

## Research Article

# Evaluation of Effectiveness of Cholera Prevention and Awareness Campaign in Students Based on Kirkpatrick Model

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## **ABSTRACT:**

**Background and Objective:** Prevention is one of the basic principles in maintaining health and preventing disease. Awareness campaign is one of the methods used for prevention. Thus, knowledge of campaign results can play an effective and constructive role in achieving the goals and future planning. This study tends to evaluate effectiveness of cholera prevention and awareness campaign in students based on Kirkpatrick model.

**Methods:** this was a descriptive and cross-sectional study; the studied population included 282 secondary-school students in border areas of Sarv Abad County. Census was used for sampling; the study was based on Kirkpatrick model. This model considers effectiveness of training programs in four levels, reaction, learning, behavior and results; this study measured reaction, learning and behavior. To measure reaction, satisfaction of learners with awareness campaign (content, attractiveness, effect on learning) was measured through a researcher-made questionnaire on a 3-point Likert scale. To measure learning and behavior, researcher-made questionnaires were used on a 3-point Likert scale ranging from true, false and I do not know.

**Findings:** out of 282 participants, 95 (33.5%) were male and 187 (66.5%) were female. The most attractive media used in awareness campaign for participants included educational videos, training provided by health professionals (speech and Q&A session), pamphlets and banners, respectively. Awareness and behavior of students significantly increased after the campaign by 44.6% and 20.6%, respectively ( $P \leq 0.00$ ).

**Conclusion:** at the end of an awareness campaign, Kirkpatrick model can be used to evaluate its effectiveness, because this model well shows changes caused by training in reaction, learning and behavior. In this regard, planners and practitioners of health system can plan to achieve higher standards.

**Keywords:** evaluation, effectiveness, awareness campaign, cholera, students

## **INTRODUCTION**

Currently, quality of training and its effectiveness are the most important concerns of education system and decision-makers in development of a country [1], because training is a very strategic and important subject as foundation of growth and development of any organization [2]. Thus, growing understanding of importance and role of training in improving organizational performance and efficiency has led to

consumption of many financial and human resources for these trainings in order to achieve tangible profits [3]. However, there are challenges to training processes depending on the extent to which these processes reduce costs and consumption [4], because training is valuable when documentary, reliable and valid evidence shows effects of training on changes in behavior and performance of participants. Thus, this

reflects effectiveness of the process [5, 6]. Effective training evaluation determines the extent to which teachings create the required skills practically [7]. Training evaluation is one of the most important programs which provides good information on design and review of a system [6]. In fact, evaluation of training effectiveness provides managers and employees with a clear picture of quality and quantity of training activities; it also equips planners and teaching staff to be aware of pros and cons of the program [8]. It is believed that evaluation of training effectiveness is more important in design and implementation of training [5]. Donald Kirkpatrick developed one of the most famous models of evaluation which has been used for more than 30 years for evaluating training [9]. This model evaluates four levels, reaction, learning, behavior and results. Reaction (attitude and satisfaction) is how participants feel about the training program. Learning (knowledge) determines the extent to which learners learn skills, techniques and facts taught during training. Behavior refers to degree of changes caused by participating in training courses. Results indicate the extent to which the considered goals are achieved [6]. This model measures evaluation of effectiveness in a training course [10].

One of the teaching and information transfer methods is awareness campaign. Awareness campaign refers to a set of information, communication and training activities using multiple and diverse information channels in order to convey messages to a certain population in a given time period along with goals of the program [11]. Awareness campaign can be done using a variety of media; it tends to inform people about risks of adverse health behaviors and how to avoid or reduce their adverse effects [12]. Awareness campaign is used to increase awareness of society in various fields of public health. Effective examples of awareness campaign are prohibition of smoking and smoking cessation in different societies. Progressive training approaches as major components of intervention strategies are increasingly considered in promoting and

encouraging society to leave risky behaviors associated with health [13].

Sarvabad is a border city in the southwest of Kurdistan province near Iraq. Every few years, there are outbreaks of epidemic cholera in Sarvabad. Due to mountainous nature of the region and problems with drinking water and lack of wastewater collection systems, Sarvabad has been exposed to epidemic cholera three times over the last 10 years. Accordingly, this study tends to evaluate effectiveness of cholera prevention and awareness campaign in secondary-school students living in border villages which are most exposed to risk of cholera.

## **MATERIALS AND METHODS**

This was a descriptive, cross-sectional study to evaluate cholera prevention and awareness campaign done in all secondary schools of border villages in the Sarvabad County. The studied schools included two schools for boys and one school for girls. Participants included 282 students of these schools who were enrolled by using census. Inclusion criteria were voluntary participation and interest in receiving training. Exclusion criteria were unwillingness to participate in classes and absence in more than two sessions. The awareness campaign lasted four months, starting from January 21 to May 21, 2014. Media used in this campaign included: 1) a banner designed by the Ministry of Health and Medical Education; 2) a pamphlet designed by the Department of Communicable Diseases Prevention Management; 3) two instructional videos about the disease and symptoms, purification of vegetables and fruits, and disease prevention; 4) training by health experts in two 2-hour sessions. Awareness campaign was evaluated based on Kirkpatrick model in three levels. In the first level, reaction was measured through a 12-item questionnaire on a 3-point Likert scale including extremely, moderately, not at all. This questionnaire measured attractiveness of educational media, their relevance to content and subject of the campaign, and their effectiveness on learning. In the second level,

learning was measured through pretest and posttest in 12 questions (reliability = 0.86). In the third level, behavioral changes or performance was evaluated by a 7-item questionnaire through pretest and posttest (reliability = 0.83). To determine validity, questionnaires were sent to 10 professors. SPSS<sup>20</sup> was used to analyze data. The means were compared by Mann-Whitney test and t-test. Approval of the Department of Education, principals and parents of students was obtained to conduct the study. Moreover, the information extracted from the encoded questionnaires was kept confidential.

**RESULTS**

Out of 282 participants, 95 (33.5%) were male and 187 (66.5%) were female (age 15.8±1.05). In the first level of the model (reaction), the most attractive media used in awareness campaign for participants included educational videos, training provided by health professionals, pamphlets and banners, respectively (Table 1). Regarding relevance of educational media to subject of the campaign, students believed that educational videos and face-to-face training were more relevant than other methods (Table 2). Regarding effect of educational materials on learning, students believed that face-to-face training was most effective and banner was least effective method (Table 3). In this study, 48.2% of students

found awareness campaign a helpful method to transfer information; 44.5% did not consider the campaign a sufficient and complete method and 7.3% were opposed to use this method for conveying messages and information.

**Table 1:** attractiveness of educational media used in the campaign for students

Attractiveness Media	Not at all	Moderately	Extremely
Banner	21.5%	58.4%	20.1%
Pamphlet	30.7%	54.8%	14.5%
Educational video	69.6%	28.7%	1.7%
Face-to-face training	63.7%	32.7%	3.6%

**Table 2:** relevance of media to subject of the campaign for students

Relevance Media	Not at all	Moderately	Extremely
Banner	34.5%	59.5%	6%
Pamphlet	43%	49.5%	7.5%
Educational video	63.7%	32%	4.3%
Face-to-face training	57.2%	39.6%	3.6%

**Table 3:** effect of educational media used for the campaign for students

Effect Media	Not at all	Moderately	Extremely
Banner	34.2%	55.2%	10.6%
Pamphlet	38.5%	59.8%	1.7%
Educational video	52.8%	43.6%	3.6%
Face-to-face training	55.8%	38.9%	5.3%

**Table 4:** frequency of responses to questions measuring awareness before and after the campaign

	Before the campaign			After the campaign		
	True	I do not know	False	True	I do not know	False
Symptoms of cholera	63%	29%	8%	82%	11%	7%
Characteristics of diarrhea in cholera patients	32%	42%	26%	41%	12%	47%
Transmission of cholera	83%	12%	5%	90%	6%	4%
Purification of drinking water	43%	7%	50%	48%	4%	48%
Risk factors of cholera	39%	10%	51%	44%	9%	47%
Treatment of a patient with severe diarrhea	58%	15%	27%	71%	9%	20%
Treatment of cholera	43%	41%	16%	73%	14%	13%
Correct sterilization of vegetables	33%	24%	43%	57%	7%	36%
Factors which are not involved in preventing cholera	39%	28%	33%	50%	21%	29%
Factors which are not involved in developing cholera	29%	38%	33%	53%	22%	25%
The season in which cholera is prevalent	39%	23%	38%	57%	12%	31%
Amount of Calcium Hypochlorite required for disinfection of vegetables	4%	59%	37%	13%	23%	64%

Regarding the second and third levels of the model (learning and behavior), the questions related to awareness and behavior of students were measured (Table 4 and 5). According to

results, awareness and behavior of students increased by 44.6% and 20.6%, respectively, after the campaign (Table 6).

**Table 5:** frequency of responses to questions measuring behavior in the campaign

	Before the campaign			After the campaign		
	Yes, often	Yes, sometimes	No	Yes, often	Yes, sometimes	No
I use spring water for drinking.	38%	52%	10%	23%	52%	25%
Before eating, I wash my hands with soap and water.	63%	34%	2%	80%	18%	1%
I wash my hands with soap and water after using the toilet.	86%	12%	2%	87%	10%	1%
I eat vegetables and fruits without washing.	8%	13%	79%	9%	15%	76%
I visit the doctor if I feel any symptoms of diarrhea.	25%	51%	24%	41%	49%	10%
I swim in the hot season in stagnant water and aqueducts.	8%	11%	81%	6%	14%	80%
I can disinfect vegetables correctly.	31%	50%	19%	58%	33%	9%

**Table 6:** mean scores of awareness and behavior of students before and after the campaign

	Awareness	Behavior
Before the campaign	22.5 ± 8.12	39.1 ± 5.27
After the campaign	67.14 ± 16.9	59.7 ± 7.13

The results suggest that there is a significant relationship between awareness before the campaign and after the campaign ( $P \leq 0.00$ ); there is a significant relationship between behavior of students before the campaign and after the campaign ( $P \leq 0.03$ ).

Awareness campaign can directly or indirectly cause positive changes or prevent negative changes. This study evaluated effectiveness of cholera prevention and awareness campaign on target students based on Kirkpatrick model.

Basically, potential success of design and implementation of awareness campaign increases by using multiple approaches and multiple interventions [14]. This study used face-to-face, educational video, banner and pamphlet to convey messages and the considered information.

An awareness campaign may be short term or long term [15]. In this study, the campaign lasted four months. Nathanail and Adamos (2013) performed a road safety communication campaign which lasted four weeks [16], while the smoking prevention campaign done by Kevin et al lasted four years [17]. Elder et al (2004) concluded that

effectiveness of interventions done by combining multiple channels in a longer time period is higher than other interventions [18].

Regarding satisfaction (first level of the model), the results showed that 48.2% of students considered the campaign a helpful method, 44.5% considered it insufficient and 7.3% considered it unhelpful, while Montazeri et al (2008) concluded that 23% of people found AIDS campaign a helpful method and 50% found it unhelpful [19]. In this study, educational video was the most attractive and effective media used, which is consistent with Awopetu et al (2008). They claimed that video is the most effective and stimulating communicational medium; addition of colorful animated images can be considered as the main cause of this effectiveness and stimulation which can lead to convey of health messages emotionally [13].

In this study, positive changes were made in learning and behavior of students to prevent cholera. Randolph et al reviewed 18 awareness campaigns and found that awareness campaign was effective on learning in 67% of cases and on behavior in 89% of cases [20].

In this study, awareness of people increased by 44.6% and behavior increased by 20.6% after the campaign. Freimuth et al (1993) reviewed 14 evaluations measuring effects of awareness campaigns on awareness of people and found that

changes in awareness varied from 10% to 60%. Based on above review, 20 out of 29 evaluations done on effect of awareness campaign on behavior of people were successful and 9 cases were unsuccessful. In these evaluations, changes in behavior varied from 4% to 74% (mean 29%) [21].

This study showed that awareness campaign increased awareness of the target population; this is consistent with Mengel et al (2005). They evaluated awareness campaigns done on risks of alcohol consumption in pregnant women and showed that awareness of women increased after the campaign [22].

This study found a significant relationship between modification and promotion of cholera preventive behavior before and after the campaign. Similar studies conducted on awareness campaigns for promotion of physical activity found significant modifications in promotion of physical activity in 7 out of 15 studies reviewed [23, 24, 25, 26, 27].

This study evaluated effectiveness of awareness campaign by pretest and posttest. Randolph et al reviewed 13 studies conducted on evaluation of awareness campaigns and found that 8 studies (61.5%) used pretest and posttest and 5 other studies (29%) used comparative group [20].

Since training without evaluation is not considered serious most of the time, limitations of this study can be lack of similar studies conducted abroad and few numbers of studies which used Kirkpatrick model for awareness campaigns. Therefore, it is suggested to evaluate trainings based on this model.

## CONCLUSION

To orient training and achieve the set goals, it is highly important to determine effectiveness of awareness campaigns. Kirkpatrick model can provide a logical framework for evaluation. Results of studies showed that awareness campaign had effective results on awareness and behavior of students. Given that behavior is very challenging and sensitive, however, it is suggested

to repeat evaluation in suitable times to ensure behavioral, permanent changes.

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