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A retrospective study of smoking cessation intervention among university students

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Abstract

This retrospective study investigated the effect of smoking cessation intervention (SCI) among university students in China.

Around 192 eligible smokers among university students were included, and were assigned to an intervention group (n = 100), and a control group (n = 92). All included subjects in both groups were recommended to increase fruits and vegetables consumptions. Additionally, participants in the intervention group also underwent SCI therapy for a total of 4 weeks. The outcome measurements consisted of a number of students quit smoking, daily cigarettes, quit attempts, mean days of smoking in the past 30 days, and also stage of change.

After 4-week treatment, SCI neither can decrease the number of students quit smoking ($P = .21$), daily cigarettes ($P = .21$), quit attempts ($P = .07$), and mean days of smoking in past 30 days ($P = .77$), nor can enhance the stage of change (precontemplation, $P = .18$; contemplation, $P = .59$; preparation, $P = .46$).

The results of this study showed that after 4-week therapy, SCI may be ineffective for smokers among university students in Chinese.

Abbreviations: MI = motivational interviewing, SCI = smoking cessation intervention.

Keywords: effect, smoking cessation intervention, university students

1. Introduction

Tobacco often causes more than 60 diseases.[1] It is one of the most important preventable factors of ill health and death.[2,3] It has been reported that tobacco can increase the incidence of respiratory symptoms and cardiovascular diseases.[4–6] Specifically, as for men, it can increase the risk of erectile dysfunction.[7,8] As for women, it can increase the risk of developing cervical and breast cancers.[9–12] A multi-country study focuses on the 15- and 16-year-old adolescents found that the prevalence of smoking is 28% among smokers who smoked stable over the past 4 years.[13] This issue is a serious problem, particularly in young adults who received lower education levels.[14]

Presently, limited evidence present on the effect of smoking cessation intervention (SCI) for smokers among young adults.[15,16] Previous published study investigated the effect of SCI for young people. It consisted of 28 clinical trials. Of those, only 3 studies were statistically significant.[17] The results demonstrated that no sufficient evidence to support and to recommend the SCI for smoking cessation among young smokers. Therefore, more evidence is still needed to evaluate the effect of SCI for such condition.

Currently, no data are available about the effect of SCI for the smoking cessation among university students in Chinese. Thus, in this retrospective study, we explored the effect of SCI for smoking cessation among Chinese university students.

2. Methods

2.1. Ethics

This study was approved by the Ethical Committee of Mudanjiang Medical University. All participants provided the written informed consent before the study.

2.2. Design

This study was conducted between January 2011 and May 2012 at Mudanjiang Medical University. A total of 192 eligible smokers among university students were included, and were recommended to increase fruits and vegetables consumptions. Of these, 100 subjects in the intervention group received SCI therapy, while 92 subjects were at waiting list.

2.3. Eligibility

This study included healthy smokers among Chinese university students aged from 18 to 30 years old. All subjects were reported one or more smoking cigarettes during the past 1 month before the recruitment. Moreover, all of them did not receive any kinds of smoking quit plans and interventions 30 days before the study. All participants completed a computerized baseline survey before the study. Participants were excluded if they had history of

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surgery, or severe diseases, such as cancer, cardiology disease, and any other severe diseases.

2.4. Intervention schedule

All participants in both groups were recommended to increase fruits and vegetables consumptions. Additionally, subjects in the intervention group also received the SCI therapy. It consisted of 4 motivational phases of counselor training by 3 experienced psychologists, who were all trained before the study. All students received one-on-one counselor training focused on motivating and helping them to quit smoking. Each phase lasts 25 to 30 minutes, once a week, for a total of 4 weeks. All subjects in the control group were at waiting list during the period of SCI therapy.

2.5. Outcome measurements

Outcome measurements included the number of students quit smoking, daily cigarettes, quit attempts, mean days of smoking in past 30 days, and also stage of change. Of those, the number of students quit smoking was reported by the students self-reported, and also verified by the urine cotinine test. The outcome measurement of stage of change was measured according to the Prochaska's model.[18] All outcomes in both groups were measured at the end 4-week intervention.

2.6. Statistical analysis

All data were analyzed using SPSS Statistics 18.0 (IBM Corp., Armonk, NY). The comparison of data between groups was assessed by the Student's *t*-test and Pearson's chi-square test. Student's *t*-test was used to analyze the continuous outcome data. Pearson's chi-square test was utilized to analyze the categorical outcome data. $P < .05$ was defined as the statistically significant.

Table 1

Participant characteristics before the study.

Characteristics	Intervention group (n = 100)	Control group (n = 92)	*P* value
Age, years	20.5 (1.8)	20.8 (1.9)	.26
Race (Chinese)	100 (100.0)	92 (100.0)	–
Year in university			
Freshman	25 (25.0)	21 (22.8)	.72
Sophomore	31 (31.0)	25 (27.2)	.56
Junior	22 (22.0)	23 (25.0)	.62
Senior	15 (15.0)	14 (15.2)	.97
Other	7 (7.0)	9 (9.8)	.49
Residence			
Home	16 (16.0)	11 (12.0%)	.42
Apartment	84 (84.0)	81 (88.0%)	.42
Activities involvement (hours/week)	8.1 (6.9)	7.8 (7.1)	.77
Days of smoking in past 30 days			
<10 days	75 (75.0)	72 (78.3)	.59
11–25 days	24 (24.0)	20 (21.7)	.71
25–30 days	1 (1.0)	0 (0)	.53
Mean	8.5 (9.4)	8.1 (9.2)	.77
Daily cigarettes	9.1 (5.9)	8.8 (6.2)	.73
History of smoking (year)	4.9 (2.2)	4.7 (2.5)	.56
Previous quit advice			
Yes	32 (32.0)	25 (27.2)	.47
No	68 (68.0)	67 (72.8)	.47
Quit attempts in past 1 year			
Yes	71 (52.0)	65 (70.7)	.96
No	29 (41.0)	27 (29.3)	.96
Stage of change			
Precontemplation	32 (32.0)	30 (32.6)	.93
Contemplation	38 (38.0)	34 (37.0)	.88
Preparation	30 (30.0)	28 (30.4)	.95

Data are present as mean ± standard deviation or number (%).

Table 2

The number of students quit smoking after 4-week intervention.

Outcome measurements	Intervention group (n = 100)	Control group (n = 92)	*P* value
Self-reported	5 (5.0)	1 (1.2)	.16
Urine cotinine verified	3 (3.0)	0 (0)	.21

Data are present as number (%).

3. Results

In this retrospective study, a total of 192 participant smoker among university students were included, and all of them were recommended to increase fruits and vegetables consumptions. All those subjects were divided into an intervention group (n = 100), and a control group (n = 92) according to the different interventions they received. In addition to increase fruits and vegetables consumptions, participants in the intervention group also underwent SCI. Furthermore, all the cases of the included subjects selected based on the predefined eligibility criteria. All participants were healthy and were selected from the university student population using the same criteria for both intervention and control groups. However, no blinding of both subjects and investigators were utilized in this study, which is an intrinsic limitation as a retrospective study.

The characteristics of all participants in both groups are listed in Table 1. There were not significant differences in all characteristics, such as race, year, days of smoking in past 30 days, daily cigarettes, history of smoking, quit attempts in past 1 year, and stage of change.

After 4-week intervention, subjects received SCI did not exert promising effect in a number of students quit smoking ($P = .21$, Table 2), daily cigarettes ($P = .21$, Table 3), quit attempts ($P = .07$, Table 3), average days of smoking in past 30 days ($P = .77$, Table 3), and stage of change (precontemplation, $P = .18$; contemplation, $P = .59$; preparation, $P = .46$; Table 4), compared with those at waiting list.

4. Discussion

Smoking is accounts for more than 60 diseases and smoking-related illness.[19] Its negative health effects also develop after many years of smoking.[19] A previous study found that a linear dose–response relationship existed between smoking and its

Table 3

Smoking outcomes after the 4-week intervention.

Outcome measurements	Intervention group (n = 100)	Control group (n = 92)	*P* value
Daily cigarettes	7.3 (6.8)	8.5 (6.4)	.21
Quit attempts	31 (31.0)	18 (19.6)	.07
Mean days of smoking in past 30 days	7.6 (9.7)	8.0 (8.9)	.77

Data are present as mean ± standard deviation or number (%).

Table 4

Stage of change after the 4-week intervention.

Outcome measurements	Intervention group (n = 100)	Control group (n = 92)	*P* value
Precontemplation	22 (22.0)	28 (30.4)	.18
Contemplation	29 (29.0)	30 (32.6)	.59
Preparation	40 (40.0)	32 (34.8)	.46
Action	9 (9.0)	2 (2.2)	.06

Data are present as mean ± standard deviation or number (%).

induced diseases.[19] Most of smokers begin their smoking in teens. They also would like to quite or cut down, however, most of them failed to quit smoking. SCI involves several special smoking cessation programs to help smokers quit their smoking by experienced psychologists. These programs consist of behavioral change support, motivational improvement, and their life style areas change.[20]

Presently, limit data are still available for the assessment of SCI for smokers among Chinese university students. Little evidence was found to support the SCI for treating university students in other countries. One study conducted in Spain, and found that a multicomponent intervention tailored to college students is efficacious and helped students to quit smoking.[21] The other one study conducted in United States and also explored the efficacy of 4 individually delivered motivational interviewing (MI) for smoking cessation among college students.[22] Its results showed that MI is efficacious for students to increase cessation attempts and also decrease smoking days in the short time.[22]

The results of this study are inconsistent with the previous studies.[21,22] In this study, the results did not show that SCI may help smokers among university students to quit their smoking, such as reducing a number of students quit smoking, daily cigarettes, quit attempts, mean days of smoking in past 30 days, and also stage of change. It may be because of the relative short intervention period in this study.

This retrospective study has several limitations. First, the treatment duration is relative short, which may affect the effect evaluation of SCI for smokers among Chinese university students. Then, this study did not include follow-up evaluation after the treatment cessation. Third, all patients and investigators were not blinded in this study, since this is a retrospective study, which may increase the risks of selection, performance and detection. Last but not the least, this study has an intrinsic limitation because of the retrospective study itself. All these limitations may impact the results of this study. Therefore, future studies should extend the duration of treatment, and longer-term outcome evaluations, as well as the better design of double blind randomized controlled trials.

5. Conclusion

The results of this study showed that SCI may be not efficacious for smokers among Chinese university students after 4-week intervention.

Author contributions

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