TSS Trends in Social Sciences

OPEN ACCESS

Junk Food & Infertility: A Silent Threat to Reproductive Health in Pakistani Youth

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ABSTRACT

Background and Objective: The sensationalized, "self-nurturing" overconsumption habits of today's youth, disguised under ideas of "self-care", directly coincide with the rapidly increasing reports of deteriorating reproductive health, including issues such as infertility in adolescents and adults globally. This study investigates the potential relationship between excessive junk food consumption and markers of infertility and reproductive dysfunction in adolescents and adults today. **Materials and Methods:** The study collected data from research articles on the correlation between junk food and its impact on infertility and reproductive health, using databases such as Google Scholar, Europe PMC, and PubMed. **Results:** The findings concluded a direct positive correlation between junk food over-consumption and self-reported infertility in men, and especially in women. **Conclusion:** The article identifies a clear correlation between junk food overconsumption and potential future indicators of infertility. The findings highlight a significant need for educational health campaigns and dietary reformation targeted towards young adults in order to protect their health through prevention.

KEYWORDS

Infertility, junk food, reproductive health, Pakistani youth, hormonal imbalance, diet, fast food

INTRODUCTION

The gradual yet steady rise in infertility rates among adolescents and adults is a deeply troubling and unsettling global health crisis that has gone under-acknowledged and under the radar for an alarmingly prolonged period. However, on a global scale, there have been multiple studies that have drawn strong connections between processed food consumption and reproductive health deterioration in adults. Yet unfortunately, in countries such as Pakistan or India, the conversation remains mute for the most part. Despite South Asia's history with a traditional, sustainability-led, organic consumption culture, with a recent surge in Westernized food related social media trends and lifestyle choices, today's youth feels a strong pull towards quick paced, urban-lifestyle-fitting fast food options over healthy, home cooked meals, out of convenience. This non-traditional lifestyle influence has not only affected a holistic view towards life itself, but it has—more specifically—dramatically impacted the dietary habits of Pakistani youth to drastic levels as well. The appeal of Western-style fast food, paired with aggressive, compulsive

https://doi.org/10.21124/tss.2025.18.23

Received: 17 Mar. 2025
Accepted: 05 Jul. 2025
Published: 18 Jul. 2025

online marketing, and urban lifestyle changes, has led to a worldwide normalization of junk food consumption as an everyday standard meal option rather than a commodity to indulge in on rare occasions. Junk food—typically high in saturated fats, sugars, and inorganic preservatives and additives—are scientifically proven to disrupt endocrine function and contribute to metabolic disorders—both of which have been known to have a close link to infertility. A comparative study conducted at Avicenna Medical College, Lahore evaluated 104 women between the ages of 18 to 40, half of which were diagnosed with infertility and 43% of whom reported consuming junk food at least twice a week[1].

Despite how grave the issue is in actuality, there is still a considerable gap regarding the region-specific data correlating junk food consumption to dysfunctional reproductive outcomes. With research conducted in major Pakistani cities such as Lahore, Sialkot, Karachi, and Islamabad only, there is a neglect-based gap in the available literature, excluding the infertility rates of other cities such as Quetta, Peshawar, Murree, etc. This article seeks to fill that gap by urging researchers to evaluate dietary plans and patterns among all ethnic and regional groups of Pakistani youth, taking a diverse sample of individuals from various regions and backgrounds, to start the conversation around reproductive health, especially for women, on a more diverse and inclusive, well-rounded forefront in to potentially drive policy change within the country in the long run[2]. The frequency of non-home-prepared meals—in simpler terms, junk food—has a positive association with self-reported infertility, and the odds of infertility are 2 to 3 times higher in women who consume fast food than in those who do not. It is crucial here to also highlight the beneficial role of alternate healthy diets (i.e., diets that are high in folic acid, long-chain omega 3 fatty acids, soy, vegetables, fruits, whole grains, and seafood) in lowering the risk of infertility in women while simultaneously also improving the results of infertility treatment in those diagnosed with any sort of reproductive health dysfunction[3]. Moreover, higher intakes of fruit combined with a minimal intake of fast food and artificially sweetened beverages, paired with a diet lower in glycemic load, may improve the female body's time to pregnancy[4]. An overall higher intake of fast food and lower intake of fruit (which is associated with non-home-prepared meals or junk food[5] were associated with modestly longer times to pregnancy and infertility[6]. Junk food is known to lack in fulfilling the nutritional requirements for the proper daily functioning of a healthy adult. Nutritional deficits such as iron, iodine, zinc, folate, and vitamin D caused by an unbalanced, unhealthy diet tend to reduce the ovarian reserve in the female body[7] which could lead to reproductive issues such as Poly-Cystic-Ovary Syndrome (PCOS)—The most common endocrine disorder among women of reproductive age, associated with an increased risk of multiple diseases that is largely rooted in insufficient nutritional levels[8]. Additionally, consuming a surplus amount of junk food can lead to other reproductive dysfunctions such as development of ovarian-cysts, due to a high influx of trans-fats, sugars, and other over-processed substances[9]. In fact, as a result of the current malnourishing dietary patterns of the Palestinian population—which comprises hardly one meal a day with little to no nutritional factors—Palestinian women have been reported to have higher rates of diagnosed PCOS and a surge in ovarian-cysts as well as a higher tendency to experience Premenstrual Syndrome (PMS) due to an insufficient amount of nutrients in their day-to-day supplemental routine[10]. On a hormonal level, sex hormones known as androgens, which include testosterone and androstenedione for the most part, are found responsible for maintaining masculine traits in both men and women. Testosterone is released in females in a minimal quantity, mostly for healthy reproductive development. A rise in testosterone in the female body, however, can result in several issues for women's reproductive and hormonal health, including outcomes such as acne, hirsutism, alopecia, menstrual irregularities, insulin resistance, hypertension, obesity, an increase in muscle mass, low libido, and mood changes etc.[11]—all of which are also direct symptoms of PCOS as well[12]. A dietary reform that includes nutrient-rich foods such as fibre-containing fruits, nuts rich in healthy fats, as well as vegetables, and red and white meat have statistically improved the reproductive abilities and fertility in women who were previously diagnosed with Polycystic Ovary Syndrome (PCOS) or had several ovarian cysts[13]. Research also poses that the quality of

food consumption can directly affect the reproductive health of men just as well as women. In contrast with a Mediterranean dietary pattern, the Western diet; rich in meat—especially a processed variation, dairy products, and sugar-sweetened beverages, has a high glycaemic index and is negatively associated with different semen quality parameters[14]. Men who adhere to a Westernized dietary plan, tend to have dysfunctional reproductive qualities such as a low formation of semen due to the fact that most of the components in Western diets are low in health-beneficial dietary nutrients such as fiber, vitamins, minerals, and phytochemicals[14]. In men, a long-term dietary exposure to high fat foods mutates the sperm epigenome; and if inherited, may induce new phenotypes in the offspring that could cause potential cognitive harm[15]. Non-steroidal Phytoestrogens have become a major component in the typical Western fast food diet over the last few decades—Soy-formula milk is one such common source of phytoestrogens, now used progressively as an alternative to breast or cow's milk for infants with allergies, can cause potential cognitive and physical dysfunction in the child which makes it particularly concerning since the most vulnerable periods for oestrogenic insult are thought to be the pre- and neonatal periods of a baby's developmental life cycle, when any sort of irreversible damage can be inflicted on the developing germinal epithelium[16]. The study investigates the impact of junk food consumption on reproductive health among Pakistani youth, with a specific focus on identifying dietary patterns that may contribute to infertility and assessing the potential physiological and hormonal disruptions linked to such eating habits.

MATERIALS AND METHODS

To evaluate the association between junk food consumption and potential reproductive challenges such as infertility, a systematic review style research was conducted using PRISMA guidelines. Additionally, PubMed, Europe PMC, and Google Scholar were the databases that were searched exhaustively to gather all relevant literature for this article.

Keeping an updated list of all relevant and precise citations and references to strictly ensure no plagiarism has been attempted. All research was ethically sourced and cited, considering predefined criteria. The article identifies studies and research articles published within the last decade, spanning from 2015 to 2025 that are limited to the physical, cognitive, and reproductive health implications of junk food overconsumption and an evident outcome of diagnosed, reported infertility in adolescents and adults who have frequent, consistent junk food-based dietary patterns. The databases were used to conduct a thorough, exhaustive research and all duplicates were removed. An extensive and detail-oriented screening was conducted on the titles and abstract sections as well as the methodology and results of all research reviewed in this article. The database searches included keywords such as "infertility", "junk food", "reproductive health", "Pakistani youth", "hormonal imbalance", "diet", and "fast food", "PCOS", and "premenstrual syndrome".

RESULTS AND DISCUSSION

There are key findings consolidated across various studies and research articles and highlighting the long-term physical—and especially reproductive—health concerns arising from a surge of junk food intake in adolescents and adults alike[1]. The findings stress the importance of implementing urgent educational health campaigns drawing a spotlight to a strong connection between reproductive health quality in women as well as men all over the globe, but especially in areas within third-world countries that contain little to no awareness regarding reproductive health, such as the provinces of Balochistan and Sindh in Pakistan. Additionally, it is important to note that cultural, socio-environmental, as well as societal norms, beliefs, and structures are also at constant play within the context of most of the research conducted on dietary patterns, and especially the attitudes and thought processes towards reproductive issues such as infertility. There is a greater risk of having more depression-related symptoms of infertility in the global South in comparison to Western and East Asian countries—Residents of China do not have strong

psychological issues rooted in concern over infertility and reproductive dysfunction due to a consistent lack of societal, mental, and emotional cues in the Chinese social atmosphere pressuring women to have children[17], Chinese women self-report to have rarely ever felt an absent sense of bodily autonomy or reproductive rights. On the other hand, female residents of Iran face a more persistent cycle of psychological and pathological breakdown when it comes to infertility due to social, societal, and cultural pressures for Iranian women to get married and bear children[18]. Furthermore, the reviewed data paints a concerning picture of how junk food consumption may be silently sabotaging the collective reproductive futures of the youth, not just in the context of the West but rather on a global magnitude. However it is not entirely impossible to reduce risky nutritional exposures affecting hormonal abnormalities among pregnant women. By improving dietary patterns, minimizing the use of pesticides in households, and decreasing the consumption of canned foods and greenhouse fruits, women self-report to have seen drastic changes in their overall physical health as well as reproductive stability[19]. The novelty of the article lies in its regional emphasis—The youth, globally, simultaneously faces multiple stressors such as socio-cultural and financial pressures, which inadvertently lead to poor dietary reforms rooted in a lack of nutritional awareness and academic or economic stress[20]. The collective findings from all of the literature included aligns cohesively, which bring us to the conclusion that state-level interventions are greatly needed on a global scale in order to combat the potentially astronomical threat to our collective futures and of future generations even more significantly. It is essential to the creation of a meaningful impact worldwide that policy-makers and clinicians prioritise public health strategies, including nutrition-education focused programs, labeling policies, and implementing incentives on a public level for whole food consumption. It is important to note that infertility as a physical condition is not limited to just an inability to bear children—it is an overall major health concern that affects the mental, psychological, emotional, pathological, and even athletic abilities of individuals who experience it. Reproductive dysfunction in and of itself is a complete lifestyle change that demands unwilling adaptation to unfamiliar and uncomfortable conditions from its residents. Obesity is one such outcome of a reproductive issue like Polycystic Ovary Syndrome. An abrupt fluctuation in weight gain, usually due to high insulin or processed sugar levels in the blood as a result of junk food over-consumption, is a harsh and brutal reality to live with on a day-to-day basis. Due to a common fat-phobic belief system in the majority of the world's population, gaining "too much weight" or becoming obese as a result of reproductive issues such as ovarian-cyst formation, or PCOS, can affect multiple areas of one's life apart from just the obvious physical inconvenience and discomfort; such as a well functioning social life, employment stability, experiences with romantic and platonic relationships, as well as self-image and self-perception. While the literature contains various extensive studies conducted on the correlation between infertility and quality of food consumption, challenges persist in maintaining results that ensure a positive correlation between the two factors due to the cross-sectional nature of most of the studies which limits causation claims[2]. Moreover, a heavy reliance on self-reported data may introduce bias, though clinical measures were taken to offset the chances of any potential bias in the findings. Limitations also include a lack of diversity in the participant samples, exclusively adhering to the Western population and lacking data on adults in other parts of the world. This gap leaves expansive room for research to be conducted in third-world countries—pecifically in rural areas of countries in the Global South such as Pakistan, Bangladesh, India, Nepal etc. There is also potential for conducting longitudinal studies that explore the relationship between diet and fertility over time. Collectively, these findings emphasize the long-term significance of a healthy, organic, non-processed diet and the potential avoidance of physical health and reproductive health-related risk factors coinciding with an overt intake of junk food on a daily or weekly basis.

CONCLUSION

This study highlights the harmful link between frequent junk food consumption and declining reproductive health among youth. Emphasizing a shift toward organic, home-cooked meals and Mediterranean-style diets rich in antioxidants and omega-3s may help mitigate infertility risks. While further research is needed to confirm causality, current evidence urges immediate public health action to address dietary habits and promote fertility-friendly nutrition through awareness and education.

SIGNIFICANCE STATEMENT

This study identified the detrimental association between junk food consumption and reproductive health deterioration in Pakistani youth, which could be beneficial for developing targeted dietary interventions and public health policies aimed at reducing infertility risks. This study will assist researchers in uncovering critical areas of nutrition-related reproductive dysfunction that have remained unexplored by many. Consequently, a new theory on diet-induced infertility among youth may be developed.

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