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The impact of educational intervention for providing disaster survival kit: Applying precaution adoption process model

Khalil Jassempour [a], Kambiz Karimzadeh Shirazi [b,*], Mohammad Fararooei [c], Mohsen Shams [a], Alireza Raygan Shirazi [d]

[a] Department of Public Health, School of Health, Yasuj University of Medical Sciences, Yasuj, Iran
[b] Department of Public Health, Social Determinants of Health Research Center, Yasuj University of Medical Sciences, Yasuj, Iran
[c] Department of Public Health, HIV/AIDS Research Center, Shiraz University of Medical Sciences, Shiraz, Iran
[d] Department of Environmental Health, School of Health, Yasuj University of Medical Sciences, Yasuj, Iran

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ABSTRACT

Natural disasters have caused many deaths and disabilities in human communities. One way to mitigate the impact of the disasters is the community based disaster preparedness programs against such incidents. The aim of this study is to encourage people to provide disaster survival kits. This randomized controlled study has evaluated the effectiveness of an eight-week Precaution Adoption Process Model-based disaster preparedness education program in 221 personnel in Ahwaz Carbon factory. The results have showed that after intervention, the training group showed significant positive progress in stages and seventeen subjects of the intervention group provided disaster survival kits. Our survey showed that the perceived benefits and barriers could predict the adaption stage. These results have supported the educational program based on the precaution adoption process model encouraging participants to provide disaster survival kits.

1. Introduction

Disasters are threats to the population public health which could derail all aspects of human society requiring complex aid and recovery interventions [1]. In the last decade, more than 2.6 billion people have been affected by natural disasters such as earthquakes, tsunamis, landslides, cyclones, heat waves, floods, or severe cold weather. These disasters lead to mass casualty (e.g., blunt trauma, crush-related injuries, drowning) that can overwhelm local medical resources and prevent them from delivering comprehensive and definitive medical care [2]. Iran is one of the world's natural disaster-prone countries. In approximately 34 cases of natural disasters that occur, 90% of the population is exposed to the earthquakes and floods risks [3,4].

With the attention to statistical and historical evidences, Khuzestan province as a strategic and borderline province enjoys huge resources of oil and major dams. It had been experienced many natural disasters so far [5,6]. During recent decades, this province suffered from a lot of damages caused by natural disasters [6]. Available statistics indicated an increase in natural disasters and a lack of preparation to handle it [7].

* Corresponding author.
E-mail addresses: kjassempour@yahoo.com (K. Jassempour), karimzadehshirazi@yahoo.com (K.K. Shirazi), fararooei@yahoo.com (M. Fararooei), moshisf@yahoo.com (M. Shams), alirezaraygan47@gmail.com (A.R. Shirazi).

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With the increasing frequency of such unforeseen events, community attention on the necessity of disaster preparedness has increased [8]. Such events can be mitigated or avoided through effective preparedness. For instance, the catastrophic loss of the Indian Ocean Tsunami of December 2004 was largely due to the lack of preparedness among the populations at risk [9]. On the contrary, in Japan's Tohoku earthquake on 11 March 2011, the effectiveness of disaster preparedness among Japanese citizens saved many lives. These examples demonstrate that personal disaster preparedness is critical to mitigate disaster impacts [10].

Preparedness for a major disaster is the most effective way to minimize the damage suffered by the affected population [11]. Emergency management officials and disaster planners recognize that for the first 72 h of an earthquake or other disaster strikes, individuals and families should be prepared for self-sufficiency because services and supplies can be disrupted and emergency aid might not be immediately reachable [12,13]. Having a comprehensive preparedness plan in the country and encouraging people to provide a family disaster survival kit can be a major factor in reducing the effects of disasters. The implementation of the interventions to provide and encourage the use of the kit in many developed countries have been welcomed with the general acceptance of the population [14]. The kit can be provided with a small expenditure and may contain a list of the items necessary such as canned foods, drinking water, flashlight, radio and batteries, first aid kit and so on [15]. In a national survey conducted in the United States in 2009, showed that 57% of the households had prepared disaster survival kits [16]. Fung and Loke studies also in Hong Kong showed that the contents of the kit of the affected people were 56.6% drinking water, 74.7% flashlight, 69.2% blankets and 52.5% radio [17].

Although such studies in this field have not been found in Iran as of yet, it seems that the formation of such behavior in the Iranian household has not been desirable. In a pilot study conducted by us in the Iran's Red Crescent aid workers we found out that just 12.5% of them had a disaster supply kit. According to our observations, lack of such a behavior in groups who have experienced disasters and who are knowledgeable experts in disaster management, then we can assume failure to develop such behavior in the community is not far-fetched.

Developing knowledge and behavior readiness so as to enhance the potential of individuals to cope with disasters is just possible through training [18].

But to reach to effective results, training must be implemented on the basis of principles and tested theories. Theories and models present a systematic view of events and present an educational process plan as a guideline for educational recognition and plannings [19].

With regards to the necessity of preliminary studies in Iran and to reach a favorable perception for researchers and those who are involved in the planning and implementation of interventions aimed at mitigating natural disaster effects. Also for providing the field to implement such a study on theoretical basis, the study is to encourage people to provide disaster survival kits on the precaution adoption process model basis.

2. Material and methods

By this randomized controlled experimental study conducted by personnel of Ahwaz Carbon factory in 2013, out of the 221 participants enrolled in this study, data was collected from 105 participants in the intervention group and 111 in the control group. Demographic characteristics of the participants were measured by a demographic questionnaire. Questions assessing the stages of PAPM were adapted from the study of Weinstein on Radon with some modifications [28]. The stages are classified into: unaware of Disaster Survival Kit (stage 1), have heard about the Disaster Survival Kit but unengaged (stage 2), undecided to prepare it (stage3), decided not to prepare it (stage 4), decided to prepare it (stage 5) and have a Disaster Survival Kit (stage 6).

Knowledge measurement designed is based on the guidelines of Red Cross [29]. This scale scores range is from zero to 10 and included question with open single answers about the contents of the disaster survival kit (Appendix A). Perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy questionnaires were directly measured by 5 items for each construct based on 5-point Likert scale (Appendix B). The face and content validity of the researcher-made instruments were confirmed by a panel of experts (comprising 8 experts in health education, psychology, disaster management and environmental health) in two different sessions. Test retest with a two-week interval was used to confirm the reliability of the instruments in 60 persons. The Cronbach's alpha of 83–94% confirmed the reliability of the instruments.

2.1. Theoretical background

Precaution Adoption Process Model (PAPM) is one of the stage theories used to explain how persons adopt certain behaviors to protect themselves. It consists of seven cognitive and behavioral stages ranging from unaware of the problem to action and maintenance stage [20].

Factors are probably to determine the progress between stages that Weinstein suggested are media messages about hazards and precaution (stages 1–2), raising knowledge, personal experience with hazard and communication from significant others (stages 2–3), perceived threat, perceived social norms, beliefs of precaution effectiveness and difficulty (stages 3–4 or stage 5), self-efficacy, mitigating perceived barriers and improvement perceived benefits (stages 5–6) [51].