

## Surveying the Dietary Diversity of Fasting Individuals in Qom in Ramadan

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### Abstract

**Background and Objectives:** In Islam, fasting means abstaining from food and beverages from sunrise Azaan to sunset Azaan. This long period of hunger with the increasing feeling of weakness leads to changes in nutritional habits and behaviors. Therefore, this study aimed to assess the dietary intake of different food groups with a view to see the effect of food diversity on nutritional needs of fasting individuals in Qom.

**Methods:** This descriptive-analytic study was performed on 120 fasting individuals in Qom city in Ramadan in 2014. The respondents -aged between 20-45 years old- were selected from Qom. A dietary records questionnaire was used to survey the dietary intake. And all of questionnaires were collected after three days of recording. The food items were determined on the basis of consumption units and groups and then compared with recommended values.

**Results:** Consumption of vegetables, meat and meat products and dairy groups was significantly lower than the recommended values and consumption of fruits was higher than recommended values. Moreover, the intake of bread and cereal group and was not statistically different from the recommended values.

**Conclusion:** According to the findings of this study, the dietary intake of fasting individuals in Qom had not enough diversity. Therefore, in accordance with the undeniable role of proper and enough food intake from different groups on health, it seems necessary for fasting individuals to have a nutrition education for proper food selection from various food groups.

**Keywords:** Diet, Fasting, Food Groups, Iran.

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### Introduction

The greatest and well-known religions of the world have recommendations for abstaining from eating certain foods or avoiding them at a specified period of time (called fasting) (1). Islam as the second largest religion in the world also has doctrines about eating habits of people which are very similar and uniform across the major sects of Islam (2). One of the most important

decrees about nutritional behaviors in Islam is fasting that refers to refraining from taking any kind of food and beverage from sunrise azaan to sunset azaan. Fasting in Islam lasts a full lunar month (Ramadan) that would be about 29-30 days (1, 3). Ramadan - due to the shortness of lunar years than solar ones- will be different in various seasonal and weather conditions (4). In such circumstances, fasting may last from about 12 hours to 17 hours in a day and vary in different

seasons. Fasting has a potential impact on the promotion of health and in recent years, researchers have been studying it from various aspects such as restriction of energy intake, change in dietary behavior and limitation of food intake (5). The effects of fasting on health have been examined in several studies, in specific population groups, and also in healthy individuals in different countries (4). In one of the earliest studies in this field, El Ati et al in a survey on 16 fasting women found that although there was no significant change in total energy intake, the intake of nutrients showed significant changes (6). According to previous studies, it is expected that energy intake limitation is associated with health promotion, longevity, delays in the development of some diseases such as atherosclerosis, autoimmune diseases, cancer, diabetes, kidney and respiratory diseases (5). For example, the restriction of energy intake by lowering blood pressure and reducing the heart rate helps to improve the health of the cardiovascular system (5). Although in previous studies it has been reported that fasting followed by low-calorie and low-fat diet could improve blood lipids and blood glucose levels, Afrasiabi et al. found that a routine nutritional program in Ramadan could be accompanied with a reduction of approximately 300 kcal energy. However, it did not have any relationship with blood fat level, and the researcher proposed that to achieve the effect of fasting on health, energy intake should be reduced by more than 500 kcal per day (7). One of the main reasons to consider for the lack of diagnosis and follow-up of beneficial effects of fasting on human health may be the change in the dietary habits during Ramadan and lack of adhering to a balanced diet (5). During fasting, not only the pattern of eating changes from three routine meals, by which the person is allowed to consume food after sunset and at night, but also even the diversity of consumed foods varies (4).

Kiziltan et al. in a survey on pregnant women in 2005 found that the intake of protein and carbohydrate in the fasting pregnant women was more than that in fasting non-pregnant women. On the other hand, the intake of vitamins and minerals with the exception of vitamin A and C

in the fasting group was lower than that in control group (8). Although numerous studies have been carried out on the effects of fasting on metabolic and anthropometric indicators and most of them have focused on the intake of energy and nutrients during fasting, so far nutritional behaviors and the amount and type of consumption from different food groups has not been dealt with sufficiently. In one study, Sadiya and colleagues in survey on 19 patients in the United Arab Emirates (UAE) in 2010 found that although there was no change in the intake of energy during fasting, reducing the consumption of bread, cereals and fruit, 50% reduction in the consumption of vegetables, more than 50% reduction in the consumption of dairy products and a 25 percent reduction in the consumption of meat and low-fat protein during Ramadan were observed. However, there was an increase in the consumption of high-fat protein. In addition, the increased use of fat and sugar in subjects was reported during this period (3).

Based on afore-mentioned issues and the fact that the intake of various foods from all food groups leads to the health and prevention of micro- and macro- nutrient deficiency, and in order to determine the dietary pattern of fasted individuals, this study was performed during Ramadan in order to evaluate the nutritional status of fasting individuals.

### Methods:

This descriptive cross-sectional study was performed in Qom city of Iran during Ramadan in 2014.

#### participants

The participants were selected from the relatives accompanying the patients who had referred to the health centers. Due to the influence of gender on the dietary pattern and selection of various food groups, equal numbers of male and female were recruited. Thus, the questionnaires were administered to 120 fasting men and women (60 males and 60 females) who had the inclusion criteria and had expressed their willingness to take part in this study.

#### Assessment of dietary intake

To assess the dietary intake of participants, a three-page food record questionnaire was given

to each participant to be completed during three days one of which was a holiday. Moreover, they were given instructions as how to record the food consumption on these questionnaires. Out of 120 individuals who had participated in this study, 111 recorded their amount and types of food consumption. After collecting the completed questionnaires, the consumed foods were determined according to the food groups and consumed units. After that the mean of consumed units was calculated in each food group. In order to determine the type of each food group, the method of food pyramid equivalents was utilized (9). By this method, the foods were classified in different groups and the amount of consumption unit of each one was determined. At the end, the number of consumption units of each group was compared with the recommended values of that group.

### Results

Of all the participants, 109 (57 females and 52 males) completely filled in the questionnaires (3 days) and 2 individuals incompletely (2 days). All in all, out of 360 questionnaires, 331 were completed appropriately. As seen in Table 1, the consumption amount of bread and cereals was  $9.9 \pm 4.7$ , which compared with the recommended amount (9.75), the difference was not statistically significant. The average consumption of vegetables was  $1.47 \pm 1.3$ , which in comparison with recommended amount (5.5) was lower than one third which was, in turn, statistically significant. The average amount of the group of fruits was  $3.8 \pm 2.4$ , which when compared with the recommended amount shows a significant increase ( $P < 0.01$ ). The average consumption of meat and meat products was

$2.1 \pm 3.1$ , which in comparison with the recommended daily intake of 5.5 units comprised only 38% of recommended amount, which had a significant decrease ( $P < 0.01$ ). The lowest amount of consumption in comparison with the recommended amounts was associated with the dairy group in which the average consumption of this group was only 0.4 units which made up 13% of the recommended amount (3 units).

### Discussion:

According to the findings of this study, during fasting the intake of fruit group was significantly higher than recommended values while the intake of meat and meat products, milk, dairy products and vegetables was significantly lower than recommended values. Every year hundreds of millions of Muslims around the world go on fasting during the fasting month. Dietary pattern during the month of fasting includes taking a heavy meal after sunset and a light meal before sunrise. Of course, some of fasting individuals eat one another meal before sleeping (5). While it is expected that the energy intakes decrease during fasting, a study showed an increase in daily energy intake in the country of Saudi Arabia (10). But among the Muslims of India, the energy intakes decreased (5). In a recent study in the United Arab Emirates, it has been shown that energy intake does not change during Ramadan (3). However, the decrease in the consumption of bread and cereals is also reported in the study by Sadiya whose results are different with the results of our study. On the other hand, the consumption of fruit in our

Table 1: The comparison of consumptive values with the recommended values of different groups of foods in fasting groups

No	Food Groups	Intake value (consumptive unit)	Recommended value (consumptive unit)	Percent of the recommended amount	P-value*
1	Bread and cereals	$4.7 \pm 9.9$	9.75	102%	0.5
2	Vegetables	$1.3 \pm 1.47$	5.5	27%	$< 0.01$
3	Fruits	$2.4 \pm 3.8$	2.7	141%	$< 0.01$
4	Milk and dairy	$0.7 \pm 0.4$	3	13%	$< 0.01$
5	Meat	$1.3 \pm 2.1$	5.5	38%	$< 0.01$
6	Miscellaneous	$2.4 \pm 5.1$	5.3	96%	0.16

\*One sample T Test

study showed an increasing trend, which finding is inconsistent with that of the study by Sadiya. The study by Al ati et al. on 16 fasting women in Tunisia showed an increase in the consumption of animal protein, which was associated with the increase in the intake of proteins (6). Moreover, the study of Kiziltan in 2005 reported an increased consumption of carbohydrates and protein and decreased consumption of vitamins and minerals (with the exception of vitamin A and C whose main source is the fruit group) (8).

In one survey on the diet of lactating women it was shown that the intake of macronutrients in fasting lactating women showed no significant difference from that of lactating women who did not fast. But the intake of potassium, zinc and magnesium in fasting individuals was significantly lower than recommended values (11). With regard to the fact that the groups of fruit and vegetables are the main source of potassium and magnesium, it can be concluded that the consumption of these food groups was also insufficient. Meanwhile, it is recommended that during fasting, the consumption of fat be decreased and use of complex carbohydrates with a lot of fibers be increased (12).

Despite the findings of a previous review article (5), the results of this study revealed that the diet diversity declined in Ramadan. The cause of these changes in the selection of foods may be due to hormonal and endocrine factors influencing the appetite (13).

Since food selection is heavily influenced by the food culture of participants and the seasonal changes will have a significant impact on the pattern of food selection (5), the main reason for the difference in the selection of food groups in this study from other studies is the difference in food culture and the season in which study was carried out.

This study has also some limitations. The most noticeable limitation of this study is the lack of evaluation of food intake in the samples before the start of Ramadan. In addition, conducting this study on more people could have achieved more detailed information about this issue. Therefore, it is recommended that in order to determine and evaluate the effects of fasting on food selection, the food intake of participants be

evaluated before the start of Ramadan s and then be compared with their food intake during Ramadan. Furthermore, it might be useful to measure follow up the anthropometric indices for evaluating the fasting impact on individuals.

### Conclusion:

The findings of this study revealed the higher consumption of fruit group and lower consumption of milk and dairy products, vegetables and meat during Ramadan. These results showed the need for educating fasting people to have an appropriate diet program during fasting periods.

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