Original Article

Smoking re-initiation after cessation program: Comparison of associated factors between young and older adults

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Abstract

Objective: To evaluate the associated factors in reinitiating the smoking habit among the participants of a smoking cessation program conducted in a tobacco cessation clinic of Manipal University, Manipal. **Materials and Methods:** This cross-sectional study was conducted among participants of a smoking cessation program who reinitiated smoking habit. A self-administered questionnaire was used that had information on demographic, habit history, knowledge on harmful effects of smoking behavior related to oral cavity and associated factors due to which individual was unable to quit the habit. **Results:** A total of 102 males (mean age = 39.91 ± 9.57) constituted the final sample. The results showed that habitual smokers were more likely to be ≥40 years and occasional smokers were all reported to be <93 years ($P < 0.001$). Cigarette smokers were more likely to be of younger age group while majority of the Beedi and cigarette + Beedi smokers were older adults ($P < 0.001$). The mean duration of the habit was significantly higher for older adults than young adults ($P < 0.001$). There was no significant difference in the number of packs between the age groups ($P = 0.054$). A significantly higher proportion of young adults than older adults were aware about oral cancer ($P < 0.001$). Significantly higher proportion of older adults than young adults tend to have a closest person to be a smoker ($P = 0.05$). A significant higher proportion of young adults reason their habit as for pleasure (84.6%) and relaxation (68.8%), while older adults reason it to be as tension (64.1%) or combined factors (70.6%). Peer pressure was almost same in both the age groups ($P = 0.006$). There were no significant differences in the withdrawal symptoms among young and older adults ($P = 0.41$). **Conclusion:** Considerable differences were noticed between younger and older age groups in the factors which might play a role in re-intiating the smoking habit. A structured cessation program focused more on the above characteristics should be planned in public health programs based on the characteristics of the participants.

Key words: Cessation, India, nicotine replacement therapies, re-initiation, smoking

INTRODUCTION

Cigarette smoking, hereafter referred to as "smoking," is the largest single risk factor for premature death. According to the World Health Organization about half of smokers will die of a tobacco-related disease as morbidity.[1] People who have experienced social and economic disadvantages during childhood, adolescence and adult life may run the greatest risk of becoming addicted to nicotine and smoking. Reasons for smoking initiation differ across cultures but certain factors have an established association with smoking. Parental, sibling, and friend smoking all have been shown to be strongly associated with an individual's smoking status.[2-9] Low academic achievement as well as low socioeconomic status are also associated with smoking status.[4,8,10,11]

Tobacco consumption has been linked to the increased prevalence of illness and therefore responsible for the resulting economic and social burden. Nonetheless, the preventability of smoking gives scope for public health

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interventions. Smoking cessation programs include the use of Nicotine Replacement Therapies (NRTs), counseling, medications (Bupropion), or a combination of the above methods to counteract the withdrawal symptoms encountered during the cessation period. While smokers (aged 18-24) do try to quit smoking, only 1 in 10 have tried using medications that have been developed specifically.[12] However, many smokers do not understand how to use these products correctly or they do not know just how effective they can be in helping you quit.

Rates of successful quitting can differ between age groups because of differences in the proportion of smokers who try to quit, or because of differences in success rates among those who try.[13] There is evidence that changes in the social norms surrounding smoking can lead to changes in the proportion of smokers who try to quit and that these norms can be influenced by tobacco-related news coverage[14] and mass media advertising campaigns.[15]

A recent meta-analysis on the effectiveness of smoking cessation therapies confirm the effectiveness of two established pharmacological therapies, NRT and bupropion, to improve cessation rates.[16] Also, it highlighted the effectiveness of newer drug varenicline. Studies exist in the literature about the predictors of participation in smoking cessation program[17] and effectiveness of such programs.[18] However, the literature is seemingly scant in evaluating the factors that might be associated with reinitiation of the smoking habit following a smoking cessation program. Hence, our study aimed to evaluate the associated factors in with reinitiation of smoking habit among the participants of a smoking cessation program conducted in a tobacco cessation clinic of Manipal University, Manipal.

MATERIALS AND METHODS

This cross-sectional study was conducted from June to December 2011 (6 months) among adults who participated in a smoking cessation program organized by Kasturba hospital, Manipal University, Manipal, south India. This hospital conducts organized smoking cessation program in a tobacco cell on every Wednesday. Activities in this tobacco cell include individual counseling, NRT, Pharmacotherapy and recall for follow-up. Individuals who have the habit of smoking and other tobacco dependence were referred to tobacco cell from other out-patient departments of the hospital. Such individuals were followed up for a period of 1 year to evaluate their smoking cessation behavior. Only individuals who had habit of smoking tobacco in the form of cigarette or beedi were included in the study. Subjects with multiple habit histories were not included in the study. An individual is considered to be successful in quitting the habit if he was not under NRT or medications and have not smoked for 2 weeks even after stopping of above therapies. If the patient failed to comply with the above working definition, then the individual was approached with a structured self-administered questionnaire. Occasional smokers were defined as subjects who smoked more than once in the 30 days prior to the survey but did not smoke everyday or almost daily. Regular smokers were defined as individuals who smoked everyday or almost daily in the 30 days prior to the survey. The questionnaire consisted demographic and habit information like age, gender, habitual/occasional smoker, type of tobacco (cigarette/beedi/combination), duration of habit, and average number of packs (10 nos). This was followed by information on knowledge on harmful effects of smoking behavior, associated factors due to which unable to quit the habit. The study was approved by the University Ethics Committee, Manipal University, Manipal. Informed consent was obtained from all the individuals before participating in the study.

Statistical analysis

Data were analyzed using PASW version 18. Chi-square and independent sample *t*-test was used to evaluate significant difference between age groups. A *P* value of <0.05 was considered to be statistically significant. The participants were categorized into young and elderly adults based on median split procedure (Median age was 40 years).

RESULTS

A total of 102 male subjects constituted the final sample with mean age of 39.91 ± 9.57 (22-59 years). Smoking-related behavior was compared with age groups of the study participants. The results showed that habitual smokers were more likely to be ≥40 years and occasional smokers were all reported to be <39 years ($P < 0.001$). Cigarette smokers were more likely to be of younger age group (61.5%) while majority of the Beedi (83.3%) and cigarette + Beedi (94.4%) smokers were older adults ($P < 0.001$). The mean duration of the habit was significantly higher for older adults than young adults ($P < 0.001$). There was no significant difference in the number of packs between the age groups ($P = 0.054$) [Table 1].

There was no significant difference in self-reported oral changes and age groups ($P = 0.56$). A significantly higher proportion of young adults (55.8%) than older adults (44.2%) ($P < 0.001$) were aware about oral cancer. There was no significant difference in the awareness of passive smoking between young and older adults ($P = 0.994$) [Table 2].

Significantly higher proportion of older adults (54.4%) than young adults tend to have a closest person to be a smoker ($P = 0.05$). A significant higher proportion of young adults reason their habit as for pleasure (84.6%) and relaxation (68.8%), while older adults reason it to be as tension (64.1%) or combined factors (70.6%). Peer pressure was almost same in both the age groups ($P = 0.006$). A higher proportion of young adults tend to use patch and medication than older adults. A higher proportion of elderly adults preferred nothing to quit than younger adults ($P = 0.002$). There were no significant changes in the proportion of withdrawal symptoms among young and older adults ($P = 0.41$) [Table 3].

A significantly high proportion of the young adults (62.2%) than older adults (41.5%) knew somebody who used antismoking/cessation aids. A significantly high proportion of young adults (65.7%) had longest tobacco free time as up to 6 months while more elderly adults had longest tobacco free period as up to 7-12 months or >1 year ($P < 0.001$). Majority of young adult's reported "tension" (88.2%) and "friends (peer pressure)" (81.8%) as predominant factors for re-initiation of smoking behavior while, almost half of the older adults report that they restart the habit because of craving (51.9%) ($P < 0.001$). Majority of the young adults (88.2%) quit the habit only once before while elderly adults has quit the habit more than once ($P < 0.001$). The distribution of interest in cessation of smoking was not significantly different between either of the age groups ($P = 0.286$). Almost 2/3rd of the young adults reason to stop smoking to quit smoking while 2/3rd of elderly adults reason it for good health ($P = 0.003$). With respect to confidence in quitting smoking, there was no significant difference between the young and older adults ($P = 0.413$) [Table 4].

Table 1: Comparison of smoking behavior between the age groups

Smoking behavior	Age group				*P* value
	<39		≥40		
	N	%	*N*	%	
Habit†					
Habitual	35	40.2	52	59.8	<0.001
Occasional	15	100	0%	0	
Type†					
Cigarette	48	61.5	30	38.5	<0.001
Beedi	1	16.7	4	83.3	
Cigarette+Beedi	1	5.6	17	94.4	
Duration‡					
Years	7.1	3.42	17.27	5.6	<0.001
Packs†					
1	30	61.2	19	38.8	0.054
2	6	33.3	12	66.7	
3	14	40.0	21	60	

†Chi-square test, ‡Independent sample *t*-test

DISCUSSION

Our study reported the characteristics and behavior of smokers who failed to quit the habit after participation in smoking cessation program. Previously many studies reported the success and efficiency of such programs.[18,19] The factors that are responsible for the failure of an individual in cessation of smoking were not reported previously. Mc Govern *et al.*,[17] examined the smoking cessation program participation among young adult smokers while Tucker *et al.*,[20] reported that race is the strongest demographic predictor of quitting behavior among young adults.

Our study reported elderly adults were more habitual, beedi and/cigarette + beedi smokers, with two or more packs of smoking along with a longer duration of the habit than the younger adults. Also elderly persons were more likely to have a closet person to be a smoker and they often smoked for reasons such as tension and other combined factors. Elderly adults unlike young adults would have started the smoking habit during their young age. Because of which they tend to have a long duration of habit, which eventually make them habitual. Due to this long standing habit the number of packs would also be more among the elderly adults. These behavioral characteristics in elderly adults need to be considered in particular when planning a cessation program in older adults.

Majority of the young adults were aware about the ill-effects of smoking while no difference was seen with respect to "noticed oral changes" and "awareness of passive smoking" in young and elderly adults. This might be due to increased awareness due to mass campaigns in young adults through the display of ill effects on cigarette packs and public display and advertisements in theatres about various cessation aids. The question relating to "noticed oral changes" was meant to evaluate self-perceived

Table 2: Comparison of knowledge about the effects of smoking between the age groups

Knowledge (effects of smoking)	Age group				*P* value
	<39		≥40		
	N	%	*N*	%	
Noticed oral changes					
Yes	25	52.1	23	47.9	0.56
No	25	46.3	29	53.7	
Aware of oral cancer					
Yes	48	55.8	38	44.2	<0.001
No	2	12.5	14	87.5	
Aware of passive smoking					
Yes	24	49.0	25	51.0	0.994
No	26	49.1	27	50.9	

Chi-square test

Table 3: Comparison of factors due to which individual was unable to quit between the two age groups

factors (unable to quit)	Age group				*P* value
	<39		≥40		
	N	%	*N*	%	
Person closest smoke					
Yes	41	45.6	49	54.4	0.05
No	9	75.0	3	25.0	
Withdrawal symptoms					
Irritability	14	43.8	18	56.3	0.41
Lack of energy	3	27.3	8	72.7	
Craving	23	59.0	16	41.0	
Tremors	1	50.0	1	50.0	
Shortness of breath	0	0.0	1	100.0	
Combined	9	52.9	8	47.1	
Reason					
Pleasure	11	84.6	2	15.4	0.006
Relaxation	11	68.8	5	31.3	
Tension	14	35.9	25	64.1	
Peer pressure	9	52.9	8	47.1	
All	5	29.4	12	70.6	
Method used to quit					
Patch/gum	2	66.7	1	33.3	0.002
Drug	16	84.2	3	15.8	
Nothing	32	40.0	48	60.0	

Chi-square test

premalignant changes due to tobacco use. Although there was no significant difference, almost half of the study participants had noticed some changes in their oral cavity.

A higher proportion of older adults had person closest as a smoker that might have influenced the smoking re-initiation behavior. The reasons for not able to quit like "pleasure," "relaxation," and "peer pressure." "Tension" as reason for unable to quit was reported more often in elderly adults.

A significant higher proportion of young adults knew someone who used antismoking aids and reason their smoking re-initiation due to "cravings" and peer pressure while older adults stayed longer duration's tobacco free and reason their re-initiation behavior due to tension. This could be due to higher proportion of elderly adults who reported tension as reason for unable to quit. Although there was no significant difference in withdrawal symptoms in young and elderly adults, young adults used more often patch or medication to overcome the cravings. Hence, in planning a cessation program for smokers, older adults should be targeted with respect to the ill-effects of smoking and the benefits of cessation aids to overcome smoking habit.

Nicotene gum/patch was the least commonly used modality among the participants of our study. Majority of the participants did not use any modality for cessation. Only few participants used drug (Buprorpion) for cessation. Majority of the young adults used primarily the help of

Table 4: Comparison of smoking cessation behavior between the age groups

Smoking cessation behavior	Age group				*P* value
	<39		≥40		
	N	%	*N*	%	
Know anyone used anti-smoking aids					
Yes	23	62.2	14	37.8	0.045
No	27	41.5	38	58.5	
Longest time tobacco free					
1-6 months	44	65.7	23	34.3	<0.001
7-12 months	4	16.7	20	83.3	
>1 year	2	18.2	9	81.8	
Reason to restart smoking					
Tension	19	35.8	34	64.2	<0.001
Craving	13	48.1	14	51.9	
Friends	18	81.8	4	18.2	
Times tried to quit smoking					
1	30	88.2	4	11.8	<0.001
2	11	35.5	20	64.5	
3	9	24.3	28	75.7	
Interest in stopping smoking					
Not at all	2	100.0	0	0.0	0.286
A little	3	75.0	1	25.0	
Some what	26	50.0	26	50.0	
Yes	19	43.2	25	56.8	
Very much	0	0.0	0	0.0	
Reason to quit smoking					
Good health	22	36.7	38	63.3	0.003
Quit habit	28	66.7	14	33.3	
Confidence to quit smoking					
Not at all	1	100.0	0	0.0	0.413
A bit confident	7	41.2	10	58.8	
Somewhat confident	21	56.8	16	43.2	
Confident	20	43.5	26	56.5	
Very confident	1	100.0	0	0.0	

Chi-square test

drugs like Buproprion whereas older adults preferred nothing for cessation therapy. The reason for not preferring any type of modality could not be elaborated within the limits of the study but we could not rule out the economic implications in the cessation therapy.

Considering the above factors of our study, we conclude that smoking cessation program should be individually tailored although might not be possible in all the circumstances. Hence, a structured program focusing more on the above characteristics could be planned in public health programs based on the characteristics of the participants. Cessation program should include the five-step process that includes: (1) Asking every patient about tobacco use; (2) advising all smokers to quit; (3) assessing smokers' willingness to make a quit-attempt; (4) assisting smokers with treatment and referrals; and (5) arranging follow-up contacts. Considering some of the drawbacks of the nicotine gums such as peppery taste, GI disturbances etc., pharmacological treatment would also be a suitable alternative to improve the cessation rates. The factors that were shown to be significant between the

young and older adults could also be used as additional leverage in successful smoking cessation. Awareness about oral cancer was low in older than young adults. Making the older adults aware about the ill-effects might be effective in smoking cessation. Similarly majority of them did not use any kind of treatment modality for cessation. NRT and pharmacological management among these participants would be helpful in smoking cessation.

The sample size of our study was small that limits its generalizability but nevertheless this study can be conceptualized as a pilot study. Another limitation of the study was that the participants constituted only males. In India, smoking is common in men and women smoking is not an accepted social behavior. Because of this, females more often resort to habits that include smokeless tobacco and chewing areca nut. Also, the participation of females in tobacco cessation program was very low and during this study period we could not enroll any participant that satisfied the inclusion criteria.

Future research will be needed to replicate these findings and evaluate potential interactions of these variables. It is worthwhile to mention that our study could have been affected by social desirability and recall bias. Although the study participants are only from single center, our study shed some light on the role of socio-behavioral characteristics in successful smoking cessation. Further studies are needed to evaluate the role of these factors in successful smoking cessation and self-reported questions should be validated with serum and urinary nicotine and cotinine.

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