

## The Effect of Volunteer Health Workers Educational Program on the Basis of BASNEF Model on Promotion of Their Practices about Cutaneous Leishmaniasis

S. Mohammad Mahdi Hazavehei,<sup>1</sup> Hashem Heshmati,<sup>\*2</sup> Akbar Hasanzadeh,<sup>3</sup> S. Alireza Pourmazar,<sup>4</sup> Dorsa Maghsoodlou<sup>5</sup>

1. Department of Public Health, School of Health, Hamadan University of Medical Sciences, Hamadan, Iran
2. Department of Health Education, Faculty of Health, Golestan University of Medical Sciences, Gorgan, Iran
3. Department of Biostatistics, Faculty of Health, Isfahan University of Medical Sciences, Isfahan, Iran
4. Director of Communicable Disease, Yazd University of Medical Sciences, Yazd, Iran
5. BSc of Public Health, Golestan University of Medical Sciences, Gorgan, Iran

Article information	Abstract
<p>Article history: Received: 13 Dec 2011 Accepted: 26 Jan 2012 Available online: 6 Feb 2013 ZJRMS 2014; 16(5): 16-21</p> <p>Keywords: BASNEF model Cutaneous leishmaniasis Volunteer health workers</p> <p>*Corresponding author at: Department of Health Education, Faculty of Health, Golestan University of Medical Sciences, Gorgan, Iran. E-mail: heshmati3369@yahoo.com</p>	<p><b>Background:</b> Since, a few study have been done using community education related to cutaneous leishmaniasis (CL) prevention, this study was done to assess the effect of educational program basis on BASNEF Model for promoting Volunteer Health Workers (VHWs) educational practices about CL prevention.</p> <p><b>Materials and Methods:</b> In this prospective quasi-experimental study, 60 VHWs who resident in endemic area of CL in Yazd in 2009 were selected through cluster sampling method and randomly divided in two groups (experimental and control group). Data were collected before and 3 months after educational intervention by using reliable and valid questionnaires and analyzed.</p> <p><b>Results:</b> The mean score of knowledge and BASNEF Model components such as attitude, behavioral intention, enabling factors and practice as well as subjective norms (family, friends, neighbors, local trusted people, local therapist, local mullah, health workers and physician) increase significantly (<math>p &lt; 0.05</math>) 3 months after the intervention program among experimental group comparing to control group.</p> <p><b>Conclusion:</b> This study was confirmed effectiveness of the training VHWs by using educational program basis on BASNEF model related to CL prevention program.</p> <p>Copyright © 2014 Zahedan University of Medical Sciences. All rights reserved.</p>

### Introduction

Leishmaniasis is endemic in 88 countries in the world and 350 million people are at risk. Forty million people are infected and 1.5 million new cases of cutaneous leishmaniasis occur every year [1]. Frequency of the disease is increasing, unlike other infectious disease [2] mainly because of migration, population displacement, co-infection with HIV, global warming and changes in human ecology [1-3]. The disease has been caused many problems due to long-term wounds; ugly scars, secondary infections possibility, heavy medical costs and drugs complications [4, 5] and the disease will take long time about 5 months to 2 years without treatment that infection transition possibility is high in this long period [6]. The disease is in some eastern Mediterranean countries such as Afghanistan, Iran, Iraq, Saudi Arabia, Pakistan, Syria, Jordan and Sudan [7]. Iran is one of the first 7 countries at the world in related to CL and 30,000 infected people are reported in Iran annually [1, 8]. That on the basis of the research, actual statistic of the disease is 4 to 5 times of the current statistic [9]. CL is endemic in most part of Iran and almost always the disease is developing in new region in Iran and more population becomes involved [9]. Yazd, central of the country, is one of the most contaminated or polluted provinces in related to CL [10]. Health education application is in priority of World Health Organization programs for CL prevention, due to lack of appropriate

vaccine and drug for CL [11]. Also numerous studies have been done in related to CL vector control [12, 13] that have emphasized on health education and community participation importance. In a descriptive study that was done on the basis of BASNEF model; educational behavior of VHWs in related to CL wasn't in a desirable level [14]. Other descriptive study showed; there was a statistically significant direct association between knowledge and attitude of VHWs and knowledge of families [15]. BASNEF model was developed by Hubley [16]. BASNEF model is the most comprehensive model for studying behavior and creating new behavior [17]. The components of BASNEF model are belief, attitude, subjective norms and enabling factors that the name of which is made up of the first letters of the above components [18]. The model is derived from two model (precede and behavioral intention model) and was applied for studying behavior and programming in order to behavior change and determining effective factors for doing behavior [19]. VHWs education is essential in order to enabling the for population education. Therefore according to high prevalence and importance of the disease and important role of VHWs in population education; the current study was designed and done with the aim of the effect of educational program on the basis of BASNEF model on promotion of VHWs educational practices about cutaneous leishmaniasis.

## Materials and Methods

This is a prospective Quasi-experimental study that was done in 2009. In this study, two health centers that were located in the most common endemic area of CL in Yazd were selected through cluster sampling method randomly and were randomly divided into two experimental and control groups. Under studied population were included VHWs of above health centers and under supported health stations that had active participation in health centers programs and VHWs that themselves and their families were infected by CL, were excluded from the study. In the study all of VHWs that were eligible for the study including 60 VHWs were studied, totally 30 VHWs as experimental group and 30 VHWs as control group. Data collection instrument was a researcher-made questionnaire that was developed on the basis of BASNEF model and study goals.

Validity of the questionnaire was approved by experts' viewpoints and reliability of the questionnaire was approved on the basis of Cronbach's alpha that its Cronbach's alpha-coefficient was 0.73-0.82. The questionnaire was including demographic characteristics (8 questions), knowledge (24 questions), attitude (12 questions), subjective norms (8 questions), behavioral intention (9 questions), enabling factors (6 questions) and practice (11 questions). Knowledge questions were developed as four answer choices that score one were used for correct response and zero score were used for incorrect response and a total score of 100 was justified.

Attitude questions were developed on the basis of six point Likert scale (strongly agree, agree, somewhat agree, somewhat disagree, disagree, strongly disagree), so scores was between zero to five so that highest score and lowest score was related to the most desirable attitude and most undesirable attitude respectively and a total score of 100 was justified. Subjective Norms questions were developed as three answer choices (yes, somewhat, no) that two, one and zero score were used for yes, somewhat and no response respectively and the total score was calculated based on the percentage of each option question. Behavioral Intention, enabling factors and practice questions were developed as three answer choices (yes, somewhat, no) that two, one and zero score were used for yes, somewhat and no response respectively and a total score of 100 was justified. Data gathering was done in two stage; before and three months after educational intervention.

The questionnaires were completed by VHWs in health centers with supervision of the researcher. Before educational intervention; situation of under studied people was assessed on the basis of BASNEF model through four methods including: 1) questionnaire, 2) reports, documents, data and recorded information in health centers, 3) interview and 4) observation that these information were used for educational planning and educational content, then educational intervention was conducted in two parts simultaneously: A) VHWs education: 5 sessions was conducted for VHWs.

one session for educating disease and its vector, one session for educating disease prevention methods, one session for educating interpersonal communication skills and one session for educating group work that two final sessions was conducted to enhance the power and skill level of VHWs for group activities and to enhance their social skills. After 1.5 month of 3 months, an educational session was conducted with the aim of investigation of VHWs problems, obstacles and their questions. It should be mentioned that all these sessions were designed on the basis of BASNEF model framework and was tried to provide VHWs participation in all educational planning and programming and they were be aware in relation to importance of BASNEF model components (beliefs, attitudes, subjective norms and enabling factors) and were asked them to use these factors in their educational activities. B) educating VHWs influential people (physician, health care workers, family and etc.): in these sessions, these persons were be aware briefly about CL importance and ways to prevent it and important role of VHWs for educating people for disease control and then were asked them to lead and encourage VHWs in regard to educational activities. After 3 months of educational intervention, data were collected by questionnaire again and were analyzed statistically via SPSS-14 software. For data analyzing-were used  $\chi^2$  tests, paired *t*-test, independent *t*-test, Mann Whitney *U* and Wilcoxon test. Also according to normality of data in under studied components were used parametric tests such as paired *t*-test, independent *t*-test. In relation to ethical considerations; VHWs were justified at the beginning of the study that participation in the study is completely voluntary and control group were educated in the end of the study.

## Results

The study was done on 60 VHWs that mean age of them was  $36 \pm 9$  years and most of them had primary education (41.7%) and were housewife (85%). Independent *t*-test showed; age and family dimension of VHWs hadn't significant difference between experimental and control groups (Table 1).  $\chi^2$  test showed educational level and job of VHWs hadn't significant difference between experimental and control groups (Table 2).

Independent *t*-test showed that, before educational intervention mean score of knowledge, attitude, behavioral intention, enabling factors and behavior haven't had significant difference between experimental and control groups while this difference 3 months after the educational intervention was significant. Paired *t*-test showed that mean score of knowledge, attitude, behavioral intention, enabling factors and behavior in the experimental group significantly increased 3 months after the educational intervention while mean score of knowledge, attitude, behavior intention, enabling factors and behavior hadn't significant increase in the control group (Table 3).

**Table1.** Comparisons between mean age and family dimension of VHWs in experimental and control groups

Variables	N	Groups	Age (yrs) (Mean±SD)	t-Test	p-Value
Mean age	30	Experimental	37.30±9.18	2.06	
	30	Control	34.87±9.37		0.153
Mean of family dimension	30	Experimental	4.10±1.31		0.902
	30	Control	4.07±1.62	0.015	

**Table 2.** Education and jobs of VHVs in experimental and control groups

Variables	Groups	Control N(%)	Experimental N(%)	p-Value
Education	Illiterate	-	-	0.117
	Elementary School	14(46.7)	11(26.7)	
	Secondary school	10(33.3)	9(30)	
	Diploma	6(20)	10(33.3)	
	Higher diploma	-	-	
Job	Employee	2(6.7)	2(6.7)	0.319
	Worker	1(3.3)	-	
	Housekeeper	25(83.3)	26(86.7)	
	self-employment	2(6.7)	1(3.3)	
	Others	-	1(3.3)	

**Table 3.** Comparison of scores mean of knowledge, attitude, behavior plans, enabling factors and health behaviors before and after the intervention case and control group (t-test)

The variable and type of test	Group	Before intervention Score Mean of 100±SD	3 months after intervention Score Mean of 100±SD	p-Value
Knowledge	Case	44.93±10.65	86.48±9.67	<0.001
	control	43.60±8.02	44.66±8.20	0.220
	p-Value	0.44	<0.001	
Attitude	Case	83.27±7.75	89.48±9.67	<0.001
	control	84.22±8.04	83.66±7	=0.606
	p-Value	0.514	<0.001	
Behavioral intention	Case	72.22±23.54	90.42±9.05	<0.001
	control	76.85±17.42	74.04±17.07	=0.136
	p-Value	0.233	<0.001	
Enabling factors	Case	49.72±21.31	88.21±10.70	<0.001
	control	54.16±23.24	52.50±19.54	=0.493
	p-Value	0.277	<0.001	
Behavior	Case	35.30±27.46	71.31±20.08	<0.001
	control	38.18±26.10	37.12±25.57	=0.772
	p-Value	0.557	<0.001	

**Table 4.** Comparison of the distribution of subjective norms volunteers before and 3 months after the intervention case and control groups

Subjective norms	Group	Before intervention			3 months after intervention			p-Value
		Yes (%)	Somewhat (%)	No (%)	Yes (%)	Somewhat (%)	No (%)	
Family	Case	53.3	23.3	23.3	82.8	17.2	-	<0.001
	Control	56.7	33.3	10	66.7	23.3	10	0.157
Friends	Case	26.7	26.7	26.7	34.5	51.7	13.8	0.014
	Control	40	46.7	13.3	26.7	50	13.3	0.670
Neighbors	Case	23.3	50	26.7	44.8	51.7	3.4	<0.001
	Control	43.3	23.3	23.3	40	53.3	6.7	0.155
People trusted site	Case	30	46.7	23.3	48.3	41.4	10.3	0.009
	Control	46.7	16.7	26.7	40	33.3	26.7	0.682
Local therapists	Case	50	30	20	3.4	34.5	62.1	<0.001
	Control	46.7	23.3	30	53.3	26.7	20	0.215
Spiritual Place	Case	16.7	26.7	56.7	58.6	27.9	3.4	<0.001
	Control	20	46.7	33.3	33.3	33.3	33.3	0.155
Health workers	Case	90	10	-	100	-	-	0.014
	Control	93.3	6.7	-	86.7	10	3.3	0.063
Doctor	Case	83.3	10	6.7	96.6	3.4	-	0.015
	Control	73.3	13.3	13.3	76.7	13.3	10	0.157

Mann-Whitney *U* test showed that, before educational intervention, effect of family, friends, neighbors, local trusted people, local therapist, health workers and physician on VHWs were not significant difference between experimental and control groups (Table 4). Also Mann-Whitney test showed effect of family, local therapist, local mullah, Health workers on VHWs had significant difference 3 months after educational intervention between experimental and control groups ( $p < 0.05$ ) and effect of friends, neighbors, and local trusted people on VHWs was not significantly different between experimental and control groups. Wilcoxon test with comparing before and 3 months after the educational intervention showed all of influential people on VHWs (family, friends, neighbor, local trusted people, local therapist, local mullah, health workers and physician) and had significant changes in experimental group ( $p < 0.05$ ), while in control group hadn't significant change (Table 4).

## Discussion

Low knowledge level of both experimental and control group before educational intervention indicate the need to educate these groups, because of important role of VHWs in society education and disease control and being aware of the subject is the at least things that is required for doing their duties. Mean score of knowledge in experimental group significantly increased 3 months after the educational intervention which indicates the impact of educational intervention on VHWs knowledge. Our findings in the study are consistent with other studies in relation to VHWs educational intervention effect such as healthy living [20] and prevention of osteoporosis [21]. Also our findings are consistent with other studies based on BASNEF model such as effect of education on assertion skill [22], diabetic eye care [23] and increasing Kala-Azar awareness [24]. Mean score of VHWs attitude in relation to educational measures significantly increased 3 months after the educational intervention that indicate educational intervention based on BASNEF model is effective for promoting VHWs attitude level in families education. The findings of this study are consistent with other studies such as VHWs education in prevention of osteoporosis [21] and mental health [25]. Also our findings are consistent with other studies based on BASNEF model such as effect of education on students' physical activity [26] and prevention of occurrence of heart attack risk factors [27].

Despite the Wilcoxon test showed that all influential people in experimental group had significant changes but Mann-Whitney *U* test showed that some influential people (friends, neighbors and local trusted people) haven't had significant difference between experimental group and control group after intervention that perhaps one of causes is these people haven't took part in educational session, second cause is low social pressure of these people on VHWs and third cause is difficulty of changing subjective norms. Our findings are consistent

with Kohzadi study because he showed education based on BASNEF model was effective on whole BASNEF model components, except subjective norms [28]. But in our study among 8 influential people 5 of them changed. After the educational intervention, behavioral intention of VHWs significantly increased which perhaps its cause is increasing awareness, improving attitudes and influential people influence. In relation to increasing behavioral intention after educational intervention, our study is consistent with other studies based on BASNEF model such as effect of education on diabetic eyes care [23] and breast-feeding mothers' behavior [29]. Enabling factors mean score of VHWs wasn't in acceptable level before the educational intervention that this factor can be one of the causes of VHWs plan recession. Mean score of enabling factors significantly increased in the experimental group after the educational intervention which indicates the impact of educational intervention and providing enabling factors for VHWs can consider as one of the reasons for their success in educating people in the study. Increasing mean score of enabling factors after educational intervention in our study is consistent with other studies based on BASNEF model such as the effect of employees' education in safety in Kimia company [30], eyes care in diabetic [23], breastfeeding mothers' behavior [29], and assertion skills [22]. VHWs behavior wasn't in desirable level before educational intervention while families care and education is one of the most important duties of them. Findings of this study are consistent with other studies; including impact of VHWs activities in promoting health services in VHWs covered populations [31]. Also our findings are consistent with other studies base d on BASNEF model; including the effect of education in performance in diabetic eye care [23], worker safety [32], students' physical activity [26] and diabetic control [33].

For preventive and control of CL; along with other measures (spraying houses, disease reservoir control and etc.), educational program was done simultaneously or before of the measures. On the other hand, our findings showed that educational intervention based on BASNEF model had significant effect on all aspects of behavior such as creating behavior, changing behavior, sustaining behavior in VHWS and BASNEF model because of having components such as attitudes, subjective norms and enabling factor increased efficacy of education and led to changing in VHWs educational behavior. Educational program based on BASNEF model is useful for VHWs and facilitate their tasks. Limitation of the study was large number of the questions that sometimes decreased attention of under studied people, so we recommended in future intervention; questionnaires with fewer questions be used.

## Acknowledgements

Authors of the article express their special thanks to the Yazd health center authorities because of their cooperation. The paper was derived from thesis of Mr



Hashem Heshmati with the number of 387205 from Isfahan University of Medical Science.

#### Authors' Contributions

All authors had equal role in design, work, statistical analysis and manuscript writing.

#### Conflict of Interest

The authors declare no conflict of interest.

#### Funding/Support

Isfahan University of Medical Sciences.

#### References

1. World Health Organization Secretariat. Control of leishmaniasis. March 2007: 1-5. Available from: [http://apps.who.int/gb/ebwha/pdf\\_files/WHA60/A60\\_10-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA60/A60_10-en.pdf).
2. Doroudgar A, Tashakor Z. Effect of education on teachers' knowledge towards leishmaniasis in Kashan. *Feyz Kashan Univ Med Sci* 2003; 7(27): 63-57.
3. Bailey MS, Lockwood D. Cutaneous leishmaniasis. *Clin Dermatol* 2007; 25(2): 203-211.
4. Ebadi M. [Status of cutaneous leishmaniasis in elementary school children in the Borkhar area in Isfahan] Persian [dissertation]. Isfahan: Isfahan University of Medical Sciences; 2008.
5. Momeni Az, Aminjavaheri M. Clinical picture of cutaneous leishmaniasis in Isfahan, Iran. *Int J Dermatol* 1994; 33(4): 260-5.
6. Wilson ME, Streit JA. Visceral leishmaniasis. *Gastroenterol Clin North Am* 1996; 25(3): 535-51.
7. Ministry of Health and Medical Education. Leishmaniasis prevention and care executive program in the country; 1997.
8. Aminian K, Yazdani A, Moradi H and Haheerian Z. The survey epidemiology of leishmaniasis in patients referred to health centers in Isfahan. *Proceedings of the 3<sup>rd</sup> congress of skin diseases and cutaneous leishmaniasis*. Isfahan: Isfahan University of Medical Sciences; 2007: 98.
9. Mazloumi SS, Servat FL. Knowledge, attitude and practice regarding to leishmaniasis: A descriptive study in Bafroye region. *J Yazd Univ Med Sci* 2004; 3(1): 38-32.
10. Ministry of Health and Medical Education. Situation of leishmaniasis disease in the country in 1998, Tehran; 1999.
11. World Health Organization. Tropical disease research, TDR news. WHO publication; 1996: 50.
12. Massom K, Pashtoon MK, Shah-Mohammad M, et al. Vector control in cutaneous leishmaniasis of the old world: A review of literature. *Dermatology Online J* 2008; 14(6): 1.
13. Kishore K, Kumar V, Kesari S, et al. Vector control in leishmaniasis. *Indian J Med* 2006; 123(3): 467-72.
14. Heshmati H, Rahaei Z, Hazavehei SM, et al. [Related factors to educational behaviors of health volunteers about cutaneous leishmaniasis on the basis of BASNEF model in Yazd] Persian. *Ardabil J Health* 2011; 1(3): 48-56.
15. Rahaei Z, Heshmati H, Hazavehei SM and Hasanzadeh A. [Relationship between educational practice of volunteer health workers and preventive behavior of households under their coverage regarding cutaneous leishmaniasis based on the BASNEF model in Yazd city] Persian. *Iran J School Public Health Inst Public Health Res* 2011; 9(1): 77-85.
16. Hubley J. Understanding behaviour: The key to successful health education. *Trop Doct* 1988; 18(3): 134-8.
17. Shojaeizadeh D. Models of behavior study in health education. Tehran: Ministry of Health Press; 2000: 67-77.
18. Ajzen I, Fishbein M. Attitude, behaviour relations: A theoretical analysis and review of empirical research. *Psychol Bull* 1997; 84(5): 888-918.
19. Heidarnia A. Subjects in health education process. 1<sup>st</sup> ed. Tehran: Zamani-Nasser Press; 2003: 94-101.
20. Ramazani A, Miri M, Shayegan F. [Effect of health education on health coordinating volunteers of Birjand health center to promote the community healthy life styles] Persian. *J Birjand Univ Med Sci* 2008; 14(4): 27-32.
21. Baba-Mohammadi H, Asgari-Majd-Abadi H, Kahoei M. [Survey effect of education based on health promotion model on health volunteer's empowerment of health service in preventing of osteoporosis] Persian. *Daneshvar, J Shahed Univ* 2005; 13(59): 18-11.
22. Hazavehei SM, Sharifirad GhR, Kargar M. [The comparison of educational intervention effect using BASNEF and classic models on improving assertion skill level] Persian. *J Res Health Sci* 2008; 8(1): 1-11.
23. Hazavehei SM, Khanijyhouni A, Hasanzade A and Rashidi M. The effect of educational program based on BASNEF model on diabetic (type ii) eyes care in Kazemi's clinic, (Shiraz). *Iran J Endocrinol Met* 2008; 10(2): 145-154.
24. Niknami SH. [Assessment BASNEF model to determine factors affecting disease prevention and control of visceral leishmaniasis and provide a suitable mode] Persian [dissertation]. Tehran: Tarbiat Modares University; 1994.
25. Salehi M, Kelishadi M, Zandye M, et al. The effect of female health volunteers education on knowledge and attitude of urban population about mental health in Isfahan province. *Iran J Med Educ* 2005; 5(2): 111-119.
26. Hazavehei SM, Asadi Z, Hassanzadeh A and Shekarchizadeh P. Comparing the effect of two methods of presenting physical education  $\pi$  course on the attitudes and practices of female students towards regular physical activity in Isfahan university of medical sciences. *Iran J Med Educ* 2008; 8(1): 121-130.
27. Mohamaei F, Nouri-Tajer M, Nouhi F and Maleki M. Application of BASNEF model in preventing the occurrence of risk factors contributing to myocardial infarction in patients with coronary artery disease. *Iran Heart J* 2004; 5(1-2): 29-32.
28. Kohzadi K. [The effect of education through BASNEF model on knowledge, attitude and practice of secondary school first year students in Baneh city about oral health] Persian [dissertation]. Tehran: Tehran University of Medical Sciences; 2008.
29. Barati M. [The impact of educational program based on BASNEF model on breastfeeding behavior of pregnant mothers in Arak] Persian. *Arak Med Univ J* 2010; 13(1): 63-70.
30. Alizadeh R. [Survey of safety culture and effective-ness of educational intervention on the basis of BASNEF model on promotion of employees safety in city of Bandar Imam in petrochemical complex 2005] [dissertation]. Tehran: Iran University of Medical Science; 2005.
31. Moosavi AM, Ostavar R. [A study on activities of female health communicators on improvement of health services in population served by health clinics in Yasuj city] Persian. *Armaghan-e-danesh J* 2003; 31(8): 51-58.
32. Taghdisi MH, Madadzadeh N, Shadzi SH and Hassanzadeh A. Effects of education interventions on the coke workers' immune performances on Baznef model basis at Isfahan melting factory 2005. *Sci J Ilam Med Univ* 2008; 16(3): 24-28.

- 
33. Baghyani-Moghadam MH, Shafiei F, Haydarneia AR and Afkhami M. Efficacy of BASNEF model in controlling of diabetic patients in Yazd. Indian J Commun Med 2005; 30(4): 144-145.

**Please cite this article as:** Hazavehei SM, Heshmati H, Hasanzadeh A, Pourmazar SA, Maghsoodlo D. The effect of volunteer health workers educational program on the basis of BASNEF model on promotion of their practices about cutaneous leishmaniasis. Zahedan J Res Med Sci (ZJRMS) 2014; 16(5): 16-21.