An Analysis on Failure Reasons of Quit Smoking Among Smokers in Beijing Communities—based on a cross sectional study

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Research article

Keywords: Attempt to quit smoking, Failure to quit smoking, Correspondence analysis

Posted Date: September 28th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-74851/v1>

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Abstract

Objective To understand the reasons for failure of smoking cessation among community smokers in Beijing, and analyze the influencing factors of the reasons for failure to quit, in order to provide a reference for providing smoking cessation guidance services.

Method Based on a cross-sectional study, a one-to-one questionnaire was used. The survey included basic demographic information, tobacco use, and past attempts to quit. And descriptive analysis was used to analyze the distribution of the reasons for the failure of smoking cessation. χ^2 test or Fisher's exact probability method were used to analyze the causes of smoking cessation failure, demographic indicators, tobacco use and other factors. Correspondence analysis was used to further explore the relationship between each factor and the reasons for smoking cessation failure.

Result A total of 442 smokers who had tried to quit smoking were investigated. The top three reasons for failure to quit were difficulty in controlling addiction, insufficient self-willingness (54.3%), the effects of other smokers(35.3%), and lack of smoke-free support environment(26.0%). There were statistically significant differences in the distribution of the reasons for failure of smoking cessation among different ages, occupations, and discomforts during smoking cessation(All $P < 0.05$). Correspondence analysis results show that the reasons for failure of smoking cessation among smokers aged 19-30 are mainly work or study stress. There are differences in the reasons why smokers in different occupations fail to quit smoking; The influence of other smokers and the lack of a smoke-free support environment are closely related to the desire to quit during the process of quitting.

Conclusion Work or study pressure, the influence of other smokers and the lack of smoke-free support environment are the main reasons for the failure of smoking cessation attempts. Therefore, it is suggested to strengthen education in different occupational places and implement personalized smoking cessation education. It is recommended to provide tips on coping with smoking cessation and alleviating peer pressure in social situations, as well as help for stress coping and negative emotion relief in smoking cessation guidance. At the same time, it is essential to strengthen the shaping of a smoke-free support environment.

Introduction

With the implementation of tobacco control policies and increasing publicity year by year, smokers have learned more and more information and knowledge about the harm of smoking through various channels. More and more smokers have also developed a willingness to quit smoking and started trying to quit smoking, but smoke quitting is a complicated and high failure rate process. The "2018 Chinese Adult Tobacco Survey Results" showed that public awareness of the dangers of smoking has improved, but the rate of smoking cessation among adults has not changed significantly. The smoking cessation rate among people aged 15 and over in China is 20.1%, and the daily smokers' cessation rate is only 15.6%^[1]. Many smokers have tried to quit smoking multiple times, but eventually relapsed due to various

reasons such as social stress or smoking cravings. It is important to understand the reasons that affect smokers' failure to quit, which will help them be more targeted in providing quit guidance services in the future.

Previous studies have focused on the average smoker's attempts to quit, but there has been a lack of research on smokers who have a clear intention to quit and 16.1% of smokers plan to quit smoking in the next 12 months^[1]. This means that there is currently a demand for smoking cessation services. But how can we help smokers quit more effectively and targeted, and reduce the high failure rate? This study intends to analyze the causes and influencing factors of smoking cessation failure among smokers who have tried to quit smoking in various communities in Beijing but failed, discuss whether there are differences in the reasons for failure among different groups, and provide a theoretical basis for providing scientific and effective smoking cessation strategies.

Objects And Methods

1.Research object: This research project is the baseline information analysis from the Key Rresearch and Development Plan of the Ministry of Science and Technology in 2017 of China, which is an intervention study to enhance the willingness and behavior of smokers to quit smoking in community through the cooperation between General Hospital and community health organizations. The survey was conducted by an epidemiological cross-sectional study from December 2018 to December 2019. Recruitment was conducted through 19 various community health service centers in Beijing using a convenient sampling method and then data collection was used with face-to-face questionnaires by trained investigators.. The inclusion criteria of the study subjects were: ≥ 18 years old and above; ≥ smokers who are resident in the community and participate in community smoking cessation programs; ≥ fluent in language communication and willing to be surveyed.

The exclusion criteria were: < 18 years of age; < non-smokers; < inability to communicate smoothly; < unwilling to be investigated. A total of 692 subjects were included in the study, of which 442 were those who had tried to quit smoking.

2.Research content: The content of the questionnaire survey includes:(1)demographic information: gender, age, education, marital status, occupation, monthly income of the respondents;(2)tobacco use: smoking age, age at which smoking started, Nicotine Dependence Assessment Scale(FTND)^[2], tobacco consumption;(3)attempting to quit smoking (That means trying to quit refers to quitting for 24 hours on a voluntary basis for long-term cessation)^[3]:the times of attempts to quit, the duration of attempts to quit, the methods and methods of failure, the reasons for failure;(4) Cognition of tobacco-related knowledge: including cognitive assessment of tobacco dependence, the dangers of second-hand smoke, common misunderstandings, and cognitive assessment of diseases that smoking may cause;(5) environmental assessment of smoking cessation support: Smoking restrictions or regulations in the workplace, whether surrounding relatives and friends support them to quit smoking;(6) requirement for smoking cessation intervention activities: individual willingness to quit smoking, choice and demand for smoking cessation

intervention methods, and selection needs of intervention providers;(7) other information: drinking habits, physical health, past medical treatment behaviors.

Among them, in the Nicotine Dependence Assessment Scale (FTND), the nicotine dependence of smokers was scored according to different scores corresponding to each option. The total of six questions is 1-3 points for mild dependence; 4-6 points for moderate dependence; 7-10 points for severe dependence^[2].

3.Statistical analysis: The database is established by double input and managed with Epidata v3.1, and SPSS 22.0 is imported for data analysis. Descriptive analysis was used to count the basic information of the survey participants, their behaviors of quitting smoking attempts and the reasons for their failure; Chi-square test and Fisher exact probability method were used to analyze the relationship between the reasons for failure of smoking cessation of the study subjects and their demographic indicators, daily smoking, nicotine dependence, and discomfort during smoking cessation; Correspondence Analysis was used to analyze statistically significant indicators to explore their relationship with smokers' failure to quit. The statistically significant difference was set at $P < 0.05$.

4.Ethics: This study has been reviewed and approved by the Medical Ethics Committee of Capital Medical University (No.Z2019SY007).

Results

1.Basic information

In this analysis, 442 community smokers who had tried to quit smoking were selected as the research subjects. Among them, the majority were men (407,92.1%), and the highest proportion was at the age of 60 and above (174,39.4%); from the marital status, the majority were married (393,88.9 %); The majority of them are college graduates or above (186,42.7%); most of the respondents have retired (189,42.8%), as seen in Table 1.

Table 1
Demographic information distribution of smokers in Beijing communities (n = 442)

Demographic indicators		Frequency	Percentage(%)
sex	male	407	92.1
	female	35	7.9
age	19~	13	2.9
	30~	81	18.3
	45~	172	38.9
	≥60	174	39.4
marital status	unmarried	21	4.8
	married	393	88.9
	separation	3	0.7
	divorced	12	2.7
	widowed	12	2.7
educational level	elementary and below	28	6.3
	junior high school	114	25.8
	high school / secondary school	114	25.8
	college and above	186	42.1
occupation	agriculture, forestry, animal husbandry and fishery	8	1.8
	business services	54	12.2
	professional skill worker	49	11.1
	institutions or enterprises	77	17.4
	retirement	189	42.8
	unemployed or other	60	13.6

2. Previous attempts to quit smoking and the causes of failure

Quit smoking attempt refers to the behavior of smokers in order to quit smoking for the purpose of quitting smoking. An analysis of past smoking cessation attempts of smokers shows that there are 156 smokers who have tried to quit smoking once, accounting for 35.3%. 133 people said they had tried to quit smoking twice, accounting for 30.1%. Most smokers try to quit three times or less, and a few smokers report that they have tried to quit more often. 30 smokers said they had tried five or more times and less

than ten attempts to quit, and 22 said they had tried ten or more times, but all failed. During the process of trying to quit smoking, smokers reported that when they last tried to quit smoking, 45.7% of them stopped smoking for more than one month, or even no more than half a year. 29.2% of the respondents stopped smoking for one week and then re-smoked, as shown in Table 2.

Table 2
Distribution of smoking cessation attempts of Beijing's community smokers (n = 442)

index	grade	frequency	percentage(%)
quit smoking attempts (times)	1	156	35.3
	2	133	30.1
	3	88	19.9
	4	13	2.9
	5~	30	6.8
	≥10	22	5.0
time to stop smoking when you last tried to quit	less than 1 day	27	6.1
	1-7days	129	29.2
	8-10days	84	19.0
	more than a month	113	25.6
	more than half a year	89	20.1

Smokers made many attempts to quit smoking and stopped smoking behaviorally for a period of time, but in the end they failed. This reminds us that quitting smoking is a process with a high failure rate, but we need to think further. What is the reason for failure to quit smoking? How to avoid the reasons for failure to quit smoking, and find suitable smoking cessation methods and techniques to help smokers who are willing to quit smoking successfully quit?

Further analysis of the reasons for the failure of smokers to quit smoking, the survey respondents attributed the failure to quit smoking to the difficulty of controlling addiction and insufficient self-willpower. 240 smokers believed that it affected the effect of quitting, accounting for 54.3%. In addition, 35.3% of the respondents believed that the influence of other smokers was also an important reason for their failure to quit smoking. 26.0% of the respondents felt that the lack of a smoke-free support environment is also an important influencing factor, as shown in Table 3. This suggests that we need scientific and professional intervention and help to quit smoking, and that the establishment of a smoke-free support environment is very important.

3. Analysis of the influencing factors of the failure reasons of smoking cessation attempts

The analysis results showed that the differences in the distribution of the reasons for the failure of smokers to quit smoking were different in various ages, occupations, and discomforts during the process of quitting(All $P<0.05$). There was no statistical difference in the distribution of gender, marital status, education level, average daily smoking and nicotine dependence(All $P>0.05$), as shown in Tables 3 and 4. Among the different age groups, the top three reasons for the failure of smoking cessation among 19-30 year old smokers are the difficulty of restraint of addiction, insufficient self-willing, stress of work or study, and the influence of other smokers. The top three causes of smoking cessation failure among smokers aged 30-45, 45-60, and 60 and above are all those who have difficulty in controlling addiction, lack of self-will, the influence of other smokers, and lack of smoke-free support surroundings. Among the people in different occupations, the top three reasons for failure to quit smoking are difficult to control, lack of self-will, and the influence of other smokers. In addition, smokers in agriculture, forestry, animal husbandry, and fisheries have no confidence in quitting smoking. The reason for the failure of professional skill workers is the lack of professional guidance on quitting, and the reason for the failure of smokers who are unemployed or in other industries is work or study stress, which reminds us that there may be differences in the life or work pressure and motivation of smoking among smokers of different ages and working conditions, which affects their smoking cessation effects.

Table 3

Reasons for failure of community smokers in Beijing to try to quit smoking (multiple choices, n = 442)

reasons for quitting smoking failure	frequency	percentage(%)
smoking addiction is difficult to restrain and self-willpower is insufficient	240	54.3
lack of professional guidance	90	20.4
lack of caring and understanding	18	4.1
lack of a smoke-free support environment	115	26.0
no confidence	53	12.0
nervous and anxious	70	15.8
weight gain	9	2.0
work or study stress	68	15.4
Impact of other smokers	156	35.3
other	31	7.0

In addition, the withdrawal symptoms corresponding to different reasons for failure to quit smoking are also different. Smokers lack professional guidance in the process of quitting and may be prone to symptoms such as restlessness, difficulty concentrating, and sleep disturbances; Smokers tend to feel irritable, frustrated or angry, causing sleep disturbances; in the absence of a smoke-free support environment, smokers find it difficult to concentrate. While providing guidance on quitting smoking in the

future, we can provide more targeted tips to alleviate different withdrawal symptoms to help quitters overcome the difficulties of quitting smoking.

As Figure 1 and 3 show that the closer the distance between the scatter points in the correspondence analysis of the factors and the reasons for the failure of smokers to quit smoking, the more obvious the tendency of the correlation between the two, which further indicates the reasons for failure of smoking cessation among smokers aged 19-30 are mainly work or study stress. During the process of quitting, it is easy to cause discomfort such as difficulty in concentration, irritability, frustration or anger, and sleep disorders. And Figures 2 and 3 show that smokers who work in commercial services think that the reason they smoke again is mostly lack of professional guidance to quit smoking. The reasons for the failure of smokers who are engaged in management or technical work in institutions or enterprises and institutions are the lack of a smoke-free support environment and the emotional effects of tension, anxiety, and depression. The main reasons for relapse among retired smokers are difficulty in controlling the onset of addiction, insufficient self-will, the influence of other smokers and lack of confidence. The impact of other smokers and the lack of a smoke-free support environment are closely related to the desire to smoke during the process of quitting.

Discussion And Suggestions

The process of quitting smoking is affected by many factors. Some studies have pointed out that the success of quitting smoking is affected by different smoking status, motivation to quit smoking, self-efficacy, recognition of expected difficulties, availability of appropriate technology and methods, and temptation situations during quitting^[4]. This study analyzed the differences in the reasons for failure of smoking cessation among different characteristics of smokers in Beijing's community, and provided a reference for exploring guidance strategies for different populations.

In this study, the top three reasons why smokers in Beijing's community failed to quit smoking were the difficulty in controlling addiction, insufficient self-willpower, the influence of other smokers, and the lack of a smoke-free support environment. Studies have shown that in the case of peer smoking, due to the induction of visual cues^[5], there will be a strong craving for cigarettes, and they tend to continue smoking and give up their intention to quit smoking, thus failing to quit. Among them, young smokers are eager to gain recognition through behaviors consistent with the group due to their psychological effects^[6], and smoking cessation behavior may be more affected by other smokers. This reminds us that social needs influence smokers' smoking cessation behavior to a large extent. When providing guidance on quitting smoking, it can help correct smokers' cognitive attitudes towards social smoking behavior and provide them with coping with smoking cessation in social situations and tips for relieving peer pressure^[7]. In addition, the government and various departments should further support the shaping of a smoke-free environment.

A univariate analysis of the causes of failure to quit smoking showed that the differences in the distribution of the causes of failure of smoking cessation among smokers in different ages, occupations,

and discomforts during the process of quitting were statistically significant. Correspondence analysis results showed that smokers aged 19-30 years of age failed to quit smoking because of work or study stress. During the process of quitting smoking, it was easy to cause discomfort such as difficulty in concentration, irritability, frustration or anger, and sleep disorders. Smokers in this age group may be in the beginning or rising stages of their careers and face greater work intensity and work pressure, which is prone to negative emotions. Studies have shown that negative psychology, such as anxiety, is an important factor affecting relapse after smoking cessation^[8-10]. Negative psychology of smokers can increase smokers' craving for tobacco, and they expect to obtain sedation through tobacco to help relieve negative emotion^[11]. This reminds us that for those who quit smoking at this age, when providing smoking cessation services, we can increase guidance on stress response and emotional relief to help them adjust their status to successfully quit smoking.

In the results of correspondence analysis, the reasons for failure to quit smoking in different occupational groups also differed. Smokers engaged in business services believe that the reasons for their re-smoking are mostly lack of professional guidance to quit smoking. Smokers who work in institutions or enterprises and professional skill work fail to quit smoking mostly because of lack of smoke-free support environment and tension, anxiety, mood Depressed emotional effects. In this study, the survey respondents generally have a high level of education and may face the intensity of work that they can overcome daily. Some studies have pointed out that when quitters are physically fatigued or need to be highly concentrated at work, quitters will relapse because of stimulating demand^[12]. In response to this situation, other alternative methods can be used to relax the mind and body and shift the demand for tobacco. This also reminds us that for different groups of people with different occupations and occupational characteristics, we can start from workplaces to provide group health education and smoking cessation services. Smoking cessation services can be personalized according to the characteristics of different occupations and the high incidence of failure reasons. The main reasons for relapse among retired smokers are difficulty in controlling the onset of addiction, insufficient self-will, the influence of other smokers and lack of confidence. After retirement, smokers have a relatively leisurely life, and they can find other hobbies in daily life to replace smoking. In addition, from a family and community perspective, a smoke-free support environment can be shaped, and family members help monitor smoking cessation and often give encouragement to improve smokers' confidence and determination to quit.

The strengths and weaknesses of this study: The respondents in Beijing were smokers who had a clear intention to quit smoking and participated in smoking cessation intervention, this paper comprehensively analyzed the relationship between the failure reasons of quitting smoking and the sociodemographic factors of the smokers. However the weaknesses is that the choice of respondents is only from Beijing, there will be a certain selection bias, so that the results extrapolation needs to consider the characteristics of Beijing city.

In summary, work or study pressure, the influence of other smokers and the lack of smoke-free support environment are the main reasons for the failure of smoking cessation attempts. Therefore, it is

recommended to strengthen education in different occupational places and implement personalized smoking cessation education. It is also recommended to provide tips on coping with smoking cessation and relieving peers in social situations, as well as help for coping with stress and negative emotions, in order to help smokers relieve discomfort during smoking cessation, and increase confidence and determination to quit successfully.

Declarations

1.Ethics approval and consent to participate

This study has been approved by the Medical Ethics Committee of Capital Medical University (Z2019SY007), and an informed consent form has been signed with the subjects before the investigation.

2.Consent for publication

Not applicable.

3.Competing interests

The authors declare that they have no competing interests.

4.Funding

This study was supported by the Foundation of National Key R&D Program of China(2017YFC1309400).

5.Authors' contributions

Qianying Jin was responsible for the conception and design of the study, data collation and analysis, literature/data collection, and the transcription of the article. Han Liu and Hanqiao Ma were responsible for the preliminary field investigation and data recovery and review. Kun Qiao was responsible for the preliminary investigation and later data verification. Ali Akbar was responsible for proofreading of the Chinese and English parts of this article. Xingming Li were responsible for the quality control and review of the article and responsible for the overall management and supervision of the study.

6.Acknowledgements

We thank the staff from the 19 communities who cooperated with us in recruiting people to quit smoking, provided us with a venue to conduct our research, coordinated the timing of our research, and helped us compile information about the participants. We thank Tobacco Medicine and Tobacco Cessation Centre at the China-Japan Friendship Hospital for all the assistance and support during the research. Qianying Jin is very grateful to Xingming Li for the thesis supervision and constant encouragement. We also thank Han Liu, Hanqiao Ma and Kun Qiao, who helped with the preliminary survey and data review, and Ali Akbar who helped in the translation work.

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Tables

Due to technical limitations, table 4 & 5 is only available as a download in the Supplemental Files section.

Figures

Figure 1

closer the distance between the scatter points in the correspondence analysis of the factors and the reasons for the failure of smokers to quit smoking, the more obvious the tendency of the correlation between the two, which further indicates the reasons for failure of smoking cessation among smokers aged 19-30 are mainly work or study stress.

Figure 2

During the process of quitting, it is easy to cause discomfort such as difficulty in concentration, irritability, frustration or anger, and sleep disorders.