



Fasting at the Confluence of Faith and Health: A Comprehensive Review

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ARTICLE INFO	ABSTRACT
Article type: Review Article	Introduction: Fasting is not only a religious obligation but also a holistic act of worship that profoundly influences an individual's body, soul, character, and society. This act of devotion brings the individual closer to Allah, fostering qualities such as patience, piety, gratitude, and endurance. Scientific research supports these spiritual benefits, confirming that fasting is advantageous for human health and an effective means of physical detoxification.
Article History: Received: 14 Mar 2025 Accepted: 13 Apr 2025	Methods: A systematic search was conducted across databases such as Scopus, PubMed, and others, using search terms like "fasting," "health benefits of fasting," "fasting and science," and "fasting and nutrition." Relevant literature was carefully selected, evaluated, and critically analyzed.
Keywords: Fasting Islam Fasting and body Health benefits Metabolism	Results: Fasting is described in both the Holy Quran and Hadith as a means of attaining taqwa (piety), facilitating spiritual purification, and fostering patience. This practice is a form of devotion and exemplifies self-discipline and control over one's desires. Fasting has been an essential practice in various religious traditions, and Islam has presented it as an organized and purposeful act of worship. Conclusion: The numerous health benefits of fasting have been identified in preclinical and clinical studies, underscoring its promising potential. These benefits include stress reduction, mood improvement, weight loss, cancer prevention, and reduced inflammation. While the available evidence is not yet conclusively strong, fasting appears to be a powerful natural method for enhancing personal, social, and health-related well-being.

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Introduction

Islam is a divine religion that aligns closely with the natural order. The term Islam refers to total submission to the one and only Allah. While it is the oldest religion, it gained widespread recognition and exploration with the advent of the last Messenger, Prophet Muhammad (PBUH). Today, Islam is the second-largest religion globally, with more than 1.8 billion followers (1). The number of Muslim adherents continues to grow rapidly, driven by Islam's comprehensive principles, alignment with nature, and completeness. Among its many distinctive qualities, Islam's universality and global reach are particularly notable, making it an attractive path for non-Muslims (2). The foundation of Islam is encapsulated in the Five Pillars, which are the core practices that guide a Muslim's life. These include faith (Shahada), prayer (Salat),

obligatory charity (Zakat), fasting (Sawm), and pilgrimage to Makkah (Hajj), as described in Hadith (3). For Muslims, it is obligatory to uphold these Five Pillars, except in cases of dire necessity or emergencies (4).

Historically, fasting has been practiced across various civilizations and religions for self-purification and spiritual growth. In Islam, fasting is the third pillar of the faith and is a distinctive act in which a Muslim abstains from eating and drinking during daylight hours solely for the sake of Allah Almighty. While fasting exists in different forms across various religious traditions, Islam uniquely emphasizes fasting during the 9th month of the Islamic (lunar) calendar, known as Ramadan. During Ramadan, Muslims fast from dawn until sunset, adhering to specific guidelines (5). The term fasting refers to abstaining from food and drink, and in the context of Islam, Sawm involves refraining not

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only from food and drink but also from sexual activity and any other forms of indulgence that might be considered substitutes for food or drink. For fasting in Islam to be valid, the individual must meet specific criteria: (i) the person must be a Muslim (male or female), (ii) the individual must have reached adulthood (after puberty), and (iii) the person should not be traveling or ill, with exceptions for each of these conditions outlined in Islamic jurisprudence. Muslims worldwide are required to fast during Ramadan unless an emergency arises. If people cannot fast during Ramadan, they may either make up for the missed days later or provide charity, as outlined in Islamic legal principles. In addition to its spiritual significance, scientific research has confirmed the health benefits of fasting, emphasizing its important role in enhancing human well-being (6).

The ultimate purpose of fasting in Islam is to attain *Taqwa*—spiritual purity and closeness to Allah. While fasting is primarily a religious duty, it offers a range of spiritual, physical, mental, and societal benefits. *Taqwa*, the highest spiritual and ethical reward of fasting, encourages Muslims to remain conscious of Allah in every situation, fostering a constant awareness of His presence. A person with *Taqwa* strives to perform good deeds and avoid all evil and *haram* (forbidden) actions. Key qualities such as piety, righteousness, consciousness, patience, and perseverance are characteristic of an individual with *Taqwa*. Fasting is the most effective means of attaining *Taqwa* and deepening one's spirituality. In addition to its spiritual benefits, fasting has been shown to offer numerous health advantages. It helps reduce stress, regulate metabolism, alleviate anxiety, combat obesity, and enhance brain and heart function—just a few examples of the health benefits associated with fasting. Research into the various medical, physical, and physiological effects of fasting during Ramadan is ongoing and continues to uncover new insights. Beyond individual health, fasting also fosters societal and communal values. It encourages equality, empathy, patience, compassion for others, and social solidarity—core aspects of the Muslim community's collective bond. Additionally, fasting contributes to mental peace, internal satisfaction, and the development of self-control, enhancing an individual's personality and character.

The health and medical benefits of fasting have been extensively studied and documented. These benefits include lowering blood glucose levels, reducing the risk of heart disease, and alleviating mental health issues such as depression and anxiety. Fasting also enhances bodily functions by eliminating damaged cells and waste materials, providing more time for the body to metabolize stored fats, and facilitating processes such as autophagy and detoxification. The role of fasting in preventing cancer and degenerative diseases and promoting gut health has also been explored.

The available literature on various aspects of fasting is extensive and can be overwhelming to explore in detail. While each dimension of fasting—whether spiritual, medical, societal, or others—has been thoroughly examined and documented, this article focuses specifically on the health spectrum, with a particular emphasis on the effects of fasting on the human body. It provides a concise and narrative exploration of these effects while shedding light on the fundamental properties of fasting and how it shapes the character and personality of a Muslim.

Materials and Methods

A comprehensive literature review was conducted for this article by searching for various terms, including "fasting," "fasting in religion," "religious perspectives on fasting," "Islam and fasting," "health benefits of fasting," "medical benefits of fasting," and "fasting and body functions." These searches were conducted across multiple reputable databases and platforms, such as PubMed, Scopus, and Google Scholar. Relevant literature was selected, downloaded, screened, and critically evaluated. The inclusion criteria focused on review articles, original research papers, book chapters, and meta-analyses while excluding grey literature, such as blogs and commercial articles. Data extraction concentrates on the spiritual significance of fasting and its physiological and medical benefits.

Definition of Fasting: Linguistic and Terminology

Linguistically, the term fasting refers to the act of abstaining from eating, drinking, or speaking. In Islamic jurisprudence, fasting is defined as refraining from food, drink, marital relations, and all sinful speech and actions from dawn (Fajr) until sunset (Maghrib) with the intention of

worship. In Shariah, fasting refers to the act of an eligible person who abstains from eating, drinking, and anything that falls under the same category as food and drink, as well as from marital relations, all with the intention of worship. This abstention must occur either physically (by actually refraining from these actions) or legally (in the case of unintentional acts, such as eating by mistake, which is forgiven in Shari'ah). While unintentional actions like eating or drinking by mistake are not considered violations of the fast, legally, the person is still regarded as having refrained from these actions

during fasting. Intention (niyyah) plays a critical role in Islamic fasting. The different aspects of fasting are summarized in Figure 1. According to Al-Qurtubi, the perfect and complete fast is one in which acts of disobedience are avoided and acts of worship are consistently maintained. Likewise, Abu Hurairah (May Allah be pleased with him) reported: The Prophet (ﷺ) said: *"If one does not eschew lies and false conduct, Allah has no need that he should abstain from his food and his drink."* [Al-Bukhari].

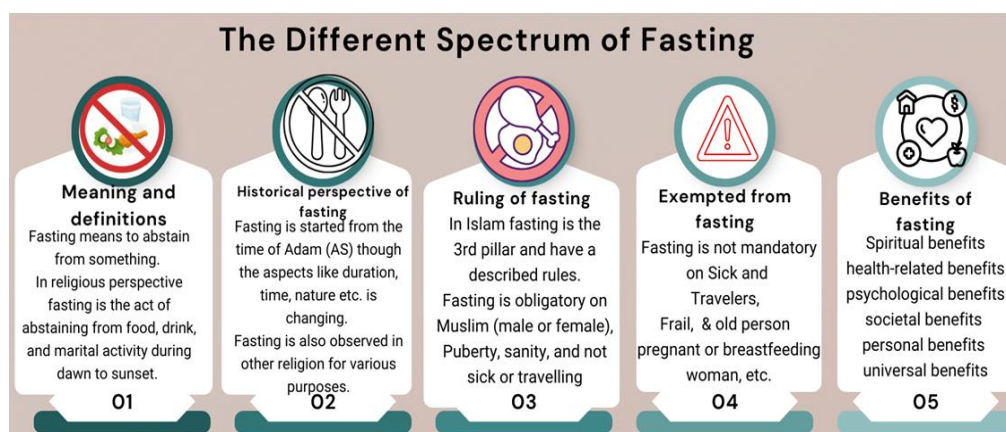


Figure 1. The various spectra of fasting exploring meaning, ruling, historical perspective, and benefits of fasting.

Purpose of Fasting

The verse "كتب عليكم الصيام" (Fasting has been prescribed for you (Quran 2:183) establishes the obligation of fasting in Islam. Among the five Pillars of Islam, fasting holds the third position. In the order of obligatory acts, Islam prescribes the Shahada as the ultimate declaration of faith and the foundational step to becoming a Muslim. This is followed by prayer (Salat), a relatively lighter act of worship, and then fasting (Sawm). Fasting, a more challenging and demanding act for the soul, is placed in the third position. The obligation of fasting was established on the 10th of Sha'ban in 2 A.H. in Madinah. Fasting serves as a remedy for both physical and spiritual well-being. In Islam, the ultimate purpose of fasting is to draw closer to the Creator, Allah, and to seek a place among those destined for Paradise(7). Allah Almighty says in the Holy Quran: *"O you who believe, the fasts have been enjoined upon you as they were enjoined upon those before you, so that you may be God-fearing"* (Quran 2:183).

Fasting is fundamental to an individual's physical, spiritual, and moral development. The Quran describes fasting as a means to attain piety:

"So that you may become righteous" (2:183).

This verse makes it clear that the purpose of fasting is not just to experience hunger and thirst but also to discipline oneself and refine one's character.

Besides the holy Quran, the hadiths of the last prophet, Muhammad (PBUH), also described the various aspects of fasting. The Prophet Muhammad ﷺ said:

"Islam is built upon five pillars: Bearing witness that there is no God, but Allah and that Muhammad is His Messenger, establishing prayer, giving zakat, performing Hajj, and fasting in Ramadan" (Sahih Al-Bukhari, Hadith 4243).

Fasting: A Practical Path to Purification, Piety, and Devotion

In Islamic teachings, fasting is a powerful means of self-purification, self-discipline, and obedience to Allah's command. Allah states in the Quran:

"So that you may attain piety" (2:183)

The ultimate purpose of fasting is to cultivate Taqwa (God-consciousness). Fasting nurtures this awareness in the heart by promoting continuous remembrance of Allah, fostering self-restraint, and strengthening one's commitment to righteousness.

By refraining from food and drink solely for Allah's pleasure, a believer maintains His remembrance from dawn to sunset, deepening their sense of devotion. Islam balances worship and daily responsibilities, permitting trade and business to continue during fasting, thus ensuring that the believer's spiritual and worldly duties are upheld. Fasting is not an all-year obligation; it is prescribed for a fixed duration of 29 or 30 days, as mentioned in the Quran: *"For a fixed number of days" (2:184)*.

The Historical Context of the Worship of Fasting

The verse phrase "كَمَا كُتِبَ عَلَى الَّذِينَ مِنْ قَبْلِكَ" (*"As it was prescribed for those before you"*) (Quran, 2:183) not only refers to a historical reality but also emphasizes that fasting, despite its natural difficulty, has been made easier for Muslims. The statement indicates that previous nations also endured this hardship. Literature shows that fasting dates to the time of Prophet Adam (peace be upon him). During his era, fasting was prescribed on the 13th, 14th, and 15th of each month (the "Ayam al-Bidh"). Similarly, the Jews observed fasting on the Day of Ashura. This is why the Prophet Muhammad (peace be upon him) advised us to fast two days instead of one, in contrast to the Jewish practice. In the holy Quran it is mentioned with the reference of Maryam (Mary) (peace be upon her) said: *"Indeed, I have vowed a fast to the All-Merciful. Thus, I shall not speak today to any human being."* (Quran: 19:26).

Fasting is observed in many religious traditions beyond Islam. In Hinduism, it is known as Upavasa, while in Buddhism, it is practiced as Bhṛat (fasting). Among some Native American religious practices, fasting was traditionally part of a vision quest, a spiritual ritual to gain insight and guidance. Additionally, the priestly societies of the Pueblo Indians engaged in fasting during retreats before major ceremonies associated with seasonal changes (8). Fasting in connection with special occasions or spiritual purposes has been preserved in various religions. In Jainism, fasting according to prescribed rules, combined

with specific types of meditation, leads to trances that enable individuals to detach from the material world and attain a transcendent state (9). Similarly, some Buddhist monks of the Theravada school incorporate fasting into their meditation practices (10). For many Buddhists, fasting is a means to draw closer to the Buddha and seek His mercy (11).

On the other hand, some religions, such as Zoroastrianism, prohibit fasting, believing that it weakens the body and impedes their ability to compete with their enemies, including evil forces (12, 13). In contrast, some religions, like Judaism, observe fasting on several days throughout the year, while Christianity, particularly Roman Catholicism and Eastern Orthodoxy, prescribes fasting for 40 days (14). In addition to these religious, cultural, and event-based fasts, Islam provides a comprehensive set of guidelines and rules for fasting, emphasizing adherence to Allah's commands. Figure 2 summarizes the concepts and practices of fasting across different religions. In summary, fasting has been a part of human tradition from the time of Prophet Adam (peace be upon him) to Prophet Muhammad (peace be upon him), practiced in some form across various religions and cultures.

The Wisdom Behind the Obligation of Fasting: Training the Soul and Spiritual Benefits

Fasting is not merely a physical act of abstaining from food and drink; it encompasses profound spiritual wisdom aimed at disciplining and nurturing the soul. The impact of fasting extends far beyond individual health benefits, reaching societal and even global levels of empathy and solidarity. To fully understand the more profound wisdom behind fasting, it is essential to consider three key points:

Restraining the desires of the soul: Just as a wild horse can be tamed by reducing its food and water intake, the unruliness of the soul is restrained through fasting. This process trains the soul, guiding it to align more closely with the will of Allah.

Increasing the burden of worship: Just as placing a burden on an animal can soften its nature, fasting increases the weight of worship on the individual, leading to the taming of the rebellious soul. This results in the soul becoming more deeply engaged in the worship of Allah.

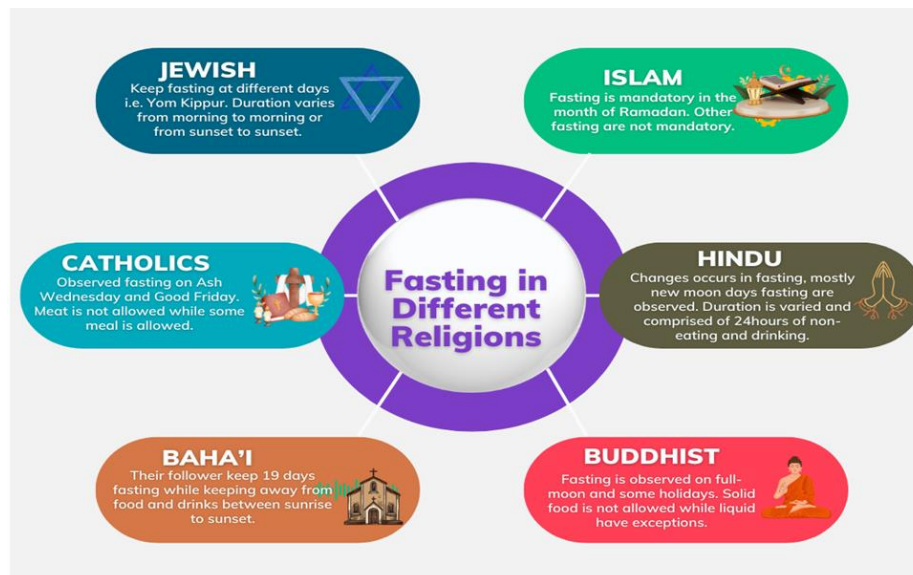


Figure 2. The concepts and spectrum of fasting in different religions.

Seeking Allah's help: It is essential to consistently seek Allah's assistance in mastering the soul. Through fasting, an individual receives Allah's help in maintaining the balance and harmony of the soul.

The purpose and objective of fasting: The objective of fasting is not merely the physical abstinence from pleasures, but its true purpose is the spiritual training of the individual and the attainment of Taqwa (God-consciousness), as mentioned in the Quran: "العلكم تتقون" (*that you may attain Taqwa*) (Quran: 2:183).

The reality of Taqwa: Taqwa is the state of the heart cultivated through the remembrance of Allah. When the heart is immersed in the remembrance of Allah, it is naturally inclined towards goodness and refrains from evil. Taqwa is not merely the fear of Allah, but rather a combination of fear, hope, and trust in Allah's mercy. This is why, alongside Taqwa, an individual's prayers, hopes, and trust in Allah's mercy are paramount, as the Shari'ah emphasizes both fear and hope in a balanced manner.

Fasting and the fulfillment of Taqwa: Fasting revitalizes a person's Taqwa, as it not only prevents food and drink intake but also curbs all other desires and worldly temptations. When an individual fulfills Allah's command, their faith

provides the strength to endure the fast. During fasting, the believer must resist their desires, and through this ongoing challenge, they succeed in reinforcing their faith and Taqwa. This is why fasting becomes a vital spiritual experience for the *muttaqi* (God-conscious) person.

Spiritual training and the increase of faith: Fasting is not merely a means of enduring physical hardship or practicing asceticism; rather, it serves as a means of spiritual training. During fasting, an individual experiences physical tranquility while their heart remains immersed in the remembrance of Allah, guiding them toward the ultimate station of Taqwa. Moreover, fasting strengthens a person's willpower, as each fast presents a new challenge that fortifies their faith and Taqwa.

Fasting as the agent of social kindness: Fasting serves as a means to express detachment from worldly desires. Through fasting, a person becomes accustomed to angelic qualities. Through fasting, a person exemplifies the principle of "Takhalliqu bi Akhlaq Allah" (Adopt the qualities of Allah) Ihya' Ulum al-Din (1/236). According to Allama Ibn al-Qayyim al-Jawzi (رحمت الله عليه): "Fasting is a restraint for the pious, paradise for the warriors, and the refinement of character for the righteous and the close ones to Allah."

Virtues of fasting: gratitude for blessings:

Fasting allows one to reflect on and appreciate Allah's blessings, particularly the three fundamental needs: food, drink, and marital relations. By abstaining from these, an individual becomes more aware of their significance and develops a deeper sense of gratitude.

Control of desires: Fasting helps control one's carnal desires and passions, fostering spiritual growth and self-improvement.

Empathy for the poor: Fasting enables an individual to empathize with the condition of the poor and needy, cultivating greater compassion and a willingness to help. By experiencing hunger, the heart becomes more sympathetic towards those who endure constant deprivation, fostering a deep sense of mercy and compassion for the less fortunate.

Lesson of mutual support: Fasting teaches patience, tolerance, and empathy. By

experiencing hunger and thirst, an individual gains a deeper understanding of the struggles faced by others, fostering greater compassion and a stronger sense of solidarity.

Purification of the heart: Fasting brings peace and tranquility to the soul. By abstaining from food, drink, and futile activities, the heart is purified, allowing the individual to align their actions with Allah's commands.

Worldly and hereafter benefits: In this world, fasting protects an individual from misguidance, while in the Hereafter, it leads to Allah's pleasure and entry into Paradise. Fasting is greatly beloved by Allah, and even the scent of the fasting person's breath is more fragrant to Allah than musk. The virtues of fasting in Islam are illustrated in Figure 3.

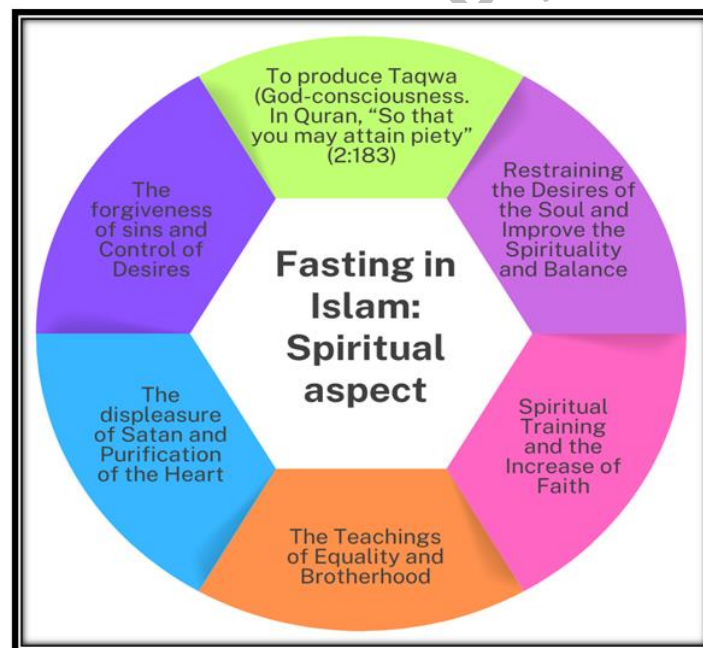


Figure 3. Summary of the spiritual benefits of fasting.

The philosophy of fasting: from spirituality to physical health

Islam provides a comprehensive set of guidelines aimed at the betterment of humanity and individual values. The integration of Islam and science is well-established, with a proven

connection based on Islam's alignment with natural principles and the practical evidence provided by scientific research. For example, the concepts of haram (forbidden) and halal (permissible) in Islam have scientifically documented advantages and disadvantages (3).

Among the pillars of Islam, fasting is particularly supported by scientifically validated research, demonstrating its numerous health benefits. Fasting is not only a spiritual act of worship, but it also offers significant physical benefits, serving as an effective remedy for the human body and overall health. It helps regulate the digestive system and promotes general well-being. As the famous Arabic saying goes:

"المعدة بيت الداء والحمية رأس الدواء" *"The stomach is the home of disease, and abstinence is the essence of medicine."*

Scientific Benefits of Fasting

Introduction

Fasting is a practice that involves the restriction of food or drink intake for a specified period. It can be *intermittent*, meaning alternating between periods of eating and fasting, or *prolonged*, typically referring to fasts lasting two days or more (15). Intermittent fasting generally involves eating within a time-restricted window each day, usually lasting between eight to ten hours. Fasting has been practiced for various reasons, ranging from dieting and medical purposes to religious observance. In medical practice, fasting is often employed for blood glucose and lipid marker tests to aid in the diagnosis of several diseases and to assess various health risk factors. As a religious duty, Muslims observe fasting during the holy month of Ramadan, which is obligatory, and on certain other lunar days, which are optional. During Islamic fasting, individuals adjust their eating habits by altering both the quantity and quality of their daily meals. Fasting is also a common practice in many of the world's major religions, with millions of Muslims around the globe observing the Islamic fast during Ramadan. All healthy adult Muslims are religiously obligated to fast during Ramadan, the ninth month of the Islamic lunar calendar, which lasts for 29 or 30 days. Through fasting, Muslims cultivate self-control and discipline while also developing empathy for the less fortunate, those suffering, and those living in poverty. Certain groups, including children, menstruating women, the sick, and travelers, are exempt from the fasting requirements. Additionally, pregnant and nursing women are permitted to postpone their fasts to a suitable time, ensuring that their maternal responsibilities are not compromised (16). There is a growing body of research supporting the health benefits of fasting,

although much of the research has been conducted on animals rather than humans. Nevertheless, the results thus far have been promising (17).

Evidence for the Scientific Benefits of Fasting

Islamic fasting is a profoundly spiritual practice sanctioned by the Islamic faith, but medical experts also highlight its neurological and nutritional benefits for both the body and brain. For centuries, Ramadan has brought immense joy to Muslims worldwide. Dating back to the 7th century, scientific evidence suggests that the month of fasting offers significant health benefits, which are increasingly relevant and worth exploring in detail. Ramadan's mental focus enhances brain function, as fasting is not merely a cessation of eating, drinking, and sexual activities, but also a conscious effort to avoid negative thinking. It encourages individuals to reimagine their lives, relationships, and family dynamics in a spiritual context. Fasting liberates the brain from many routine distractions, allowing it to concentrate on essential functions of the nervous system (6).

During fasting, the body undergoes several metabolic adaptations to maintain optimal function without external fuel sources, such as food. In the initial hours of fasting, the body relies on its glycogen stores for energy. However, once these stores are depleted, a metabolic shift occurs, wherein the body begins to break down fatty acids into ketone bodies, which are then utilized as an alternative energy source (18, 19). Fasting primarily helps cleanse the body of toxins and induces cellular processes that are typically not activated in the presence of food. During fasting, the body loses its usual access to glucose, compelling cells to rely on alternative sources for energy production. One such process is gluconeogenesis, in which the body synthesizes glucose from non-carbohydrate sources. The liver converts fats, amino acids, lactate, and other non-carbohydrate substrates into glucose to produce energy. Ketosis, a process that occurs toward the end of the fasting period, takes place when the body burns stored fat for fuel, making fasting an effective model for weight loss and blood sugar regulation. Furthermore, the mild stress induced by fasting can prompt body cells to adopt adaptive mechanisms to cope with such stress (6, 19). An overview of the health benefits of fasting is illustrated in Figure 4.

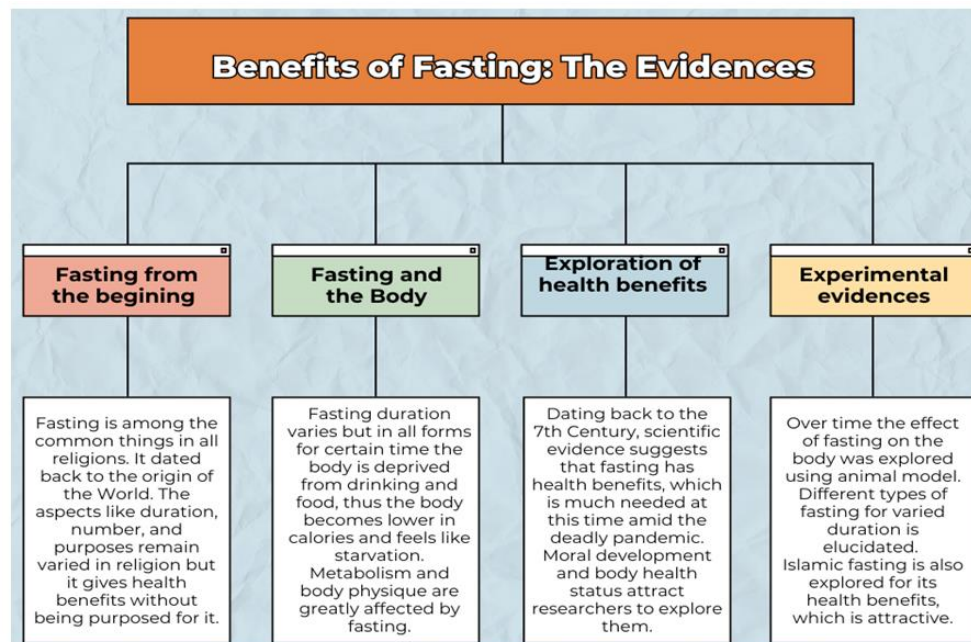


Figure 4. The exploration of health benefits of fasting, with different aspects.

Studies conducted on both animals and humans have shown that many of the health benefits of intermittent fasting are not attributed to the reduced production of free radicals. Instead, fasting activates conserved energy sources and promotes adaptive cellular behavior. Cellular adaptation enhances glucose regulation, improves stress resistance, and reduces inflammation. Additionally, fasting aids in defending against metabolic and oxidative stresses while also facilitating the removal and repair of damaged cells (20, 21). Various preclinical studies have highlighted the disease-modifying effects of fasting in conditions such as metabolic, digestive, mental, and neurodegenerative disorders. Similarly, the activation of metabolic pathways involved in ketone body formation triggers complex systemic and cellular responses that enhance the body's performance and increase disease resistance (21- 23).

The Health-Spectrum of Fasting

Fasting is a multifaceted act of worship that profoundly influences the physical, spiritual, moral, and social dimensions of human life. In the Quran and Hadith, fasting is described as a means of attaining Taqwa (piety), which facilitates the training of the soul, fosters patience, and leads to the pursuit of Allah's pleasure. This worship purifies the spirit and serves as a powerful example of self-discipline and control over one's desires (24). The various health-related aspects of fasting have been extensively explored and documented (25). Fasting should not be confused with starvation, which is a voluntary action. Instead, fasting is a controlled and deliberate practice, and its duration varies across different contexts (15). Here, we briefly outline the medical benefits of fasting, with a detailed depiction of its effects on the human body's organs provided in Figure 5.

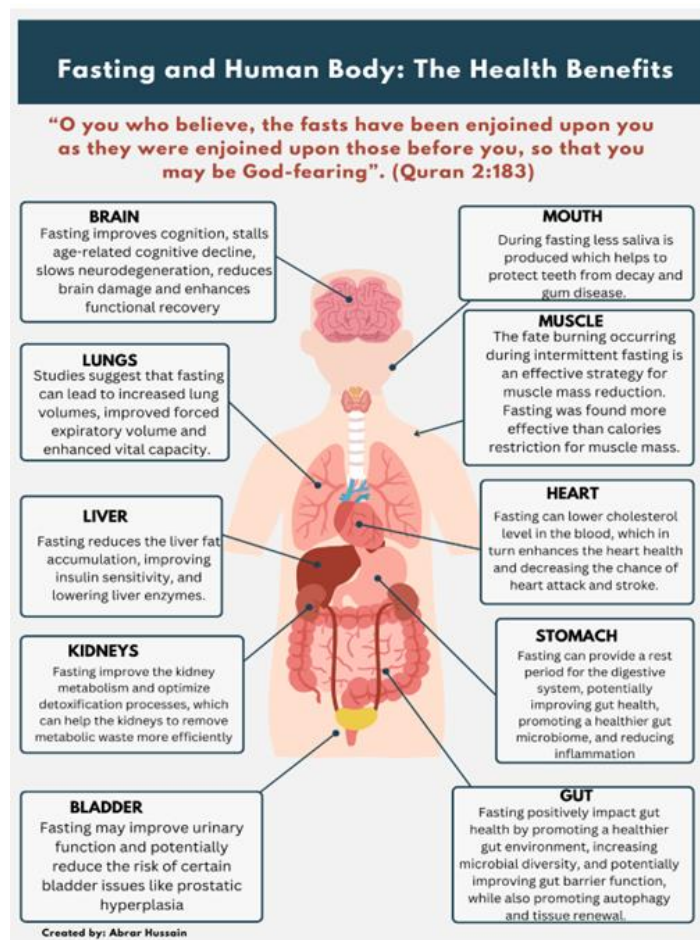


Figure 5. The promising health benefits of fasting on human body.

Fasting and Metabolism

The impact of short-term experimental fasting on carbohydrate metabolism has been extensively studied. A few hours after beginning a fast, normal individuals experience a slight decrease in blood glucose levels, typically dropping to around 3.3 to 3.9 mmol/L (60 to 70 mg/dL) (26) (27). However, the decline in serum glucose eventually halts due to increased gluconeogenesis and a reduction in both glycogen synthesis and glycolysis in the liver. These changes are induced by a decrease in insulin levels, along with an increase in glucagon and sympathetic activity (15). Fasting for 24 hours has been shown to reduce blood sugar levels in children aged 1 to 9 years to 50% of baseline levels, with 22% of these children experiencing blood sugar levels dropping below 40 mg/dL. Numerous studies have explored the effects of fasting on blood glucose levels. For

example, one study found that serum glucose decreased during the first few days of Ramadan, normalized by the 20th day, and then slightly increased by the 29th day (24). Studies examining the effects of Ramadan fasting on blood lipids have yielded varied results. In the initial days of fasting, serum cholesterol and triglyceride levels may decrease before returning to pre-fasting levels. Additionally, the study demonstrated that fasting during Ramadan can increase plasma HDL cholesterol levels (24).

Fasting and Diabetes

Fasting can help to regulate blood sugar levels, which may benefit individuals at risk of developing diabetes. Studies have shown that individuals with type-2 diabetes experience significant reductions in blood glucose levels while practicing intermittent fasting. By decreasing insulin resistance, fasting enhances the body's sensitivity to insulin, allowing more

efficient glucose transport from the bloodstream into cells (24). In addition to its blood sugar-lowering effects, fasting may help stabilize blood sugar levels, preventing the spikes and crashes commonly seen in individuals with glucose imbalances. Some research indicates that fasting may affect blood sugar regulation differently in males and females. In pregnant women, fasting has been shown to help maintain normal blood sugar levels (28, 29).

Fasting and Inflammation

Intermittent fasting has significantly reduced inflammation by lowering C-reactive protein levels, a key marker of inflammation, thereby promoting overall health. Data also suggest prolonged fasting can help prevent various heart disease risk factors. Additionally, periodic fasting is effective in reducing chronic inflammation, improving the side effects of chemotherapy treatment, and potentially enhancing lifespan (21, 30).

Fasting and Heart Health

In addition to other health benefits, fasting has promising effects on heart health, particularly in individuals with obesity. Cardiologists have found that people observing Ramadan experience a positive impact on their lipid profile, including lower cholesterol levels in the blood. This improvement in lipid levels enhances heart health and reduces the risk of heart attack and stroke. Similarly, intermittent fasting has been shown to improve heart health by lowering low-density lipoprotein (LDL), or "bad" cholesterol (6, 15, 31).

Fasting and Mental Health

Fasting has been shown to improve brain health by promoting the generation of new nerve cells and preventing neurodegenerative disorders. Studies also indicate that fasting enhances mental focus and increases brain-derived neurotrophic factor (BDNF) levels, a protein that plays a key role in improving brain function (15, 32, 33). Fasting has also been shown to improve mental health indirectly by reducing cortisol levels, a hormone associated with stress. This reduction in cortisol indicates a significant decrease in stress levels during fasting (34, 35).

Fasting and Body Weight

Fasting has a direct effect on body weight. By abstaining from all foods and beverages, overall calorie intake is reduced, which can lead to

weight loss over time. Fasting also boosts metabolism by increasing levels of norepinephrine, a neurotransmitter that enhances weight loss (15, 25). A full day of fasting can result in a 9% reduction in body weight and a significant decrease in body fat. Remarkably, studies have found fasting to be more effective for weight loss than caloric intake restriction (24).

Fasting and Hormonal Secretion

The literature suggests that fasting can enhance the secretion of growth hormone, which plays a key role in weight loss, metabolism, and muscle growth, imparting these benefits to the body. One study found that 24 hours of fasting significantly improves growth hormone secretion, and fasting for two days increases secretion five-fold (15, 36). Additionally, a hormone called adiponectin, which is produced as a result of fasting combined with late-night eating, may aid in nutrient absorption by muscles, contributing to overall health and improved bodily function (20, 37).

Fasting and Cancer

Animal studies have demonstrated the effectiveness of fasting in cancer prevention, with findings indicating that alternate-day fasting can block tumor formation. Additionally, fasting has been shown to reduce tumor progression and enhance the effectiveness of chemotherapy (38, 39). Intermittent fasting impairs the metabolism of cancer cells, inhibiting their growth and making them more sensitive to treatment. The mechanisms involved in this process include a reduction in insulin and growth hormone receptors while enhancing the activity of forkhead box O (FoxO) and nuclear factor erythroid 2-related factor 2 (NRF2) transcription factors (21). Activating these transcription factors and their associated targets through intermittent fasting may help protect against cancer and improve the ability of normal cells to manage stress. Many clinical trials are currently exploring the effectiveness of fasting in cancer patients. For example, a trial of daily caloric restriction in men with prostate cancer reported excellent adherence (95%) and no adverse effects (21, 40). Other studies on intermittent fasting in patients with glioblastoma have indicated tumor growth suppression and extended survival. Ongoing trials are also investigating the effects of intermittent fasting in patients with breast, ovarian, prostate,

endometrial, and colorectal cancers, as well as glioblastoma (21, 41, 42).

Fasting and Muscle Mass

The fat-burning effects of intermittent fasting provide an effective strategy for reducing muscle mass. Studies have shown that fasting is more effective than caloric restriction in reducing muscle mass (43).

Fasting and Autophagy

Autophagy is a natural process in the body that helps remove damaged or worn-out cells. Fasting can trigger autophagy, facilitating the removal of unwanted cells. This process becomes more effective when fasting is sustained over a longer period, acting as a reset for the body (44). During fasting, the body is given an additional opportunity to focus on autophagy, as damaged cellular components are broken down and repurposed for energy production (45).

Fasting and Gut Health

Gut health is essential for overall well-being, as the gut microbiota, representing the major body microbiome, plays a crucial role in a wide range of bodily functions. Any imbalance in the microbiota (dysbiosis) can contribute to the development of various diseases. Fasting helps remove dead and unwanted gut microorganisms, creating space for beneficial microbes' growth and activity (46). Ramadan fasting, in particular, has been shown to promote the growth of beneficial gut microbes, positively impacting gut health, digestion, and overall gut metabolism. Fasting during Ramadan stimulates the development of "good" bacteria in the gut, supporting overall gut function (47, 48).

Fasting and Probiotics

Probiotics are live microorganisms that confer health benefits when consumed in adequate amounts (49, 50). Probiotics, also called good bacteria perform their function in the gut and help to rebalance the gut dysbiosis. Fasting shows a stimulatory effect on the growth of these bacteria and thus helps to enhance their functions (51). Coupling fasting with a specific strain of probiotic is found to enhance glucose tolerance while following the gut microbiota alteration effect (52). Additionally, fasting can enhance the metabolic flexibility and lower the inflammation, while on the other hand, the probiotics help to maintain the steady state and promote the overall health status (53).

Fasting and Detoxification

During metabolism and other physiological processes, various toxic substances are produced in the body, and their accumulation can impair normal bodily functions. Detoxification is the process through which these toxic substances are eliminated with the help of organs such as the liver and kidneys. Ramadan fasting is an effective strategy for facilitating detoxification, as the fasting period allows time for removing toxins without consuming additional food. Ramadan offers an excellent opportunity for the body to detoxify, as metabolic processes are slowed or halted during fasting (54). By abstaining from food and drink throughout the day, the body has a rare chance to cleanse the digestive system. Additionally, fasting encourages the body to use its fat stores for energy, aiding in eliminating toxins and acting as a natural detoxifier. This process strengthens the body's functions and promotes a healthier lifestyle (55, 56).

Fasting and Neurodegenerative Disorders

Neurodegenerative disorders, characterized by abnormal mood patterns and cognitive decline, currently affect over one billion people worldwide, representing a major global health concern (49). Preclinical data suggest that alternate-day fasting may help delay the onset of Alzheimer's and Parkinson's diseases in animal models. Intermittent fasting has been shown to enhance neuronal stress resistance through various mechanisms, including improved mitochondrial function, stimulation of autophagy, increased neurotrophic factor production, enhanced antioxidant defenses, and DNA repair (21, 32, 57). However, the currently available data is insufficient to draw definitive conclusions, and further research is needed to better understand the relationship between fasting and neurodegenerative diseases.

Fasting and Asthma, Multiple Sclerosis, and Arthritis

Fasting has been linked to improvements in conditions such as asthma, multiple sclerosis, and arthritis, highlighting its broad health benefits. A study on individuals practicing alternate-day fasting found that asthma symptoms were reduced, as reflected by a decrease in serum markers (21). Similarly, the effect of fasting on multiple sclerosis was investigated in mouse models. Alternate-day fasting, combined with three consecutive cycles

of energy restriction, reduced autoimmune demyelination and improved functional outcomes (58). Other studies have shown that patients with multiple sclerosis who adhere to intermittent fasting regimens experience fewer symptoms within a short period (21). Additionally, fasting has been shown to lower inflammation, making it potentially beneficial for individuals with rheumatoid arthritis (21, 59).

Conclusion

Fasting is a multifaceted act of worship that profoundly influences the physical, spiritual, moral, and social aspects of human life. In the Quran and Hadith, fasting is described as a means of attaining Taqwa (piety), which facilitates the training of the soul, fosters patience, and leads to the pursuit of Allah's pleasure. This worship purifies the spirit and serves as an exemplary practice of self-discipline and control over one's desires. Throughout history, fasting has been a significant practice in various religions, and Islam has presented it as an organized and purposeful act of worship. Scientific research also supports its benefits, demonstrating that fasting promotes human health and is an effective means of physical detoxification. From an Islamic perspective, fasting is not merely abstention from food and drink; it is an act that molds the servant into a devoted worshiper of Allah, purifying their actions. Fasting nurtures selflessness, empathy, and charity, all contributing to forming a virtuous and balanced society. The health benefits of fasting include weight loss, lower blood pressure, removal of toxins, prevention of mental disorders, enhanced immune function, and improved organ performance. Additionally, fasting helps alleviate stress and anxiety, detoxifies the body, and promotes a healthier lifestyle. By fasting, an individual attains Allah's pleasure and gains control over the soul, achieves better physical health, and strengthens their commitment to worship and obedience to Allah—ensuring true success.

Declarations

Conflict of Interest

The authors declare no conflict of interest

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Author Contribution

AH developed the concept and wrote the fasting and scientific parts, MA wrote the Islamic

perspective of fasting, and SAA reviewed and finalized the article.

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