

## Nutrition Support in Earthquakes: A Comprehensive Program is Needed for Iran

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#### Dear Editor,

Natural disasters have taken more than 3 million lives in the last two decades all over the world (1). Among them, earthquakes have claimed the largest number of lives (2). In addition to human casualties, earthquakes have destroyed food distribution centers (such as shops and stores), food storage facilities (warehouses, cold storage warehouses, silos, etc.) and food production centers (for example, food processing factories, livestock farms, and slaughter houses).

These issues cause concerns among citizens and authorities (3).

Providing nutritious food after natural disasters is one of the most important daily functions to be performed (4). The main nutritional problems after disasters are acute malnutrition (wasting, which is particularly an issue among children), micronutrient deficiencies, and long-term malnutrition (stunting) (5). After an earthquake, young children and infants are the most vulnerable groups to acute malnutrition, especially if they have to live in a temporary shelter (6). Moreover, people with special physiological conditions, such as pregnant and nursing women, and those of child-bearing age, are nutritionally vulnerable under these circumstances (7, 8). Hence, this population is at high risk of nutritional deficiencies due to low intake of animal food, which is rich in protein and micronutrients such as vitamins A and D, iron, zinc, and vitamin B12. These micronutrients play a key role in placental development, fetal brain development and embryonic growth (9). Poor nutritional status impairs the functioning of the immune system, and thus leads to higher mortality from infectious diseases such as tuberculosis, diarrhea or malaria. Lack of nutritional treatment and medical care in this situation, even can ultimately lead to death (6).

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Studies have suggested that the foods provided at emergency shelters are the main factors affecting survivors' health and physical state (10). The findings of one study showed that two months after the great Hanshin-Awaji earthquake in Japan, lower intake of green vegetables and fish caused several problems, including symptoms of the common cold, weight loss, gastrointestinal disorders, stress, and irritability (11).

To manage the nutritional status of people, having an integrated system for supplying food and delivering it to the victims is of great importance (12). According to the observations, creating menus by dietitians leads to an increase in dairy and fruit consumption among people in emergency shelters. As a result, mass nutrition and nutritionist collaborations lead to improved nutritional status in survivors (13).

Since a lot of equipment is necessary for preparing most foods, the first step is to use foods that do not require such things as water, electricity, or gas for their preparation. Thus, in the first days after an earthquake, canned food, bread, crackers and nutrition supplements should be provided. A few days after the earthquake, if boiling water become available, it is also possible to make oatmeal, stew and instant food (14).

Ready-to-eat meals are very important to decrease malnutrition, especially in the aftermath of natural disasters. Furthermore, energy-dense foods such as biscuits or pastes rather than dairy, are more resistant to bacterial growth. Opting for these kinds of foods makes it easier to care for children with moderate malnutrition in shelters or at home (15).

Non-perishable foods are a priority in emergency situations to meet the basic needs of survivors for in the immediate aftermath of a disaster. Although they are intended for short-term consumption, survivors use emergency foods for extended periods of time, which has been widely reported across the globe. Also, the duration of providing these foods depends on the area and the severity of the disaster (16). Disaster

survivors may also experience gastrointestinal symptoms due to their imbalanced diet.

The task of nutritionists is to increase the nutrition balance of emergency foods (17). Therefore, a series of measures may help to improve the provision of foods at emergency shelters as quickly as possible. Adequate and balanced food should be provided and facilitate gas supplies should be restored as quickly as possible to facilitate cooking. Also, the number of people in each emergency shelter should be limited (18).

Iran has the sixth highest occurrence of natural disasters in the world and is one of the ten most earthquake prone areas. In the last century, there have been 20 earthquakes in Iran that ranked 6 on the Richter scale. These earthquakes have caused about 500,000 deaths (19). Therefore, preparation for nutrition support after earthquakes after an earthquake is necessary.

A descriptive study was carried out by Saghafi Nia et al. two years after the Bam earthquake in Iran. One of the results of this study was that two years after the earthquake, 71.5% of participants were still staying in conex homes (temporary shelters for victims), only 15.6% had supplies of safe drinking water, and 20.9% of them did not have enough healthy food (20).

Tavakkoli et al. investigated the status of supply, storage, and distribution of food products in the city of Bam. It was revealed that the most important problems were the inappropriate distribution of food (98.9%), lack of food diversity (80.3%), and low food quality (77.8%). The most important causes of problems were lack of proper monitoring and management (91%), lack of timely delivery of food (85.7%), lack of nutrition and health experts in the distribution of food (79.7%), and lack of food storage facilities (60.2%)(21).

Another study by Nekouie Moghadam et al. also showed that the main problems in terms of nutrition in disaster were lack of a general program, absence of appropriate nutritional programs, and lack of nutritional assessment in natural disasters (22).

Regarding to the frequent occurrence of earthquake in Iran; having a specific program for supplying, storing, and distribution of foods before incidence is absolutely necessary. Furthermore, national authorities must take action to remove these problems by creating trained, specialized teams, and placing expert nutritionists in these teams.

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### Authors' contribution

NM and ASA wrote and approved the final draft of the manuscript.

### References

- Gutierrez E, Taucer F, De Groeve T, et al. Analysis of worldwide earthquake mortality using multivariate demographic and seismic data. *American journal of epidemiology*. 2005;161(12):1151-8.
- Mahoney LE, Reutershan TP. Catastrophic disasters and the design of disaster medical care systems. *Annals of emergency medicine*. 1987;16(9):1085-91.
- Rabeian M, Hosseini SH, Radabadi M, et al. Evaluation Of Effective factors on the rate of preparedness of Tehran university of medical sciences' selected hospitals in dealing with earthquake. *Journal of Payavard Salamat*. 2013;7(3): 251-61.[In Persian]
- Kaplan BJ, Rucklidge JJ, Romijn AR, et al. A randomised trial of nutrient supplements to minimise psychological stress after a natural disaster. *Psychiatry research*. 2015;228(3):373-9.
- World Health Organization. The management of nutrition in major emergencies. Geneva: World Health Organization. 2000.
- Australian Agency for International Development, Indonesia Earthquake: 30 Mar 2005. New York, NY: United Nations Office for the Coordination of Humanitarian Affairs; March 30, 2005. [cited 2014/10/28]; Available from: <https://reliefweb.int/report/indonesia/indonesia-earthquake-30-mar-2005>
- Yin S, Zhao X, Zhao L, et al. The nutritional status of reproductive women at one year after the disaster of Earthquake in Wenchuan. *Zhonghua yu fang yi xue za zhi [Chinese journal of preventive medicine]*. 2010; 44(8):686-90.
- Zhao X, Yin S, Zhao L, et al. The nutritional status among children under 60 months year-old after one year of the Earthquake in Wenchuan. *Zhonghua yu fang yi xue za zhi [Chinese journal of preventive medicine]*. 2010;44(8):691-5.
- Benton D. The influence of dietary status on the cognitive performance of children. *Molecular nutrition & food research*. 2010;54(4):457-70.
- Magkos F, Arvaniti F, Piperkou I, et al. Identifying nutritionally vulnerable groups in case of emergencies: experience from the Athens 1999 earthquake. *International journal of food sciences and nutrition*. 2004;55(7):527-36.
- Okuda T, Hirai K, Masuda T, et al. Survey of health status among victims of the Great Hanshin-Awaji Earthquake living in evacuation centers. *Jpn J Physiol Anthropol*. 1996;1:101-7.
- Tsuboyama-Kasaoka N, Purba MB. Nutrition and earthquakes: experience and recommendations. *Asia Pacific journal of clinical nutrition*. 2013:1-9.
- Harada M, Takizawa A, Oka J, et al. The effects of changes in the meal providing system on emergency shelter menus following the Great East Japan Earthquake. [*Nihon koshu eisei zasshi*] *Japanese journal of public health*. 2017;64(9):547-55.
- Amagai T, Ichimaru S, Tai M, et al. Nutrition in the Great East Japan Earthquake Disaster. *Nutrition in Clinical Practice*. 2014;29(5):585-94.
- Young H, Borrel A, Holland D, et al. Public nutrition in complex emergencies. *The Lancet*. 2004;364(9448):1899-909.
- Nakazawa T, Beppu S. Shifting from Emergency Food to Disaster Preparation Food to Help Disaster Survivors. *Science & Technology Trends; Quarterly Review*. 2012; (44):36-52. Available from: [http:// data.nistep.go.jp/dspace/bitstream/11035/2892/1/NISTEP-STT044E-36.pdf](http://data.nistep.go.jp/dspace/bitstream/11035/2892/1/NISTEP-STT044E-36.pdf)
- Inoue T, Nakao A, Kuboyama K, et al. Gastrointestinal symptoms and food/nutrition concerns after the great East Japan earthquake in March 2011: survey of evacuees in a temporary

- shelter. *Prehospital and disaster medicine*. 2014;29(3):303-6.
18. Tsuboyama-Kasaoka N, Hoshi Y, Onodera K, et al. What factors were important for dietary improvement in emergency shelters after the Great East Japan Earthquake? *Asia Pacific journal of clinical nutrition*. 2014;23(1):159-66.
19. Kianpoor A, Minaie M, editors. Nutrition and natural disasters. The committee of effect decrease of disasters in Iran, Preceding of military health symposium; 2004:142-145.
20. Nia MS, Nafissi N, Moharamzad Y. Survey of Bam earthquake survivors' opinions on medical and health systems services. *Prehospital and disaster medicine*. 2008;23(3):263-8.
21. Tavakoli H R., Faraj Zadeh D, Izadi M, et al. The study of providing, preservation and distribution of foodstuffs in Bam earthquake. *Journal of Military Medicine*. 2008; 10 (1) :11-20
22. Moghadam MN, Amiresmaeli M, Hassibi M, et al. Toward a better nutritional aiding in disasters: relying on lessons learned during the Bam Earthquake. *Prehospital and disaster medicine*. 2017;32(4):382-6.