



The using of health belief model on AIDS preventive behaviors among health volunteers

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Abstract

AIDS has affected all countries, races, and both genders across the world. The purpose of this study was the effect of an educational program based on the health belief model in health volunteers on AIDS preventive behaviors. In this quasi-experimental study, 150 health volunteers were chosen and placed randomly in the case group (75) or in the control group (75). A questionnaire was used to collect the data. The volunteers filled out the questionnaires one month after the educational program had ended. The data were analyzed through statistical tests, namely the independent t-test, the paired t-test, the chi-square test and the Pearson correlation test. After the educational intervention, mean scores of all constructs of the health belief model became significant. The results were indicative of the positive effects of health belief model-based educational interventions on AIDS-related awareness, skills and preventive behaviors in health volunteers and the households under their coverage.

Keywords: Acquired Immune Deficiency Syndrome, Education, Volunteer, health belief model

Introduction

Due to its high rate of mortality and healthcare-related costs, human immunodeficiency virus (HIV) is a serious threat to the society's health and economics [1,2]. In the third decade since its emergence, HIV has become a pandemic disease threatening the whole world [3] and is now considered the fourth top cause of death in the world [4].

Since the emergence of acquired immune deficiency syndrome (AIDS) epidemic in the world, more than 60 million people have been infected with the virus and 30 million have died of it. In 2011, 34.2 million people were living with HIV virus, and 2.7 million were infected with this virus. Some 8 million people are under

treatments for AIDS. In 2011, countries with a low or average rate of income have invested 8.6 million dollars to fight AIDS [5].

Most people with HIV live in developing countries, where there is less capacity in providing care and support for such patients [6]. Iran is located in a high-risk geographical area. According to the latest statistics, 25,041 people with HIV/AIDS have been identified in the country, of whom 90.6% are male and 9.4% are female. Thus, a serious fatal risk threatens Asian countries including Iran; the risk is so high that government officials have warned people of explosive rise in prevalence of this disease and have called Iran a high-risk area [7]. At present, prevention is the single

most important measure that the world can take against HIV epidemic. Because of the particular conditions of the population, preventing the current rising trend of HIV epidemic requires the persistent implementation of targeted educational programs [8]. The Health Belief Model (HBM) is one of the oldest theories about health behavior and is considered one of the first models enlisting theories pertaining to behavioral sciences in an effort to help resolve health issues. This model is based on five major constructs, namely, perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and perceived self-efficacy. This model is useful for prevention-based programs and brief interventions intending to achieve particular changes; in fact, most mobilization organizations for public education on HIV and AIDS exercise this approach. Applying this model to HIV/AIDS can help us better understand risky sexual behaviors and substance use. The model is based on the individuals' motivation to act. The constructs of this model are applied to AIDS education programs and can help with the better understanding of AIDS prevention behaviors. Studies conducted through this method of education suggest that the effect of education interventions on AIDS prevention behaviors was evident [3,10]. Health volunteers are volunteer workers who act as an intermediary between people and systems providing health and medical services. They play a major role in increasing the efficiency of services and improving the delivery of health services. They can play their role more productively if they have comprehensive knowledge about health issues [11]. At present, more than a hundred thousand women act as health volunteers cooperating with healthcare centers across the country. With regard to the key role they play and the cultural and social relations they have with the families they cover, these women can easily convey their newly gained knowledge to the families [12]. Given the importance of this issue, we decided to determine the effects of health educational program based on the HBM held for health volunteers working with health centers in Roshtkhar on AIDS prevention behaviors.

Method

In this quasi-experimental study, the participants consisted of 150 health volunteers collaborating with health and medical centers in Roshtkhar city, Iran. Among the inclusion criteria for the health volunteers was their activity and also their desire for and possibility of active participation in the classes. Thus, 150 health volunteers were selected from 6 eligible health and medical centers and were included in the study (75 in case group and 75 in the control group). In dividing the health volunteers into the two groups of intervention and control, several factors were considered such as the impossibility of communication between volunteers of the two different groups, geographical distribution of the health centers and lastly their population, economic and social features. On these grounds, three of the healthcare centers formed one group and three others formed the other group. Then, using simple randomization method, one group was chosen as the intervention group and the other as the control group. The mode of data collection was a questionnaire consisting of different sections. The first section included 4 demographic questions. The second section evaluated the awareness of the volunteers with 10 questions and possible answers of Yes/No/Don't know while 2 scores were allocated to correct answers, 0 score to wrong answers and 1 score to "Don't know" answer. The third section was about the viewpoint and the constructs of the HBM which consisted of 32 questions (10 questions for the viewpoint, 5 for perceived susceptibility, 5 for perceived severity, 5 for perceived benefits, 5 for perceived barriers, and 5 for self-efficacy). The scores agreed to be allocated to viewpoint, perceived susceptibility, perceived severity, perceived benefits and barriers, and self-efficacy were determined in this manner: The most favorable answer received a score of 3, the least favorable 1 and the neutral answer 2. A panel of experts verified the validity of the questionnaire. Hence, the questionnaire was sent to the experts of this field, who then assessed its errors, and afterwards corrections

were made to it and the Content Validity Ratio (CVR) and the Content Validity Index (CVI) were verified. For reliability verification, the questionnaire was submitted to 20 health volunteers (aside from the groups of volunteers participating in the study) who resembled the target group and was then filled out. Cronbach's alpha test was used in this case and its coefficient for this questionnaire was 0.76- which is verified. Before the questionnaires were distributed, necessary clarifications were made about the method of responding to the questions and it was made clear that providing name of the responder was not required. The questionnaires were filled out and collected in the presence of the researcher in health and medical centers. After the initial analysis of the data, the educational needs of the participants were determined and the educational content

was prepared with regard to their culture and demographic features. The educational program was then actualized during two sessions of two hours in the form of lectures, group discussions and the distribution of pamphlets. Two months after the educational intervention, a second test with a similar format as the first one was carried out simultaneously in both the intervention and the control groups. The data were then analyzed by the SPSS-11.5 and through statistical tests, namely, the independent t-test, the paired t-test, the chi-squared test and the Pearson correlation test. $P < 0.05$ was taken as a significant.

Results

Mean age and standard deviation of the intervention group and the control group was 30 ± 5.23 and 25.35 ± 5.44 years, respectively.

Table 1 Comparison between changes in the behavior and constructs of HBM before and after the intervention

		Pre-intervention	Post-intervention	Mean rate of changes	P-value**
		Mean \pm SD	Mean \pm SD		
Awareness	experimental group	14.1 \pm 3.85	18 \pm 2.54	3.9	0.001
	control group	17.04 \pm 2.89	17.05 \pm 2.87	0.01	0.65
	P-value	0.22	0.004	0.001	
Attitude	experimental group	24.64 \pm 2.91	26.46 \pm 2.53	2	0.001
	control group	26.18 \pm 2.89	26.07 \pm 1.86	-0.11	0.23
	P-value	0.3	0.007	0.002	
Perceived susceptibility	experimental group	13.86 \pm 1.68	14.74 \pm 0.65	0.88	0.004
	control group	14.09 \pm 1.24	14.12 \pm 1.23	0.03	0.32
	P-value	0.35	0.004	0.002	
Perceived severity	experimental group	9.19 \pm 2.18	10.59 \pm 2.54	1.40	0.005
	control group	8.74 \pm 1.86	8.76 \pm 1.84	0.02	
	P-value	0.21	0.002	0.002	
Perceived barriers	experimental group	12.55 \pm 2.88	11.01 \pm 3.09	-1.54	0.003
	control group	11.32 \pm 3.25	11.51 \pm 3.12	0.19	0.34
	P-value	0.56	0.001	0.001	
Perceived benefits	experimental group	12.98 \pm 2.07	14.92 \pm 0.43	1.94	0.004
	control group	14.49 \pm 1.05	14.54 \pm 0.90	0.05	0.15
	P-value	0.11	0.003	0.001	
Self-efficacy	experimental group	13.35 \pm 2.07	14.29 \pm 1.5	0.94	0.003
	control group	13.51 \pm 1.83	13.56 \pm 1.78	0.05	0.95
	P-value	0.64	0.007	0.002	
Behavior	experimental group	12.37 \pm 1.90	14.65 \pm 0.89	1.28	0.001
	control group	12.40 \pm 1.86	12.47 \pm 1.79	0.07	0.09
	P-value	0.91	0.002	0.001	

*Independent t-test

** Paired t-test

There was no significant statistical difference between the two groups with regard to their age distribution. As for their level of education, findings of the study showed that nearly half of the participants had a high school degree or above and more than half of them did not have a high school degree. The chi-squared test did not indicate a significant statistical difference between the two groups with regard to their level of education and employment.

Regarding mean scores of the constructs of the

HBM, no significant difference was found between the intervention and control groups. In the experimental group, the mean score of awareness showed significant change after educational intervention ($P < 0.001$). The paired t-test showed that in the experimental group, difference in behavior score before and after intervention is statistically significant ($P < 0.001$). In the experimental group, the mean scores of the constructs of the HBM showed significant increases following

Table 2 Correlation between constructs of the HBM

		Behavior	Perceived benefits	Perceived susceptibility	Perceived self-efficacy	Awareness	Attitude	Perceived severity	Perceived barriers
Behavior	Correlation coefficient	1							
	P value	-							
Perceived benefits	Correlation coefficient	0.261							
	P-value	0.002	-						
Perceived susceptibility	Correlation coefficient	0.110	0.212	1					
	P-value	0.19	0.01	-					
Perceived self-efficacy	Correlation coefficient	0.162	0.045	0.024	1				
	P-value	0.05	0.6	0.77	-				
Awareness	Correlation coefficient	0.127	0.111	0.156	0.150	1			
	P-value	0.13	0.19	0.06	0.07	-			
Attitude	Correlation coefficient	0.047	0.105	0.109	0.178	0.359	1		
	P-value	0.58	0.22	0.20	0.03	0.001	-		
Perceived severity	Correlation coefficient	0.151	0.175	0.029	0.186	0.121	0.343	1	
	P-value	0.07	0.04	0.73	0.02	0.15	0.003	-	
Perceived barriers	Correlation coefficient	0.96	0.03	0.071	0.424	0.285	0.329	0.308	1
	P-value	0.26	0.64	0.41	0.002	0.001	0.008	0.002	-
Perceived benefits	Correlation coefficient	0.252	0.962	0.225	0.076	0.161	0.132	0.172	0.072
	P-value	0.003	0.001	0.008	0.37	0.05	0.12	0.04	0.4

intervention. The independent t-test showed that the mean scores of the constructs of the HBM are significantly different between the experimental group and the control group (Table 1).

In order to verify the relationship between the constructs of the HBM and the AIDS prevention behaviors, the Pearson's correlation coefficient analysis was used. The results are presented in Table 2. The constructs of perceived benefits and perceived self-efficacy had a significant relationship with the AIDS prevention behaviors ($P < 0.001$).

Discussion

Not adhering to healthy behaviors can be seen in any society. Proper and improper behaviors are considered a part of a society's culture. The inclination in people to discern proper lifestyles as a means of protecting their health and avoiding illness requires that their behavior be adjusted [13].

Mean score of awareness in health volunteers in intervention group increased by 19.50% and they managed to score 90% of the total score of awareness post-intervention. Thus we can claim that education can have a positive effect on the health volunteers' awareness. The results of the present study are in accordance with findings of Sharifzadeh *et al.* [14] and Babaei [15].

Mean score of attitude increased by 66.6% in experimental group. It seems that the improvement in the attitude of the health volunteers studied after educational intervention is the result of their increased awareness and the positive effect of educational intervention on them. In other words, increased awareness creates a positive attitude.

The results of the present study are in accordance with the results of other studies on AIDS education conducted by Zareban *et al.* [4], Sharifzadeh *et al.* [15], Zhanq *et al.* [16], which were indicative of the positive effect of educational intervention on the participants studied.

Mean score of behavior increased by 8.23% in health volunteers of intervention group. The results Alizadeh *et al.* [7] and Aghamolaei *et al.*

[17] studies are comparable with this.

In the experimental group, the health volunteers' mean score of perceived susceptibility increased post-intervention in contrast to pre-intervention. On average, the health volunteers in this group scored 98.26% of the total score of perceived susceptibility post-intervention, that is, on average, health volunteers reacted to 98.26% of the consequences of risky behaviors. According to the HBM, high perceived susceptibility is necessary for increasing people's motivation in adopting preventive health behavior. Part of educational programs on topics such as AIDS has to focus on this construct. This finding is in accordance with the results of other studies conducted in this field based on the HBM, such as those by Rahmati *et al.* [18] and Karimi *et al.* [19]. Moreover, in the experimental group, the health volunteers' mean score of perceived severity also increased after the intervention provided as they scored 70.6% of the total score of perceived severity. One of the reasons that justify the fitness of the HBM in AIDS is the fatal consequences of this disease and the fact that AIDS is viewed as a lethal disease by the community. However, a greater perceived severity of AIDS might be positive since it can be beneficial to the public adoption of AIDS-preventive behaviors. We can conclude that education has managed to increase the health volunteers' perceived severity of this disease. This result is in accordance with Rahmati *et al.* [18] study; likewise, in the other study conducted by Karimi *et al.* [19], education has led to an increase in perceived severity.

Moreover, the mean score of perceived benefits increased from 12.98 to 14.42 post-intervention. The effectiveness of education on increasing the perceived benefits toward AIDS has also been reported by Volk & Koopman [20] and Lollis *et al.* [21], which is in accordance with the results of the present study. In the intervention group, the mean score of perceived barriers, which was 12.55 at pre-intervention state decreased to 11.01 following the post-intervention which reflects a decrease by 10.26%. This implies

that educational intervention based on the HBM has led the health volunteers to perceive fewer barriers against the prevention of AIDS. Other studies also point to the reducing effect of educational programs on the degree of perceived barriers [19,22].

The results of the study showed that the mean score of self-efficacy, which was 29.14 at pre-intervention state increased to 13.35 post-intervention. The studies conducted by Ghaffari & Kinsler showed that the score of the self-efficacy did not change significantly at post-intervention [23,24]; however, Aghamolaei study noted an increase in the score of the aforementioned construct [17].

There is a significant positive relationship between behavior and attitude, perceived benefits, and perceived self-efficacy while the relation between perceived barriers, perceived susceptibility and perceived severity is of no significance.

On the other hand, greater perceived self-efficacy along with high perceived benefits and low perceived barriers can increase the participation of health volunteers in AIDS prevention interventions among the population they cover. With regard to the high dispersion of the health centers studied, coordinating the educational programs and tracking the interventions were among our limitations.

Conclusion

The results of this study suggest that HBM-based educational program for AIDS resulted in increased awareness, perceived susceptibility, perceived severity, perceived benefits, and self-efficacy with regard to AIDS in health volunteers. Thus, as every health volunteer covers several households with respect to their health issues, we can expect to see them provide effective education to the households they cover on matters pertaining to AIDS prevention behaviors. We recommend that educational programs be widely implemented for health volunteers on the subject of communication skills, and that its effects on the communities they cover be evaluated with regard to the subjects studied with a particular attention to

AIDS. Furthermore, plans should be devised through similar educational programs and other theories or models of behavior change on the individual and organizational level in order to resolve the barriers existing against prevention behaviors.

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Contributions

Study design: HAS,NSR

Data collection and analysis: HAS

Manuscript preparation: HAS,HH, SA

Conflict of interest

"The authors declare that they have no competing interests."

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