

Effect of theory of planned behavior-based educational intervention on HIV/AIDS preventive behaviors among male barbers

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Abstract

Introduction: Based on the latest estimates of the United Nations Program on HIV/AIDS (UNAIDS), acquired immunodeficiency syndrome (AIDS) is now a public health challenge in Iran, and in 2018, 61,000 people were living with human immunodeficiency virus (HIV), of which 45,000 (75%) were men. This study aimed to evaluate effect of educational intervention based on theory of planned behavior (TPB) on HIV/AIDS preventive behaviors among male barbers.

Material and methods: The current quasi-experimental study was conducted in 2019 among 120 male barbers, who were selected using stratified sampling method. Data were collected using a valid and reliable questionnaire based on TPB at baseline and post-intervention. Intervention was designed and performed according to TPB. Data were analyzed with SPSS version 20 using descriptive and inferential methods.

Results: Mean age of barbers was 30.41 ± 8.43 years. At baseline, mean scores of TPB constructs were not significantly different between intervention and control groups ($p > 0.05$). However, in post-intervention phase, there was a significant difference between two investigated groups in mean scores of TPB constructs ($p < 0.05$).

Conclusions: Findings of the current study showed that educational intervention based on TPB can enhance knowledge level, perceived behavioral control, and attitude and creation of appropriate subjective norms for formation of behavioral intention and promoting AIDS preventive behavior among barbers.

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Introduction

Acquired immunodeficiency syndrome (AIDS) is considered a public health concern around the world [1]. In the fourth decade since its rise, the disease has become a life-threatening pandemic [2]. In many countries, AIDS is spreading primarily by injecting drugs, unemployment, poverty, and prostitution, and is now regarded as the second cause of death in the world. The significance of AIDS problem has attracted considerable attention of international community [3]. Since the initial AIDS epidemic, about 78 million people have lived with human immunodeficiency virus (HIV) worldwide, of which 35 million people have died of AIDS-associated diseases [1]. Even though the occurrence of AIDS has stabilized in many developed countries, in many parts of the world, such as Africa, Southeast Asia, and Eastern Europe, the number of infected people is still increasing [4].

HIV/AIDS is now a public health challenge in Iran based on the latest estimates of the United Nations Program on HIV/AIDS (UNAIDS), where in 2018, 61,000 people were living with HIV, of which 45,000 (75%) were men [1]. The spread of this disease in Iran is faster than other countries in the region [5, 6]. Hairdressing is a profession, in which sharp tools are employed, and therefore it can be a potential source of disease transmission. During haircuts, barbers may use joint tools for clients, and the infection can be accidentally transmitted from a client to another [7]. Therefore, knowledge and sensitization of barbers and hairdressers on topics associated with AIDS are of great significance [8].

Theory of planned behavior (TPB) was developed as a theory of reasoned action in 1988 by Ajzen to predict an individual's intent to involve in a behavior at a definite place and time. The theory was recommended to describe all behaviors, over which people can exert self-control [9, 10]. TPB consists of six constructs that jointly characterize a person's real control over a behavior. One of this constructs is attitude that considers a degree of a person favorable, satisfactory, or disapproving attitude towards behavior of interest. It involves a consideration of consequences of acting the behavior. The second structure of this theory is behavioral intention. Motivational factors that affect a certain behavior, in which the stronger the intent to do the behavior, the more probable the behavior will be done. The third structure of this theory is subjective norms, with a belief whether most people favor or dislike behavior. It is associated with a person's opinion if peers and people of significance for that person think he or she should involve in the behavior. The fourth structure of this theory is perceived behavioral control. It reveals a person's awareness of the ease or difficulty of acting the behavior of interest [11-14]. The constructs of this model are used in AIDS education programs, and displayed in training programs with a significant influence on adopting AIDS prevention behaviors [3, 15].

Regarding youth visiting barbershops at least once a month, they are considered suitable to transfer information about AIDS. In such places, barbers can exchange information about AIDS with their clients, of which most are

young people. Therefore, the present study aimed to evaluate the effect of educational intervention based on theory of planned behavior (TPB) on HIV/AIDS preventive behaviors among male barbers.

Material and methods

Study design and setting

This quasi-experimental study was conducted among male barbers in Torbat-e Heydariyeh city of Khorasan Razavi province in Northeast Iran in 2019.

Sampling and sample size

Sample size consisted of 120 participants, which were equally divided into intervention and control group. List of male barbershops locations were obtained from Hairdressers Union of the city.

Sampling was performed in two stages. In the first stage, four health centers were selected using stratified sampling, of which participants were selected by a simple random sampling method, and were divided into intervention and control groups. Inclusion criteria were Iranian nationality, hairdressing job, and men with high-risk behaviors. However, if tested positive for HIV/AIDS, they were excluded from the study. Distribution of hairdressers participating in the study was homogeneous among sampling centers, therefore both groups had sufficient homogeneity to compare the effect of the intervention.

Instruments and data collection

Before completing the questionnaires, target and questionnaire completion methods were explained. The questionnaires were filled with a self-administrated method (for both groups). After analysis of data, educational content emphasizing theoretical structures of TPB were prepared, and training courses for two workshops were set. Four training sessions were held in the meeting hall of comprehensive health service centers, each of which lasted 1 hour. The content of each of these training sessions are summarized in Table 1. Three months after the educational intervention, post-test questionnaires were completed for both the intervention and control groups.

The questionnaire was designed using literature review based on the constructs of TPB model. To evaluate content validity rate (CVR) and content validity index (CVI), the questionnaire was edited by a panel of 10 experts (6 health education and health promotion specialists, 2 epidemiologists, and 2 physicians in the field of infectious diseases). The construct validity was 0.82 for knowledge questions, 0.78 for attitude, 0.81 for behavior, 0.78 for perceived behavior control, 0.79 for subjective norms, and 0.77 for intention questions. The questionnaire internal consistency was measured using Cronbach's α in a pilot study tested with 15 barbers (Cronbach's $\alpha = 0.8$). The questionnaire included

Table 1. Plan of the educational intervention

Constructs	Hours	Behavior change techniques	Intervention strategies
Session 1: Knowledge Attitude	First hour	Lecture, slides, teach-back video, pamphlets	Definition of disease, and symptoms and clinical signs of the disease Transmission and prevention routes
	Second hour	Focus group discussion, lecture, identification of barriers and benefits	Key concepts were explained for promoting participants' attitude towards AIDS prevention behaviors, changing attitude by increasing severity and susceptibility of the disease
Session 2: Subjective norms Perceived behavioral control	First hour	Focus group discussion, brainstorming, planning of social support and social change lecture, and teach back videos	Educational session was also held for Hairdressers Union to support barbers (encouragement and reward) Importance of peer education by barbers and request to share information with their colleagues
	Second hour	Lecture, focus group discussion, identification of Barriers and benefits, reminder card, pamphlets	Clarifying the efficacy as an effective factor in AIDS prevention behaviors, encouraging barbers to learn more about high-risk AIDS factors from a booklet developed by researchers

different parts on demographic and knowledge questions (9 items), attitude towards behavior (8 items), behavior (7 items), intention (5 items), subjective norms (5 items), and perceived behavioral control (6 items).

Construct of knowledge was determined according to three-point responses ('Yes' = 3, 'I don't know' = 2, 'No' = 1). The construct of intention was determined on the basis of a five-point Likert scale ('Always' = 5, 'Most often' = 4, 'Sometimes' = 3, 'Rarely' = 2, 'Never' = 1). Constructs of attitude, subjective norms, and perceived behavioral control were determined according to three-point Likert scale ('Agree' = 3, 'No idea' = 2, 'Disagree' = 1). Also, construct of behavior was determined based on three-point Likert scale ('Always' = 3, 'Sometimes' = 2, 'Never' = 1).

Ethical consideration

Ethics committee affiliated with Torbat Heydariyeh University of Medical Sciences approved this study as well as its consent procedure (No., IR.THUMS.REC.1394.70). A cover letter explaining the purpose and procedures of the study

was provided to eligible participants for data collection. Then, verbal agreement from all participants was obtained; they were ensured about confidentiality of the data and voluntary participation in the study, with the right to withdraw at any time. Informed consent forms were obtained after completion of the questionnaires.

Statistical analysis

After collecting, data were analyzed with SPSS version 20 using descriptive (mean, standard deviation) and inferential methods (independent *t*-test, paired *t*-test, correlation coefficient, χ^2 , and linear regression). *P*-value < 0.05 was considered as statistically significant.

Results

The mean age of the twelve enrolled subjects in this study was 30.41 ± 8.43 , of which 3.4% had university degrees and 71.6% were married. Chi-square test did not show a significant difference among education level and marital status in

Table 2. Distribution of demographic variables

Variable	Intervention		Control		All		<i>p</i> -value *
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Level of education							
Elementary	28	46.6	24	40.0	52	43.3	0.092
Diploma and under diploma	30	50.0	33	55.0	63	52.5	
Academic	2	3.4	3	5.0	5	4.2	
Marital status							
Single	17	28.4	15	25.0	32	26.6	0.081
Married	43	71.6	45	75.0	88	73.4	

* χ^2 test

Table 3. Comparison between behaviors and TPB constructs before and after intervention

	Before intervention, mean \pm SD	After intervention, mean \pm SD	Mean rate of changes	p-value**
Knowledge				
Experimental group	10.97 \pm 3.45	16.36 \pm 1.81	5.39	< 0.001
Control group	11.48 \pm 3.07	11.58 \pm 2.68	0.10	0.17
p-value*	0.68	< 0.001		
Attitude				
Experimental group	16.18 \pm 2.83	21.61 \pm 2.34	5.43	< 0.001
Control group	15.95 \pm 3.11	16 \pm 2.16	0.05	0.66
p-value*	0.91	< 0.001		
Intention				
Experimental group	10.08 \pm 1.59	14.11 \pm 1.31	4.03	< 0.001
Control group	10.04 \pm 1.2	10.76 \pm 1.04	0.72	0.12
p-value*	0.11	< 0.001		
Subjective norm				
Experimental group	8.36 \pm 3.02	14.06 \pm 1.91	5.07	< 0.001
Control group	8.7 \pm 2.6	8.2 \pm 1.83	-0.05	0.49
p-value*	0.38	0.007		
Perceived control behavior				
Experimental group	12.51 \pm 1.83	14.28 \pm 0.97	1.77	< 0.001
Control group	12.08 \pm 1.78	12.1 \pm 1.83	0.02	0.11
p-value*	0.82	< 0.001		
Behavior				
Experimental group	3.66 \pm 1.14	5.71 \pm 0.97	2.05	< 0.001
Control group	3.87 \pm 1.23	3.91 \pm 1.27	0.04	0.17
p-value*	0.10	< 0.001		

*Paired t-test. **Independent t-test

the intervention and control groups before the intervention ($p > 0.05$) (Table 2).

At baseline, the findings of independent t-test demonstrated that mean scores of TPB constructs as well as behavior were not significantly different between the intervention group and the control group ($p > 0.05$). After the intervention, paired t-test revealed that there was a significant difference between the intervention and control groups in mean scores of TPB constructs as well as behavior ($p < 0.05$) (Table 3).

Pearson correlation coefficient demonstrated a significant correlation between TPB structures and AIDS prevention behaviors (Table 4).

Linear regression analysis showed that this model could predict 62% of behavior change as a dependent variable. Moreover, on the basis of standardized regression coefficients, knowledge and perceived control were the most important behaviors predictors, respectively (Table 5).

Discussion

The aim of the present study was to evaluate the effect of educational intervention based on theory of planned be-

havior (TPB) on HIV/AIDS preventive behaviors among male barbers. The results of the current study showed a significant enhancement in the mean score of constructs of TPB model after training. Here, the mean score of knowledge in the intervention group enhanced meaningfully, while this difference was not found to be significant in the control group. A significant change in the knowledge score of the intervention group was expected compared to its counterpart, and the impact of educational intervention on raising the awareness of hairdressers was revealed. Our findings were in accordance with those of Alizadeh Siouki *et al.* [3, 14] and Magnussen *et al.* [16]. The first step in changing behavior and criterion for changing attitudes was increasing knowledge of goal group, as we conveyed appropriate educational methods to the target group.

On the basis of results of linear regression, among TPB constructs, knowledge and perceived control were the most important predictors in improving AIDS preventive behaviors. In this regard, results of Dehdari *et al.* [17] and Schans and Brig-Gen [18] showed that knowledge and controlling perceived behavior were the most important predictors in improving behaviors leading to health. The mean score of at-

Table 4. Correlation between TPB constructs

Variable	Knowledge	Intention	Subjective norm	Perceived control behavior	Attitude	Behavior
Knowledge						
<i>r</i>	1.00	0.266*	0.506**	0.544**	0.512**	0.405
<i>p</i>		0.04	< 0.001	0.01	< 0.001	0.001
Intention						
<i>r</i>	0.266**	1.00	0.514**	0.357**	0.251	0.119
<i>p</i>	0.04		< 0.001	0.005	0.06	0.367
Subjective norm						
<i>r</i>	0.506**	0.514**	1.00	0.377**	0.258*	0.294*
<i>p</i>	< 0.001	< 0.001		0.003	0.04	0.02
Perceived control behavior						
<i>r</i>	0.544**	0.357**	0.377**	1.00	0.382**	0.335**
<i>p</i>	< 0.001	0.005	0.003		0.003	0.009
Attitude						
<i>r</i>	0.389**	-0.134	-0.186	-0.051	1.00	-0.172
<i>p</i>	0.002	0.300	0.155	0.698		0.189
Behavior						
<i>r</i>	0.060	0.232	0.292*	0.276*	-0.172	1.00
<i>p</i>	0.001	0.367	0.02	0.009	0.189	

Table 5. Regression analysis for TPB constructs as predictors of AIDS prevention behaviors

Constructs	B	St. error	Beta	t-value	p-value
Knowledge	0.136	0.050	0.314	2.710	0.008
Attitude	0.046	0.046	0.116	0.999	0.320
Intention	0.139	0.083	0.147	1.671	0.097
Subjective norm	0.089	0.093	0.086	0.958	0.340
Perceived control behavior	0.150	0.083	0.166	1.801	0.044

titudes was 90% in the interventional group. It seems that attitude was a critical factor in persuasion and creating motivation of adopting preventive behaviors. Therefore, training programs should include this important subject, so that people's sensitivity and motivation would be enhanced.

Boer and Mashamba reported on the significance of attitude to learn about HIV/AIDS [19]. Our findings are in accordance with results of Moeini *et al.* [20] and Alizadeh Siouki *et al.* [3]. The mean score of subjective norms showed a significant increase in the interventional group after the intervention in comparison with the control group. A significant increase in subjective norms among the participants in the intervention group was similar to findings from previous studies [15, 21, 22]. Because subjective norms are determinants of AIDS prevention behaviors [20], therefore, in the current study, educational intervention, including encouragement and reward, was also undertaken in Hairdressers Union to support barbers.

In the present study, perceived behavioral control about AIDS prevention showed statistically significant changes after the intervention, perceived behavioral control emphasize individuals' perceptions of their capacity to perform a given behavior. To the extent that it is a precise reflection of real behavioral control, perceived behavioral control can, along with intention, be utilized to predict behavior [15]. Jalali [23] and Eslamimehr studies [24] showed a significant changes in perceived behavioral control mean score of interventional group after educational interventions, which is consistent with the results of the current study.

In the present research, the behavioral intention mean score revealed a significant increase in the interventional group, as it obtained 94% from total scores of this construct. Behavior often occurs after creating intention. In line with our findings, other studies also revealed the impact of training on behavioral intention [14, 25-28]. Our findings showed a significant increase in AIDS prevention behaviors mean

score among the intervention group, which was similar to previously published reports [14, 29-31].

In order to change behavior, initial motivational conditions should be provided, and regular and coherent training programs should be designed through appropriate channels to provide significant changes of behavior [30]. The strengths of the present study involved an opportunity for hairdressers in post-test stage to discuss and use their experiences about AIDS prevention behaviors. However, this research had some limitations, such as homogeneity of the sample, self-reported questionnaires, scattering of barbershops, and long time to complete the questionnaires in pre-test and post-intervention stage.

Conclusions

The findings of the current study revealed that an educational intervention using TPB can lead to enhancement in the level of knowledge and perceived behavioral control, improvement of attitude, and creating appropriate subjective norms with the formation of behavioral intention. Researchers can use TPB to design, implement, and evaluate educational interventions at other levels for the prevention of AIDS.

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Conflict of interest

The authors have no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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