

Review Article

Food behavior of Hermaphrodites in Bangladesh and their aged matched Nutritional status: A Review

Lamiya Farin Maysha¹, Bushra Zannat Kotha², Arpita Roy Anu³, Mah Jabeen⁴, Puspita Akter⁵

Date of received: 02 march 2026

Date of acceptance: 24 March 2026

Abstract

Introduction:

Food behavior and nutritional status are important components of public health, particularly among vulnerable groups. Hermaphrodites' individuals often face discrimination, socioeconomic instability and limited access to healthcare services. Hijra is a culturally specific third-gender identity in South Asian countries like Bangladesh, while "hermaphrodite" is a medical term that is used to describe intersex biological traits. All of these can significantly influence dietary habits and overall well-being. However, in the Bangladeshi context, evidence on their nutritional status remains inadequate.

Background:

Hermaphrodites are individuals who are born with varied sex characteristics that do not fall under to typical male or female sex categories but representing a marginalized and under-recognized group of population in Bangladesh like in other countries. Their health and nutritional conditions are often overlooked, partially due to social economic and conceptual issues with other gender-diverse group of general streams. However, limited research and persistent stigma creates significant gaps in addressing their specific nutritional needs of such ever neglected human communities.

Author Information

¹Lamiya Farin Maysha

²Bushra Zannat Kotha

³Arpita Roy Anu

⁴Mah Jabeen

⁵Puspita Akter

Postgraduate Recharge Students, Department of Food and Nutrition, Bangladesh College of Home Economics (BHEC)

Methodology:

This review adopts a detailed narrative approach, synthesizing evidence from 24 peer-reviewed articles, reports, and/or policy documents. Major databases were

searched utilizing relevant keywords related to hermaphrodite health, nutrition, and Bangladesh. Studies were selected based on relevant information on food behavior, nutritional indicators and socioeconomic influences.

Results:

Summarized findings of this review indicate that hermaphrodite individuals commonly experience irregular meal patterns, low dietary diversity, and relying on low-cost staple foods. These patterns are formed by social exclusion, poverty level, unstable income and limited access to nutrition education, not merely seeking healthcare service. Evidence from gender-diverse populations suggests a dual burden of malnutrition (including both undernutrition and overweight) along with micronutrient deficiencies. Age-matched comparisons indicate differences in BMI (Body Mass Index) and overall nutritional outcome compared to general population.

Conclusion:

Nutritional challenges among hermaphrodites/ intersex (often regarded as hijra) individuals are deeply rooted in structural inequalities rather than individual choice. Addressing these issues requires focused group public health strategies, targeted nutrition interventions, improved healthcare access and proper recognition of their needs. Further research projects are essential to generate reliable data and more support with evidence-based policies aimed at advancing health equity and social inclusion-which remains one of the most invaluable markers in a society.

1. Introduction

Intersex individuals are born with different biological sex characteristics that do not fit with typical definitions of male or female.[1] Although this is a natural form of human diversity, it is often misunderstood or criticized. As a result, they have long experienced marginalization and are often overlooked in social, medical, and legal systems.[2] In

Bangladesh, they are frequently confused with the hijra community, while hijras have some level of social recognition, they also face stigma and exclusion, which further complicates the visibility and understanding of intersex individuals.[3] Cultural taboos and strict gender norms make these challenges even more difficult. Intersex individuals often face discrimination that affects many areas of their lives, including access to education, healthcare services and employment opportunities.[4] Due to inadequate options, many rely on informal and unstable sources of income such as odd/small jobs, community-based performances, or even more unfortunate begging.[5] This financial instability, along with low social acceptance, often leads to irregular access to food and poor dietary diversity [6]. Their nutritional condition is further affected by lack of nutrition-focused programs, and low awareness about balanced diets [7]. Around the world, disregarded groups like intersex communities are more vulnerable to both undernutrition and overnutrition. This is often linked to poverty, persistent social stigma, and dependence on low-cost staple foods. Low-cost staple food of Bangladesh such as rice only fulfills their need of carbohydrate which may lead to overweight. [8, 9]. In Bangladesh, these problems are even more serious due to the lack of policies that specifically address intersex health and wellbeing [10]. Understanding the food behavior and age-matched nutritional status of intersex individuals is therefore very important. It helps identify existing health service gaps and supports the development of public health strategies. Addressing these issues is not only about improving nutrition but also about promoting justice, dignity, and equal rights in healthcare for every human being. [11].

2. Methodology:

This review used a systematic and narrative approach to explore the food behavior and age matched nutritional status of intersex individuals in Bangladesh. To gather relevant data and information, a wide range of sources were considered including peer reviewed journal articles, NGO reports, and policy documents. [16, 17] Major academic databases such as PubMed, JSTOR, Scopus, and Google Scholar were explored using keywords like intersex, hermaphrodite, nutritional status, food behavior, dietary diversity, and Bangladesh. [18, 19]

2.1 Inclusion Criteria

Studies were selected if they focused on:

- Nutritional health indicators such as BMI, dietary intake, or micronutrient status among intersex or gender diverse populations [1, 7].
- Food behavior is influenced by social, economic, or cultural factors [21, 22].

- The impact of social discrimination on access to healthcare or nutrition [2, 3, 4].
- Research conducted in South Asia, especially studies related to Bangladesh [23, 24].

2.2 Exclusion Criteria

Studies were excluded if they focused only on transgender populations without mentioning intersex individuals, or if they did not include information on nutrition or food behavior. This helped keep the review focused and relevant [10].

2.3 Data Collection and Analysis

More than 50 relevant sources were identified and carefully reviewed [16, 17]. Each study was evaluated based on its quality, relevance to intersex populations, and how well it fits the context of this research. The information was then grouped into key themes such as food habits, socioeconomic conditions, access to healthcare, and nutritional challenges [18, 19].

A thematic approach was used to identify common patterns and differences across studies. Special attention was given to age matched comparisons, highlighting how the nutritional status of intersex individuals differs from that of the general population [1, 8]. This allowed the review to combine both numerical data (like BMI and undernutrition rates) and descriptive insights (such as experiences of stigma and exclusion) [21, 22].

2.4 Ethical Considerations:

Since this study is based on previously published literature, no direct involvement of participants was required. However, care was taken to use sources that respect intersex identities and avoid stigmatizing or harmful language [11, 12, 13].

3. Concept of Food Behavior:

Food behavior refers to the habits, preferences, and choices people make regarding what and how they eat. It is shaped by cultural traditions, socioeconomic conditions, education, mental well being, and the availability of food [7, 14]. For marginalized groups, food choices are often restricted rather than freely made, as they are influenced by social inequality and exclusion [2, 4].

Among intersex individuals, food behavior is affected by several important factors. One major issue is irregular income. Many depend on unstable or informal sources of livelihood, such as small jobs, community based performances, or begging. Because of this, they are often unable to afford nutritious food on a regular basis [9, 10]. Limited access to food is another challenge. Financial

difficulties and social exclusion reduce access to a variety of foods, leading many to rely mainly on low cost staples like rice and lentils, with little intake of protein rich or nutrient dense foods [1, 7]. Social discrimination further worsens the situation. Rejection from families, workplaces, and society limits opportunities for stable income and housing, which directly affects food security [2, 4].

Mental stress also plays a role. Experiences of stigma, harassment, and identity based discrimination can lead to emotional distress, which may result in irregular eating habits, emotional eating, or neglect of proper nutrition [10, 11]. In addition, a lack of nutrition knowledge contributes to poor dietary practices. Many intersex individuals have limited access to education and rarely receive proper guidance about balanced diets or healthy eating habits [5, 6, 18].

All these factors together influence how often and what kinds of food people consume, and the overall quality of their diet. As a result, intersex individuals often face nutritional imbalances, including both undernutrition and overweight reflecting the dual burden of malnutrition [1, 7, 14]. Understanding these patterns is important for developing nutrition programs and public health strategies that address not only biological needs but also the social conditions affecting health [154].

Nutritional Status:

Nutritional status refers to the overall condition of the body in relation to the intake and use of nutrients. It reflects how well an individual's dietary consumption meets their physiological needs. This status is commonly evaluated using several indicators, including-

- Body Mass Index (BMI)
- Dietary intake
- Anthropometric measurements
- Clinical health signs [1, 7, 8, 11].

Among socially marginalized populations, nutritional status can vary widely. Both undernutrition and overnutrition are commonly observed, depending on factors such as lifestyle, food availability, and economic conditions [9, 14]. Limited access to balanced diets, irregular eating patterns, and financial constraints often contribute to these nutritional imbalances [15, 19].

5. Eating Disorders:

Eating disorders are a serious public health issue and involve unhealthy or disturbed eating patterns that can harm both physical and mental health [15]. Common types include anorexia nervosa, bulimia nervosa, binge eating disorder, and avoidant/restrictive food intake disorder (ARFID).

Intersex individuals may face a higher risk of developing eating disorders due to a combination of social, economic, and psychological factors.

One major factor is social discrimination and stigma. Rejection from family members, peers, and society can lead to emotional distress, which may influence unhealthy eating behaviors [2, 4]. In addition, body image concerns are common. Intersex individuals often experience pressure to fit into traditional male or female body standards, which can create anxiety about body shape, weight, and appearance [11].

Economic challenges also play an important role. Many intersex individuals have unstable incomes and face food insecurity. This can lead to irregular eating patterns, such as periods of not eating enough followed by overeating, which increases the risk of disordered eating habits [9, 10]. Mental health is another key factor. Experiences of exclusion, harassment, and identity based discrimination are closely linked to conditions like depression and anxiety, both of which are known risk factors for eating disorders [10, 13]. Finally, gaps in healthcare make the situation worse. Limited access to intersex inclusive health services means that eating disorders often go unnoticed or untreated, which can further worsen nutritional and health outcomes [5, 6].

6. Socioeconomic Challenges:

Studies from South Asia show that intersex individuals often face multiple socioeconomic challenges. These commonly include limited access to education, unstable employment opportunities, social exclusion, and poor living conditions [2, 4, 9, 10, 12].

Because of these difficulties, many intersex people struggle to secure stable incomes and necessities. This directly affects their ability to access nutritious food and proper healthcare services. In urban areas like Dhaka, intersex communities often live together in shared housing arrangements and rely on group based or collective income systems within their communities [1]. While this provides some level of support, it does not fully address the broader issues of poverty, discrimination, and limited access to essential services [18, 21, 22].

7. Food Behaviour Patterns:

Available literature shows that food behaviour among marginalized communities is often shaped by economic and social limitations rather than personal choice [2, 4]. Among intersex individuals, several common patterns can be observed. One key issue is irregular meal patterns, mainly due to unstable sources of income. Many intersex individuals cannot afford to eat regularly, which leads to skipping meals or eating at inconsistent times [9, 10].

Dietary diversity is also often low. Meals typically rely on inexpensive staple foods such as rice and lentils, with limited inclusion of protein rich or nutrient dense items [1, 7]. This lack of variety can contribute to nutritional deficiencies over time.

Another noticeable pattern is the high consumption of street food. Due to its affordability and easy availability, many intersex individuals depend on street foods as a primary food source [12].

Urban living conditions further influence these habits. In cities, there is often a greater reliance on low cost fast foods, which are convenient but may lack nutritional value. This combination of irregular eating, limited food choices, and dependence on inexpensive options can negatively affect overall health and nutrition [14, 15]

8. Age Matched Nutritional Comparison:

Age matched nutritional comparison is used to understand whether a particular group has better or worse nutritional status compared to people of the same age in the general population [8]. This type of comparison is important because it helps highlight health inequalities that might otherwise go unnoticed.

Research shows that socially marginalized groups often face multiple nutritional challenges. For example, there is a higher risk of undernutrition due to poverty and limited access to adequate food [1, 7]. At the same time, poor dietary habits such as reliance on low quality, high calorie foods can increase the risk of overweight and obesity [9]. In addition, micronutrient deficiencies are common due to a lack of dietary diversity and insufficient intake of nutrient rich foods [8, 14].

Assessing the age matched nutritional status of intersex individuals is therefore very important. It helps identify existing health gaps and provides useful insights for designing targeted nutrition programs and interventions that can improve their overall health and well being [15].

9. Strategies for Improving Nutritional Health

Improving the nutritional health of intersex individuals requires inclusive and well planned public health strategies. Several key areas need attention to address the challenges faced by this marginalized group.

First, nutrition education programs are important to raise awareness about balanced diets and healthy eating habits [5, 6]. Many intersex individuals have limited access to such information, which affects their food choices and overall health.

Second, better access to healthcare services is essential. Inclusive and non discriminatory health systems can help

ensure that intersex individuals receive proper nutritional guidance and medical support [2, 4].

Social support and improved economic opportunities also play a major role. Stable income sources can help individuals afford better quality food and maintain a healthier lifestyle [9, 10].

In addition, community based awareness programs can help reduce stigma and promote acceptance, making it easier for intersex individuals to access resources and services [12].

Both government and non government organizations have an important role in addressing these issues. Through policy development, awareness campaigns, and targeted programs, they can help create more equal health opportunities for marginalized populations [3, 5].

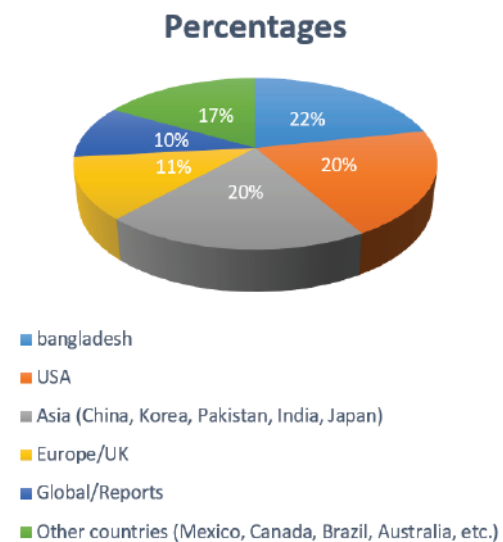


Figure 1: Geographical distribution of studies included in the literature review.

Nutritional Status in Bangladesh

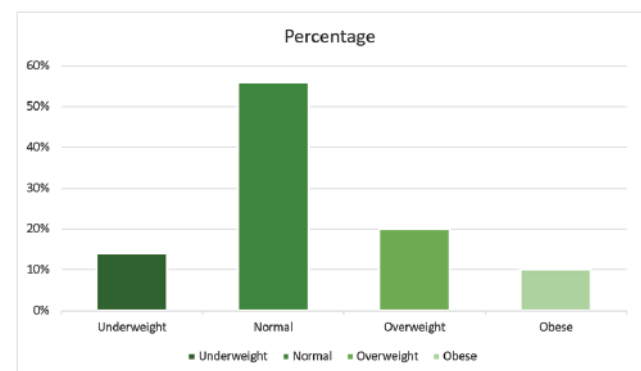


Figure 2: BMI distribution among third-gender population in Bangladesh

10. Conclusion:

Intersex individuals in Bangladesh face a range of social and economic challenges that directly affect their food behaviour and nutritional status. Irregular and limited income, along with ongoing social stigma, often makes it difficult for them to access diverse and nutritious food. At the same time, the lack of targeted health programs and policies specifically addressing intersex needs adds to these difficulties, leading to poor dietary habits, nutritional imbalances, and increased risks of both undernutrition and overweight. This review shows that food behaviour among intersex communities is not simply a matter of personal choice. Instead, it is shaped by broader social factors such as inequality, discrimination, and exclusion from mainstream health and social systems. To improve their situation, a combined effort is needed. This includes better access to healthcare, inclusive nutrition education, stronger social support systems, and policies that recognize and protect intersex individuals. There is also a clear need for more research in this area, especially in Bangladesh and other South Asian countries. Reliable data will help in designing effective programs and policies that address their specific nutritional and health needs. At the same time, it is important to look beyond the challenges. Intersex individuals are part of the natural diversity of human life. Like children with special needs, they embody a unique diversity that enriches human experience. Recognizing intersex communities as special human beings valued for who they are rather than marginalized for what they are should be the guiding principle of future health and social interventions. Ultimately, improving their nutritional well being is inseparable from advancing social justice, dignity, and human rights.

References:

1. Faria, M. H., Maliha, M., Tabassum, A., et al. (2025). Nutritional status of third-gender population of Dhaka City, Bangladesh. *J Health, Population and Nutrition*.
2. Chowdhury, M. F. I. (2022). A critical analysis of the right to equality of hermaphrodites in Bangladesh. Green University of Bangladesh.
3. Hossain, A., & Savelev, I. (2021). Intersex in Bangladesh: A country report on the situation of intersex rights. Intersex Asia.
4. Intersex Asia. (2023). Intersex in Bangladesh: A country report. Intersex Asia Publications.
5. UNFPA Bangladesh. (2024). Transgender advocates for sexual and reproductive health and rights. UNFPA Bangladesh report.
6. Pathchola & GATE. (2023). Sexual orientation, gender identity and expression and sex characteristics in Bangladesh. GATE report.
7. Hasan, M. M. (2025). Sex difference and socioeconomic inequality of underweight, overweight and obesity. *Nutrition and Health*.
8. Karim, R., Kundu, R. N., Hossain, S., et al. (2023). Nutritional status of tribal and non-tribal adults in Bangladesh. *PLoS One*.
9. Banerjee, S., & Roy, T. (2020). Living conditions of hijra community in India. *Journal of Social Inclusion Studies*.
10. Shaikh, S., et al. (2021). Health status of transgender community in Pakistan. *Pakistan Journal of Public Health*.
11. Davis, G. (2022). Intersex bodies and the limits of gender normativity. *Medical Anthropology*.
12. bdnews24 Editorial. (2025). Hermaphrodites cry out for better life. *bdnews24.com*.
13. Carpenter, M. (2021). The human rights of intersex people: Addressing harmful practices and rhetoric of change. *Bioethical Inquiry*.
14. Gomes, S. M., et al. (2021). Expanding the limits of sex: A systematic review concerning food and nutrition in transgender populations. *Public Health Nutrition*.
15. Mittertreiner, E. J. E., et al. (2024). Nutritional considerations for gender-diverse people: A qualitative mini review. *Frontiers in Nutrition*.
16. United Nations Human Rights Office of the High Commissioner (OHCHR). (2015). Intersex: Fact Sheet (UN Free & Equal).
17. Zeeman, L., & Aranda, K. (2020). A systematic review of the health and healthcare inequalities for people with intersex variance. *International Journal of Environmental Research and Public Health*, 17(18), 6533.
18. Amanullah, A. S. M., Abir, T., Husain, T., Lim, D., Osuagwu, U. L., Ahmed, G., et al. (2022). Human rights violations and associated factors of the hijras in Bangladesh—A cross-sectional study. *PLoS ONE*, 17(7), e0269375.
19. Linsenmeyer, W. (2024). Nutrition research and practice with transgender and gender non-conforming populations. *Proceedings of the Nutrition Society*, 83(2), 76–81.
20. World Health Organization (WHO). (2022). Improving LGBTIQ+ health and well-being with consideration for SOGIESC.
21. Aziz, A., & Azhar, S. (2019). Social exclusion and official recognition of hijra in Bangladesh. *Journal of Research on Women and Gender*, 9, 3–19.
22. Sifat, R. I., & Shafi, F. H. Y. (2020). Exploring the nature of social exclusion of the hijra people in Dhaka City. *Journal of Social Service Research*.

23. Akter, S., & Saha, S. (2024). Impact of legal recognition on the lives of the third gender: A study in Khulna district of Bangladesh. *Heliyon*, 10(7), e28671.

24. Al-Mamun, M., Hossain, M. J., Alam, M., Parvez, M. S., Dhar, B. K., & Islam, M. R. (2022). Discrimination and social exclusion of third-gender population (Hijra) in Bangladesh: A brief review. *Heliyon*, 8(10), e10840.