

Research Article

## Fasting and Mental Health: An Interdisciplinary Study

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**Abstract:** Fasting as a spiritual and health practice has been practiced for thousands of years in various religious and cultural traditions around the world. In the last decade, researchers have shown increasing interest in the health aspects of fasting, not only from a physiological but also a psychological perspective. This phenomenon is interesting to study further, especially in the context of modern society which often faces stress, anxiety, and various mental disorders. The approach used in this study was a qualitative approach with a literature study method that analyzed in depth various reference sources related to the mental impact of fasting. The results of the review of several studies show that fasting has been proven to have an effect on mental health because it has a significant impact on overall mood improvements, with reduced anxiety levels and increased feelings of calm. Furthermore, another important aspect of mental health is cognitive function, which includes attention, concentration, memory, and executive function. It was found that cognitive alertness is generally maintained during short- to medium-term fasting, but begins to decline after longer fasting durations. Fasting also has an impact on extraordinary psychological resilience and good mental health despite advanced age. Researchers attribute this extraordinary mental resilience to the consistent practice of long-term fasting, which may have induced significant neuroplastic and psychological adaptations.

**Keywords:** Adaptasi Neuroplasty; Cognitive Function; Mental Health; Psychological Resilience; Spiritual Fasting

### 1. Background

One of the main pillars of Islam that needs to be emphasized and practiced by every Muslim is fasting. Etymologically, in Arabic, fasting is called as-saum or as-siyam, which means self-restraint. This means refraining from eating and drinking, and avoiding actions that can break the fast from dawn to sunset. Fasting has a strong social dimension because through this worship, Muslims can feel some of the suffering experienced by those who cannot meet their food needs like others. Fasting also reflects deep obedience to Allah, because it is able to refrain from eating and drinking, and avoid behavior that can break the fast. (Damanhuri, 2014)).

Fasting as a spiritual and health practice has been practiced for thousands of years in various religious and cultural traditions around the world. In the last decade, researchers have shown increasing interest in the health aspects of fasting, not only from a physiological perspective but also from a psychological one. This practice of restricting food for a certain period of time has been shown to have far broader implications for mental health than previously understood by the general public (Almosavi & Maryam, 2015). Furthermore, according to Nasiri & Lotfi, (2020), fasting is closely linked to improved spiritual and mental health and aggression control. Fasting encourages self-discipline, reduces anxiety, and improves emotional control. This phenomenon is

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interesting to study further, especially in modern society, which frequently faces stress, anxiety, and various mental disorders.

Regionally, they observed that the practice of Alnasser & Almutairi, (2022) *intermittent* fasting in Saudi Arabia is not only related to religious aspects but also has significant psychosocial dimensions. Their research shows that fasting, particularly during Ramadan, helps individuals improve self-awareness, emotional regulation, and social connection. This suggests that fasting is not simply a practice of physical restriction but also has complex psychological dimensions.

In Indonesia, the practice of fasting has become an integral part of community life. Sonia & Happy Putra, (2023) documented the positive impact of community fasting on the mental health and social interactions of residents at the Petukangan Berseri RPTRA (Recreational Park for the Environment) in South Jakarta. Their study showed that fasting not only improves physical health but also enhances mental fitness and strengthens social bonds within the community.

Widiastuti dkk., (2022) In their popular paper, they review the psychological theory behind the practice of fasting, including how it can affect stress mechanisms, coping, and self-regulation. They highlight that the psychological processes that occur during fasting can contribute to improved mental well-being if approached with the right understanding and approach. It's important to note that fasting isn't limited to religious situations like Ramadan, but has also evolved into modern health protocols such as Time-Restricted Eating (TRE) and Intermittent Fasting (IF).

Templeman dkk., (2018) detailed a study design to evaluate the impact of intermittent fasting on energy balance, *mood*, and stress levels. This study demonstrates growing interest in the scientific community in investigating the effects of fasting on various aspects of mental health. Furthermore, Shah dkk., (2023) their comprehensive review explored the impact of Ramadan fasting on human health, encompassing not only physical but also mental effects across various age groups and health conditions. Their findings suggest that fasting, when performed appropriately and under appropriate conditions, can provide significant benefits for mental health, including improved *mood*, concentration, and psychological resilience.

This reflects the trend of modern research integrating mental health aspects into the study of the physiological effects of fasting. Guo dkk., (2025) In a cross-sectional study, they found a correlation between central obesity index and cognitive deficits in middle-aged and elderly populations. This finding is relevant to the discussion of fasting, given that one of the potential benefits of fasting is the reduction of visceral fat and improved metabolic function, which can impact cognitive function. Furthermore, in a Ras dkk., (2024) narrative literature review, they summarized the psychological challenges and coping strategies faced by patients with chronic diseases during Ramadan fasting. This study highlights the importance of considering mental health in relation to fasting, especially for individuals with health conditions that require special attention.

Based on the above background, this study aims to explore the relationship between fasting practices and mental health from an interdisciplinary perspective, encompassing psychological, neurological, and social aspects.

## 2. Theoretical Study

### The Concept of Fasting

Fasting is a fundamental act of worship in Islam, possessing spiritual, social, and physiological dimensions. The command to fast is explicitly stated in the Quran, Surah Al-Baqarah, verse 183:

يَا أَيُّهَا الَّذِينَ آمَنُوا كُتِبَ عَلَيْكُمُ اللَّهُ لَعَلَّكُمْ تَتَّقُونَ ﴿١٨٣﴾

Meaning: "O you who believe! Fasting is prescribed for you as it was prescribed for those before you so that you may become pious" (QS Al-Baqarah: 183).

In Islamic teachings, fasting is not only limited to obligatory fasting in the month of Ramadan, but also includes various forms of sunnah fasting such as: 1) Fasting Monday-Thursday, 2) Fasting 6 days in the month of Shawwal, 3) Fasting Ayyamul Bidh (13th, 14th, 15th of each Hijri month), 4) Fasting Arafah (9th of Dzulhijjah), 5) Fasting *Tasu'a* and *'Ashura* (9th and 10th of Muharram), 6) Fasting in the month of Sha'ban and the Haram month, and 7) Fasting David.

These variations of fasting reflect the flexibility and breadth of spiritual aspects of Islam, which can positively impact not only religiosity but also mental and emotional balance. Therefore, interdisciplinary studies between Islamic studies and mental health sciences are crucial to uncover how the practice of fasting can contribute to holistic mental health.

Fasting can be globally defined as voluntarily abstaining from some or all food, drink, or both, for a specific period of time. This practice has a long history of thousands of years and is found in almost all human civilizations and spiritual traditions. In the context of Islamic teachings, fasting during Ramadan means abstaining from certain foods, drinks, and activities that can break the fast from dawn to sunset for a full month (Shah dkk., 2023). During this period, Muslims not only abstain from physical needs but also practice mental and spiritual discipline to achieve a higher awareness of the presence of God in everyday life.

*intermittent* fasting has gained significant popularity as an alternative approach to weight management and metabolic optimization. These methods include various protocols such as the 16:8 pattern (fasting for 16 hours, eating within an 8-hour window), the 5:2 method (eating normally for 5 days, severely restricting calories for 2 days), and alternate-day fasting, where a person alternates between days of normal eating and days of strictly calorie restriction (Templeman et al., 2018).

From a psychological perspective, fasting is a form of self-discipline that involves behavioral regulation and *impulse control*. Almosavi & Maryam, (2015) explains that fasting can be seen as a willpower exercise *that* has positive implications for the brain's executive functions, which include the ability to plan, regulate attention, and control emotions. The process of refraining from basic human desires such as eating and drinking, and is able to activate and strengthen neural pathways related to self-discipline and behavioral regulation, which in turn can bring about positive changes in various aspects of human life.

### **Neurobiological Theory of Fasting and Its Implications for Mental Health**

From a *neurobiological perspective*, fasting affects several *neurotransmitter systems* that play a crucial role in regulating human *mood* and intelligence. Studies show that fasting can increase the production of *Brain-Derived Neurotrophic Factor* (BDNF), a protein that supports the growth and survival of nerve cells and plays a role in *synaptic plasticity*, which is essential for learning and memory. This increase in BDNF can provide (Shah dkk., 2023) *neuroprotective* effects and improve cognitive function, which can foster the feeling of "self-awareness" often experienced by those who fast.

Recent research suggests that *intermittent fasting* can trigger *cellular autophagy*, a cellular cleansing mechanism that removes damaged proteins and malfunctioning cell components (Guo dkk., 2025). In the brain, increased *autophagy* plays a crucial role in reducing the accumulation of *neurotoxic proteins* associated with *neurodegenerative diseases* such as *Alzheimer's* and *Parkinson's*. This suggests that the benefits of fasting extend beyond short-term mental health to providing brain protection against the long-term risk of age-related cognitive decline.

In addition, fasting also affects the stress hormone system, including *cortisol* and *the hypothalamic-pituitary-adrenal* (HPA) axis. *Fluctuations* in blood glucose and hormone levels that occur during fasting can regulate stress responses and affect *mood*. (Alnasser & Almutairi, 2022) Specifically, the decrease in *insulin levels* that occurs during fasting can

reduce systemic inflammation and increase insulin sensitivity in brain tissue, which can improve cognitive function and *mood stability*.

*Neuroimaging* studies show that fasting can also alter activity in areas of the brain involved in regulating emotions, such as *the prefrontal cortex* and *amygdala*. These changes can improve emotional control and decrease reactivity to stressors experienced by fasting individuals. Furthermore, changes in gut *microbiota composition* due to fasting can influence *gut-brain communication* via the *gut-brain axis*. *microbiotic* -gut-brain, as an additional pathway through which fasting can improve mental health.

Fasting is also associated with changes in the brain's energy metabolism. During prolonged fasting, the body switches from using glucose as its primary energy source to using *compounds Ketones*, which are produced by breaking down fat. Some studies suggest that the brain can use *ketones* more efficiently than glucose for energy production, which enhances the focus and alertness achieved during fasting. These metabolic changes are also associated with (Templeman dkk., 2018) *neuroprotective* and *anti-inflammatory* effects that may benefit long-term brain health.

### **Psychological Theory of Fasting and Its Relevance to Mental Health**

From a psychological perspective, fasting can be explained through several theoretical frameworks that provide insight into how this practice affects mental health:

#### ***Self-Control Theory***

*Longitudinal* studies have Widiastuti dkk., (2022) shown that individuals who consistently fast during Ramadan over several years demonstrate measurable improvements in *impulse control* and emotional regulation compared to a control group. These improvements positively impact all aspects of life, including financial management, interpersonal relationships, and daily habits, demonstrating the broad effects of fasting's self-control "training."

#### ***Mindfulness Theory***

Fasting promotes greater awareness of bodily sensations, thoughts, and emotions. The process of abstaining from food and drink makes one more aware of their basic needs and enhances appreciation for food and life in general (Nasiri & Lotfi, 2020). This mindfulness allows one to observe their thoughts and emotions without judgment or *impulsive reactions*, improving emotional regulation and reducing stress.

#### ***Psychological Resilience Theory***

Research by (Almosavi & Maryam, 2015) shows that individuals who regularly experience minor physiological discomfort during fasting develop a greater tolerance for discomfort in general and exhibit a more adaptive response to daily stress reduction. This aligns with the concept of "antifragility" proposed by Talebi dkk., (2023), where certain systems are not only resilient to stress but actually become stronger through exposure to measured levels of stress.

### ***Socio-Cultural Theory of Fasting and Its Impact on Mental Health***

The social aspect of fasting also has a significant impact on mental health. In many traditions, fasting is observed collectively, such as during the Islamic month of Ramadan. This communal practice strengthens social bonds, fosters a sense of community, and reduces feelings of social isolation, which are risk factors for mental health problems (Sonia & Happy Putra, 2023).

In the context of modern society, the communal aspect of fasting can play a crucial role in countering the trend of social isolation and restoring a deeper sense of connectedness. Sonia & Happy Putra, (2023) This paper documents how communal fasting activities in urban areas can create spaces for meaningful social interactions that might otherwise be lost due to busy schedules. This phenomenon seems even more relevant in the post-pandemic context, where many people are experiencing symptoms of loneliness and isolation.

## The Influence of Potential Mechanisms of Fasting on Mental Health

Based on various theories and studies, several potential mechanisms explain how fasting may affect mental health:

### **Neurotransmitter Modulation**

Fasting can affect levels of *serotonin*, *dopamine*, and the *GABA system*, which play a role in regulating *mood*, feelings of happiness, and anxiety (Shah dkk., 2023). Changes in diet and blood glucose levels during fasting can affect the *synthesis* and metabolism of these *neurotransmitters*, which can improve cognitive function and emotional stability.

### **Ketosis and Cognitive Function**

*Neuroscience* research shows that the brain can use *ketones* more efficiently than glucose to produce energy, which may contribute to the increased focus and mental clarity many people experience during fasting. Furthermore, *ketosis* is associated with increased production of BDNF, which supports neuron growth and survival, potentially enhancing the brain's capacity for learning and memory.

### **Inflammation Reduction**

Grine dkk., (2022) conducted a comprehensive meta-analysis of the anti-inflammatory effects of fasting and found consistent reductions in biomarkers of systemic inflammation across different fasting activities. There is a strong link between inflammation and neuropsychiatric disorders such as depression. This anti-inflammatory effect is an important mechanism by which fasting can positively improve mental health.

### **Improve Sleep Quality**

Several studies have shown that fasting at the right time can help regulate *circadian rhythms* (the body's biological rhythms that occur in approximately 24-hour cycles) and improve sleep quality, which is crucial for mental health (Ras dkk., 2024). Synchronizing meal times with the body's *circadian rhythms* can strengthen the natural sleep-wake cycle and promote more *restorative sleep*.

### **Increased Autophagy**

The enhanced *cellular autophagy* process during fasting has an important role in improving *neuronal function* and protecting against *neurodegeneration*. (Guo dkk., 2025) Autophagy involves the *breakdown* and recycling of damaged or unnecessary cell components, which can help maintain optimal brain function and prevent the accumulation of toxic proteins.

### **Gut Microbiota Modulation**

Talebi et al. (2023) identified changes in a group of gut microbes during Ramadan fasting and found an increase in microbial diversity and abundance of beneficial species such as *Akkermansia muciniphila*, which is associated with a healthier metabolism and improved gut defense function. These changes correlated with decreased inflammation and improvements in *mood* and anxiety, suggesting that fasting can positively impact mental health.

### **Increased Self-Control**

(Widiastuti dkk., 2022) conducted a *longitudinal study* on the effects of Ramadan fasting on self-control and found significant improvements in objective measures of *inhibitory control* and executive function after the fasting period. Participants also experienced a greater ability to control cravings and manage emotional responses, which are essential components of optimal mental health.

## 3. Research Methods

This research employed a qualitative approach using a literature review method, which thoroughly analyzed various reference sources related to the mental health impacts of fasting. Data were collected from credible scientific journals, references, and other

academic publications, with an emphasis on the most recent sources to ensure the findings are relevant to current developments. Data analysis involved thematic categorization, pattern identification, critical interpretation, and conceptual synthesis to produce a descriptive and comprehensive formulation of the impacts of fasting on mental health. This research also adopted an interdisciplinary perspective, integrating insights from psychology, medicine, and Islamic studies to gain a comprehensive understanding of the topic.

#### 4. Results And Discussion

From a health perspective, fasting can have an impact on mental health, including:

##### **The Effects of Fasting on Mood and Emotional Well-Being**

Various studies have demonstrated a complex relationship between fasting and mood. Akan et al. (2023) examined changes in mood, anxiety, and hormone levels during Ramadan fasting in healthy men. Their findings showed significant improvements in overall mood, with reduced anxiety levels and increased feelings of calm. Hormonal analysis revealed stabilization of cortisol (the stress hormone) levels and an increase in serotonin, often referred to as the "happiness hormone." These neurobiological changes provide a physiological basis for the positive effects of fasting on emotional well-being.

The study also noted that the positive effects on mood emerged after an initial adaptation period, suggesting that the body and brain need time to adjust to the fasting regimen. In fact, some participants experienced irritability and a lower mood in the first few days of fasting, which was then replaced by a steady and sustained improvement in mood after the first week. These findings highlight the importance of consistency and persistence in fasting to fully experience the psychological benefits.

Lauche et al., (2024) found concordant findings in their controlled clinical trial, where participants undergoing a modified Ramadan fast showed increased happiness scores and decreased cortisol levels compared to a control group. This study confirms that even modified fasting (not strictly adhering to the strict rules of Ramadan fasting) still provides measurable psychological benefits.

The researchers identified a strong correlation between decreased cortisol levels and improvements in subjective measures of well-being, suggesting that modulating the physiological stress response may be a key pathway through which fasting improves mood. They also noted that participants who fasted experienced an increased sense of meaning and purpose in life, suggesting that the psychological benefits of fasting may extend beyond biochemical effects and encompass a deeper existential dimension.

Lin et al., (2023) compared the effects of Time-Restricted Eating (TRE) and a daily calorie-restricted diet on mood and quality of life in obese adults. The results showed that the TRE group experienced more consistent mood improvements and increased life satisfaction compared to the conventional calorie restriction group. These findings suggest that not only calorie reduction but also meal timing plays a role in the psychological effects of dietary interventions.

An interesting aspect of this study was the observation that participants in the TRE group experienced a greater sense of "mastery" and satisfaction compared to those who only restricted calories. The clear structure of the meal schedule in the TRE protocol appears to provide a mental framework that helps facilitate adherence and reduces the cognitive load associated with the constant eating decisions that may be required in a standard calorie-restricted diet.

Johnson et al. (2024) conducted a pre-post study to assess changes in mood, stress, and inflammatory biomarkers in patients with bipolar disorder who implemented TRE. Interestingly, participants experienced improved mood stabilization and a reduction in the intensity of affective episodes during the intervention period. Inflammatory biomarkers

associated with bipolar disorder exacerbations also showed a decrease. This study, although small in scale, raises the possibility that patterned fasting could be a supportive intervention in the management of mood disorders.

This study provides valuable insights into the potential of fasting as an adjunct therapy for patients with mental health disorders, although the researchers emphasize that fasting should always be implemented under medical supervision in populations with significant mood disorders. Their findings suggest that stabilizing circadian rhythms and reducing systemic inflammation through fasting may help reduce the extreme mood fluctuations characteristic of bipolar disorder.

### **The Effect of Fasting on Cognitive Function**

Another important aspect of mental health is cognitive function, which includes attention, concentration, memory, and executive function. Alabed et al. (2013) examined how fasting duration affected cognitive alertness and perceived fatigue after controlling for food intake and sleep. They found that cognitive alertness was generally maintained during short- to medium-term fasting, but began to decline after longer fasting durations.

The study differentiated between the effects of fasting on various cognitive aspects, noting that while sustained attention appeared to be most sensitive to prolonged fasting, higher-order cognitive functions such as decision-making and abstract reasoning appeared to be more resilient. The researchers also identified significant individual variation in cognitive responses to fasting, suggesting that genetic and metabolic factors may mediate the effects of fasting on cognitive function.

Bougrine et al. (2024) evaluated the impact of Ramadan fasting on psychomotor and cognitive skills in adolescent athletes. Their study showed that despite a decline in performance on some complex motor tasks during the first week of fasting, core cognitive functions such as decision-making and selective attention remained intact or even improved toward the end of the fasting month. This suggests neurobiological adaptations to the fasting state.

This study provides valuable insights into the cognitive adaptation curve during prolonged fasting. These adaptations likely involve metabolic changes in response to reduced energy availability and may reflect a state of enhanced neuronal plasticity and efficiency that allows cognitive performance to be maintained even under conditions of energy limitation.

Bamberg & Roefs (2025) examined the role of fasting effect expectations (diet claims) on cognitive performance and hunger perception. They found that subjective beliefs about fasting can influence performance on cognitive tasks, suggesting an important psychological component in fasting's effects on mental function. Participants who were given positive information about the cognitive benefits of fasting tended to perform better than those given neutral or negative information.

These findings highlight the important role of psychological aspects of fasting on cognitive function and suggest that expectations and mindsets about fasting may be as important as actual physiological changes. This perspective aligns with the biopsychosocial model of health, which emphasizes the complex interactions between biological, psychological, and social processes in determining health outcomes.

Sharifi et al., (2024) conducted a systematic review of the effects of TRE and intermittent fasting on cognitive function and mental health in older adults. Their analysis revealed that moderate fasting protocols were consistently associated with improvements in working memory and executive function in the elderly population. They also noted a reduced risk of cognitive decline in participants who regularly practiced intermittent fasting, which may be related to the neuroprotective and anti-inflammatory effects of fasting.

This review identified several potential mechanisms for the cognitive protective effects of fasting, including increased neuronal autophagy, decreased oxidative stress,

enhanced neuroplasticity, and modulation of insulin signaling pathways. The authors emphasized that these effects appear to be strongest when fasting is implemented as a consistent, long-term practice, rather than as sporadic, short-term interventions.

### **The Effect of Fasting on Psychological Resilience**

Psychological resilience, defined as the ability to cope with stress and bounce back from adversity, is an important aspect of mental health that is also influenced by the practice of fasting. Nasiri (2021) measured the increase in mental resilience and psychological resilience in college students after fasting during Ramadan. His research showed that students who fasted during Ramadan consistently demonstrated higher resilience scores compared to the control group. Nasiri argues that the experience of dealing with discomfort during fasting increases stress tolerance and builds resilience to face future challenges.

The most striking aspect of Nasiri's study was the observation that the increase in psychological resilience persisted for several months after Ramadan, suggesting that the benefits extend not only during the fasting practice itself but also for several months after Ramadan. Students participating in the study demonstrated improved ability to overcome academic and personal challenges, with more adaptive coping strategies and lower levels of test anxiety compared to the control group (Wilhelmi de Toledo et al., 2024). The unique case of a 92-year-old man who had been fasting for 21 days annually for 45 years was examined. Analysis of this case demonstrated remarkable psychological resilience and good mental health despite his advanced age. The researchers attributed his remarkable mental resilience to his consistent, long-term fasting practice, which may have induced significant neuroplastic and psychological adaptations.

This case study provides compelling insights into the cumulative effects of long-term fasting. The study subjects demonstrated excellent emotional regulation skills, enduring optimism, and impressive adaptability to changing circumstances. Neuropsychological examinations revealed excellent cognitive function for their age, with above-average performance on memory, executive function, and information processing tasks, which may reflect the neuroprotective effects of long-term fasting.

Ontok-balah (2023) examined differences in stress levels and coping strategies among male and female Filipino Muslim students during fasting. The study found that female students were more likely to use fasting as an opportunity for self-reflection and emotional management, while male students focused more on physical resilience. Both groups showed increased resilience to stress symptoms in their daily lives after Ramadan.

The findings of this study underscore the importance of considering both contextual and individual factors in understanding the impact of fasting on psychological resilience. The observed gender differences may reflect broader social norms and expectations related to masculinity and femininity in the cultural context in which the study was conducted. Despite differences in approach, the positive results reported by both groups suggest that the benefits of fasting for psychological resilience can be achieved through a variety of psychological pathways.

## **5. Conclusion**

Fasting as a spiritual and health practice has been practiced for thousands of years in various religious and cultural traditions around the world. In the last decade, researchers have shown increasing interest in the health aspects of fasting, not only from a physiological perspective but also from a psychological perspective. Fasting has been shown to have an impact on mental health, resulting in significant improvements in overall mood, with reduced anxiety levels and increased feelings of calm. Another important aspect of mental health is cognitive function, which includes attention, concentration, memory, and executive function. It has been found that cognitive alertness is generally maintained during short- to medium-term fasting, but begins to decline after longer fasting

durations. Fasting also contributes to remarkable psychological resilience and good mental health despite advanced age. Researchers attribute this remarkable mental resilience to the consistent practice of long-term fasting, which may have induced significant neuroplastic and psychological adaptations.

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