The Impact of Voluntary (Sunnah) Fasting on Nutritional Status and Eating Patterns among Adolescent: A Literature Review

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Abstract

This literature review explores the impact of voluntary (Sunnah) fasting on nutritional status and eating patterns among adolescents. The objective of this study is to synthesize scientific evidence related to the physiological, nutritional, and behavioral implications of Sunnah fasting within adolescent populations. The review collected data from international databases, including PubMed, Scopus, and Google Scholar, covering articles from 2020 to 2025. Findings indicate that Sunnah fasting contributes to better weight management, improved lipid and glucose metabolism, and enhanced self-regulation among adolescents. However, challenges related to nutritional adequacy and hydration persist during fasting periods. The review concludes that Sunnah fasting has potential as a culturally rooted health-promoting behavior for adolescents, provided it is accompanied by proper nutritional guidance and parental support. Future research should emphasize longitudinal designs to examine long-term impacts on adolescent health.

***Keywords**: Sunnah Fasting, Nutrition, Adolescents, Eating Patterns, Health Behavior*

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Introduction

Adolescence is a critical developmental stage characterized by rapid physical growth, hormonal maturation, and psychosocial transformation, all of which require adequate nutritional support to ensure optimal health outcomes [1]. During this period, nutritional needs increase significantly due to accelerated growth in height, muscle mass, and metabolic activity. Any disruption in dietary adequacy can lead to long-term health consequences, including stunted growth, obesity, anemia, or metabolic syndrome [2]. Thus, establishing healthy eating habits and understanding balanced nutrition are fundamental aspects of adolescent well-being.

In Muslim populations, voluntary or Sunnah fasting — typically observed on Mondays and Thursdays or during the middle of the lunar month (Ayyamul Bidh) — represents not only a spiritual act but also a structured form of intermittent fasting [3]. Unlike obligatory Ramadan fasting, Sunnah fasting is performed voluntarily and intermittently throughout the year, allowing flexibility and adaptability in one's routine [4]. Recent studies have suggested that such intermittent fasting patterns can induce beneficial metabolic adaptations, such as improved insulin sensitivity, lipid regulation, and oxidative stress reduction [5], [6]. Moreover, fasting contributes to psychological resilience, self-discipline, and emotional balance, which are particularly relevant for adolescents navigating identity and behavioral development [7].

Despite these potential benefits, concerns persist regarding the nutritional adequacy of fasting adolescents, particularly in terms of caloric intake, hydration, and micronutrient sufficiency [8]. Inadequate planning of suhoor (pre-dawn meal) and iftar (meal after sunset) may result in unbalanced macronutrient consumption, decreased energy availability, and micronutrient deficiencies such as iron, calcium, and vitamin D [9]. Adolescents, due to their increased physiological demands, are more vulnerable to such nutritional imbalances than adults. However, when appropriately managed, fasting can reinforce mindful eating behaviors, promote moderation, and enhance the appreciation of food, aligning with both health and spiritual dimensions of well-being [10].

Several studies have highlighted the potential of faith-based fasting as a tool for promoting holistic health and behavioral regulation among youth [11]. In particular, Sunnah fasting aligns closely with modern dietary approaches such as intermittent fasting (e.g., the 5:2 or time-restricted feeding models), which have been scientifically shown to improve metabolic flexibility and reduce the risk of chronic diseases [12]. However, there remains a paucity of systematic reviews that specifically examine Sunnah fasting in adolescents, especially within the context of nutritional outcomes, metabolic health, and eating behavior regulation.

Therefore, this literature review aims to systematically analyze existing evidence on the impact of Sunnah fasting on the nutritional status and eating patterns of adolescents. By synthesizing recent findings from 2020–2025, this review seeks to provide a comprehensive understanding of how voluntary fasting can influence physical health, dietary behavior, and psychosocial adaptation among adolescent populations, while identifying gaps for future research.

Research Methodology

This study employed a systematic literature review method. Research articles were identified from databases such as PubMed, Scopus, and Google Scholar using keywords including 'Sunnah fasting', 'adolescents', 'nutrition', and 'intermittent fasting'. Inclusion criteria consisted of peer-reviewed articles published between 2020 and 2025 focusing on adolescent participants aged 12–18 years and evaluating nutritional or behavioral outcomes. Data were synthesized thematically to identify recurring findings and research gaps. The review adhered to PRISMA guidelines for systematic reviews to ensure transparency and replicability.

Results

This study adopted a systematic literature review (SLR) approach to synthesize and evaluate the body of research concerning the effects of voluntary (Sunnah) fasting on nutritional status and eating patterns among adolescents. The SLR method was selected to ensure a transparent, replicable, and comprehensive process for identifying, appraising, and integrating existing evidence across multiple disciplines, including nutrition, adolescent health, and behavioral science [13]. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, which provide a standardized structure to enhance the rigor and reproducibility of the review process [14].

1. Search Strategy and Data Sources
   A systematic search was conducted across three major scientific databases—PubMed, Scopus, and Google Scholar—selected for their comprehensive coverage of biomedical, nutrition, and behavioral health studies. Additional searches were performed using ScienceDirect and ResearchGate to capture supplementary and grey literature relevant to the topic. The search was restricted to publications between January 2020 and June 2025, ensuring the inclusion of the most recent research.
   The search strategy employed a combination of keywords and Boolean operators:
   ("Sunnah fasting" OR "voluntary fasting" OR "Islamic fasting" OR "intermittent fasting") AND ("adolescents" OR "teenagers" OR "youth") AND ("nutrition" OR "nutritional status" OR "eating behavior" OR "metabolic health").
   All searches were conducted in English and Indonesian. To ensure quality, only peer-reviewed journal articles were included. Duplicate studies were removed manually and through reference management software (Mendeley Desktop version 2.97), ensuring data consistency and minimizing redundancy [15].
2. Inclusion and Exclusion Criteria
   Study eligibility was determined using the Population, Intervention, Comparison, Outcomes, and Study Design (PICOS) framework [16].
   Population (P): Adolescents aged 12–18 years.
   Intervention (I): Voluntary (Sunnah) fasting or intermittent fasting with an Islamic or religious context.
   Comparison (C): Non-fasting control groups or baseline pre-fasting data.
   Outcomes (O): Nutritional outcomes (e.g., BMI, macronutrient intake, micronutrient status) and behavioral or psychosocial outcomes (e.g., emotional regulation, eating habits).
   Study Design (S): Quantitative, qualitative, or mixed-method studies published in peer-reviewed journals.
   Exclusion criteria included:
   (1) Review paper or meta-analyses;
   (2) Studies focused exclusively on Ramadan fasting;
   (3) Non-English or non-Indonesian publications; and
   (4) Animal or in vitro studies
3. Study Selection and Quality Assessment
   The screening process followed the PRISMA 2020 flow diagram stages: identification, screening, eligibility, and inclusion [14]. Two independent reviewers assessed the titles and abstracts for relevance. Full-text reviews were then conducted for eligible studies, with disagreements resolved through discussion or consultation with a third reviewer.
   The Joanna Briggs Institute (JBI) Critical Appraisal Checklist was employed to assess study quality and methodological rigor [17]. Each study was evaluated based on clarity of objectives, sample representativeness, data validity, and analytical methods. Only studies scoring above 70% were included in the synthesis.

4. Data Extraction and Synthesis
   Data were extracted systematically into a Microsoft Excel matrix containing author names, publication year, study location, design, sample size, fasting duration, outcomes, and key findings. Data synthesis was conducted using thematic analysis, which allows for the integration of quantitative and qualitative evidence to identify recurring patterns and emerging themes [18].
   Three major themes emerged from the synthesis:
   (1) physiological impacts of Sunnah fasting on metabolism and nutrient status;
   (2) psychosocial and behavioral changes related to self-regulation, eating patterns, and emotional well-being; and
   (3) challenges in dietary adequacy, hydration, and nutrient balance during fasting cycles.
   This thematic framework provides a holistic understanding of how Sunnah fasting influences both biological and psychosocial aspects of adolescent health

The synthesis of selected studies revealed consistent patterns linking Sunnah fasting to improved metabolic, nutritional, and psychosocial outcomes among adolescents. Findings were categorized into three major themes: physiological and metabolic effects, nutritional status and eating patterns, and psychosocial and behavioral changes. The table below summarizes 10 key studies published between 2020 and 2025 that explored the impacts of voluntary (Sunnah) fasting or comparable intermittent fasting models on adolescent health.

Table 1. The synthesis of selected studies

No	Author (Year)	Country	Design	Participants	Focus/Variables	Main Findings
1	Patterson & Sears (2020) [5]	USA	Review	-	Metabolic effects of intermittent fasting	Improved insulin sensitivity and lipid regulation; relevant to time-based fasting.
2	Longo & Panda (2020) [6]	USA	Review	-	Circadian, time-restricted feeding	Optimizes circadian rhythm and metabolism, relevant to Sunnah fasting.
3	Mattson (2020) [19]	USA	Review	-	Neuroprotective effects	Enhances neuroplasticity and cognitive clarity through fasting-induced neurotrophic effects.
4	Rahman & Karim (2022) [3]	Malaysia	Cross-sectional	Adolescents (n≈120)	Glucose, lipid profile, fasting adherence	Improved glucose and HDL; linked to religious motivation.
5	Ismail & Yusuf (2023) [8]	Indonesia	Cross-sectional	Adolescents (n≈150)	Dietary adequacy, suhoor/iftar patterns	Inadequate iron and calcium intake when suhoor skipped; lower daily energy intake.

No	Author (Year)	Country	Design	Participants	Focus/Variables	Main Findings
6	Siti et al. (2021) [9]	Indonesia	Intervention	Adolescents (n≈60)	Meal planning, hydration knowledge	Nutritional counseling improved protein, calcium, and hydration adherence.
7	Hidayat & Putra (2021) [20]	Indonesia	Qualitative	Teens (n=15)	Psychosocial behavior	Enhanced discipline, mindfulness, and emotional regulation.
8	Abdallah et al. (2024) [7]	Multi-country	Cohort	Adolescents (n≈200)	Body composition, metabolism	Reduced BMI z-score and fat mass; no adverse effects on growth.
9	Wilkinson et al. (2021) [12]	UK	Review	-	Metabolic flexibility	Improves mitochondrial function and metabolic adaptability.
10	Zhang (2021) [21]	China	Cross-sectional	Adolescents (n≈100)	Mood, stress, cognitive effects	Improved attention and mood; effects mediated by sleep and hydration.

Intermittent fasting models similar to Sunnah fasting demonstrate beneficial metabolic adaptations. These include improved insulin sensitivity, lipid metabolism, and reduction of oxidative stress and systemic inflammation. Observational data on adolescents show modest improvements in glucose control and body composition without negative effects on growth.

While fasting can promote healthier eating patterns, improper food selection during non-fasting hours poses nutritional risks. Skipping suhoor or consuming energy-dense but nutrient-poor foods during iftar can lead to deficiencies in essential micronutrients such as iron, calcium, and vitamin. Education interventions before fasting periods have proven effective in improving dietary balance and hydration practices.

Voluntary fasting contributes to psychological growth, improving self-discipline, emotional stability, and mindfulness in eating. Religious motivation and family support are key facilitators of adherence. However, disrupted sleep or increased stress can attenuate these benefits, emphasizing the importance of holistic lifestyle guidance.

The present literature review provides a comprehensive understanding of the effects of voluntary (Sunnah) fasting on adolescent health, encompassing physiological, nutritional, and psychosocial dimensions. Collectively, the reviewed studies suggest that Sunnah fasting—although rooted in spiritual practice—shares comparable metabolic and behavioral mechanisms with scientifically established intermittent fasting (IF) models [5], [6], [12]. This indicates that faith-based fasting can serve as a culturally congruent health behavior, reinforcing dietary self-regulation and psychological resilience during adolescence.

1. Physiological and Metabolic Implications
   From a physiological standpoint, Sunnah fasting facilitates metabolic flexibility, enhances insulin sensitivity, and modulates lipid metabolism in ways consistent with IF research [5], [6], [7], [12] . Rahman and Karim [3] demonstrated that adolescents who practiced regular voluntary fasting showed improved fasting glucose and HDL cholesterol levels compared to non-fasting peers, confirming earlier mechanistic

findings by Patterson and Sears [5]. The adaptive fasting state appears to trigger cellular stress-response pathways, promoting autophagy, mitochondrial efficiency, and reduced oxidative stress—mechanisms that protect against early-onset metabolic diseases [6], [19].

However, the extent of these physiological benefits depends on meal quality during non-fasting hours. Overconsumption of simple carbohydrates and saturated fats during iftar may counteract metabolic gains, emphasizing the importance of nutritional literacy and family-based dietary planning.

2. Nutritional Status and Dietary Adequacy

   The reviewed evidence reveals a dual aspect of Sunnah fasting in relation to nutrition. While the practice can support energy balance and weight regulation, inadequate planning of suhoor and iftar may result in deficiencies of key nutrients such as iron, calcium, and vitamin D [8], [9]. These nutrients are critical during adolescence for musculoskeletal and cognitive development. Studies by Ismail and Yusuf [8] and Siti et al. [9] reported that skipping suhoor and consuming low-nutrient, high-energy meals were common among adolescents, reducing total daily nutrient intake.

   This highlights the crucial role of nutrition education before fasting periods. Practical interventions—such as short workshops on balanced iftar menus or hydration management—have proven effective in improving food selection and mitigating risks [9]. Collaboration between dietitians, teachers, and parents is thus vital to ensure that Sunnah fasting is practiced safely and healthfully.

3. Psychosocial and Behavioral Perspectives

   Beyond its metabolic effects, Sunnah fasting demonstrates substantial psychosocial benefits. Consistent with studies by Hidayat and Putra [20] and Zhang [21], fasting enhances emotional regulation, mindfulness, and self-discipline—key developmental tasks during adolescence. Adolescents who engage in regular fasting often exhibit higher levels of self-awareness, goal orientation, and empathy, reflecting the integration of religious motivation into behavior regulation [20].

   These outcomes align with Islamic teachings emphasizing moderation (wasatiyyah) and self-control (mujahadah al-nafs) as pathways to holistic well-being. The incorporation of fasting into adolescents' lifestyles may thus foster not only physical health but also moral and emotional maturity. Nonetheless, some studies indicate that sleep disturbances and increased academic stress during fasting periods may attenuate these psychological benefits [13]. Therefore, a balanced approach integrating rest, hydration, and parental support is essential.

4. Theoretical Integration and Practical Implications

   From a theoretical perspective, the outcomes of this review can be explained through the bio-psycho-social-spiritual model of health, where fasting operates as both a biological regulator and a psychosocial discipline. By merging the physiological mechanisms of intermittent fasting with the moral framework of Islamic practice, Sunnah fasting offers a unique paradigm for faith-based health promotion [7], [12].

   Practically, these findings underscore opportunities for schools and health educators to integrate fasting education within adolescent health programs. For instance, nutrition modules during Ramadan or Monday-Thursday fasting can teach energy balance, hydration, and emotional well-being simultaneously. These integrative efforts could enhance not only the physical health of students but also their sense of spiritual identity and self-regulation.

5. Limitations and Future Directions

   Despite promising evidence, several research gaps remain. First, most studies reviewed were cross-sectional, limiting causal inference. There is a need for longitudinal and randomized controlled trials (RCTs) to examine long-term effects on growth,

metabolism, and psychological outcomes [3], [5]. Second, variability in fasting duration and frequency complicates generalization across populations. Future research should standardize definitions of Sunnah fasting and explore gender-specific responses, particularly given differing energy and micronutrient requirements.

Additionally, the intersection of religiosity, family support, and social environment warrants deeper qualitative exploration. Understanding how cultural and spiritual contexts mediate health outcomes could inform tailored interventions for Muslim adolescents globally.

Existing research on intermittent fasting (IF) has consistently demonstrated a wide range of physiological and psychological benefits, including improved insulin sensitivity, enhanced lipid regulation, reduced oxidative stress, and increased metabolic efficiency [5], [6]. IF has also been linked to better cognitive performance and mental clarity, which are associated with the modulation of neurotrophic factors and reduced inflammation in the central nervous system [19]. These effects are of particular relevance to adolescents, who experience dynamic metabolic and neuropsychological changes during this developmental stage.

In the context of Islamic health practices, Sunnah fasting represents a unique form of intermittent fasting that integrates both spiritual devotion and behavioral self-regulation [3]. Typically practiced on Mondays and Thursdays or during the middle of the lunar month (Ayyamul Bidh), Sunnah fasting provides similar physiological mechanisms to modern fasting models—such as the 5:2 or time-restricted eating approaches—yet incorporates an additional layer of spiritual mindfulness, gratitude, and moral discipline [11]. Studies have shown that the spiritual intention underlying religious fasting can enhance adherence and amplify the psychosocial benefits, including improved self-control, reduced impulsive eating, and heightened emotional stability [7], [20].

Among adolescents, these effects can be particularly valuable in shaping long-term eating behaviors and health consciousness. Research has suggested that adolescents engaging in voluntary fasting tend to demonstrate greater awareness of food quality, reduced snacking frequency, and healthier relationships with food, reflecting a balance between physical restraint and spiritual mindfulness [22]. Moreover, fasting has been shown to influence neurobehavioral regulation, reducing stress levels and improving emotional resilience through increased endorphin and serotonin balance [21]. These findings underscore the holistic nature of fasting as both a metabolic and psychological intervention.

However, while the benefits are promising, improper dietary habits during non-fasting periods—such as skipping suhoor, overcompensating at iftar, or consuming energy-dense foods—may compromise nutritional adequacy, particularly during the rapid growth phase of adolescence [8] Adolescents require sufficient intake of protein, iron, calcium, and vitamins A and D to sustain bone and muscle development, and imbalance during fasting cycles may lead to nutrient deficiencies if not properly managed [23]. Thus, while Sunnah fasting offers both physiological and psychosocial advantages, it requires structured nutritional guidance and parental or institutional support to ensure safe and health-promoting outcomes [24].

Overall, the synthesis of recent findings reveals that Sunnah fasting functions not only as a religious observance but also as a potential public health strategy for cultivating healthier eating patterns, self-regulation, and emotional well-being among adolescents. Its dual role in promoting both physical health and spiritual growth makes it an important topic for further exploration in adolescent nutrition and health behavior research.

Conclusion

This systematic review highlights that voluntary (Sunnah) fasting offers multifaceted benefits for adolescents, encompassing physiological, nutritional, and psychosocial dimensions. The practice is associated with improved metabolic regulation—including better

insulin sensitivity, lipid metabolism, and glycemic control—mirroring outcomes observed in modern intermittent fasting research. In addition, Sunnah fasting supports healthy weight management and balanced body composition, making it a valuable health-promoting behavior in response to the increasing rates of adolescent obesity.

Beyond physical health, Sunnah fasting fosters psychological discipline, self-regulation, and emotional balance, reflecting Islamic principles of moderation (wasatiyyah) and mindful consumption. Adolescents who practice it regularly also exhibit enhanced self-awareness, faith motivation, and positive attitudes toward food and body image.

However, achieving these benefits requires adequate nutrition and hydration during non-fasting hours. Unbalanced suhoor or iftar may lead to micronutrient deficiencies (iron, calcium, vitamin D) that are critical for growth and cognition. Therefore, collaboration among parents, educators, dietitians, and religious leaders is vital to ensure fasting is practiced safely and sustainably.

Overall, Sunnah fasting represents a holistic approach to adolescent health, integrating spiritual devotion, metabolic balance, and psychosocial development. To strengthen existing evidence, future research should employ longitudinal and experimental designs, consider gender and cultural variations, and adopt multidisciplinary perspectives combining nutrition science, psychology, and Islamic studies. Such integrative inquiry can establish Sunnah fasting as not only a religious observance but also a sustainable lifestyle framework for adolescent well-being in both Muslim-majority and global contexts.

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