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Nutrition in Disasters

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Disaster is a tragic event which causes excessive mortality, suffering, and financial damage. One of the most important basic needs of people after a disaster is food. Providing and distributing healthy, adequate, and hygienic food is one of the biggest challenges which managers always face in a crisis because disasters have different effects on food situation and nutrition of the affected area (Ireton-Jones *et al.*, 2019). Therefore, one of the major consequences of disasters is the reduction of energy and food supply sources. Evaluation of available food sources, proper rationing, prioritization of high-risk groups such as children and pregnant or lactating women, and food distribution should be considered according to the assessment of minimum energy and nutrient requirements (Marzban *et al.*, 2021).

The most important reasons for food problems in crisis are as follows

-Destruction of food production resources:
Destruction of agricultural lands, wells, and

aqueducts, livestock ,poultry ,fodder, and food they need, destruction of factories or cessation of food production activities in them (Marzban *et al.*, 2022).

-Disruption of food distribution process due to the destruction of grocery stores or the roads and highways

- Contamination of piped water due to fractures and people's need for safe water

- Destruction of food storage centers such as silos, cold stores, and food warehouses.

- Power outages and loss of food storage equipment, and eventually, food spoilage.

- Financial crisis of families and inability to buy food

The reflection of these disorders is the reduction of food access in the region. Meeting nutritional needs is especially important in vulnerable nutrition groups, including children, pregnant and lactating women, the elderly, the sick, large families, the single, or the widow. Therefore, in times of crisis,

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vulnerable groups must be identified immediately and given nutritional care (Biglari *et al.*, 2017, Madeleine *et al.*, 2018, Marzban *et al.*, 2022) .

The most important nutritional needs

The first question which arises after the emergency regarding the nutrition of the people is what kind and how much food is needed for the affected people? Estimating the amount of nutrients depends on the crisis control situation, which can be divided into three stages:

The first stage is the peak of the crisis with top priority; rescuing, providing immediate assistance to the wounded and injured, which may take 3 to 7 days.

The second stage is the conditions in which people are settled in temporary settlements; this situation may vary from the second to the third week after the crisis.

Stage three is a situation in which more facilities for a more comfortable life for the affected people are provided (Moghadam *et al.*, 2017).

In the beginning of the crisis, due to the problems in preparing, storing, and cooking food, ready-made foods, especially canned food, should be provided. Therefore, in the first week of the crisis, the use of various canned foods such as trout, beans, lentils, etc., along with bread, dates, and biscuits are recommended. Due to the need for a variety of food consumption, different cans suitable for daily consumption of people should be used as much as possible (Jackson, 2020).

The second stage is when food intake decreases. Although nutritional needs, especially in terms of energy and protein are met, people are affected by inadequate access to fresh foods, especially vegetables and fruits (for about a month or more). There would be decreased intake of vitamins and minerals, especially vitamins C, B2, B1, A, folic acid, and iron. In these cases, either foods fortified with vitamins and minerals should be used, or supplements should be provided through necessary supplements of vitamins and minerals.

In the third stage, as soon as the conditions are favorable (food containers and cooking utensils), the food can be distributed, cooked, or dried

among the people. Otherwise, the distribution of canned foods with bread, cheese, yogurt, fruit juices, biscuits, and nuts should continue (at least 2-3 weeks).

If dried food can be distributed among the affected people as soon as possible, it can create a sense of security for these people and support them psychologically. The list of dried food should include fresh fruits and vegetables, sterile milk, and pasteurized yogurt if possible, and if the storage conditions of the above food items are inappropriate, nuts, juices, etc. should be used (Miyagawa *et al.*, 2020).

Essential recommendations in disaster situations

1) Nutrition of vulnerable groups, especially children under 5, pregnant and lactating mothers, unaccompanied children, the elderly and the disabled, etc. is vital in times of crisis.

2) All paramedics, employees of government organizations, and institutions who are sent to the area of the accident, must be self-sufficient regarding food for at least a week.

3) Cooked and raw foods must be separate at all stages of preparation, distribution, and storage.

4) Food preparation, distribution, storage, or delivery facilities in times of crisis should be under close supervision of environmental health personnel in all matters related to environmental health, including water consumption, the presence of vectors (insects and rodents), and health services.

5) Breastfeeding should be given serious support and the distribution of formula should be avoided without a careful assessment of the situation of affected households.

6) If you need to feed the baby with dry milk, observing the instructions for preparing dry milk with boiled water must be considered. Diarrhea is very dangerous in infants due to poor hygiene (Jackson, 2020).

7) The number of meals for children should be at least 3 meals a day.

8) Foreign food aid should be in line with the culture of the people in the region.

9) Gift donors should be informed through public media about what food is needed by the people of the region and how and where it should be delivered in order for public donations to be useful (Wentworth, 2020).

10) People's access to food should be facilitated with the support of relief officials, the launch of food distribution networks, and the reopening of stores.

11) In the opener, disposable glasses, spoons and forks should be provided to the people from the beginning (Motley, 2021).

Proper anticipation, planning, and management can reduce disaster losses. In addition to providing enough energy for the general public, healthy food, timely supply, prevention of spoilage and food poisoning and proper distribution and selection of food required in emergencies, planning is also very important.

Authors' contributions

Marzban A conceived the original idea and designed the project. Sadeghi-Nodoshan F collected the data and wrote the draft of manuscript. All authors read and approved the final version of manuscript.

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