a school-based survey. The intention to quit and its related determinants were assessed using a self-administered questionnaire. The result was more than half of the participants were ≥ 17 years, and of male gender (54.7%, 77.9% respectively). An intention to quit smoking was reported in 71.7% of participants, and has been significantly associated with: male gender (OR=3.25, 95% CI=1.65-6.41), concluding that Effective and focused health education about the dangerous of smoking and ban smoking in public places could help initiate the intention to quit among youth smokers. ⁽²⁾

-A study published on PubMed in 2017 conducted in France to estimate the success rate in smoking cessation clinic with factors such as psychoactive substance or/and depression, study Smoking cessation was counted a success when patients were abstinent 6 months after the beginning of cessation, The significant factors a history of depression (OR adjusted = 0.57, $p = 0.003$), state of depression at the initial consultation (ORa = 0.64, $p = 0.005$), other psychoactive substances (ORa = 0.52, $p < 0.0001$), heart, lung and Ear-Nose-Throat diseases (ORa = 0.65, $p = 0.005$), age (ORa = 1.04, $p < 0.0001$), the Richmond test ($p < 0.0001$; when the patient's motivation went from insufficient to moderate, the frequency of abstinence was twice as high) and the Prochaska algorithm ($p < 0.0001$; when the patient went from the 'pre-contemplation' to the 'contemplation' level, the frequency of success was four times higher). A high score in the Richmond test had a more significant impact on

success with increasing age (significant interaction: $p = 0.01$). In exclusive smokers, the contemplation level in the Prochaska algorithm was enough to obtain a satisfactory abstinence rate (65.5%) whereas among consumers of other psychoactive substances, it was necessary to reach the preparation level in the Prochaska algorithm to achieve a success rate greater than 50% (significant interaction: $p = 0.02$)., concluding that the psychological preparation plays key role in the success rate of smoking cessation. ⁽³⁾

-A study conducted in London, UK and published on August 2014, to estimate the success rate of smoking cessation program among physicians who attend and learned through a national program of evidence-based practitioner in 2011-2013, verified abstinence rates were compared for 146 (of 151) stop smoking services between 2008-10 (before roll-out of training) and 2011-13 (after roll-out), and the change in success rates for each service was regressed on to the number of practitioners per service trained in a-knowledge through internet and b-skills through face to face interviewing, Results show success rate improved between the two periods, with a(34.1% to 36.5%, $p=0.01$ 1-tailed; 95% CI for difference 0.44-4.48). The magnitude of improvement for each service was associated with the number of practitioners who completed the knowledge and skills training, Concluding that the importance of national guideline to work with to achieve a successful smoking cessation process. ⁽⁴⁾

-In 2015 A Study performed in Jazan by Abdelwahab SI et al. with cross-sectional design to assess the factors associated with smoking through socio-demographic and cessation behavior playing a role in smoking, the number of participants was 1497 with seven different areas collected by a questionnaire, The majority of the respondents were married, had a university level of education, were employed and were younger than 34 years. The same trends were also observed among smokers' samples. The current prevalence of cigarette smoking was 49.2% and 65.7% of smokers had smoked at less than 18 years of age. More than 50% of the study sample had tried at least once to quit smoking. However, 42% of the smokers participating had never had the intention to quit, concluding the importance of providing a smoking cessation program and increasing the awareness about the hazards of smoking. ⁽⁵⁾

A study conducted in India by Gaikwad R et al. published in PubMed 2017 with cross-sectional design to study Potential Predictor of Tobacco Cessation among Factory Workers, the study started by dividing the participants into two groups (a)who quit smoking (b) who never quitted smoke,

using SPSS v17 the result was The mean age among the quitters was comparatively low than the never-quit group. Out of 640 participants, most quitters and those who never quit were found to consume smokeless tobacco (232 [93.5]; 288 [73.5]). As per logistic regression analysis, the gender of participants, the age of starting tobacco use, and the frequency of tobacco use can be considered as good predictors to quit smoking/chewing tobacco. Concluding study's result provides valuable insight into the current tobacco usage and potential predicting factors for quitting tobacco use among factory workers in India. These data can help in developing a policy for the implementation of tobacco cessation programs.⁽⁶⁾

1.3 Rational:

he researcher has the interest to study it due to a lack of information regarding this specific topic. Besides the experience that he holds in this area regarding the smoking cessation clinics for 2 years in PHC, so he proceeded to choose Jeddah city the second largest city in Saudi Arabia with a total population of 4 million people,⁽⁷⁾ and where he lived most of his life.

1.4 Aim:

To estimate the success rate of smoking cessation and the factors associated with it in the Ministry of health smoking cessation program in Jeddah.

1.5 objectives:

- To estimate the success rate of smoking cessation among smokers attending the smoking cessation clinic in Jeddah in 2018.
- To assess the factors and determinants of smoking cessation in patients attending primary health smoking cessation clinics in Jeddah in 2018.

METHODOLOGY:

2.1 Study design: A cross-sectional study

2.2 Study area: Jeddah city

2.2.2 Study services: Ministry of Health smoking cessation program

2.2.3 The location: (the central office of smoking cessation program in Jeddah) in Al-Fayhaa district

2.3 study population: Smokers attending the smoking cessation clinic in Ministry of Health primary health care centers in Jeddah 2018 between 1st January until the 30th June.

Eligibility criteria

2.4 inclusion criteria:

- 1-Saudi smokers
- 2-both genders (male and female)
- 3- All ages

2.5 exclusion criteria:

- 1-non-Saudi smokers
- 2-patient lives outside Jeddah

2.6 Sample size:

The estimated number of total populations attending the smoking cessation clinics **450**

Study population: The calculated number of the study population is **208**

done by using <http://www.raosoft.com/samplesize.html>

The prevalence of the problem (for cross-sectional studies): consider local, national or international. If not possible consider 50% to obtain the largest sample size.

Confidence level: 90 – 99% (**95%**).

Error: 1- 10% (**5%**) or the worse acceptable; (the prevalence \pm the error)

2.7 Sampling technique:

Simple random sampling was applied using the computer-based random number generator(<http://www.random.org>) based on table number of participants given by the smoking cessation program and arranged accordingly.

2.8 Data collection tool:

A self-administered questionnaire was built and validated by two family medicine and one community medicine consultants.

The questionnaire was divided into two parts

First part: the demographic data of the participants, e.g. name, age, sex, social status ...etc.

Second part: was about the factors and the determinants that faced the participants in the smoking cessation process.

2.9 Data collection method:

After sampling the researcher would contact the participants by telephone and explain the strategy and the purpose of the study and handle an E-forms and written forms as participants favored then will be retrieved within a week.

2.10 Study variables:

2.10.1 Dependent variable: the success rate of smoking cessation. It was considered as stopping smoking for at least 6 continuous months, according to the Saudi guideline for smoking cessation services.⁽⁸⁾

2.10.2 Independent: age, sex, socio-demographic status, years of smoking, types of smoking, pharmacological intervention, number of smoking cessation clinic visits, duration of using the treatment.

2.11 Data analysis:

Computer programs with versions: (SPSS) v25

Descriptive statistics: Mean and standard deviation (SD) for continuous variables and frequency and percentage for categorical variables

Analytical statistics: Pearson's chi-square, Fisher's Exact and Student-t test were applied.

Significance: P-value < 0.05 should be considered for significance.

2.12 Pilot study:

A pilot study was done on 10% of the study population and was done in Al-khaldiyah PHC in Makkah due to similarity (the main office of TCP in Makkah).

2.13 Ethical consideration:

- Approval of the local Research and Ethical committee.
- Higher authority approval.
- Written or verbal consent of the participants.
- Acknowledgments from the research supervisor and advisor.

2.14 budget:

Self-funded

2.15 Relevance and expectation:

Smoking cessation clinics program in the ministry of health is considered successful regarding their services that have a significant success rate among patient attending that quitting smoking after the help that was offered.

RESULTS:

1- The study included 169 participants out of targeted 208 giving a response rate of 81.3%. Their age ranged between 18 and 60 years with an arithmetic mean± Standard deviation of 33.6±8.2 years. Table 1 presents their remaining socio-demographic characteristics. Majority of them (96.4%) were males and almost two-thirds (67.4%) were married and university graduated (62.8%). Concerning job status, majority of them (85.7%) were employees. The income of more than one-third of them was either ranged between 6001 and 10000 SR/month (37.8%) or exceeded 10000 SR/month (39.6%).

Table 1: Personal characteristics of the participants (n=169)

	Frequency	Percentage
Sex		
Male	163	96.4
Female	6	3.6
Marital status		
Single	49	29.0
Married	114	67.4
Divorced	6	3.6
Educational level		
Below secondary	7	4.1
Secondary	49	29.0
University	106	62.8
Postgraduate	7	4.1
Job status		
Not working	6	3.6
Employee	145	85.7
Student	13	7.7
Retired	5	3.0
Income (SR/month) (n=164)		
≤3000	8	4.9
3001-6000	29	17.7
6001-10000	62	37.8
>10000	65	39.6

Medical history

As realized from Figure 1, 11.8% of the participants had history of one or more chronic diseases. History of hospital visits because of heart problems was observed among 8 participants (4.7%) as shown in Figure 2. History of difficulty in respiration was reported by 18.9% of the participants as illustrated in Figure 3. Nearly two-thirds of the participants (67.5%) described their health status as excellent whereas only 2.4% as fair.

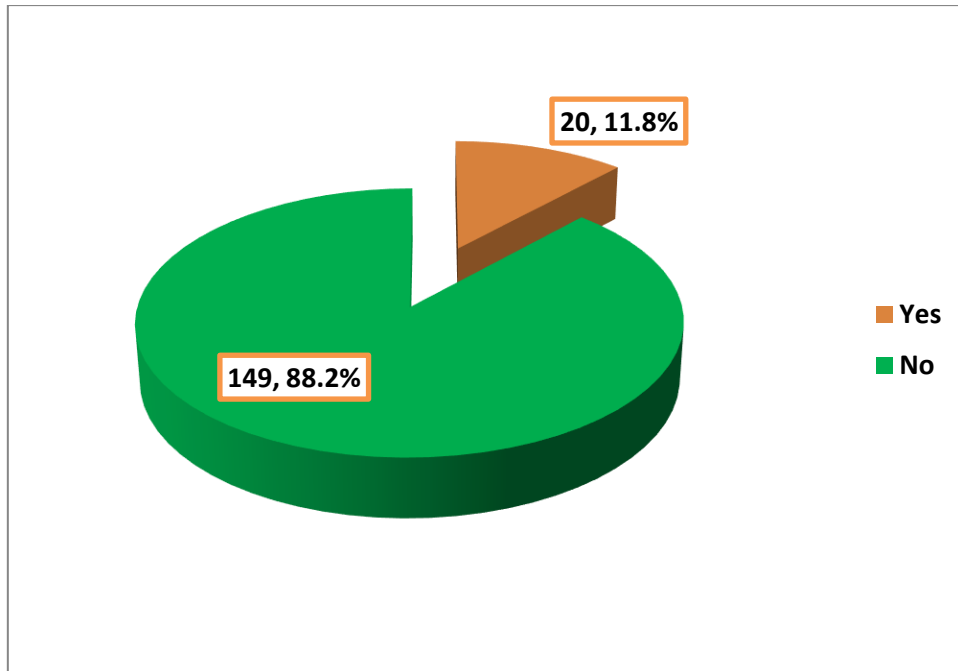


Figure 1: History of chronic diseases among the participants

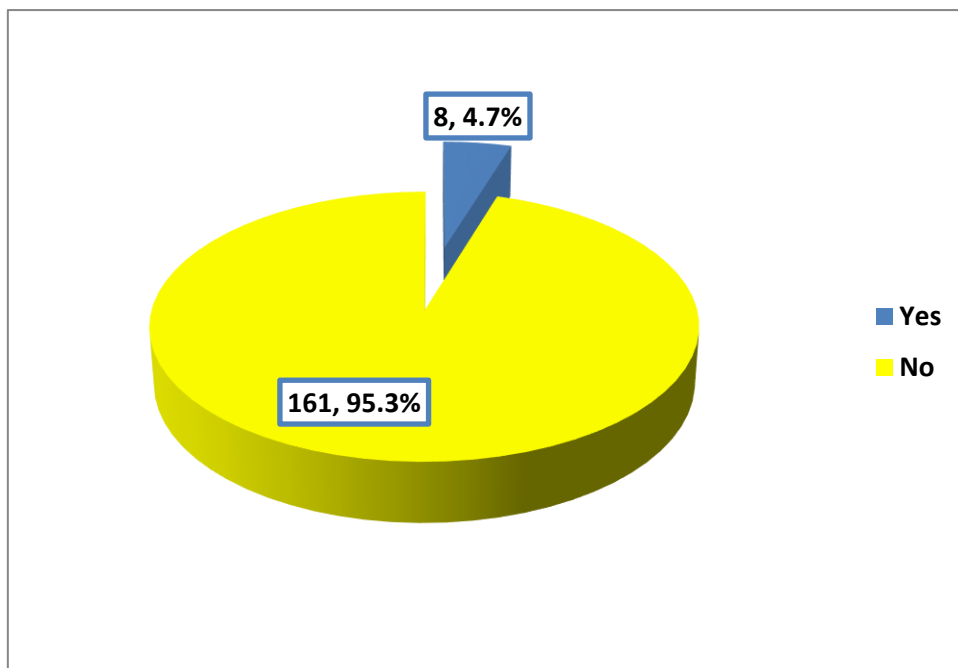


Figure 2: History of hospital visits because of heart problems among the participants

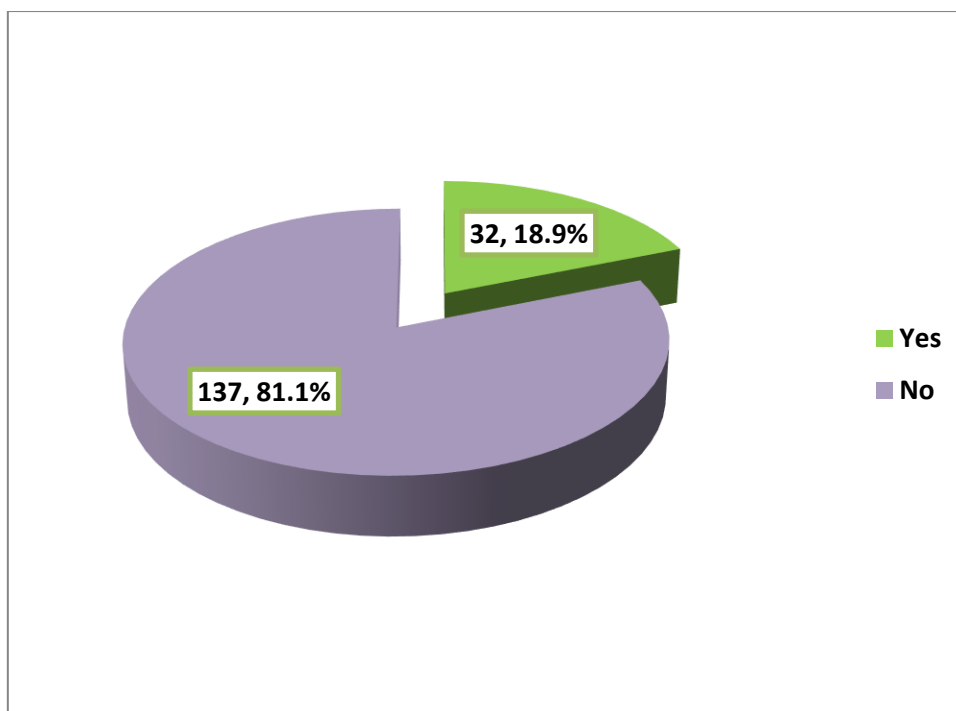


Figure 3: History of difficulty in respiration among the participants

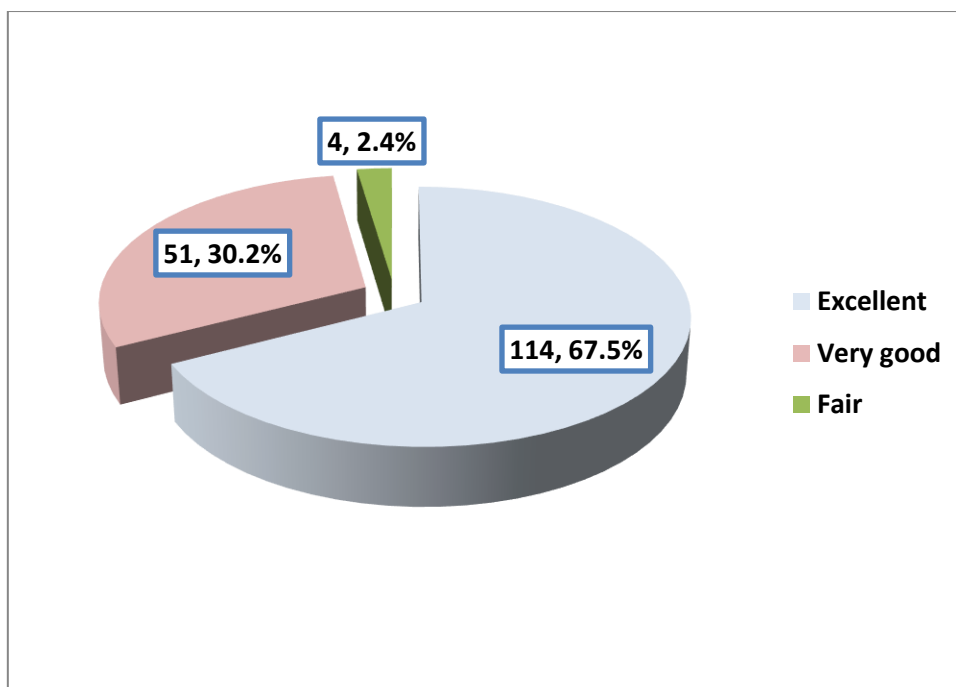


Figure 4: Self-description of the health status among the participants

Smoking history

From Figure 5, it is clear that majority of the participants (83.4%) were current smokers and the remaining 16.6% were ex-smokers. Table 2 presents the details of the smoking history. The age at starting smoking ranged between 8 and 35 years with a mean±SD of 17.7±3.8 years. Majority of them currently/previously used cigarettes (94.7%) as a type of smoking. Almost half of them (48.1%) smoked between 11 and 20 cigarettes/day as an average. Regarding usual place for smoking, public places and homes were mentioned by 37.3% and 33.7% of the participants, respectively. Fifty participants (29.6%) reported living with smokers. More than half of the participants (53.6%) reported smoking during their disease.

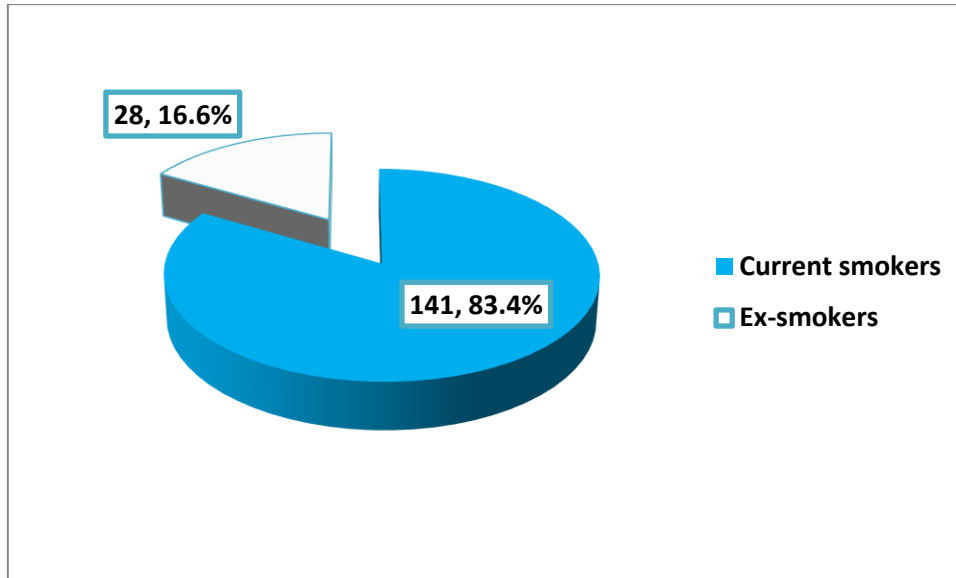


Figure 5: Current smoking status of the participants

Table 2: Detailed smoking history of the participants

	Frequency	Percentage
Age at starting smoking (in years) (n=168)		
<18	87	51.8
18-20	60	35.7
>20	21	12.5
Range	8-35	
Mean±SD	17.7±3.8	
Type of smoking currently/previously used*		
Cigarettes	160	94.7
Moassel	9	5.3
Water pipes	3	1.8
Others	3	1.8
Number of cigarettes smoked/day (n=160)		
≤10	21	13.1
11-20	77	48.1
>20	62	38.8
Usual place of smoking		
Home	57	33.7
Work	46	27.2
Public places	63	37.3
Car	3	1.8
Living with smoker		
Yes	50	29.6
No	119	70.4
Smoking during a disease (n=166)		
Yes	89	53.6
No	77	46.4

* Not mutually exclusive

Successful smoking cessation

Successful cessation of smoking was found among 30.8% of the respondents as shown in Figure 6.

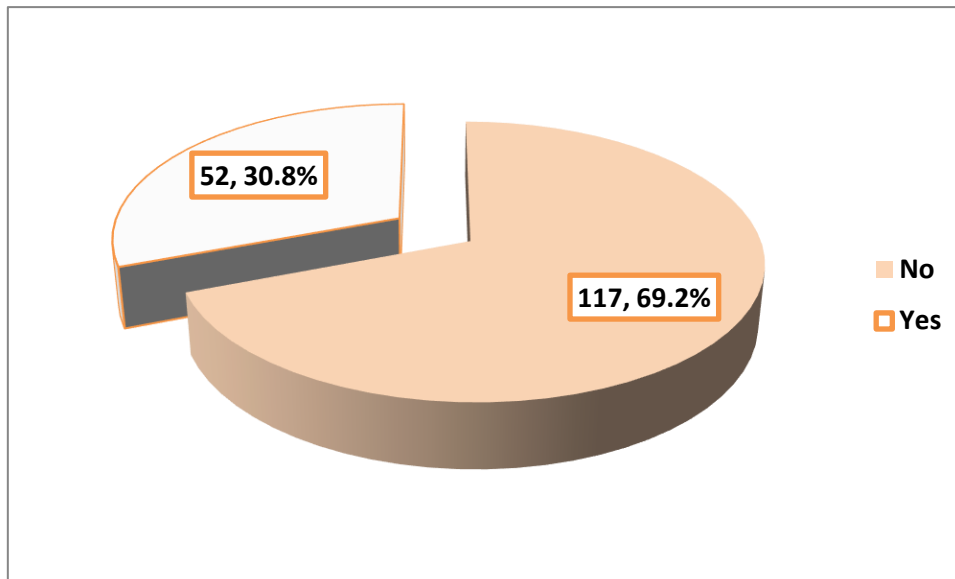


Figure 6: History of successful smoking cessation among the participants.

Details of smoking cessation trials (n=52)

More than a quarter (26.9) of those reported successful smoking trials had more than three smoking cessation trials whereas 21.2% had only one trial. Also, more than a quarter of them (28.8%) stopped smoking for a period exceeded one year. Age of the first smoking cessation trial ranged between 26 and 35 years among more than half of them (51.9%). Regarding reasons for smoking cessation trials, medical reasons ranked first (75%), followed by social reasons (25%). However, as regards reasons of re-smoking after cessation, psychological reasons ranked first (63.5%), followed by social reasons (42.3%). Table 3.

Table 3: Details of smoking cessation trials (n=52)

	Frequency	Percentage
Number of smoking cessation trials		
One	11	21.2
Two	13	25.0
Three	14	26.9
More than three	14	26.9
Longest duration of smoking cessation		
6 months	17	32.7
>6 months-one year	20	38.5
>one year	15	28.8
Age at first smoking cessation trial		
≤25	18	34.6
26-35	27	51.9
>35	7	13.5
Reason/s for smoking cessation* trials		
Medical	39	75.0
Social	13	25.0
Financial	7	13.5
Others	4	7.7
Reason/s for re-smoking after cessation* (n=39)		
Psychological		
Social	33	63.5
No suitable alternative	22	42.3
Others	5	9.6
	5	9.6

*Not mutually exclusive

Experience with smoking cessation clinic

It is realized from Figure 7 that almost two-thirds of the participants (62.1) visited smoking cessation clinic once whereas 11.2% of them visited it three times or more. Varenicline was the most frequent reported therapy taken at smoking cessation clinic (80.5%), followed by nicotine substitutes (17.2%) whereas behavioral therapy was given to only 4.7% of the participants as shown in Figure 8. More than

half of the smokers (53.8%) were given therapy for a period of week whereas 7.1% were given it for a period exceeded one month. Figure 9

History of re-smoking after successful smoking cessation was mentioned by 75% of the participants who successes to stop smoking as illustrated in Figure 10. The commonest reported feeling among them was guilt feeling (68.8%). Table 11

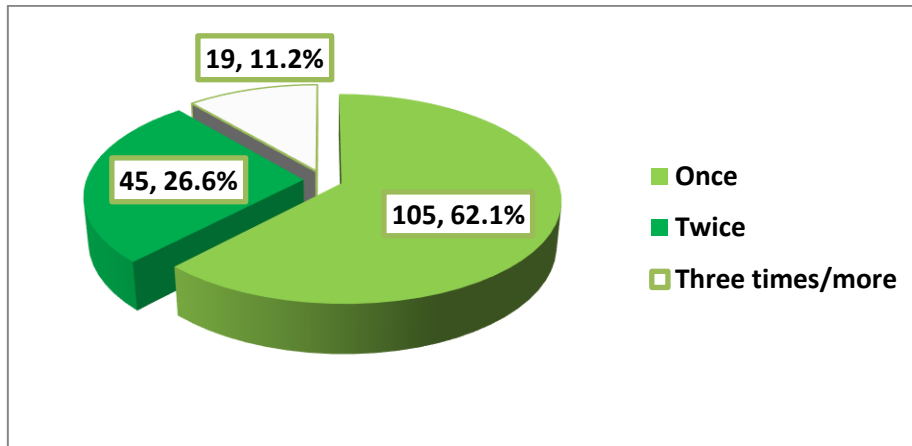


Figure 7: Frequency of visiting smoking cessation clinics among the participants

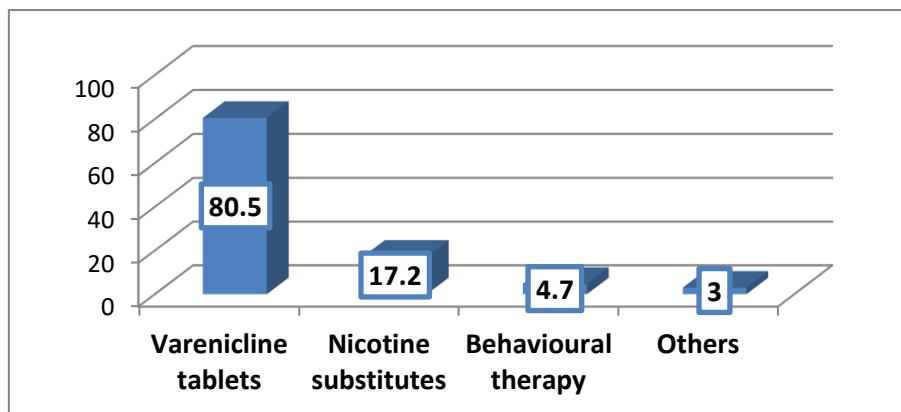


Figure 8: Types of therapy taken at smoking cessation clinics among the participants

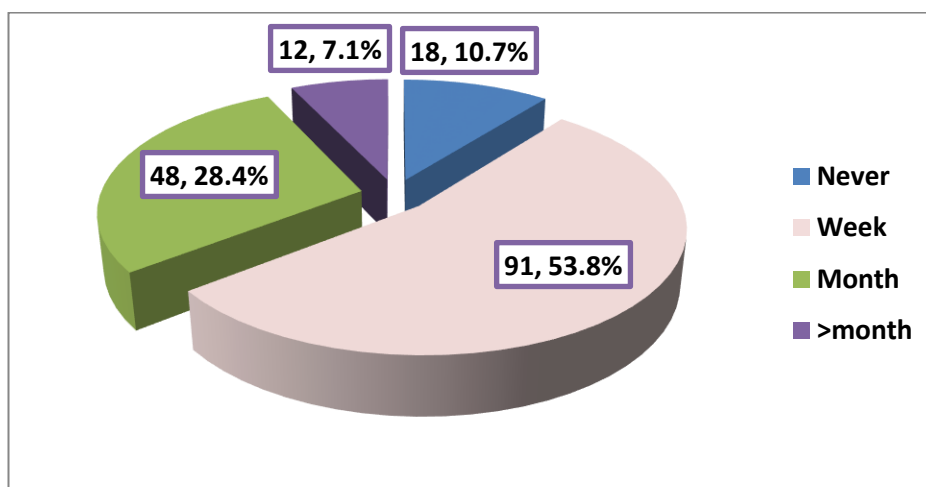


Figure 9: Duration of therapy given to smokers at smoking cessation clinic

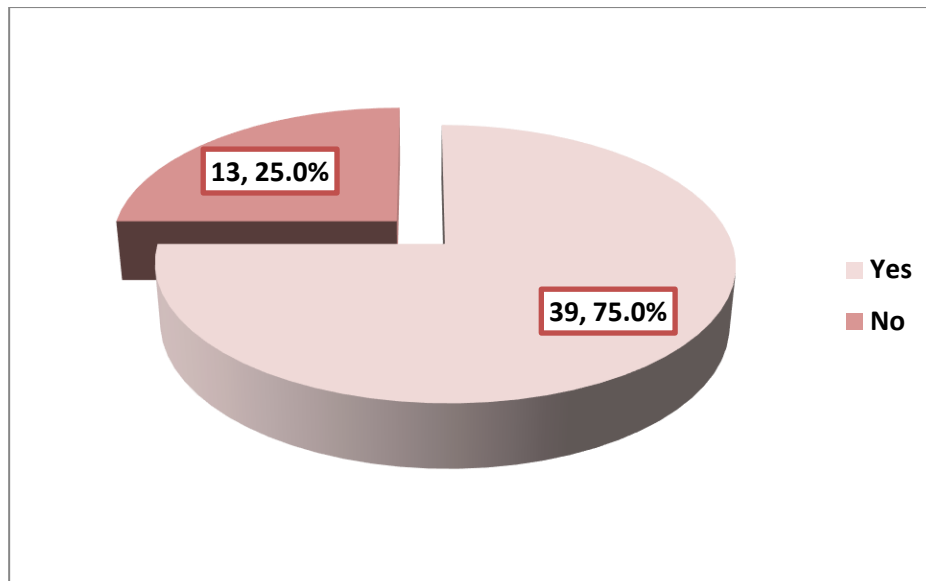


Figure 10: History of re-smoking after successful cessation among the participants

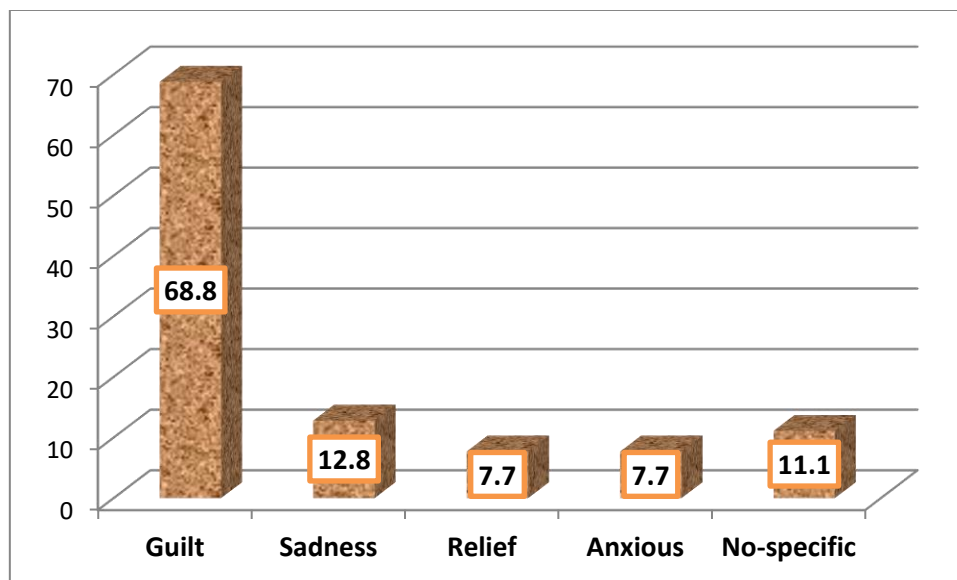


Figure 11: Feeling of re-smoking after cessation among the participants (n=39)

Factors associated with successful smoking cessation

-Socio-demographic factors

As shown in Table 3, none of the studied socio-demographic factors (age, gender, marital status, educational level, job status and income) was significantly associated with successful smoking cessation.

-Medical history-related factors

Similarly, none of the studied factors-related to medical history (history of chronic diseases, History of hospital visits because of heart problems, History of difficulty in respiration and self description of the health status) was significantly associated with successful smoking cessation. Table 4

-Smoking history-related factors

As regards the smoking history, the only significant factor with successful smoking cessation was the duration of treatment as 58.3% of participants who were treated for more than one month compared to 23.1% of those treated for a week and 5.6% of never treated participants expressed successful smoking cessation, $p < 0.001$. Other studied smoking-related factors (age at start of smoking, type of smoking, number of cigarettes smoked per day, living with smoker, smoking during a disease, number of smoking cessation clinic visits and pharmacological intervention) were not significantly associated with successful smoking cessation as illustrated in Table 5.

Table 3: Socio-demographic factors associated with smoking cessation

	Successful smoking cessation		p-value
	No N=117 N (%)	Yes N=52 N (%)	
Sex			
Male (n=163)	113 (69.3)	50 (30.7)	0.600**
Female (n=6)	4 (66.7)	2 (33.3)	
Marital status			
Single (n=49)	36 (73.5)	13 (26.5)	0.475*
Married (n=114)	78 (68.4)	36 (31.6)	
Divorced (n=6)	3 (50.0)	3 (50.0)	
Educational level			
Below secondary (n=7)	2 (28.6)	5 (71.4)	0.092*
Secondary (n=49)	34 (69.4)	15 (30.6)	
University (n=106)	75 (70.8)	31 (29.2)	
Postgraduate (n=7)	6 (85.7)	1 (14.3)	
Job status			
Not working (n=6)	2 (33.3)	4 (66.7)	0.101*
Employee (n=145)	103 (71.0)	42 (29.0)	
Student (n=13)	10 (76.9)	3 (23.1)	
Retired (n=5)	2 (40.0)	3 (60.0)	
Income (SR/month) (n=164)			
≤3000 (n=8)	7 (87.5)	1 (12.5)	0.262*
3001-6000 (n=29)	22 (75.9)	7 (24.1)	
6001-10000 (n=62)	45 (72.6)	17 (27.4)	
>10000 (n=65)	40 (61.5)	25 (38.5)	
Age			
Mean±SD	33.4±8.2	34.2±8.1	0.549‡

* Pearson`s Chi-square ** Fischer exact

‡ Student`s t-test

Table 4: Association between medical history of the participants and success of smoking cessation trials

	Successful smoking cessation		p-value
	No N=117 N (%)	Yes N=52 N (%)	
History of chronic diseases			
No (n=149)	103 (69.1)	46 (30.9)	0.937*
Yes (n=20)	14 (70.0)	6 (30.0)	
History of hospital visits because of heart problems			
No (n=161)	112 (69.6)	49 (30.4)	0.469**
Yes (n=8)	5 (62.5)	3 (37.5)	
History of difficulty in respiration			
No (n=137)	96 (70.1)	41 (29.9)	0.624*
Yes (n=32)	21 (65.6)	11 (34.4)	
Self description of the health status			
Fair (n=4)	2 (50.0)	2 (50.0)	0.455*
Very good (n=51)	33 (64.7)	18 (35.3)	
Excellent (n=114)	82 (71.9)	32 (28.1)	

* Pearson`s Chi-square ** Fischer exact

Table 5: Association between smoking history of the participants and success of smoking cessation trials

	Successful smoking cessation		p-value
	No N=117 N (%)	Yes N=52 N (%)	
Age at starting smoking (years)			
<18 (n=87)	60 (69.0)	27 (31.0)	0.585*
18-20 (n=60)	44 (73.3)	16 (26.7)	
>20 (n=21)	12 (57.1)	9 (42.9)	
Type of smoking			
Cigarettes (n=155)	107 (69.0)	48 (31.0)	0.649*
Moassel (n=7)	4 (57.1)	3 (42.9)	
Water pipes (n=2)	2 (100)	0 (0.0)	
Cigarettes and others (n=5)	4 (80.0)	1 (20.0)	
Number of cigarettes smoked/ day (n=160)			
≤10 (n=21)			0.369*
11-20 (n=77)	14 (66.7)	7 (33.3)	
>20 (n=62)	50 (64.9)	27 (35.1)	
	47 (75.8)	15 (24.2)	
Living with smoker			
No (n=119)	83 (69.7)	36 (30.3)	0.822*
Yes (n=50)	34 (68.0)	16 (32.0)	
Smoking during a disease (n=166)			
No (n=77)	50 (64.9)	27 (35.1)	0.334*
Yes (n=89)	64 (71.9)	25 (28.1)	
Number of smoking cessation clinic visits			
Once (n=105)			0.366*
Twice (n=45)	72 (68.6)	33 (31.4)	
Three times/more (n=19)	34 (75.6)	11 (24.4)	
	11 (57.9)	8 (42.1)	
Pharmacological intervention			
Varenicline tablets alone (n=124)	84 (67.7)	40 (32.3)	0.317*
Nicotine substitutes (n=23)	15 (65.2)	8 (34.8)	
Behavioral therapy (n=7)	7 (100)	0 (0.0)	
Varenicline tablets with others (n=15)	11 (73.3)	4 (26.7)	
Duration of treatment			
Never (n=18)	17 (94.4)	1 (5.6)	<0.001
Week (n=91)	70 (76.9)	21 (23.1)	
Month (n=48)	25 (52.1)	23 (47.9)	
>month (n=12)	5 (41.7)	7 (58.3)	

* Pearson's Chi-square ** Fischer exact

DISCUSSION:

Smoking is the most modifiable risk factor that increases death rates worldwide.⁽⁹⁾ However, it is a difficult habit to stop due to an addictive property of cigarette contents such as nicotine and other biogenic amines that release dopamine and other neurotransmitters inside the humans body which improve attention, working memory, pleasure and mood enhancement.^(10, 11) When the level of these substances declines, withdrawal symptoms were developed in the form of negative impacts on different cognitive functions.^(10, 12)

Unfortunately, the majority of smoking cessation attempts fail within a year after their quit attempt.⁽¹³⁾ Therefore, many countries, including KSA offering services to improve the success of smoking cessation trials. It has been documented

that these smoking cessation services significantly increase success rates.⁽¹⁴⁾ However, it was noted that success rates were somewhat less than would be expected.⁽¹⁵⁾ The present study aimed to estimate the success rate of smoking cessation and the factors associated with it in the Ministry of health smoking cessation program in Jeddah.

In the present study, the age at starting smoking ranged between 8 and 35 years with a mean±SD of 17.7±3.8 years. In a study carried out in Jazan, 65.7% of smokers had smoked at less than 18 years of age.⁽⁵⁾ Smoking at the earlier age reduces the possibility of success in smoking cessation future trials.⁽¹³⁾

Successful cessation of smoking was found among 30.8% of the respondents in the present study. The higher rate was reported in a study carried out in

France (53.7%).⁽³⁾ However, we cannot compare both rates as a result of using different definitions of success rate as in a study carried out in France, they depended on patients' declarations and the measurement of carbon monoxide level in exhaled gases 6 months after cessation while in the present study we depended on cessation for at least 6 months, according to the Saudi guideline for smoking cessation services.⁽⁸⁾

In the present study, no gender difference was observed concerning the successfulness of smoking cessation. The same has been reported by others.^(3, 16) In the present study, the great majority of participants were males, therefore, comparison of success rate according to gender is difficult, from the statistical point of view.

Older age was proved in some studies as a significant positive factor of successful smoking cessation.^(3, 17, 18) They attributed this to more experience with the adverse effects of smoking. However, in the present study, age was not a significant predictor for successful smoking cessation.

In the present study, smoking-related health problems such as the history of hospital visits because of heart problems or history of difficulty in respiration were not related to the success of smoking cessation. The same has been observed in other international studies.^(19, 20) Even, some studies observed an association between smoking-related diseases and failure in smoking cessation.^(3, 21) However, some other studies found an association between history of smoking-related cancer and success in smoking cessation.⁽²²⁻²⁵⁾ In the present study, we included only smoking-related heart and respiratory diseases and furthermore, it is hypothesized that already the presence of smoking-related diseases reduced the success rate of cessation because of reduction of efficacy of cognitive behavioral therapy.⁽³⁾

As regards the history of smoking-related factors, various studies reported several smoking history-related factors to be associated with success in smoking cessation including an average number of cigarettes smoked/day, age at starting smoking, duration of smoking, long periods without smoking (≥ 6 months), and level of dependence.^(3, 5, 26-30) However, in the present study, none of these factors was associated with smoking cessation success.

Investigating the reasons for re-smoking after cessation in the present study revealed that psychological reasons ranked first, followed by social reasons. Therefore, psychological preparation of before beginning the cessation is very important.⁽³⁾

In the current survey, Varenicline was the most frequently reported therapy taken at the smoking cessation clinic, followed by nicotine substitutes whereas behavioral therapy was given to only 4.7% of the participants. However, the type of treatment was not associated with smoking cessation success while its long duration was a significant predictor of successful smoking cessation trials in the present study. This finding also confirms the importance of psychological preparation before starting smoking cessation.

In the present study, although not significant, smokers who attended smoking cessation clinics more frequently had the highest success rate of cessation. It has been documented that the intention to quit with more past attempts is a significant predictor of smoking cessation.⁽³¹⁾ Furthermore, Al-Zalabani et al reported that effective and focused health education about the dangerous of smoking and ban smoking in public places could help initiation of the intention to quit among youth smokers.⁽²⁾

Limitations of the study included its cross-sectional design with its disadvantage in the temporal relationship between exposure and outcome. Also, its conduction in one center could limit the generalizability of results. Despite those limitations, the study investigated an important public health problem in the Kingdom and the results could be of help to decision-makers.

CONCLUSION:

A considerable proportion of smokers attending the smoking cessation clinic, Ministry of Health primary health care centers in Jeddah had a successive smoking cessation. Those treated for a period exceeded one month, regardless of the type of treatment were more likely to succeed in smoking cessation. History of re-smoking after successful smoking cessation was mentioned by most of the participants who successes to stop smoking with a common feeling of guilt among most of them. The reasons of re-smoking after cessation in the present study revealed that psychological reasons ranked first, followed by social reasons.

Recommendations:

The following are recommended:

1. Improving awareness and adherence of healthcare workers regarding the importance of national guideline is highly recommended to achieve a successful smoking cessation process.
2. Physicians should play an active role in encouraging smokers to attend smoking cessation clinics.

3. Smokers who want to stop smoking should be informed to adhere to the complete course of therapy
4. Encourage attendees of smoking cessation clinics to complete the provided treatment course and finding ways to follow those who did not comply with the treatment course
5. Psychological sessions should be organized and implemented for smokers at smoking cessation clinics to help them to main the smoking cessation status.
6. Further larger research is recommended to have a more clear profile of the situation in Jeddah and identifying barriers of attending smoking cessation clinics among smokers.

ACKNOWLEDGMENTS:

Before all and foremost I must thank Allah, the great almighty, the most merciful for giving me the patience and capability to complete this study. I would express my sincere gratitude and great appreciation to the supervisor Dr. Yusuf Al-Harbi, Family Medicine consultant for his sustainment help and making himself available for expert advice during this study, and who had taught me many great values in my life with positives lessons. Also, thanks to Dr. Najat Islami as co-author who helped with the research and being active for sharing the information regarding the study Special thanks go to directors of the involved primary healthcare centers for facilitating the field part of this study.

Finally, I'm grateful to all participants in the study for their cooperation and to my family members for their support.

List of abbreviation:

KSA: THE KINGDOM OF SAUDI ARABIA.

PHC: Primary Health Care.

TCP: Tobacco Cessation Program.

MOH: ministry of health.

SPSS: Statistical Package for the Social Sciences.

O Ra: Odds ratio adjusted

E. FORMES: Electronic Forms.

REFERENCES:

1. Smoking cessation - Definition [Internet]. [cited 2017 Nov 15]. Available from: <http://health.ccm.net/faq/2261-smoking-cessation-definition>
2. Al-Zalabani AH, Abdallah AR, Alqabshawi RI. Intention to Quit Smoking among Intermediate and Secondary School Students in Saudi Arabia. *Asian Pac J Cancer Prev* [Internet]. 2015 [cited 2017 Nov 11];16(15):6741–7. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26434904>
3. Joly B, Perriot J, d'Athis P, Chazard E, Brousse G, Quantin C. Success rates in smoking cessation: Psychological preparation plays a critical role and interacts with other factors such as psychoactive substances. Pershouse MA, editor. *PLoS One* [Internet]. 2017 Oct 11 [cited 2017 Nov 11];12(10):e0184800. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/29020085>
4. Brose LS, West R, Michie S, McEwen A. Changes in success rates of smoking cessation treatment associated with take up of a national evidencebased training programme. *Prev Med (Baltim)* [Internet]. 2014 Dec [cited 2017 Nov 11];69:1–4. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25152508>
5. Abdelwahab SI, El-Setohy M, Alsharqi A, Elsanosy R, Mohammed UY. Patterns of Use, Cessation Behavior and Socio-Demographic Factors Associated with Smoking in Saudi Arabia: a Cross- Sectional Multi-Step Study. *Asian Pac J Cancer Prev* [Internet]. 2016 [cited 2017 Nov 12];17(2):655–60. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26925659>
6. Gaikwad R, Bhowate R, Bajad P, Gadail AR, Gondivkar S, Sarode SC, et al. Potential Predictor of Tobacco Cessation among Factory Workers: A Baseline Data of Worksite Tobacco Cessation Programs in the Central Part of India. *J Contemp Dent Pract*. 2017 Nov 1;18(11):1071-1077.
7. مدينة جدة [Internet]. [cited 2017 Nov 15]. Available from: <http://www.jed.gov.sa/Arabic/Pages/aboutjeddah.aspx>
8. Saudi guideline for smoking cessation services, Ministry of Health-Assistant Deputy Ministry for Preventive Medicine, Tobacco Control program (2011-1433 H). Available at: <https://www.tcp-sa.org>
9. Danaei G, Ding EL, Mozaffarian D, Taylor B, Rehm J, Murray CJ, et al. The preventable causes of death in the United States: Comparative risk assessment of dietary, lifestyle, and metabolic risk factors. *PLoS Med*. 2009; 6:e1000058.
10. Benowitz NL. Nicotine addiction. *N Engl J Med*. 2010; 362:2295-303.
11. Herman AI, Sofuoglu M. Cognitive effects of nicotine: Genetic moderators. *Addict Biol*. 2010; 15:250–65.
12. McLaughlin I, Dani JA, De Biasi M. Nicotine withdrawal. *Curr Top Behav Neurosci*. 2015; 24:99–123.
13. Hughes JR, Keely J, Naud S. Shape of the relapse curve and long-term abstinence among untreated smokers. *Addiction*. 2004; 99: 29-38.

14. West R, May S, West M, Croghan E, McEwen A. Performance of English stop smoking services in first 10 years: analysis of service monitoring data. *BMJ*. 2013; 347: f4921
doi: 10.1136/bmj.f4921.
15. West R., Zatonski W., Przewozniak K., Jarvis M.J. Can we trust national smoking prevalence figures? Discrepancies between biochemically assessed and self-reported smoking rates in three countries. *Cancer Epidemiol Biomarkers Prev*. 2007; 16(4):820–822.
16. Hall SM, Shi Y, Humfleet GL, Muñoz RF, Reus VI, Prochaska JJ. Smoking cessation abstinence goal in treatment-seeking smokers. *Addict Behav*. mars 2015; 42:148±53.
<https://doi.org/10.1016/j.addbeh.2014.11.012>
17. Abdullah AS, Driezen P, Quah ACK, Nargis N, Fong GT. Predictors of smoking cessation behavior among Bangladeshi adults: findings from ITC Bangladesh survey. *Tob Induc Dis*. 2015; 13(1):23.
<https://doi.org/10.1186/s12971-015-0050-y>
PMID: 26261450
18. Stolz D, Scherr A, Seiffert B, Kuster M, Meyer A, Fagerstroëm K-O, et al. Predictors of success for smoking cessation at the workplace: a longitudinal study. *Respir Int Rev Thorac Dis*. 2014; 87(1):18±25.
19. Nayan S, Gupta MK, Strychowsky JE, Sommer DD. Smoking cessation interventions and cessation rates in the oncology population: an updated systematic review and meta-analysis. *OtolaryngolÐHead Neck Surg Off J Am Acad Otolaryngol-Head Neck Surg*. aouÃ t 2013; 149(2):200-11.
20. Karam-Hage M, Cinciripini PM, Gritz ER. Tobacco use and cessation for cancer survivors: an overview for clinicians. *CA Cancer J Clin*. 2014 Jul-Aug;64(4):272-90.
doi: 10.3322/caac.21231.
21. Azevedo RCS de, Fernandes RF. Factors relating to failure to quit smoking: a prospective cohort study. *Sao Paulo Med J Rev Paul Med*. deÃc 2011; 129(6):380-6.
22. Gritz ER, Nisenbaum R, Elashoff RE, Holmes EC. Smoking behavior following diagnosis in patients with stage I non-small cell lung cancer. *Cancer Causes Control CCC*. mars 1991; 2(2):105-12. PMID: 1651777
23. Ostroff JS, Jacobsen PB, Moadel AB, Spiro RH, Shah JP, Strong EW, et al. Prevalence and predictors of continued tobacco use after treatment of patients with head and neck cancer. *Cancer*. 15 janv 1995; 75(2):569-76. PMID: 7812925
24. Ostroff J, Garland J, Moadel A, Fleshner N, Hay J, Cramer L, et al. Cigarette smoking patterns in patients after treatment of bladder cancer. *J Cancer Educ Off J Am Assoc Cancer Educ*. 2000; 15 (2):86-90.
25. Sanderson Cox L, Patten CA, Ebbert JO, Drews AA, Croghan GA, Clark MM, et al. Tobacco use outcomes among patients with lung cancer treated for nicotine dependence. *J Clin Oncol Off J Am Soc Clin Oncol*. 15 aouÃ t 2002; 20(16):3461-9.
26. Expertise collective: Tabac. Comprendre pour agir. INSERM; 2001.
27. Nicotine et troubles neuropsychiatriquesÐHenri-Jean Aubin, Collectif [Internet]. [citeÃ 19 oct 2016]. Disponiblesur:
<http://www.decitre.fr/livres/nicotine-et-troublesneuop-sychiatriq-ues-9782225854934.html>
28. Arrêt du tabac chez les patients atteints d'affections psychiatriques. ConfeÂrence d'experts. Paris: OFT, 2009.
29. GILLET C. Quelle deÂmarche de soins et d'accompagnement? Tabac, alcool et cannabis. *Alcoologie Addictologie*. DeÃcembre 2007;(Tome 29, n4):390-7.
30. TraiteÂ d'addictologie (2 d.) REYNAUD Michel, KARILA Laurent, AUBIN Henri-Jean, BENYAMINA Amine [Internet]. Librairie Lavoisier. [citeÃ 19 oct 2016]. Disponible sur:
<http://www.lavoisier.fr/livre/medecine/traite-d-addictologie-2-ed/reynaud/descriptif-9782257206503>
31. Woodruff SI, Joann L, Conway TL. Smoking and quitting history correlates of readiness to quit in multiethnic adolescents. *Am J Health Behav* 2006; 30: 663-74.