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## A Randomised Single-Blinded Controlled Trial on the Effectiveness of Brief Advice on Smoking Cessation among Tertiary Students in Malaysia

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### Abstract

**Introduction**—Tobacco smoking, a habitual behavior, is addictive and detrimental to health. Quitting requires personal abilities and environmental opportunities and therefore, improving these abilities and opportunities will undoubtedly act on smokers' motivation to quit.

**Methods**—A prospective single-blinded randomized controlled interventional study was conducted among first year undergraduate students in Malaysia. A total of eighty smokers were randomly allocated to a control or intervention groups (40/40). Randomization remained concealed from research personnel. All participants were followed up for six months to evaluate abstinence.

**Results**—Quit line enrolment rate of the intervention group was 55% (22) compared to 7.5% (3) in the control ( $P < 0.001$  95% CI 30.1 - 64.9). In the intervention group 27% (6) sustained quitting for six months compared to none in the control group.

**Conclusion**—This study has shown that brief advice for smoking cessation is more effective than an information leaflet alone to promote quitting and that to maintain abstinence quit line follow up is necessary. Larger samples size and longer follow up studies are needed to further confirm these findings.

### Keywords

Brief advice; Smoking cessation; Tobacco smoking; Quit line

### Introduction

Non communicable diseases (NCDs) such as cardiovascular diseases, diabetes, cancers and chronic respiratory diseases had caused nearly two third (36 million) of the 57 million global deaths in 2008 [1]. Smoking contributes extensively to mortality from NCDs, including

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CVDs, cancer and chronic respiratory diseases. Moreover, nearly 6 million people die from tobacco use each year. Smoking is estimated to cause about 71% of lung cancer, 42% of chronic respiratory disease and nearly 10% of cardiovascular disease [1]. In the ASEAN region 30% of adults are reportedly current smokers [2].

Tobacco is the second biggest cause of all deaths and disabilities from NCDs in Malaysia. National Health Morbidity Survey (NHMS) 2006 revealed that diseases related to smoking had contributed to 15% of morbidity in government hospitals and 35% of all hospital mortality in 2006 [3]. The Global Adults Tobacco Survey Malaysia (GATS) 2011 revealed that the smoking prevalence among adults was 43.9% among men and 1% among women with overall 23.1% [4]. World Health Statistics 2010 reveals that prevalence of smoking any tobacco product among over 15 years old males was 52.6% and 2.6% in females in Malaysia. The above report also indicated that the prevalence of tobacco use among 13 – 15 years old adolescent males and females was 35.1% and 9.4%, respectively, for the period 2000–2009 [5].

Khor's study on tobacco use among female college and university students in Kuala Lumpur, Malaysia in 2005 revealed that 21.3% of the students had ever smoked and 4.3% were currently smoking. Most of them were smoking less than 10 cigarettes daily [6].

Though the prevalence of smoking and its association with gender, ethnicity and socioeconomic backgrounds were investigated, the cognitive aspect influencing smoking was scarcely examined in the previous studies, except for the one by Foong Kin [7] and the other by Lim et al. [8] on knowledge and attitudes on tobacco.

As Rothschild et al explains, smoking behavior is influenced by mediators or determinants, different cognitions and environmental factors. The mediators include motivation, abilities and opportunities [9,10].

The most popular theories used for the development of smoking behavior change intervention are the Trans Theoretical Model (TTM) and its stages of change concepts. According to John et al. [11] effective smoking prevention interventions are based on the National Cancer Institute's Five A's model, the Agency for Health Research and Quality guidelines and the Trans theoretical Model (TTM) of behavioral change. Five A's model is based on asking about smoking behavior, advice, assess, assist and arrange follow up. [12] The TTM facilitates application of the intervention to match the smoker's needs [13]. The level of addiction to nicotine is an indication of cessation success [14].

Meanwhile, 21.5% of the population is exposed to secondhand smoke in public places in Malaysia [3]. A study by Jiyeon et al. revealed significantly high particulate matter levels due to second hand smoking in public places [15].

Researchers have been relentlessly studying at the effect of brief advice on smoking cessation rate. A study by Hjalmarson and Boethius showed this rate to be 25% among those who received brief advice [16]. Moreover, brief advice given by health professionals around three minutes has been revealed to decrease the proportion of people smoking by 2% when compared to those who did not get any advice [17]. More recently, randomized controlled



## Sample size

**Phase I**—All male and female undergraduate students in the main campus of the Universiti Sains Malaysia were screened for their smoking status during the routine medical examinations at the Medical Centre.

**Phase II**—During six months prospective study involving independent cases and controls with 1 control(s) per case, to detect a 25% quit rate with a power of 80%, minimum subjects required to each group is 40. The Type I error probability associated with this test of this null hypothesis was 0.05. The total sample size was  $40 \times 2 = 80$  (P&S calculator).

## Study process

Intervention on brief advice was based on asking about smoking habit, explaining the disadvantages of smoking, advice on benefit of stopping, assess the willingness to quit and level of nicotine addiction and opportunities available through USM-quit line to assist in the quitting process. Control group received only a printed A4 size paper with basic information on risk of smoking and importance of quitting and the services provided by Quit Line. No other advice was given to them.

## Data collection

A structured pre tested self-administered questionnaire was used for data collection. Questionnaire consisted of socio-demographic data, smoking practices, intention to quit, failed previous attempts, trigger for smoking and reasons for the intention to quit. The level of addiction to nicotine was assessed by the Fagerstrom nicotine tolerance questionnaire.

Total score	Level of dependence
0 – 3 points	Low
4 – 6 points	Medium
7 – 10 points	High

The questionnaire was administered in the English language. Identification of the persons was confirmed by checking the National Identity card number and the student identity number.

Ethics approval was obtained from the Ethical Review Committee of the University Sains Malaysia. Initially the study procedure was explained to the participants and an information sheet was given them to read and understand.

Confidentiality was ensured by concealing the identity and personal data to investigators. The respondents were given a case number only. After clarification of any doubts, written informed consent was obtained from the respondents to participate in the study and to register them in the Quit line and for follow up.

## Data analysis

Quantitative data was analyzed using descriptive statistics. Primary analysis included the number and proportions experiencing an event. Mean estimation of proportions and 95% confidence interval was calculated to ascertain the magnitude and the direction of the effect. Chi-square test was used to compare the categorical variables and T test was used for comparison of continuous variables. SPSS 15 was used for data analysis.

## Results

All the female students were declared as non-smokers. Among the total number of male respondents ( $n = 80$ ), Brief advice was received by 40 in the intervention group and USM Quit line Information leaflet was given to 40 in the Control group.

The basic characteristics of the two groups are described in Table 1.

Among those who registered in the USM quitline, 13 (59%) had low nicotine dependence while only 2 (9%) had high nicotine dependence. Among the 22 in the intervention group who received Brief Advice 06 (27%) respondents continued to quit smoking up to 6 months compared to none in the control.

Following the brief advice, 22 (55%) students from the intervention group registered in the USM quit line compared to 03 (7.5%) the control group which was statistically significant ( $P < 0.001$ ) (Table 2).

## Discussion

Our findings show that brief advice to quit smoking is more effective than an information leaflet alone. The cessation rate of 27% in this study is comparable with the cessation rate of 25% among those who received brief advice in a study by Hjalmarso [16]. Among the 22 in the intervention group who received Brief Advice, 6 (27%) respondents continued to quit smoking up to 6 months compared to none in the control. These findings are also consistent with similar study one quitting conducted by a Hong Kong researchers that showed that telephone-based advice was positively associated with abstinence in comparison to advice via short messaging service or no advice at all [18].

Furthermore, our results showed that 04 (18%) respondents had set new quit dates in spite of having set prior quit dates and having preparatory sessions. During the six months, harm reduction was also evident as they have reduced the number of cigarettes smoked by 40%. Interestingly, 07 (32%) had set quit dates but they did not respond to the subsequent quit line calls. Meanwhile 05 (23%) had registered in quit line they did not respond to quit line calls at all.

Among the controls 3 respondents (7.5%) had quit smoking but no one abstained for six months but harm reduction was evident by the reduction of number of cigarettes smoked by 30%.

Smoking behavior is influenced by mediators, different cognitions and environmental factors. As Rothschild et al. importance explains, the mediators include motivation, abilities and opportunities. The relative and underlying beliefs of these determinants vary among different populations and between individuals within the same population depending on their personal, social and environmental circumstances [12]. In this study, following the brief advice, 22 (55%) students from the intervention group registered in the USM quit line compared to 03 (7.5%) in the control group clearly indicate their motivation level to quit.

Cahill et al. reveals (by the Cochrane review) stage based self-help interventions and individual counseling to be neither more nor less effective than the non-staged based interventions provided at a similar intensity USM Quit line is based on 5As and TTM. On par with this, among the 22 in the intervention group who received Brief Advice06 (27%) respondents continued to quit smoking up to 6 months compared to none in the control. The remainder of respondents were fitting into the various stages of TTM.

Habitual complex behaviors depend very much on personal abilities and environmental opportunities as explained by Gollwitzer PM, the theories that improve people's abilities and opportunities will effectively act on their motivation. Such action oriented self-regulatory models focus specifically on the cognitive mechanisms involved in translating an intention to perform a particular behavior into action as evidenced by the outcomes in the current study.

The uniqueness of our study is that we used a simple face-to-face brief advice without the use of formal professional expertise. This seems to be more applicable and practical exercise, at least in resource poor settings.

## Limitations

Smoking status was declared by the respondents. Confirmation through the biological validation was not done in this study due to financial constraints. Moreover, a larger sample size and a longer follow-up period would have allowed healthier numbers in the subgroups which would have further improved the results. However, this is also strength as our study showed a significant gap between the intervention and the control group in relation to the outcome of interest and we can, more or less, predict that a larger sample with longer follow-up may show yet more substantial outcome.

## Conclusion

“Brief advice for smoking cessation” can be more effective than an information leaflet alone in promoting smokers to quit smoking. For the abstinence, quit line follow up is vital. More research with larger sample size should be carried out to test the efficacy of this new approach to encourage young people to quit smoking that can be extended to other groups and communities as well.

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**Table 1**

The baseline characteristics of the two groups.

	<b>Intervention (n = 40)</b>	<b>Control (n = 40)</b>
Mean age of the respondents (years)	21.2	22.6
Mean duration of smoking (years)	4.4	6.7
Previous quit attempts		
No attempts	4 (10%)	7 (17.5%)
Once (n = 40)	10 (25%)	9 (22.5%)
Twice	11 (27.5%)	11 (27.5%)
> 3 times	15 (37.5%)	13 (32.5%)
Readiness to quit smoking		
Not ready	1 (2.5%)	4 (10%)
Not sure	16 (40%)	10 (25%)
Ready	18 (45%)	11 (27.5%)
Very ready	5 (12.5%)	15 (37.5%)



**Table 2**

Outcome of the intervention.

Enrollment in the USM Quit line			
	Intervention (n = 40)	Control (n = 40)	p value
	22 (55%)	3 (7.5%)	P < 0.001 (95% CI 30-64)
Sustained quitting for six months			
	06 (27%)	00 (0%)	