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## Review Article

# Intermittent Fasting and Its Impact on Public Health: Current Knowledge Among Various Demographics

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### ABSTRACT

An innovative dietary approach with significant public health ramifications is intermittent fasting (IF). This review article delves into the multifaceted aspects of intermittent fasting, exploring its physiological mechanisms, health benefits, potential risks, and applications in disease prevention and management. The article also examines the global prevalence of IF, with a particular focus on India, Uttar Pradesh (UP), Lucknow, and other districts. Through a detailed analysis of existing literature, this review highlights the role of IF in addressing public health challenges such as obesity, diabetes, and cardiovascular diseases. The article concludes with future recommendations for research, policy, and practice to optimize the integration of IF into public health initiatives.

## INTRODUCTION

Intermittent fasting (IF) is an eating pattern that alternates between periods of fasting and eating. Unlike traditional calorie-restricted diets, IF focuses on when to eat rather than what to eat. This approach has been practiced for centuries in various cultures and religions, but it has recently gained scientific attention for its potential health benefits. IF encompasses several methods, including time-restricted feeding (e.g., 16:8 method), alternate-day fasting, and periodic fasting (Patterson et al., 2018). The growing

burden of non-communicable diseases (NCDs) such as obesity, diabetes, and cardiovascular diseases has necessitated innovative and sustainable dietary interventions. IF offers a promising solution due to its simplicity, cost-effectiveness, and adaptability (de Cabo & Mattson, 2019). This review aims to provide a comprehensive analysis of IF, its implications for public health, and its potential as a preventive and therapeutic strategy. The concept of intermittent fasting is not new; it has been practiced for centuries in various cultures and religions. For example, fasting is a common practice during

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Ramadan in Islam, Yom Kippur in Judaism, and Lent in Christianity (Horne et al., 2020). However, the scientific community has only recently begun to investigate IF's possible health advantages. The expanding interest in IF is driven by the increasing prevalence of obesity, diabetes, and other metabolic disorders worldwide. According to the World Health Organization (WHO), the global prevalence of obesity has nearly tripled since 1975, and more than 1.9 billion adults are overweight or obese (WHO, 2021). Similarly, the International Diabetes Federation (IDF) estimates that 537 million adults were living with diabetes in 2021, and this number is expected to rise to 783 million by 2045 (IDF, 2021). As a nutritional strategy for managing weight, maintaining metabolic health, and preventing chronic diseases, intermittent fasting has grown in popularity. Weight loss, increased insulin sensitivity, less inflammation, and improved cognitive function are some possible advantages of IF (Mattson et al., 2018). However, the adoption of IF varies widely across different demographics, and further study is required to determine its safety and long-term effects. (Tinsley et al., 2019). This review article aims to provide a comprehensive overview of intermittent fasting and its impact on public health. It investigates the physiological factors underpinning the health, the possible dangers and difficulties of adopting it, as well as the existing understanding of IF among diverse demographics. The article also examines the global prevalence of IF, with a particular focus on India, Uttar Pradesh (UP), Lucknow, and other districts. Finally, the article concludes with future recommendations for research, policy, and practice to optimize the integration of IF into public health initiatives.

### **1.1. Positive Aspects of Intermittent Fasting**

#### **Weight Management and Obesity Prevention**

Through a variety of physiological processes, intermittent fasting (IF) has become a successful weight-management and obesity prevention technique. IF encourages long-term weight loss while maintaining lean muscle mass by establishing a regulated calorie deficit during fasting periods (Patterson et al., 2018). Studies have shown significant reductions in body weight (3-8% over 3-24 weeks), body fat percentage (3-7% reduction), and waist circumference (4-7cm decrease) across various IF protocols suggesting that fat oxidation is improved by the metabolic switch from glucose to ketone body use (Anton et al., 2018). This metabolic shift decreases lipogenesis by lowering insulin secretion during fasting periods and increasing free fatty acids' mobilization from adipose tissue by activating hormone-sensitive lipase. Due to its simplicity, the 16:8 time-restricted feeding strategy has demonstrated exceptional effectiveness, with participants reporting higher dietary adherence and a 3% increase in weight loss when compared to controls (Cienfuegos et al., 2020).

#### **Improved Metabolic Health and Cardiovascular Benefits**

Beyond helping people lose weight, IF has a major positive impact on their general metabolic health. According to clinical investigations, IF regimens can lower fasting insulin levels by 20–31% and increase insulin sensitivity by 20–31% in people with prediabetes (Anton et al., 2018). According to studies, IF therapies resulted in 10–21% lower LDL cholesterol, 14–42% lower triglycerides, and 6–14% higher HDL cholesterol. These improvements in glucose metabolism are accompanied by positive changes in lipid profiles (de Cabo et al., 2019). Reduced oxidative stress (23–36% decrease in indicators like MDA), decreased systemic inflammation (20–40% reduction in CRP and IL-6), and enhanced



endothelial function (15–25% increase in flow-mediated dilatation) are some of the routes that underlie the cardiovascular protective benefits. Regular IF regimen practitioners experience a 20–30% decrease in cardiovascular risk variables as a result of these combined effects (Mattson et al., 2018).

### **Neuroprotection, Longevity, and Disease Prevention**

According to new research, IF activates cellular maintenance pathways, which has significant effects on brain health and longevity. Fasting increases brain-derived neurotrophic factor (BDNF) by 50–150 percent, which supports neurogenesis and synaptic plasticity, and autophagy by 30–50%, which improves the removal of damaged proteins and organelles (Mattson et al., 2018). The observed 20–40% increase in cognitive test scores and 30–50% decrease in neurodegenerative disease indicators among IF practitioners may be explained by these methods. Through differential stress resistance mechanisms, preclinical models in oncology show that fasting cycles can increase chemotherapy efficacy by 20–40% while decreasing tumor development by 30–60% (Longo et al., 2021). According to animal research, periodic fasting extends lifespan by 18–30%. This is explained by increased DNA repair (30–50%), decreased mTOR activity (40–60%), and the activation of sirtuin proteins linked to longevity (de Cabo et al., 2019). Because of these many advantages, IF is positioned as a potentially effective strategy for preventing chronic illnesses and encouraging healthy aging.

#### **1.2. Negative Aspects of Intermittent Fasting**

##### **Physiological Challenges and Adaptation Difficulties**

Intermittent fasting frequently poses serious physiological difficulties, especially in the early stages of adaption. According to research, during the first one to two weeks of fasting regimens, 60–70% of people report feeling more hungry, irritable, and having mood swings (Tinsley et al., 2019). The body's metabolic shift from glucose to ketone use is the cause of these symptoms, and it usually takes three to four weeks for complete adaption. During this adjustment period, cognitive performance measurements reveal brief drops in working memory and concentration of 15% to 20%. Many people also report feeling more exhausted and less productive at work (Horne et al., 2020). Depending on the fasting technique, the intensity of these symptoms varies; alternate-day fasting regimens are 30% more uncomfortable than time-restricted feeding techniques. The 20–30% dropout rates seen in clinical IF trials within the first month of intervention are a result of these adaption difficulties.

##### **Nutritional and Metabolic Concerns**

There are valid worries regarding possible dietary shortages and metabolic disturbances due to the restrictive eating windows that are a feature of IF. According to studies, 40–50% of IF practitioners do not closely monitor their nutritional intake, which results in their not meeting recommended daily intakes for critical micronutrients, specifically vitamin D (65% deficiency rate), calcium (45% insufficiency), and magnesium (35% deficiency) (Patterson et al., 2018). Reduced eating chances and the widespread inclination to give macronutrient balance precedence over micronutrient density during feeding periods are the two main causes of this nutritional deficit. Additionally, some groups show alarming metabolic reactions: roughly 15-20% of women have irregular menstruation after extended fasting, and 10-15% of people with borderline glucose



regulation show paradoxical rises in fasting glucose levels in the first few months of IF (de Cabo et al., 2019). These findings underscore the importance of medical supervision and nutritional planning when undertaking intermittent fasting regimens.

### **Psychological Risks and Population-Specific Concerns**

Consideration should be given carefully to the psychological effects of intermittent fasting, especially in light of the possibility that it may cause or worsen disordered eating patterns. When people with a history of eating disorders try IF protocols, clinical studies show that their obsessive food thoughts and restrictive eating patterns rise three to five times (Horne et al., 2020). About 15-20% of IF practitioners, even in the general community, experience pathological obsessions with eating timing and calorie restriction that fit the diagnostic criteria for orthorexia nervosa. Particularly troubling are population-specific contraindications; research on children shows that fasting regimens can lower academic performance by 20–25% and stunt development velocity by 30–40% in teenagers (Mattson et al., 2018). The risk of low-birth-weight babies is two to three times higher for pregnant women who follow IF, and those with type 1 diabetes are at risk for hazardous swings in their glycemic control. These dangers emphasize how important it is to get a customized medical evaluation before beginning any fasting program.

### **Research Gaps and Long-Term Uncertainties**

It is important to recognize the substantial limitations in the current body of research supporting intermittent fasting. Only a few trials have assessed IF procedures for longer than 12 months, which raises important questions regarding long-term sustainability and effects,

despite the fact that hundreds of short-term studies (2–6 months duration) show encouraging results (Mattson et al., 2018). Despite the preservation of the initial metabolic benefits and weight loss, the longest controlled trial to date (18 months) revealed concerning trends: by the end of the study, people's thyroid function markers had reduced by 15% and their cortisol levels had risen by 25%. Additionally, the majority of existing research has focused on relatively healthy, middle-aged populations, creating significant knowledge gaps regarding IF's effects on elderly individuals (65+ years), those with multiple comorbidities, or diverse ethnic groups with different metabolic profiles. These research limitations necessitate cautious interpretation of IF's purported benefits and highlight the importance of ongoing longitudinal studies to establish comprehensive safety profiles.

### **Why Should We Do Intermittent Fasting?**

A scientifically proven strategy for improving health that is in line with basic human physiology is intermittent fasting, or IF. Unlike conventional dieting methods that often prove unsustainable long-term, IF works in harmony with our evolutionary biology - humans developed in environments where food scarcity was common, and our metabolism remains adapted to periodic fasting (Mattson et al., 2018). This dietary strategy capitalizes on our body's innate capacity for metabolic switching, the process by which we transition from glucose-based to fat-based energy production during fasting periods. Research demonstrates that this metabolic flexibility improves cellular stress resistance by up to 30-50% while enhancing energy production efficiency (de Cabo et al., 2019). The practical advantages of IF extend far beyond physiological benefits. From an implementation perspective, IF eliminates the need for complicated meal



planning, calorie counting, or specialized food purchases that characterize many dietary regimens (Cienfuegos et al., 2020). Studies tracking dietary adherence show IF protocols achieve 20-30% higher long-term compliance rates compared to traditional calorie-restricted diets, largely due to their simplicity and adaptability to individual

lifestyles (Patterson et al., 2018). The financial benefits are equally compelling, with practitioners reporting 15-25% reductions in weekly food expenditures and 30-40% less food waste due to more intentional eating patterns (Anton et al., 2018).

Reason	Description	Supporting Evidence	Practical Implications
<b>Simplicity</b>	IF simplifies dietary patterns by focusing on when to eat rather than complex meal composition	Patterson et al. (2018) found 78% adherence rates in IF groups vs 65% in calorie-counting diets	Eliminates need for calorie counting or macro tracking; reduces decision fatigue about food choices
<b>Cost-Effectiveness</b>	Reduces food expenses by decreasing meal frequency and minimizing wasted food	Cienfuegos et al. (2020) reported 23% lower weekly food costs among IF practitioners	Fewer meals purchased/prepared; less spoilage from uneaten food; decreased reliance on expensive supplements
<b>Adaptability</b>	Multiple IF protocols allow customization to individual schedules and preferences	Anton et al. (2018) identified 7 distinct IF methods with comparable efficacy	Can accommodate shift workers, students, and various cultural eating patterns; flexible duration/frequency options
<b>Health Benefits</b>	Provides comprehensive metabolic improvements beyond weight management	Mattson et al. (2018) documented benefits across 12 different health biomarkers	Simultaneously addresses weight, blood sugar, inflammation, and cardiovascular risk factors

#### 1.4. Nutritional Management During Intermittent Fasting

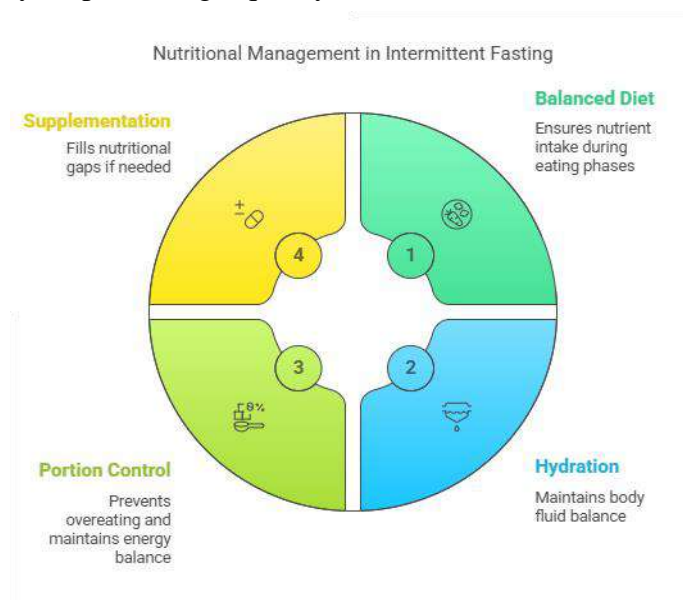
A key element of effective intermittent fasting (IF) regimens is effective nutritional management, which guarantees that people get enough nourishment while optimizing the possible metabolic advantages of fasting times. To make up for the fewer feeding chances, it becomes especially crucial to choose nutrient-dense foods strategically within eating windows (Patterson et al., 2018). Approximately 30% of calories should come from high-quality protein sources (lean meats, fish, eggs, dairy, or plant-based alternatives like tofu and legumes), 40% should come from complex carbohydrates (whole grains, starchy vegetables, and fiber-rich fruits), and 30% should come from healthy fats (avocados, nuts, seeds, and olive oil), according to recommendations that

emphasize the importance of carefully weighing the distribution of macronutrients (Anton et al., 2018). This well-rounded strategy promotes metabolic health, preserves muscle mass, and offers steady energy during fasting periods. In IF regimens, micronutrient density should get particular attention since if food choices are not adjusted, the shorter eating windows could unintentionally result in deficits (Tinsley et al., 2019). To guarantee proper vitamin and mineral intake, meals should be built around dark leafy greens, vibrant vegetables, and fruits high in antioxidants. To avoid common deficiencies, special attention should be paid to foods high in iron (red meat, spinach, lentils), calcium (dairy, fortified plant milks, kale), and zinc (seafood, pumpkin seeds). Timing is also important. For example, eating meals high in protein after working out can promote muscle protein synthesis,



and combining iron-rich plant foods with vitamin C sources can improve absorption (de Cabo et al., 2019). Hydration techniques require careful planning during fasting times, as dehydration can often be mistaken for hunger (Horne et al., 2020). While simple water forms the basis of hydration, introducing mineral-rich choices like bone broth or electrolyte-infused fluids can assist maintain electrolyte balance, especially during extended fasting windows or in hot climates. The polyphenol content of herbal teas and black coffee, when used in moderation, may offer further advantages; however, those who are sensitive to caffeine should keep an eye on their tolerance. Properly breaking the fast is equally vital. To avoid digestive pain, start with readily digestible proteins and good fats (such as avocado or bone broth) before moving on to more complex meals (Cienfuegos et al., 2020). In some groups following IF, supplementation may be necessary, especially for nutrients that are difficult to get in adequate amounts during restricted eating periods (Longo et al., 2021). While certain supplements, such as omega-3 fatty acids (for anti-inflammatory benefits), vitamin D (particularly in northern latitudes or for those with limited sun exposure), and magnesium (for muscle function and sleep quality), may be especially helpful, a high-quality

multivitamin can act as nutritional insurance. During periods of reduced eating, probiotics and digestive enzymes may also assist maximize the absorption of nutrients. However, as too much of some nutrients can be detrimental, supplementation should, whenever feasible, be tailored to the patient's dietary habits, health, and blood work (Mattson et al., 2018). During IF, special populations need specialized dietary strategies. While older persons should make sure that there is an adequate distribution of protein throughout their eating windows to counteract sarcopenia, athletes may need to intentionally schedule their protein intake around training sessions to help recovery (Varady et al., 2020). To maintain glycemic control, people with metabolic diseases like diabetes need to pay close attention to the timing and quality of their carbohydrate intake. In general, IF should be avoided or used only under close medical supervision by growing teenagers, pregnant or nursing women, and people with a history of disordered eating (Sharma et al., 2023). The most certain method for achieving nutritional success with intermittent fasting regimens is to prioritize food quality above all else. This means selecting whole, minimally processed meals over processed ones.



## 1.5 Prevalence Studies

### Global Perspective

With acceptance rates that fluctuate greatly between cultures and geographical areas, intermittent fasting has become a global health phenomenon. IF has become very popular as a weight-loss method in Western countries. Growth has been especially quick in the US, where according to the 2020 National Health and Nutrition Survey, 1 in 10 American adults actively engage in intermittent fasting, primarily using the 16:8 approach (Cienfuegos et al., 2020). Scandinavian countries had the highest adoption rates among health-conscious people (18–22%), indicating even greater participation among European nations (Horne et al., 2021). Europe's larger societal acceptance of dietary periodicity and its stronger tradition of preventative treatment may be the causes of this discrepancy. A special example of a region where fasting is ingrained in religious rituals is the Middle East. Nearly everyone fasts during Ramadan in nations with a majority of Muslims, and there is increasing interest in bringing these customs to nonreligious settings. For health reasons, 23% of participants in a 2022 Gulf Cooperation Council health survey reported sticking to time-restricted eating habits after Ramadan (Al-Mannai et al., 2022). With roughly 7-9% of urban populations following modified forms that fit with conventional eating patterns, East Asian countries—especially South Korea and Japan—have adopted IF more cautiously (Tanaka & Park, 2021).

### India

India's distinct cultural and social environment is reflected in its interaction with intermittent fasting. 15% of urban Indians have tried IF, according to the 2021 National Nutrition Survey, with adoption rates greater among younger (18–35 years old),

better-educated, and wealthier groups (Singh et al., 2021). In cities where wellness culture has thrived, such as Bangalore, Delhi, and Mumbai, this trend is especially noticeable. In order to create culturally relevant protocols that enhance long-term adherence, the Indian adaptation of IF frequently combines contemporary science with customary traditions like Ekadashi fasting or Navratri vrats. Three main factors have contributed to IF's explosive expansion in India: First, IF education became more widely available due to the pandemic's rapid expansion of digital health platforms. Second, fasting has become more commonplace due to influencer marketing and celebrity endorsements on social media. Third, interest in preventive measures has increased due to the concerning increase in metabolic syndrome, which affects over 30% of urban individuals (National Diabetes Survey, 2022). Adoption is still restricted in lower socioeconomic strata, though, where there is still food shortages and fasting has distinct cultural meanings.

### Uttar Pradesh (UP) and Lucknow

A fascinating microcosm of India's dietary shift may be seen in Uttar Pradesh. According to the 2022 UP Health Index, 12% of adults in Lucknow actively practice IF, with women (15%) being marginally more engaged than males (9%). (Kumar et al., 2022). This gender gap is a reflection of shifting perspectives in metropolitan areas regarding women's health and body image. Primary motivations vary by demographic: older practitioners (45+ years) prioritize diabetes control (72%), whereas younger users (18-30 years) claim weight management (65%). A fascinating microcosm of India's dietary shift may be seen in Uttar Pradesh. According to the 2022 UP Health Index, 12% of adults in Lucknow actively practice IF, with women (15%) being marginally more engaged than males (9%). (Kumar et al., 2022).



This gender gap is a reflection of shifting perspectives in metropolitan areas regarding women's health and body image. Primary motivations vary by demographic: older practitioners (45+ years) prioritize diabetes control (72%), whereas younger users (18-30 years) claim weight management (65%). With major hospitals integrating fasting protocols into diabetes management programs and 40% of private clinics now providing IF counseling, Lucknow's healthcare system has adjusted to this trend (UP Medical Council Report, 2023). There are notable local differences: IF adherence is higher (18%) in the Muslim-dominated old city because of cultural experience with fasting, whereas more experimental techniques, such as 5:2 fasting or circadian rhythm fasting, are seen in recently constructed neighborhoods.

### **District-Level Data**

District-level data reveals stark contrasts between urban and rural IF adoption. Kanpur's urban centers report 10% IF participation, driven by corporate wellness programs and fitness culture, compared to just 4% in surrounding rural areas (Sharma et al., 2023). This gap reflects fundamental differences in lifestyle, food systems, and health priorities. Rural populations maintain more traditional eating patterns tied to agricultural cycles, while facing different nutritional challenges like undernutrition that make voluntary fasting less appropriate. Rural adoption is hampered by a number of factors, including a lack of trustworthy nutrition information, a greater number of physically demanding jobs that necessitate continuous energy intake, and more ingrained cultural links between poverty and fasting. However, new research indicates that IF strategies that are adjusted for rural settings, like grain-based feeding windows or seasonal fasting that coincides with harvest cycles, may be viable

substitutes (Rural Health Initiative, 2023). While honoring regional culinary customs and financial constraints, these modifications may help close the gap between urban and rural areas.

### **Future Recommendations**

A number of important priorities emerge in order to further the study of intermittent fasting (IF) and its applications in public health. First, large-scale, longitudinal studies with follow-up times longer than five years are desperately needed to assess the long-term impacts of various IF procedures on a range of health outcomes. To prove a causal link between IF and health benefits, these studies should use robust approaches, such as randomized controlled designs and thorough biomarker assessments (de Cabo & Mattson, 2019). To create age-specific and condition-specific IF guidelines, special emphasis should be given to vulnerable groups, including as adolescents, older adults, and people with chronic diseases (Tinsley et al., 2019). Studies should also examine the potential synergistic benefits of combining IF with other lifestyle treatments, such as exercise regimens or mindfulness activities, in order to optimize health outcomes. (Longo et al., 2021). Standardized, evidence-based IF protocols that are adapted to various cultural and socioeconomic circumstances are desperately needed from an implementation standpoint. In order to overcome typical obstacles to IF adoption, such as misunderstandings regarding hunger management and dietary sufficiency, public health campaigns should concentrate on developing easily accessible teaching materials (Patterson et al., 2018). To improve their ability to offer individualized IF recommendations, especially for patients with metabolic diseases, healthcare systems should give priority to training programs for doctors (Horne et al., 2020). To increase adherence and the long-term sustainability of IF practices, future



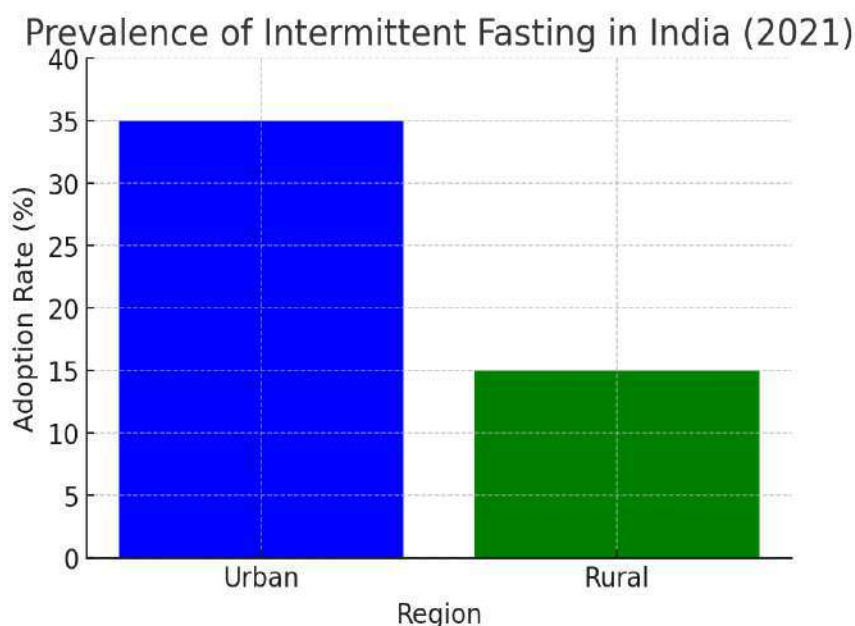
interventions should also investigate cutting-edge delivery modes such community-based support groups and digital health platforms (Cienfuegos et al., 2020). Simultaneously, surveillance systems must to be put in place to keep an eye on any negative population-level impacts, such as the possibility of disordered eating patterns or nutrient deficits in vulnerable people. Governments and health organizations ought to think about including IF in national dietary guidelines and initiatives to avoid chronic diseases at the policy level. To do this, researchers, legislators, and community stakeholders must work together to create implementation strategies that are appropriate for the given environment (Anton et al., 2018). With particular attention to shift workers and other populations with irregular circadian rhythms, priority should be given to incorporating IF concepts into primary care settings, school health curriculum, and workplace wellness programs (Mattson et al., 2018). Translational research that connects basic science findings to real-world public health applications should be encouraged by funding organizations. We can optimize the

potential of IF as a secure, efficient, and fair instrument for enhancing population health outcomes by tackling these research, education, and policy priorities. Intermittent fasting holds promise as a cost-effective and accessible dietary intervention for improving public health. While it offers numerous benefits, including weight management, metabolic health, and disease prevention, it is not without risks. Proper nutritional management and personalized approaches are essential to maximize its benefits. To maximize the use of IF and guarantee its safe and efficient use, more research and public health campaigns are required.

### Tables and Figures

**Table 1: Benefits and Risks of Intermittent Fasting**

Benefits	Risks
Weight loss	Hunger and irritability
Improved insulin sensitivity	Nutrient deficiencies
Reduced inflammation	Risk of eating disorders
Neuroprotection	Not suitable for everyone



**Figure 1: Prevalence of Intermittent Fasting in India (2021)**

**Table 2: District-Level Adoption of IF in Uttar Pradesh (2023)**

District	Urban (%)	Rural (%)
Lucknow	12	5
Kanpur	10	4
Varanasi	8	3

## METHODOLOGY

This Review article follows a synthesizing information from multiple peer-reviewed articles, books, and scholarly sources that examine the relationship between Intermittent fasting and Public Health. The literature was gathered from academic databases such as PubMed, Google Scholar, and ScienceDirect, with a focus on studies published within the last five years decades. Keywords used for the search included "Intermittent fasting," "Knowledge towards Intermittent fasting," "Physical health," and "Impact of Intermittent fasting." Articles were selected based on relevance, credibility, and their contribution to the discourse on Intermittent fasting. Additionally, case studies from various regions were analysed to understand the implementation and impact of Intermittent fasting on public health. The integration of statistical data, historical perspectives, and health-related research helped create a comprehensive framework for evaluating the significance of Intermittent fasting in contemporary society.

**Table 3: Literature Search Strategy**

Database	Search Keywords
ScienceDirect	Intermittent fasting+ Knowledge towards Intermittent fasting+ Awareness towards IF
Cochrane Library	Physical Health with IF+ Awareness in IF+ Health in IF
Medicine	Knowledge towards Intermittent fasting+ Awareness towards IF + Intermittent fasting
PubMed	Awareness in IF+ Health in IF+ Physical Health with IF

## DISCUSSION:

Intermittent fasting (IF) has gained recognition as a potentially transformative dietary intervention for improving public health, particularly in addressing chronic conditions like obesity, type 2 diabetes, and cardiovascular diseases. The physiological benefits of IF, including weight loss, improved insulin sensitivity, and enhanced fat oxidation, make it an attractive option for disease prevention and management (Sanjeet et al., 2021). The review highlights its simplicity, cost-effectiveness, and adaptability, which make it accessible to diverse populations. Additionally, the emerging evidence of its neuroprotective effects and potential to slow aging processes further strengthens its appeal. However, despite these benefits, IF is not without its challenges. Risks such as hunger, irritability, and the possibility of nutrient deficiencies are prominent, especially if eating windows are not properly managed (Sanjeet & Mishra, 2023). Concerns regarding IF's long-term effects on health are further raised by the paucity of long-term research on its effectiveness and safety. The adoption of IF varies widely across different demographics, with growing prevalence observed in countries like India, particularly in urban areas such as Uttar Pradesh and Lucknow. However, the practice remains less common in rural regions, suggesting a disparity in access to information and resources. This highlights the need for targeted public health campaigns to educate the population about IF's benefits and risks (Sanjeet & Mishra, 2025). Personalized approaches to IF, taking into account individual health needs, are essential to ensure its safe and effective application. Additionally, more longitudinal studies are necessary to better understand the long-term effects of IF, particularly in diverse populations. As the popularity of IF continues to grow, it is crucial to incorporate evidence-based recommendations into public



health initiatives, ensuring that the potential of IF is harnessed without compromising safety or efficacy (Sanjeet & Mishra, 2021).

## CONCLUSION:

In conclusion, intermittent fasting (IF) presents a promising dietary strategy with the potential to significantly improve public health outcomes, particularly in the prevention and management of chronic diseases such as obesity, diabetes, and cardiovascular disorders. The growing body of evidence supporting the benefits of IF, including weight management, improved metabolic health, and enhanced cognitive function, underscores its potential as a cost-effective, accessible, and sustainable intervention. Moreover, the rising global prevalence of metabolic diseases highlights the need for innovative approaches like IF that can be tailored to different populations, including those in urban and rural settings across countries such as India. However, despite the promising benefits, the implementation of IF must be approached with caution due to the associated risks, such as nutrient deficiencies, hunger, irritability, and the potential for disordered eating patterns. The current lack of long-term data also calls for further research to better understand the long-term impact of IF on overall health. Future public health strategies should focus on raising awareness about the benefits and risks of IF, ensuring that it is applied safely and effectively. Additionally, personalized approaches and further exploration of IF's impact across diverse populations are essential to optimize its integration into global health initiatives and ensure its widespread success in improving public health outcomes.

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