

Abstract

Regardless of the objective destructive effects, the psychosocial effects and consequences of natural disasters, such as earthquakes, are quite clear in humans. The passage of time and long-term process after disasters could have positive or negative effects on the occurrence or non-occurrence of social harms.

This research is conducted by combining quantitative and qualitative techniques and investigate the long-term effects of the earthquake (case study of the Bam earthquake) on the social harms of drug abuse, marital incompatibility, and suicide. The method of this research consists of three steps. In the first step, for understanding of scientific knowledge in the field of post-traumatic growth, a systematic review and meta-analysis has been conducted. To do this step, the articles have been searched in both Persian and English databases, and finally, the data were analyzed using STATA (ver. 15.0; Stata Corporation, College Station, TX, USA).

In the second step, a historical cohort study is conducted. In this step, given that the study is performed in the city of Bam, a cluster sampling was done in this city and a sample of 917 people was selected and examined in two groups of exposure and non-exposure. In the exposure group, the people were selected who were present in the city of Bam at the time of the earthquake and experienced it objectively. The inclusion criterion for the non-exposure group was being resident of Bam for a maximum of two years after the earthquake until the study. In case of age, those were included in the study who were at least 15 years old at the time of the earthquake. The social harms considered in this study included suicidal thoughts/suicide attempt, marital incompatibility, and drug abuse, and post-traumatic growth and PTSD are also the intermediate variables. The data collection tool is a questionnaire consists of following items: 1. the questions about suicide extracted from the National Mental Health Survey that have been answered inside the country, 2. Kansas three-item questionnaire whose validity and reliability have been assessed in Persian to check the marital satisfaction, 3. the questions about the drug abuse extracted from asist questionnaire whose validity and reliability are confirmed, 4. a 4-item short questionnaire for PTSD assessment of the validity and reliability of the 20-item questionnaire is conducted in Persian and researchers have recently suggested to use a 4-item form, 5. Post-traumatic growth (PTG) questionnaire, which was translated into Persian by two translators fluent in Persian after acquiring the consent and then each of the translations was re-translated by two native English-speaking translators fluent in Persian language and literature, the validity and reliability of which were then measured and confirmed. In the end, the demographic questions, such as age, gender, occupation, education level, and marital status of the software used in this section were Spss ver.25 and Mplus 7.4.

Third step: In the third section of the study, using the panel of experts, the proposed measures were collected to reduce social harms and increase post-traumatic growth in the long-term after the earthquake. To determine the panel members, first a primary list of experts, policymakers, and executives was prepared by targeted sampling, and then using the snowball method, they were asked to introduce the other people who are suitable for participation in the panel, and in the end, 15 people were participated in the panel. The result of this meeting was to find the strategies to reduce social harms and increase post-traumatic growth in the long-term after the earthquake, which could be a solution for policymakers to develop protocols and executive instructions. The software used in this section was MaxQDA ver 2018.

Introduction and objectives

Humans have been suffered from many social harms and pains throughout the ups and downs of history and have always been looking for their causes and motivations to find ways and methods to get rid of them. In medicine, the diagnostic process of diseases is called pathology. In simulation of human body with the society, the social pathology can be studied and the roots of social disorders can be defined. In fact, the social pathology, study of social harms, such as unemployment, addiction, poverty, suicide, prostitution, divorce, etc. are accompanied by their causes and methods of prevention and treatment.

Some researchers called the disasters a "collective stress situation", while others have called it "social crisis period". Since disasters disrupt normal social life, create chaos, destroy social structure, and replace social order, the research on disasters as a study of "social pathology" can

attracted a lot of attention. So far, most sociological approaches and studies about disasters have been made and implemented for the developed countries (especially the United States).

Although many natural disasters are related to physical phenomena, but have many general impacts on society, people, institutions and the environment. In recent studies, the natural disasters have received less attention from a sociological perspective, while the society requires focused and timely policies to solve the problems related to disasters. The approval and development of a sociological approach for disaster management is essential. Therefore, the present study investigated the long-term impact of earthquakes on social harms (addiction, marital relations, and suicide) and provided practical suggestions for management of disasters and reduction of social harms at the time of crisis.

Objectives

General objective

- Determining the long-term impact of the Bam earthquake on the social harms of drug abuse, marital incompatibility, suicidal thoughts/suicide attempt

Partial objectives of the research :

- Determining the long-term impact of the Bam earthquake on drug abuse
- Determining the long-term impact of the Bam earthquake on marital incompatibility

- Determining the long-term impact of the Bam earthquake on suicidal thoughts/suicide attempt
- Determining the long-term impact of the Bam earthquake on post-traumatic growth
- Determining the long-term impact of the Bam earthquake on post-traumatic stress disorder
- Providing executive solutions to reduce the social harms
- Providing executive solutions to increase the post-traumatic growth
- Proposed model design

Methods

The present research is a study that focused on long-term effect of the Bam earthquake on the social harms of drug abuse, marital incompatibility, and suicide using a combined quantitative and qualitative method. The research method consists of three steps :

In the first step, for understanding of scientific knowledge in the field of post-traumatic growth and the effect of earthquake, a systematic review and meta-analysis has been conducted. To do this step, the articles have been searched in both Persian and English databases.

In the second step, using the historical cohort study, the probable correlation of earthquake with three social harms of drug use, marital incompatibility and suicide has been addressed. In this step, given that the place of study was the city of Bam, the cluster sampling is carried out in this city and a sample of 917 people with the same age and gender were studied in two groups of

exposure and non-exposure in terms of exposure to the Bam earthquake on December 26, 2003. In the exposure group, there were people who were present in Bam at the time of the earthquake and experienced it objectively. The inclusion criterion for the non-exposure group was being resident of Bam for a maximum of two years after the earthquake until the study. In case of age, those were included in the study who were at least 15 years old at the time of the earthquake. To eliminate the results evaluation bias, in addition to age and gender, education level, occupation, place of residence at the time of earthquake, and severity of PTSD, some questions were asked about drug abuse before the earthquake, marriage age, marital status, and drug abuse in the first-degree relatives. To neutralize the bias to reminders, those with mental illness who were not able to concentrate and respond were excluded from the study. Since this is a historical cohort study, there was no follow-up bias.

In this step, this was a two-stage cluster sampling. In order to have a higher external validity (generalizability), the size of the clusters was considered to be 20. In referring to the cluster, an adult was randomly selected with respect to inclusion criteria, and after greeting and stating the objectives of the study, the person was asked to fill the self-administered questionnaire if agreed and put the result in a box without mentioning the name. For the illiterates, the questionnaire is completed by the interviewer. The interviewers were selected from the health care providers who are trusted by the people. If the subjects were not at home, the interviewers would re-visit up to three times, and in case of no response, they were considered as non-response. The social harms considered in this study included suicide (thoughts and attempt over the past 90 months), marital satisfaction, and drug abuse, and the post-traumatic growth and PTSD were examined as accompanying variables.

In the third step of the study, using a panel of experts, the proposed measures to reduce social harms and increase the post-traumatic growth in the long-term after earthquake were investigated. To determine the panel members, first a primary list of experts, policymakers, and executives was prepared by targeted sampling, and then using the snowball method, they were asked to introduce the other people who are suitable for participation in the panel, and in the end, 15 people took part in the panel.

Findings

The results of 21 studies showed that the overall mean of PTG was low among the earthquake survivors, but with respect to confidence interval, it can be concluded that it is in low to moderate range (41.71; 95%CI=34.8926; 76.41). The analysis of the subgroups showed the difference in the mean PTG at different times from the time of the earthquake, so that the mean PTG has decreased over time from the time of the earthquake. Furthermore, the subgroup analysis, with respect to the age of study population showed that the adults had a mean PTG (49.47; 95% CI=42.2435; 56.58) over children and adolescents (35.38; 95% CI=23.65; 47.11).

The results were as follows: 1. Long-term earthquake exposure is not related to tobacco use, 2. Marital satisfaction in people exposed to the Bam earthquake is on average 0.62 higher than those who were not exposed. 3. Long-term exposure to earthquake has nothing to do with suicidal thoughts (pvalue=0.5). 4. Long-term exposure to earthquakes is related to suicide attempts (pvalue=0.048). 5. Post-traumatic growth in people exposed to the Bam earthquake is on average

2.22 higher than those who were not exposed. 6. Post-traumatic stress disorder in people exposed to the Bam earthquake is on average 0.77 higher those who were not exposed.

Moreover, the results of qualitative part have provided the 8-item model to increase post-traumatic growth and reduce social harms.

Discussion and conclusion

The results of meta-analysis showed low to moderate levels of PTG among earthquake survivors. However, the mean value of PTG in adults was higher than children and adolescents. Additionally, the mean PTG decreases over time after traumatic events.

The results showed that suicide, post-traumatic growth, marital dissatisfaction, and post-traumatic stress disorder are related to long-term exposure with earthquake. Therefore, it is suggested to pay attention to long-term mental health after the earthquake. These results provide a complete understanding of intervention programs for health care experts to avoid the risk of social harms.