

Using the Transtheoretical Model of Change to Understand High School Students' Hookah Smoking Behavior

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ABSTRACT

Objective(s): The aim of this study is to understand high school students' hookah smoking behavior.

Methodology: Part of the study was an experimental randomized controlled trial used to guide this study. The study was carried out at Tuz High School for males in Tuz Khurmatu District, Salah-Aldeen Governorate. The study included a simple random sample of 144 high school students. The study instrument includes students' sociodemographic data. It also includes the Stages of Change Scale for Hookah Smoking, The Processes of Change Scale for Hookah Smoking, The Self-Efficacy/ Temptation Scale for Hookah Smoking, and The Decisional Balance Scale for Hookah Smoking. Data were collected using a self-reported method for the period from November 1st, 2021 to March 31th, 2022. Data were analyzed using the statistical package for social science (SPSS) for Windows, version 26.

Results: The study results revealed that more than two-fifth of subjects in the study group were in the Precontemplation Stages of Change, followed by those who were in the Contemplation, and those in the Preparation Stage of Change. The administered intervention made subjects use more Processes of Change, enhanced their Self-Efficacy and Decisional Balance of hookah smoking cessation.

Conclusion: The Stage-matched intervention efficaciously made students use more Processes of Change of hookah smoking, enhanced their Self-Efficacy/Temptation of hookah smoking, and Decisional Balance of hookah smoking. The lower the Stage of Change, the poorer the Self-Efficacy for hookah smoking cessation.

INTRODUCTION

Hookah smoking (HS), also known as water pipe smoking, has grown in popularity, particularly among students of high school and university. According to the culture and country, hookah smoking is also called as argileh, hubble-bubble, narghile, shisha, and goza¹.

Nowadays, one of the most common health issues worldwide is Hookah smoking. Researches confirmed that its effect on health is as the same as Cigarette smoking in many countries for instance the United States^{1,2,3}. Furthermore, Hookah is considered a global concern that has negative health consequences, which its consumption and spread create new burdens on the communities. In the Middle East, the Hookah smoking is the preferred kind of smoking among young people, in addition, studies demonstrated that these phenomena also growing among younger ages in the rest of the world⁴.

A mouthpiece, a head, a body, a water bowl, and a hose make up a modern water pipe. The head of a hookah contains 10-20-grams of tobacco. There are many kinds of tobacco are used, the commonest one is Maassel, that is flavored and sweetened⁵. Other forms, like Tumbak and Ajami, have milder flavors⁵. A fenestrated aluminum foil separates the burning charcoal from the head of hookah. A metallic tube constitutes the body of the hookah. This tube extends from the head to the water bowl, that runs from the head to the water bowl, half of this tube is immersed in water, while the other half represent the hose which originates from the top of the water bowl and lodges in the mouthpiece from which a smoker inhales. When the user inhales through the mouthpiece, smoke is passed by sucking from the user's head through the body and into the water bowl, creating a negative pressure. As smoke flows across water, bubbles form. Finally, the smoke will enter the smoker's lungs via the hose⁶.

Tobacco smoking exposes individuals to increased rates of a wide range of toxicants. Individuals are subjected to dangerous levels of carbon monoxide during a typical hookah session, which could last for 45 minutes or longer^{6,7}. When opposed to smoking a single cigarette, there are 30 times the carcinogenic polycyclic aromatic hydrocarbons⁸, when compared to smoking a single cigarette, there is 40 times the amount of tar⁹ and twice the amount of nicotine¹⁰. Hookah users have blood nicotine levels that are similar to those of a half-pack-a-day (10/day) cigarette smoker¹¹. To replace the regular eating routines, efforts to change diet or limit overeating must identify alternative activities and consequences¹⁴.

METHODOLOGY

Part of the study was an experimental randomized controlled trial used to guide this study. Experimental designs are the definitive way to establish evidence of causation. The reason researchers prefer these designs is that they assure a high degree of internal validity, because random assignment creates experimental and control groups that are very similar¹⁵. It is noted to be the strongest methodology for testing the effectiveness of a treatment because of the elements of the design that limit the potential for bias¹⁵.

The study was carried out at Tuz High School for males in Tuz County, Salah Al-deen Governorate. The study included a simple random sample of high school male students who agreed to participate in this study. The study subjects were recruited from three grades in this school which are Fourth Grade, Fifth Grade, and Sixth Grade. Subjects were randomly assigned into both study and control groups; 72 students for the study group and 72 students for the control group. The simple random sampling involved having the lists of students' names in Tuz High School for males generated on Microsoft Office Word software. The names of students in each grade were cut in identical pieces of paper, in the same color of paper, and folded in the same way.

The sample size was determined using G*Power software based on an effect size of 0.25, alpha error probability of 0.05, a power of 0.95, two groups, three repetitions. Thus, the recommended sample size would be 142. The final sample size is 144.

After receiving the approval of the College of Nursing, University of Baghdad for the study, the student researcher discussed study details with officials at the selected high school. The general purpose of the study was explained to the participants, as well as how to complete the questionnaire, to ensure that they understand that participation is optional and that they can withdraw at any time. The student researcher assured participants that the confidentiality of their data will be safeguarded and securely maintained during and following study participation. The student researcher further assured study participants that their identities will remain anonymous in the presentation, reporting, and/or any eventual publication of the study.

Data were analyzed using the statistical package for social science (SPSS) for windows, version 26. The statistical measures of frequency, %, mean, standard deviation, Repeated Measures ANCOVA, linear regression, One-way analysis of variance (ANOVA), and independent-sample t-test will be used.

RESULTS OF THE STUDY

Table 2: Participants' distribution according to Stages of Change over time

Group	Stage of Change	Pretest		Posttest I		Posttest II	
		f	%	f	%	f	%
Study	Precontemplation	34	47.2	25	34.7	21	29.2
	Contemplation	25	34.7	24	33.3	11	15.3
	Preparation	13	18.1	23	31.9	40	55.6
Control	Precontemplation	28	38.9	28	38.9	28	38.9
	Contemplation	18	25.0	18	25.0	18	25.0
	Preparation	26	36.1	26	36.1	26	36.1

Table 3: Descriptive Statistics for the Values of the Processes of Change of hookah smoking over Time

Processes of Change	Mean	Std. Deviation	N
Study Pretest	86.74	18.13	72
Study Posttest I	103.62	27.61	72
Study Posttest II	119.62	19.19	72
Control Pretest	76.43	17.73	72
Control Posttest I	90.73	25.94	72
Control Posttest II	100.08	26.08	72

DISCUSSION

Concerning students' movement across the Stages of Change for hookah smoking, the study results demonstrate that for participants in the study group, 12.5% moved from the Precontemplation to the Contemplation Stage of Change in the posttest I, and 29.1% who moved from Precontemplation to the Preparation Stage of Change in the posttest II.

For the control group, there was an invariant fluctuation in participants' distribution cross the Stages of Change over time. These findings are supported by Chan who reported that participants in the intervention group were more prepared to quit smoking than those in the control group (Contemplation/Preparation Stage: 37% versus 27%).

According to Fu, Precontemplation accounted for 67.6% of 278 daily smokers (152 men and 126 women), Contemplation for 21.6%, and Preparation for 10.8%. Leem et al., (2017) revealed that 32.4%, 54.4%, and 13.1% of smokers were in the Precontemplation, Contemplation, and Preparation groups, respectively between 2001 and 2012, the number of cases in the Precontemplation group declined from 37.4% to 28.4%, while the number of smokers in the Preparation group increased from 6.4% to 18.1%.

Diehr¹⁶ revealed that the 993 people who were in Precontemplation at time 1 had a 63% chance of remaining in Precontemplation two years later, but a 16% risk of shifting to Contemplation and a 6% chance of transferring to Maintenance. People who were in the Precontemplation, Maintenance, or Never Smoker Stages at Time 1 were more likely to be in the same stage at Time 2, whereas those in the Contemplation, Preparation, or Action Stages were more likely to have Changed Stages.

CONCLUSION

The Stage-matched intervention efficaciously moved hookah smokers from lower Stages of Change to higher Stages. The Stage-matched intervention efficaciously made students use more Processes of Change of hookah smoking, enhanced their Self-Efficacy/Temptation of hookah smoking, and Decisional Balance of hookah smoking. The lower the Stage of Change, the poorer the Self-Efficacy for hookah smoking cessation. In posttest II, the lower the Stage of Change, the more the used Processes of Change for hookah smoking cessation. The higher the Stages of Change, the greater the Self-Efficacy and Decisional Balance for hookah smoking cessation.

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