

## FASTING: FROM CULTURAL PRACTICES TO HEALTH IMPLICATIONS

 **Abbas Ali Qayyum\***

University of Copenhagen, Denmark

**Abstract.** Fasting is a practice with deep cultural and religious significance, which has been a part of living for thousands of years across various civilizations and religions. Fasting during the Islamic month of Ramadan is a deeply spiritual and communal activity, promoting self-discipline, reflection and unity. Beyond its religious importance, fasting has gained attention for its potential therapeutic and health benefits, including increased longevity, enhanced metabolic health and improved organ function. At cellular level, fasting triggers autophagy and alters gene expression related to longevity. Fasting's influence extends to vital organs facilitating metabolic shifts, improving insulin sensitivity and promoting neurogenesis. Physiologically, fasting has been associated with weight loss, reduced inflammation and a lower risk of chronic diseases. Psychologically, fasting fosters resilience, self-discipline and spiritual growth. The communal aspects further enhance social cohesion. Furthermore, traditional practices, such as breaking the fast with dates, water or salt, hold both spiritual and nutritional significance. Despite its benefits, fasting requires careful consideration, particularly for vulnerable populations such as pregnant women, elderly and individuals with illnesses. In conclusion, fasting during Ramadan exemplifies a multifaceted approach to health and well-being, encompassing physical, psychological and social dimensions and warrants further scientific exploration to fully understand its wide-ranging impacts.

**Keywords:** *Fasting, health benefit, physiological effects, psychological effects, Ramadan.*

**\*Corresponding Author:** *Abbas Ali Qayyum, University of Copenhagen, Denmark,  
e-mail: [abbasaliqayyum@yahoo.dk](mailto:abbasaliqayyum@yahoo.dk)*

**Received:** 14 December 2024;      **Accepted:** 25 January 2025;      **Published:** 11 February 2025.

### 1. Introduction

Fasting has been a substantial ritual across various cultures and religions for ages. Many civilizations like the ancient Greeks and Egyptians practiced fasting as a mean of physical and spiritual purification (Wang & Wu, 2022).

The fasting is a substantial part of many religions like Judaism, Christianity and Islam (Trepanowski & Bloomer, 2010). The concept of fasting is also seen in other faiths such as Hinduism and Buddhism.

Fasting has been performed in various forms and lengths. Monks from the monastery of Mount Athos in Greece fast more than 180 days during a year (Mitsikostas *et al.*, 1994) and the Hebrew feast of Yom Kippur includes a fast for 25 hours (Mosek & Korczyn, 1995).

The origins of fasting among Muslims during Ramadan can be traced back to the revelation of the Quran to the Prophet Muhammad (PBUH) in the 7th century. Fasting is

---

#### How to cite (APA):

Qayyum, A.A. (2025). Fasting: From cultural practices to health implications. *Islamic History and Literature*, 3(1), 62-70 <https://doi.org/10.62476/ihl3.162>

considered one of the five main pillars in Islam. Millions of Muslims worldwide fast during the Islamic month Ramadan from dawn until sunset for a month, promoting a deep sense of community, spiritual reflection and self-improvement (Alghafli *et al.*, 2019).

The significance of fasting extends beyond religious practice. It has also been embraced for its therapeutic and health benefits. Restricting food supply has shown that it increases the length of life (Mattison *et al.*, 2017; Swindell, 2012), modify diseases such as Alzheimer's and Parkinson's disease and increase wound healing in animal models (de Cabo & Mattson, 2019).

Interestingly, fasting has also shown to enhance physical well-being, promote mental improvement and foster closer ties to a spiritual existence. The shared experience of fasting during Ramadan brings families and communities together, creating an environment of support, solidarity and unity. Usually, the fasting is accompanied by other cultural and religious rituals, which enhance the unity within the group of people fasting.

However, several groups of people are exempted from fasting during the Islamic month of Ramadan like children, pregnant-, breastfeeding- or menstruating- women, elderly, people who are travelling, patients with acute disease or chronic diseases with the risk of deterioration of health.

Thus, fasting emerges as a multifaceted approach to promote overall health and well-being. In this review, we will briefly explore the effect of fasting on cellular and organ level besides looking on the physiological and psychological health benefits of fasting.

## **2. Effect of fasting on cells**

Fasting induces profound changes at the cellular level, particularly through processes such as autophagy and cell repair (Levine & Kroemer, 2019). Autophagy is a cellular mechanism where damaged cellular components are degraded and recycled, promoting cellular health. In addition, cellular repair mechanisms prevent the development of unhealthy cells to avoid cellular dysfunction and organ failure and to avoid the development of uncontrolled cell division. Interestingly, fasting may lead to increased expression of antioxidants and DNA repair (de Cabo & Mattson, 2019).

During fasting, the inhibition of the mTOR pathway (target of rapamycin), a central regulator of cell growth, triggers autophagy (Saxton & Sabatini, 2017), which can enhance cellular repair and survival in stress conditions.

Additionally, fasting influences gene expression and metabolic pathways. Research has shown that fasting can alter the expression of genes related to longevity, stress resistance and inflammation (Fontana & Partridge, 2015). These alterations can lead to improved metabolic functions, increased insulin sensitivity and modulation of lipid levels (Patterson *et al.*, 2015), thus providing a stronger biochemical framework for health and longevity.

Furthermore, the medicine given to patients may be influenced by whether or not the patient is fasting on a cellular level. In models of melanoma cell lines, cisplatin along with fasting has shown increased anti-cancer effect (Antunes *et al.*, 2017).

## **3. Organ response to fasting**

Fasting has distinct effects on vital organs, including the liver, pancreas and brain.

The liver, which plays a central role in the metabolism of the human body, switches from glucose production to ketogenesis during prolonged fasting, converting fatty acids into ketones for energy (Cahill, 2006). The switch from glucose to ketone utilization provides an alternative energy source, particularly beneficial during prolonged fasting states. This metabolic shift can enhance fat burning and promote weight management. Additionally, reduced oxidative stress occurs due to decreased production of free radicals during low energy availability in the body (Ristow & Zarse, 2010). Fasting also influences the pancreatic function by regulating insulin secretion. Prolonged fasting leads to lower insulin levels, reducing the pancreas's workload, potentially ameliorating insulin resistance over time (Mattson *et al.*, 2017). Interestingly, fasting has shown to promote neurogenesis and improve cognitive functions (Zhao *et al.*, 2022). The release of brain-derived neurotrophic factor during fasting periods supports neurogenesis, which may ameliorate anxiety and depression (Elesawy *et al.*, 2021). These physiological adaptations underscore the complexity of the effects of fasting on the human organ systems.

#### **4. Health benefits of fasting**

Fasting has been associated with various potential health benefits, notably weight loss, improved insulin sensitivity and reduced systemic inflammation. The physical benefits of fasting extend beyond metabolic changes. By restricting caloric intake, fasting promotes fat loss, which in turn can contribute to body weight management. The physical benefits of fasting extend beyond metabolic changes. They encompass improved cardiovascular health and cognitive function. Fasting has shown weight loss along with reduced waist circumference (de Cabo & Mattson, 2019). Even in people not categorized as obese, the effect of fasting may be beneficial (de Cabo & Mattson, 2019). Weight loss can reduce the blood pressure and heart rate (de Cabo & Mattson, 2019). This may in turn reduce the risk of cardiovascular diseases. Furthermore, long-term calorie restriction may have an impact on atherosclerosis (Fontana *et al.*, 2004). Beside lower blood pressure, regular fasting can lead to, improved cholesterol profiles and enhanced endothelial function and thus reducing the risk of heart disease. A meta-analysis has shown that cholesterol and triglycerides were decreased in men while high-density lipoprotein, which is considered as a “good” cholesterol, was increased in women in post-fasting period compared to pre-fasting period (Rouhani & Azadbakht, 2014). Low-density lipoprotein, which is considered as a “bad” cholesterol, was significantly decreased in both men and women (Rouhani & Azadbakht, 2014). The meta-analysis showed that fasting resulted in decreased weight during the 3<sup>rd</sup> week of Ramadan (Rouhani & Azadbakht, 2014).

It has been suggested that patients with stable cardiac disease can fast without any increased risk (Chamsi-Pasha & Chamsi-Pasha, 2016). A study of 1655 patients with known coronary artery disease showed a reduction in the incidence of acute coronary syndrome (Chamsi-Pasha & Chamsi-Pasha, 2016). While another study showed no difference in the incidence of acute coronary syndrome before or during Ramadan (Chamsi-Pasha & Chamsi-Pasha, 2016).

A study investigated the effect of fasting in patients using anticoagulation therapy (warfarin) (Chamsi-Pasha & Chamsi-Pasha, 2016). The study did not find any increased risk of thromboembolic events.

Additionally, improved insulin sensitivity enhances the body's ability to manage blood sugar levels, reducing the risk of type 2 diabetes. Interestingly, people of the island

of Okinawa have reduced incidence of diabetes and obesity which is being associated to their fasting habits (Willcox *et al.*, 2006).

Fasting has also been linked to decreased inflammation, which is a key factor in many chronic diseases (de Cabo & Mattson, 2019). Studies indicate that fasting can lower levels of pro-inflammatory cytokines, contributing to a lower risk of conditions such as heart disease and arthritis. Fasting has shown to improve atopic dermatitis, pustulosis palmaris et plantaris, psoriasis and acne vulgaris (Bragazzi *et al.*, 2019).

Fasting may also modify Alzheimer's and Parkinson's disease while the effect of fasting in patients with manio-depressive disease has both shown a benefit but also a worsening in the disease (Furqan *et al.*, 2019). In a study of elderly fasting, the verbal memory was shown improved (Witte *et al.*, 2009). Furthermore, the cognitive benefits tied to fasting, including enhanced concentration and memory retention (Gudden *et al.*, 2021), underscore its potential role in age-related cognitive decline.

Interestingly, a cross-sectional study of 1256 patients found fewer operated cases of acute appendicitis and another study found a reduction in number of patients having urinary tract infections during the Ramadan month (Bragazzi *et al.*, 2015).

Fasting may have several beneficial effects. However, some recommendations have to be followed such as to avoid exercise during the end of the fasting period to avoid the risk of dehydration and hypoglycemia (low blood sugar). However, the recommendation is to exercise in the beginning of the fasting period with aerobic exercise like running, bicycling or walking.

Even during periods of fasting, in most people a low-fat diet may be recommended.

Moreover, avoid items, which can have a diuretic effect such as tea and modify the intake of diuretics to reduce the risk of dehydration. Patients receiving large doses of diuretics should refrain from fasting after consulting their physician. Interest should also be given to avoid orthostatic hypotension due to reduction in the intravascular volume especially in patients with preexisting tendency to hypotension, diabetic neuropathy and autonomic dysfunction to avoid syncope.

It has been suggested that patients having symptomatic hypoglycemia or blood glucose below 3.9 mmol/L (70 mg/dL) are recommended to disrupt their fast. Patients with blood glucose levels higher than 16.7 mmol/L (300 mg/dL) are also advised to disrupt their fast as it increases the risk for ketoacidosis (Hassanein *et al.*, 2022).

Even though pregnant women are exempted fasting during the Ramadan month, a study showed that fasting did not result in difference in neonatal bodyweight or pregnancy duration (Rouhani & Azadbakht, 2014).

Patients with chronic diseases are advised to consult their physician, if the patient wants to fast but have a need for medicine e.g., pain killers. Many patients can be considered for switch in their medication, so they receive long-acting tablets reducing the number of daily medicine intakes.

## **5. Social aspects and psychological benefits of fasting in Ramadan**

The experience of fasting during Ramadan is not only a personal spiritual journey but also a communal practice that fosters social bonds. Traditionally, breaking of the fast, known as Iftar, unites families and communities, reinforcing social cohesion (Shalihin & Sholihin, 2022). This communal aspect enhances the spiritual experience, allowing individuals to share in the challenges and rewards of fasting.

Psychologically, fasting may be associated with various benefits, such as increased self-discipline and spiritual growth. The rigors of fasting during Ramadan can cultivate resilience and promote mental clarity, providing individuals with a renewed perspective on their priorities and life choices. The focus on self-reflection during Ramadan can enhance emotional well-being and lead to positive behavioral changes.

## 6. Effect of intermittent fasting

The 5:2 diet, which involves two nonconsecutive fasting days per week, has recently gained considerable attention for its potential health benefits (de Cabo & Mattson, 2019). Recent studies, such as the EARLY randomized clinical trial, have demonstrated that the 5:2 fasting approach may significantly improve glycemic control and weight loss in adults with type 2 diabetes (Guo *et al.*, 2024). In this trial, participants on the 5:2 diet achieved a remarkable reduction in hemoglobin A1c (average blood sugar over 2-3 months) levels compared to those treated with conventional medications. This suggests that intermittent fasting could serve as an effective lifestyle intervention for managing type 2 diabetes.

Intermittent fasting may also confer cardiovascular benefits, as shown by a systematic review indicating reductions in blood pressure, low density lipoprotein cholesterol and triglycerides among individuals practicing intermittent fasting (Varady *et al.*, 2022). Additionally, weight loss associated with intermittent fasting can enhance insulin sensitivity, further supporting metabolic health. Research has shown that individuals following intermittent fasting protocols, including the 5:2 diet, often experience weight reductions of approximately 3-8% from baseline.

## 7. The significance of water, dates and salt

In some societies, the fast is either broken with water, dates or salt. There is a risk of low blood sugar and dehydration after fasting and thus items such as water, dates and salt may be ideal to break the fast with. In the following, we will have a brief look on the importance of these elements.

Water is a fundamental element of life, essential for the survival of all living beings. In the Quran, the significance of water is emphasized through various verses that highlight its role not only as a physical necessity but also as a symbol of purity and spiritual sustenance.

The Quran explicitly states the vital role of water in sustaining life. In Surah Al-Ambiya (21:30), it is mentioned:

أَوَلَمْ يَرَ الَّذِينَ كَفَرُوا أَنَّ السَّمَوَاتِ وَالْأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا ۖ وَجَعَلْنَا مِنَ الْمَاءِ كُلَّ شَيْءٍ حَيٍّ أَفَلَا يُؤْمِنُونَ ﴿٣٠﴾

And have the disbelievers not seen that the whole heavenly universe and the earth were (all) joined together as one unit and then We split them apart? And We originated (the life of) all the living organism (on earth) from water. So do they not accept faith (even after learning these facts brought forth by the Qur'an)?

This verse underscores the idea that water is the source of life, indicating that without it, existence is impossible. The biological necessity of water is mirrored in modern health understanding, where hydration is recognized as crucial for maintaining bodily functions, regulating temperature and facilitating digestion. In Surah Al-Furqan (25:48), it states:

وَبُورِ الدِّينِ أَرْسَلَ الرِّيحَ بُشْرًا بَيْنَ يَدَيْ رَحْمَتِهِ ۗ وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً طَهُورًا ﴿٤٨﴾

And He is the One Who sends the breezes as good news before (the rain of) His mercy. And it is We Who send down pure (and cleansing) water from the sky,

Rainwater is depicted as a source of nourishment and healing, reflecting the broader understanding of water as a life-giving force.

Moreover, water is often associated with purity in Islamic teachings. In Surah Al-Ma'idah (5:6), the Quran instructs believers on the importance of cleanliness, stating:

يَا أَيُّهَا الَّذِينَ آمَنُوا إِذَا قُمْتُمْ إِلَى الصَّلَاةِ فَاغْسِلُوا وُجُوهَكُمْ وَأَيْدِيَكُمْ إِلَى الْمَرَافِقِ وَامْسَحُوا بِرُءُوسِكُمْ وَأَرْجُلَكُمْ إِلَى الْكَعْبَيْنِ ۗ وَإِنْ كُنْتُمْ جُنُبًا فَاطَّهَّرُوا ۗ وَإِنْ كُنْتُمْ مَرْضَىٰ أَوْ عَلَىٰ سَفَرٍ أَوْ جَاءَ أَحَدٌ مِنْكُمْ مِنَ الْغَائِطِ أَوْ لَمَسْتُمُ النِّسَاءَ فَلَمْ تَجِدُوا مَاءً فَتَيَمَّمُوا صَعِيدًا طَيِّبًا فَامْسَحُوا بِوُجُوهِكُمْ وَأَيْدِيكُمْ مِنْهُ ۗ مَا يُرِيدُ اللَّهُ لِيَجْعَلَ عَلَيْكُمْ مِنْ حَرَجٍ وَلَكِنْ يُرِيدُ لِيُطَهِّرَكُمْ وَليُنِّمَ عَلَيْكُمْ وَعَلَىٰكُمْ تَشْكُرُونَ ﴿٦﴾

O believers! When you (intend to) stand for Prayer, then, (for ablution,) wash your faces and hands up to the elbows and pass your wet hands over your heads and (also wash) your feet up to the ankles. And if you are in a state of obligation for total ablution, purify yourselves well (by bathing). Should you be ill or on a journey or someone of you comes (after) defecation or you have had sexual contact with women and then you do not find water, (in these cases,) perform tayammum with clean soil. So, it is wiping your faces and (full) hands with it (i.e., clean soil). Allah does not want to make things hard for you, but He wants to purify you and complete the bestowal of His favour upon you so that you may become grateful.

This emphasis on cleanliness highlights the role of water in maintaining both physical and spiritual health. Cleanliness is a prerequisite for prayer, which is a fundamental aspect of a Muslim's life. Thus, water serves not only as a means of physical health but also as a facilitator of spiritual well-being.

The Quran also addresses the importance of water conservation and responsible usage. In Surah Al-A'raf (7:31), it is advised:

يَبْنَئِ أَدَمَ خُدُودًا زَيْنَتَكُمْ عِنْدَ كُلِّ مَسْجِدٍ وَكُلُوا وَكُلُوا وَاشْرَبُوا وَلَا تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ ﴿٣١﴾

O Children of Adam! Dress up decently every time you offer Prayer. And eat and drink, but do not spend extravagantly because certainly He does not like the extravagant.

This verse encourages moderation and mindfulness in the consumption of resources, including water. In a world facing water scarcity and environmental challenges, this teaching is particularly relevant.

Dates do also hold a spiritual significance in Islam. They are often consumed to break the fast during the Ramadan month, as exemplified by the practice of the Prophet Muhammad (PBUH). The Prophet Muhammad (PBUH) is reported to have said:

نُ الرِّبَابِ، عَ حَدَّثَنَا مُسَدَّدٌ، حَدَّثَنَا عَبْدُ الْوَاحِدِ بْنُ زِيَادٍ، عَنْ عَاصِمِ الْأَحْوَلِ، عَنْ حَفْصَةَ بِنْتِ سِيرِينَ، عَنِ مَرْقَانَ لَمْ إِذَا كَانَ أَحَدُكُمْ صَائِمًا فَلْيُفِطِرْ عَلَى الدَّ " قَالَ رَسُولُ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ سَلْمَانَ بْنَ عَامِرٍ، عَمَّهَا قَالَ "يَجِدِ النَّمْرَ فَعَلَى الْمَاءِ فَإِنَّ الْمَاءَ طَهُورٌ .

Narrated Salman ibn Amir:

The Prophet (PUBH) said: When one of you is fasting, he should break his fast with dates; but if he cannot get any, then (he should break his fast) with water, for water is purifying. (Sunan Abi Dawud 2355) (*Sunan Abi Dawud 2355 - Fasting (Kitab Al-Siyam) - Sunnah.Com - Sayings and Teachings of Prophet Muhammad, n.d.*).

The Quran references dates multiple times, highlighting their nutritional value, their role in sustenance and their significance in the lives of the prophets. Dates are recognized

for their rich nutritional profile, providing essential vitamins, minerals and energy. The Quran acknowledges the importance of dates as a source of sustenance. In Surah Maryam (19:25-26), Allah commands Maryam (AS) to eat dates during her labor:

﴿٢٥﴾ وَ بُرِّئِ إِلَيْكَ بِجِدْعِ النَّخْلَةِ تُسْقِطُ عَلَيْكَ رَطْبًا جَنِيًّا

And shake the trunk of the date-palm towards you. It will shed fresh ripe dates upon you.

﴿٢٦﴾ فَكُلِي وَ اشْرَبِي وَ قَرِّي عَيْنًا فَمَا تَرَيْنَ مِنَ الْبَشَرِ أَحَدًا فَقُولِي إِنِّي نَذَرْتُ لِلرَّحْمَنِ صَوْمًا فَلَنْ أُكَلِّمَ الْيَوْمَ إِنْسِيًّا

So eat and drink and cool (your) eyes (with the sight of your beautiful, lovely baby). Then if you see any man, say (to him by gestures): ‘I have vowed a fast (of silence) to the Most Gracious (Lord), so I shall just not talk to any human being today’.

These verses illustrate not only the physical sustenance that dates provide as a source of nourishment and comfort but also the divine support and care offered to Maryam (AS) during a challenging time. The mention of dates in this context emphasizes their role.

Dates do also symbolize abundance and blessings in Islamic tradition. In Surah Al-An'am (6:99), Allah mentions the date palm as one of the blessings of the earth:

﴿٩٩﴾ وَ بُوِ الدُّنْيَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَأَخْرَجْنَا بِهِ نَبَاتَ كُلِّ شَيْءٍ فَأَخْرَجْنَا مِنْهُ خَضِرًا نُخْرَجُ مِنْهُ حَبًّا مُتَرَاكِبًا وَ مِنَ النَّخْلِ مِنْ طَلْعِهَا قِنْوَانٌ دَانِيَةٌ وَ جَنَّاتٍ مِنْ أَعْنَابٍ وَ الزَّيْتُونِ وَ الرُّمَّانِ مُشْتَبِهًا وَ غَيْرِ مُتَشَابِهٍ أَنْظَرُوا إِلَى ثَمَرِهِ إِذَا أَثْمَرَ وَ يُعْمَهُ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِقَوْمٍ يُؤْمِنُونَ

And He is the One Who sends down water from the sky. Then by means of this (rain), We bring forth vegetation of every kind out of which We produce green (foliage) from which We bring forth clustered grain packed one over the other, clusters of date-palm hanging low from its spathe and gardens of grapes, olives and (also) pomegranates (which from many aspects look) alike but (in products, tastes and effects) are unlike. Look at the fruit of the tree when it bears fruit and (also observe) when it ripens. Verily, in these are signs for those who believe.

One of the notable references to salt in the Quran is found in Surah Al-Furqan (25:53), where Allah mentions the two bodies of water:

﴿٥٣﴾ وَ بُوِ الدُّنْيَ مَرَجَ الْبَحْرَيْنِ بَدَاً عَذْبٌ فُرَاتٌ وَ بَدَاً مِلْحٌ أجاجٌ وَ جَعَلَ بَيْنَهُمَا بَرْزَخًا وَ حِجْرًا مَحْجُورًا

And He is the One Who joined two rivers, this (one) very sweet and freshening and that (other one) very salty and bitter. And He set a barrier and a strong partition between them.

This verse illustrates the coexistence of fresh and saltwater, emphasizing the balance in creation. Usually, in the medical field, the saline or the glucose intravenous infusion of fluid is used in several types of patients admitted including the patients who are dehydrated.

## 8. Conclusion

In summary, fasting holds a significant place in both cultural practices and scientific exploration. The impacts of fasting at cellular and organ levels promote various health benefits, from weight loss to altered metabolism and improved organ function. The social and psychological dimensions of fasting during Ramadan enrich the experience, fostering

community ties and personal growth. Thus, the multifaceted nature of fasting asserts its role as a practice that supports both physical health and holistic well-being.

## References

- Alghafli, Z., Hatch, T.G., Rose, A.H., Abo-Zena, M.M., Marks, L.D. & Dollahite, D.C. (2019). A qualitative study of Ramadan: A month of fasting, family and faith. *Religions*, 10(2), <https://doi.org/10.3390/rel10020123>
- Antunes, F., Corazzari, M., Pereira, G., Fimia, G.M., Piacentini, M. & Smaili, S. (2017). Fasting boosts sensitivity of human skin melanoma to cisplatin-induced cell death. *Biochemical and Biophysical Research Communications*, 485(1), 16-22. <https://doi.org/10.1016/j.bbrc.2016.09.149>
- Bragazzi, N.L., Briki, W., Khabbache, H., Rammouz, I., Mnadla, S., Demaj, T. & Zouhir, M. (2015). Ramadan fasting and infectious diseases: A systematic review. *The Journal of Infection in Developing Countries*, 9(11) <https://doi.org/10.3855/jidc.5815>
- Bragazzi, N.L., Sellami, M., Salem, I., Conic, R., Kimak, M., Pigatto, P.D.M. & Damiani, G. (2019). Fasting and its impact on skin anatomy, physiology and pathophysiology: A comprehensive review of the literature. *Nutrients*, 11(2), 249 <https://doi.org/10.3390/nu11020249>
- Cahill, G.F. (2006). Fuel metabolism in starvation. *Annual Review of Nutrition*, 26, 1-22 <https://doi.org/10.1146/annurev.nutr.26.061505.111258>
- Chamsi-Pasha, M., Chamsi-Pasha, H. (2016). The cardiac patient in Ramadan. *Avicenna Journal of Medicine*, 6(2), 33-38 <https://doi.org/10.4103/2231-0770.179547>
- de Cabo, R., Mattson, M.P. (2019). Effects of intermittent fasting on health, aging and disease. *The New England Journal of Medicine*, 381(26), 2541-2551 <https://doi.org/10.1056/NEJMra1905136>
- Elesawy, B.H., Raafat, B.M., Muqbal, A.A., Abbas, A.M. & Sakr, H.F. (2021). The impact of intermittent fasting on brain-derived neurotrophic factor, neurotrophin 3 and rat behavior in a rat model of type 2 diabetes mellitus. *Brain Sciences*, 11(2), 242 <https://doi.org/10.3390/brainsci11020242>
- Fontana, L., Meyer, T.E., Klein, S. & Holloszy, J.O. (2004). Long-term calorie restriction is highly effective in reducing the risk for atherosclerosis in humans. *Proceedings of the National Academy of Sciences of the United States of America*, 101(17), 6659-6663 <https://doi.org/10.1073/pnas.0308291101>
- Fontana, L., Partridge, L. (2015). Promoting health and longevity through diet: From model organisms to humans. *Cell*, 161(1), 106-118. <https://doi.org/10.1016/j.cell.2015.02.020>
- Furqan, Z., Awaad, R., Kurdyak, P., Husain, M.I., Husain, N. & Zaheer, J. (2019). Considerations for clinicians treating Muslim patients with psychiatric disorders during Ramadan. *The Lancet. Psychiatry*, 6(7), 556-557 [https://doi.org/10.1016/S2215-0366\(19\)30161-0](https://doi.org/10.1016/S2215-0366(19)30161-0)
- Gudden, J., Arias Vasquez, A. & Bloemendaal, M. (2021). The effects of intermittent fasting on brain and cognitive function. *Nutrients*, 13(9), 3166. <https://doi.org/10.3390/nu13093166>
- Guo, L., Xi, Y., Jin, W., Yuan, H., Qin, G., Chen, S., ... & Yu, D. (2024). A 5:2 intermittent fasting meal replacement diet and glycemic control for adults with diabetes: The early randomized clinical trial. *JAMA Network Open*, 7(6), e2416786 <https://doi.org/10.1001/jamanetworkopen.2024.16786>
- Hassanein, M., Afandi, B., Ahmedani, M.Y., Alamoudi, R.M., Alawadi, F., Bajaj, H.S., ... & Zainudin, S.B. (2022). Diabetes and Ramadan: Practical guidelines 2021. *Diabetes Research and Clinical Practice*, 185 <https://doi.org/10.1016/j.diabres.2021.109185>
- Levine, B., Kroemer, G. (2019). Biological functions of autophagy genes: A disease perspective. *Cell*, 176(1-2), 11-42 <https://doi.org/10.1016/j.cell.2018.09.048>



- Mattison, J.A., Colman, R.J., Beasley, T.M., Allison, D.B., Kemnitz, J.W., Roth, G.S., ..., & Anderson, R.M. (2017). Caloric restriction improves health and survival of rhesus monkeys. *Nature Communications*, 8, 14063 <https://doi.org/10.1038/ncomms14063>
- Mattson, M.P., Longo, V.D. & Harvie, M. (2017). Impact of intermittent fasting on health and disease processes. *Ageing Research Reviews*, 39, 46-58 <https://doi.org/10.1016/j.arr.2016.10.005>
- Mitsikostas, D.D., Thomas, A., Gatzonis, S., Ilias, A. & Papageorgiou, C. (1994). An epidemiological study of headache among the Monks of Athos (Greece). *Headache*, 34(9), 539-541 <https://doi.org/10.1111/j.1526-4610.1994.hed3409539.x>
- Mosek, A., Korczyn, A.D. (1995). Yom Kippur headache. *Neurology*, 45(11), 1953-1955 <https://doi.org/10.1212/wnl.45.11.1953>
- Patterson, R.E., Laughlin, G.A., Sears, D.D., LaCroix, A.Z., Marinac, C., Gallo, L.C., ... & Villaseñor, A. (2015). Intermittent fasting and human metabolic health. *Journal of the Academy of Nutrition and Dietetics*, 115(8), 1203-1212 <https://doi.org/10.1016/j.jand.2015.02.018>
- Ristow, M., Zarse, K. (2010). How increased oxidative stress promotes longevity and metabolic health: The concept of mitochondrial hormesis (mitohormesis). *Experimental Gerontology*, 45(6), 410-418 <https://doi.org/10.1016/j.exger.2010.03.014>
- Rouhani, M.H., Azadbakht, L. (2014). Is Ramadan fasting related to health outcomes? A review on the related evidence. *Journal of Research in Medical Sciences: The Official Journal of Isfahan University of Medical Sciences*, 19(10), 987-992.
- Saxton, R.A., Sabatini, D.M. (2017). mTOR Signaling in growth, metabolism and disease. *Cell*, 168(6), 960-976 <https://doi.org/10.1016/j.cell.2017.02.004>
- Shalihin, N., Sholihin, M. (2022). Ramadan: The month of fasting for Muslim and social cohesion-mapping the unexplored effect. *Heliyon*, 8(10), e10977 <https://doi.org/10.1016/j.heliyon.2022.e10977>
- Sunan Abi Dawud 2355-Fasting (Kitab Al-Siyam)-تاب الصوم-Sunnah.com-Sayings and Teachings of Prophet Muhammad (ملس و هيلع هلاا لىلص). Retrieved 20.01.2025 <https://sunnah.com/abudawud:2355>
- Swindell, W.R. (2012). Dietary restriction in rats and mice: A meta-analysis and review of the evidence for genotype-dependent effects on lifespan. *Ageing Research Reviews*, 11(2), 254-270. <https://doi.org/10.1016/j.arr.2011.12.006>
- Trepanowski, J.F., Bloomer, R.J. (2010). The impact of religious fasting on human health. *Nutrition Journal*, 9, 57. <https://doi.org/10.1186/1475-2891-9-57>
- Varady, K.A., Cienfuegos, S., Ezpeleta, M. & Gabel, K. (2022). Clinical application of intermittent fasting for weight loss: Progress and future directions. *Nature Reviews Endocrinology*, 18(5), 309-321 <https://doi.org/10.1038/s41574-022-00638-x>
- Wang, Y., Wu, R. (2022). The Effect of fasting on human metabolism and psychological health. *Disease Markers*, 5653739 <https://doi.org/10.1155/2022/5653739>
- Willcox, D.C., Willcox, B.J., Todoriki, H., Curb, J.D. & Suzuki, M. (2006). Caloric restriction and human longevity: What can we learn from the Okinawans? *Biogerontology*, 7(3), 173-177 <https://doi.org/10.1007/s10522-006-9008-z>
- Witte, A.V., Fobker, M., Gellner, R., Knecht, S. & Flöel, A. (2009). Caloric restriction improves memory in elderly humans. *Proceedings of the National Academy of Sciences of the United States of America*, 106(4), 1255-1260 <https://doi.org/10.1073/pnas.0808587106>
- Zhao, Y., Jia, M., Chen, W. & Liu, Z. (2022). The neuroprotective effects of intermittent fasting on brain aging and neurodegenerative diseases via regulating mitochondrial function. *Free Radical Biology and Medicine*, 182, 206-218 <https://doi.org/10.1016/j.freeradbiomed.2022.02.021>