**Effects of Ramadan Fasting on Common Upper Gastrointestinal Disorders; A Review of the Literature**

Najmeh Seifi¹, Mohammad Hashemi¹, Mohammad Safarian¹, Vahid Hadi¹, Mojtaba Raeisi²,³*

1. Department of Nutrition, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
2. Cereal Health Research Center, Golestan University of Medical Sciences, Gorgan, Iran
3. Department of Nutrition, Faculty of Health, Golestan University of Medical Sciences, Gorgan, Iran

**Article Info**

**Article type:** Review article

**Review History:**
- Received: 19 Nov 2016
- Accepted: 8 Feb 2017
- Published: 1 Mar 2017

**Abstract**

Introduction: Ramadan is the ninth month of Muslim’s calendar during which Muslims fast. Ramadan lasts 29-30 days based on the visual sightings of the crescent moon. Fasting during Ramadan has significant health effects. The present study aimed at reviewing the literature of the impact of Ramadan fasting on upper gastrointestinal disorders.

Methods: MEDLINE and Google Scholar were searched by using (“Ramadan” R fasting”) AND( “Upper Gastrointestinal Tract” OR “Gastrointestinal Diseases” OR “Dyspepsia” OR “Gastroesophageal Reflux” OR “Peptic Ulcer” OR “Gastrointestinal Hemorrhage”) as keywords in the title and abstract. Relevant, non-duplicate full articles written in English were reviewed.

Results: Gastric acid and pepsin secretion increase during Ramadan fasting, probably associated with dyspeptic symptoms. Regarding peptic ulcer frequency, results are inconsistent. However, peptic ulcer complications such as gastrointestinal bleeding and peptic ulcer perforation increase during Ramadan fasting.

Conclusion: Fasting during Ramadan seems to be beneficial for healthy individuals, but in people with gastrointestinal disorders, it might be harmful as it increases the risk of complications. Therefore, taking medical advice before Ramadan fasting is highly recommended to people suffering from gastrointestinal symptoms.

Introduction

Fasting during Ramadan is one of the five holy religious pillars among Muslims and an important annual ritual practiced by them worldwide (1, 2). The month lasts 29-30 days and the duration of fasting is 8 to 18 hours in different seasons and based on the geographical locations (3, 4). While fasting from dawn till sunset, Muslims refrain from eating food, drinking and smoking (5). Fasting is a type of calorie restriction. Fasters consume two meals, one before dawn (namely, Sahar) and one after the sunset (namely, Iftar) during Ramadan fasting (6, 7).

Ramadan fasting has proved significant health effects and as indicated by the literature, it is the most commonly researched religious fasting (8). Fasting during Ramadan may affect body metabolism and human behavior (9). In addition, eating, sleeping and drug programs changes can affect the control of medical conditions (10, 11). Moreover, fasting and calorie restriction, the most robust intervention to improve various diseases, decrease oxidative stress and the consequent damages (12). The increase of oxidative stress is mainly considered as the main reason behind numerous diseases, resulting from the production of reactive oxygen species (ROS) during respiration (12).

As evident in the literature, different researches have been conducted to assess the impact of Ramadan fasting on gastrointestinal tract. Gastrointestinal disorders can be accelerated or aggravated by prolonged fasting. Findings are indicative of different results in this
regard; therefore, no consensus exists regarding how upper gastrointestinal tract might be affected by fasting in Ramadan. The present review investigated previous studies on the impact of Ramadan fasting on upper gastrointestinal disorders.

**Material and methods**

MEDLINE and Google Scholar were searched by using ("Ramadan" OR "fasting") AND ("Upper Gastrointestinal Tract" OR "Gastrointestinal Diseases" OR "Dyspepsia" OR "Gastroesophageal Reflux" OR "Peptic Ulcer" OR "Gastrointestinal Hemorrhage") as keywords in the title and abstract. After screening for duplicates, potentially relevant articles were chosen and references were hand searched for additional relevant studies that may have been missed using electronic search. Two investigators reviewed articles separately for the selection criteria. The selection criteria were: articles published in full manuscripts in English that examined the relationship between Ramadan fasting and gastrointestinal signs or symptoms and also GI disorders in human. The two reviewers extracted data. A summary of this data is presented in Table 1.

**Results and discussions**

**Dyspepsia**

Dyspepsia is an upper GI tract syndrome associated with epigastric discomfort, fullness sensation, early satiety, nausea, vomiting, and belching(13). Recent studies have reported a high prevalence of dyspepsia worldwide. The prevalence of dyspepsia was identified about 30% in Iran.(14). In a cross-sectional study by Keshteli et al. (2015), no significant relationship was found between fasting and the frequency or severity of dyspeptic symptoms (15). Although another study by Torab et al. (2009) reported that patients with dyspeptic symptoms and history of peptic ulcer disease were at higher risk of peptic ulcer perforation associated with fasting, they should also be considered for prophylactic treatment before Ramadan(16).

**Gastro-Esophageal Reflux Disease**

As indicated by the results of some recent

<table>
<thead>
<tr>
<th>Table 1. Ramadan fasting and common gastrointestinal disorders relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Author</strong></td>
</tr>
<tr>
<td>1 Keshteli AH(15)</td>
</tr>
<tr>
<td>2 Torab FC(16)</td>
</tr>
<tr>
<td>3 Iraki L(17)</td>
</tr>
<tr>
<td>4 Hakkou F(19)</td>
</tr>
<tr>
<td>5 Bener A(20)</td>
</tr>
<tr>
<td>6 Al-Kansi(21)</td>
</tr>
<tr>
<td>7 Gokakin AK(22)</td>
</tr>
<tr>
<td>8 Hosseini-Asl K(23)</td>
</tr>
<tr>
<td>9 Donderici O(24)</td>
</tr>
<tr>
<td>10 Ozkan S(25)</td>
</tr>
<tr>
<td>11 Amine M(26)</td>
</tr>
<tr>
<td>12 Emami MH(27)</td>
</tr>
<tr>
<td>13 Golkakin AK(29)</td>
</tr>
</tbody>
</table>
studies, Gastro-esophageal Reflux disease is higher during Ramadan fasting (17, 18). The reason could be due to eating too fast without chewing or chewing with mouth open, smoking at Iftar and Sahar, drinking too much of carbonated and caffeinated beverages, such as cola, coffee and tea and eating fatty and spicy food (19).

**Peptic Ulcer Disease**

Peptic ulcer disease (PUD) is a GI tract disorder characterized by mucosal damage secondary to pepsin and gastric acid secretion occurring in stomach and proximal duodenum(17). One study showed that Ramadan induces an increase of both gastric acid and pepsin secretion, though this effect got reversed when Ramadan ended (19). Another study by Iraki et al. measured the 24-h gastric PH during Ramadan and observed an increase of gastric acidity mainly in diurnal phase (8AM-5PM) (18). These gastric secretion changes are likely associated with the increase of dyspeptic symptoms during Ramadan (19).

Regarding the frequency of PUD, two studies reported no increase during Ramadan fasting (20, 21), and one of these studies declared that the frequency of PUD and its complications increased after Ramadan (20). On the other hand, another study evaluating patients with epigastric pain and referring for endoscopy before, during and after Ramadan observed that duodenal ulcers and duodenitis were found more often during Ramadan (22). A clinical study was performed by Hossein-Asl to assess the healing process of peptic ulcer in patients on proton pump inhibitor drugs during Ramadan. They found that fasting does not have a deteriorating effect on healing of duodenal ulcer, and even if there is an active duodenal ulcer, one can fast while taking the drug regimen (23).

**Acute Upper Gastrointestinal Bleeding (AUGIB)**

Around 25 percent of patients with PUD experience some serious complications such as hemorrhage, perforation, or gastric outlet obstruction (17). Donderici et al, in a retrospective study, found that peptic ulcer complications were in all years higher during Ramadan than before or after Ramadan (24). Regarding acute upper gastrointestinal hemorrhage (AUGIH), it was found that the number of patients with AUGIH was significantly higher in Ramadan than other months, and the peptic ulcer disease was recognized as its main cause (25). A retrospective analysis on patients undergoing AUGIB endoscopy in Ramadan and the month before demonstrated that there were more patients admitted for AUGIB in Ramadan, especially more duodenal ulcer bleeding. Furthermore, regarding patients’ outcome, there was no significant difference between the two groups, which recommends that Ramadan fasting may not influence the prognosis of AUGIB (26). Similar results were obtained in another study conducted in Iran as well. They concluded that Ramadan fasting increases AUGIB due to duodenal ulcer, but it does not make the prognosis poorer (27).

Ulcer perforation as a serious complication of PUD occurs in approximately 2-10 percent of peptic ulcers (28). A Turkish study demonstrated that significantly more peptic ulcer perforation (PUP) surgeries happened during Ramadan than other months. Also, duration of fasting influenced the prevalence of PUP, as people fasting more than 12 hours significantly had more PUP in this study (29). Similar results were obtained from another study showing that the incidence of PUP is at the lowest rate in non-winter days with no fasting while it increases in winter days with no fasting (with a relative risk of 2.62), and this is even higher in fasting days during winter (16). Although some studies indicated that Ramadan fasting increases PUP, a Saudi study showed no change in the prevalence of PUP during Ramadan (30).

**Conclusion**

In this systematic review, it was found that Ramadan fasting seems to be harmless in healthy individuals, but in people with gastrointestinal disorders, it might be harmful as it increases the risk of complications.

Although findings about the effect of Ramadan fasting on dyspeptic symptoms are inconsistent (15, 16), as PUD complications like AUGIB and PUP are more commonly reported during Ramadan than other months (16, 25-27, 29), taking special considerations is recommended for people with history of PUD (16).

**References**


