

Adverse Health Effects Associated with Islamic Fasting: A Literature Review

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ARTICLE INFO	ABSTRACT
<p>Article type: Review article</p> <hr/> <p>Article History: Received: 03 Aug 2017 Accepted: 06 Sep 2017 Published: 20 Sep 2017</p> <hr/> <p>Keywords: Anemia Constipation Decreased sleep quality Headache Heartburn Islamic fasting</p>	<p>Introduction: Millions of Muslims across the world observe Islamic fasting during the holy month of Ramadan, as well as the other specific dates in the lunar calendar year. While fasting during this month, Muslims refrain from eating or drinking from dawn to dusk. Islamic fasting is similar to alternate day fasting (ADF) since it incorporates an average of 12 hours of fasting and 12 hours of feasting periods. This present review study is aimed to find out the common adverse health effects associated with Islamic fasting and the preventive measures to be followed to avoid them.</p> <p>Methods: The literature was reviewed through searching in databases such as PubMed, Google Scholar, and reference lists to identify the related articles.</p> <p>Results: Many health benefits have been attributed to Islamic fasting, including the reduced risk of cardiovascular diseases, diabetes, cancer, hypertension, and asthma. On the other hand, some studies have mentioned a few health problems associated with Islamic fasting, such as headaches, heartburn, constipation, dehydration, decreased sleep quality, and anemia, which may occur in some fasting individuals during Ramadan.</p> <p>Conclusion: Islamic fasting could be beneficial for health if it is performed correctly. During Ramadan, fasting individuals are advised to adhere to a balanced diet that contains sufficient portions of fruits and vegetables, whole grains, pulses, meat, fish, milk, and dairy products. Moreover, fasting individuals must drink adequate fluids, such as water, fresh fruit juices, and soups, in order to prevent the possible adverse health effects associated with Islamic fasting.</p>

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Introduction

Fasting is one of the five pillars of Islam. Prophet Muhammad (PBUH) says that fasting is like a shield that protects the followers against sins and lustful desires. Islamic fasting is observed during the holy month of Ramadan, as well as the other days in the lunar calendar year (9-11th of Muharram, any six days in Shawwal, 9th of Dhu'I-Hijja, Rajab and Sha'aban, 13-15th of every Islamic month, and Mondays and Thursdays of every week if possible). Islamic fasting involves abstaining from eating foods, drinking fluids, smoking, and sexual activities from sunrise to sunset. Eating and drinking are allowed from Iftar (sunset meal) to Sahur (predawn meal) (1).

During Islamic fasting, eating patterns and the amount and type of daily meals are altered. Normally, fasting individuals consume a large meal at Iftar and a lighter meal at Sahur (2). At these meals, individuals often use a greater variety of foods while fasting (3). In addition, consumption of sugary foods and drinks increases in fasting individuals (4).

Islamic fasting is similar to alternate day fasting (ADF) since they both involve an average of 12-hour feasting and fasting periods (5). Animal studies have suggested that ADF is likely to increase lifespan (6) and prevent cardiovascular diseases (7, 8), diabetes (9), kidney disease (10), neurodegeneration (9), and cancer

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(11). Islamic fasting is a healthy, non-pharmacological approach for health improvement, which is associated with numerous health benefits, including weight loss (12, 13), reduced inflammation (14), improved insulin sensitivity (15), detoxification (16), elevated endorphin levels (17), immune cell regeneration (18), and overcoming addictions (19). Furthermore, Islamic fasting has been shown to reduce hypertension (10), asthma (20), and rheumatoid arthritis (21).

Islamic fasting is often considered safe for healthy individuals (22). On the other hand, patients with chronic health problems, such as diabetes (23-31), hypertension (32-34), active ulcers (35-41), urolithiasis (42), and chronic kidney disease (43, 44) should consult healthcare professionals before starting to fast. Of note, Islam exempts ill individuals, travelers, and menstruating women from fasting (45).

Material and methods

In the present study, the literature was reviewed through searching in databases such as PubMed, Google Scholar, and reference lists using keywords such as Islamic fasting, negative effects, Ramadan fasting, adverse effects, and health problems in order to identify the related articles in this regard.

Absolute refraining from foods and drinks from sunrise to sunset may disrupt homeostasis (30), and some adverse health effects have been attributed to Islamic fasting, such as headaches, heartburn, constipation, dehydration, anemia, and decreased sleep quality, which could be minimized through specific preventive measures.

Headaches

Statistics suggest that the frequency of emergency department visits due to headaches is higher during the month of Ramadan compared to the other times of year (46). Caffeine withdrawal and hypoglycemia may induce headaches in fasting individuals (47). Some other influential factors in headaches include the activation of the sympathetic nervous system, hypothalamic dysfunction, dehydration, free fatty acids, insulin, and several other hormonal factors (48). Tension-type headaches have been observed in the majority of the emergency visit cases during

Ramadan (49).

According to the literature, gradual reduction of consuming tea or coffee 1-2 weeks prior to Ramadan and drinking one cup of strong coffee at Sahur (predawn meal) may prevent the fasting-induced headaches that occur due to caffeine withdrawal (50). Additionally, consumption of foods with a low glycemic index could be effective in minimizing the headaches induced by hypoglycemia (48). In this regard, the migraine patients who are willing to observe fasting should consult a physician about fasting exacerbation and caffeine withdrawal, hypoglycemia, and dehydration (51).

Heartburn

Minor gastrointestinal symptoms may occur in healthy fasting individuals (22). Consuming high portions of foods that delay gastric emptying (e.g., fried and fatty foods), especially at Iftar, may increase the risk of heartburn and gastroesophageal reflux disease (22).

During Ramadan, fasting individuals are advised to avoid bulky, fried, and fatty foods in order to prevent heartburn (52). Moreover, symptoms of heartburn could be improved by decreasing the consumption of spicy foods and caffeinated beverages while fasting. Heartburn could also be prevented by avoiding the supine position after the Iftar and Sahur meals (53).

Constipation

Fasting individuals might face difficulty in passing stool due to the irregular and decreased bowel movements caused by dietary changes (54). Bowel movement frequency may increase by adding high-fiber foods to the daily diet (55). On the other hand, reduced physical activity while fasting is likely to induce constipation; as such, constipation could be prevented by adopting regular physical exercises to improve the defecation pattern, rectosigmoid, and total time of colonic transit (56).

Lower fluid intake may also contribute to constipation in fasting individuals (57). Adequate fluid intake (e.g., water, fresh fruit juices, and vegetable soups) should be properly incorporated into the diet of these individuals (58). Furthermore, higher consumption of dietary fiber increases bowel movement frequency and prevents constipation (59).

Additionally, probiotics (e.g., yoghurt) helps prevent constipation (60).

Dehydration

Evidently, individuals avoid drinking fluids while fasting, which may result in dehydration. Although Islamic fasting is associated with dehydration, no detrimental health effects have been directly attributed to intermittent negative water balance (61).

Fluid balance could be achieved by drinking a minimum of 1-1.5 liters of water after Iftar and before sleep (62). Fasting individuals are advised to avoid caffeinated beverages (e.g., energy drinks) since caffeine increases fluid loss and thirst due to its diuretic properties (63). Water may be substituted with fruit juices, low-sodium soups, and water-rich fruits (e.g., watermelon, berries, grapes, and peaches) and vegetables (e.g., tomatoes, lettuce, and summer squash) (64). Moreover, it is recommended that the consumption of sweets and salty, spicy, fatty, and fried foods be avoided by fasting individuals from Iftar to Sahur (65).

Decreased Sleep Quality

Sleep quality might decline in fasting individuals during Ramadan due to the increased body temperature caused by the thermogenic effect of delayed meal time (66), which lowers the body temperature. In such cases, sleep quality could be improved by performing ablution (wudu) before bed (67). In addition, exposure to artificial light, which interrupts the normal circadian light cycles and disrupts the normal melatonin rhythms, should be avoided (68). Sleep quality can be enhanced by strengthening the circadian rhythm through increased exposure to sunlight, physical and social activities, and sleep hygiene (69). Also,

electronic devices, such as mobile phones, tablets, and laptops, should be kept out of the bedroom (70).

Sleeping on the back (supine position) should be avoided by fasting individuals, and it is recommended that they sleep on their side so as to improve the quality of sleep by reducing sleep apnea and snoring (71). Adherence to regular sleep and wake times could also strengthen the circadian rhythm, as well as the exposure to environmental and indoor lights, thereby leading to improved sleep quality (72).

Caffeine affects the neurotransmitters that control the secretion of melatonin, which is the principal hormone responsible for sleep synchronization. Therefore, consuming caffeinated drinks (e.g., energy drinks, coffee, tea, and cola) should be avoided during the permitted hours of Islamic fasting (73).

Anemia

Islamic fasting may significantly reduce the levels of hemoglobin, packed cell volume, and red blood cells, leading to the higher prevalence of anemia (74). In this regard, iron-rich foods (e.g., red meat, apricots, raisins, nuts, dates, soy bean, spinach, broccoli, and garlic) should be consumed in higher quantities in order to avoid the risk of anemia during Ramadan (75). Moreover, lentils are considered to be a proper source of iron and should be incorporated into the diet of fasting individuals (76).

Iron found in animal products (meat, poultry, and fish) might be absorbed better by the body (77). The absorption of iron increases by consuming the foods that contain vitamin C, such as lemon and tomato (78). Furthermore, drinking coffee and tea with meals should be avoided since it might lower iron absorption (79). The absorption of supplementary or

Table 1. Adverse Health Effects of Islamic Fasting

Author	Measure	Response
Topacoglu H et al. (46)	Headaches	Frequency of emergency department visit due to headaches is significantly higher during Ramadan compared to the other times of year.
Sadeghpour S et al. (22)	Heartburn	Healthy individuals may be affected by minor gastrointestinal symptoms, including heartburn.
Sana SK (54)	Constipation	Dietary changes in Islamic fasting may induce irregular and decreased bowel movement frequency, resulting in constipation.
Leiper JB et al. (61)	Dehydration	Fasting individuals do not drink any fluids during the day, which may lead to dehydration.
Roky R et al. (66)	Decreased Sleep Quality	Delayed meal time during Ramadan increases the body temperature through thermogenic effects, resulting in decreased sleep quality.
Dewanti L et al. (74)	Anemia	Prevalence of anemia is higher during Ramadan due to the significant reduction of hemoglobin, packed cell volume, and red blood cells.

dietary iron appears to be inhibited by calcium supplements. Therefore, regular intake of calcium supplements with meals should be avoided by fasting individuals (80). It is also advisable to avoid the consumption of calcium-rich dairy products with the main meals (81).

Conclusion

According to the current review, Islamic fasting could be beneficial for health if it is performed correctly. During Ramadan, fasting individuals are advised to adhere to a balanced diet that contains sufficient portions of fruits and vegetables, whole grains, pulses, meat, fish, milk, and dairy products. Moreover, fasting individuals must drink adequate fluids, such as water, fresh fruit juices, and soups, in order to prevent the possible adverse health effects associated with Islamic fasting. Also, these individuals should avoid deep-fried foods (e.g., pakora and samosa), sweets (e.g., gulab jamun and rasgulla), and fatty foods (e.g., paratha, oily curries, and greasy pastries).

Patients with chronic diseases, such as diabetes, coronary artery disease, cancer, ulcers, urolithiasis, and chronic kidney disease, should consult a healthcare professional before starting to fast. Although Islamic fasting is associated with some adverse health effects, no detrimental effects have been directly attributed to fasting in healthy individuals.

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