

Assessment of Nutritional Status of *Hijras*: A Study of Paschim Medinipur District, West Bengal, India

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Abstract: Nutritional status of Hijras in West Bengal has not been investigated adequately. The present study was undertaken to determine the prevalence of overweight, obesity, and thinness in Hijras of Paschim Medinipur, West Bengal, India. The nutritional status of Hijras in Paschim Medinipur is risk full. Appropriate measures should be taken by the respective authorities and Government to improve their health and nutritional status. A cross-sectional, observational, study was carried out among 114 Hijras aged 17-78 years studying in Survey Questionnaire. The nutritional status has been assessed with the help of some anthropometric indices. Height and weight were measured and BMI was computed following standard formula. SPSS 20.0 was used for analysis of data. The mean nutritional indices were found to be much critical among the Hijras. The overall prevalence rates of overweight, obesity, and thinness were 32.45 percent, 15.79 percent, and 16.67 percent respectively. The present study shows that obesity constituted major health problems whereas the nutritional status among the Hijras is very poor with a high rate of nutritional risks. The older portion among them was experiencing the highest prevalence of nutritional stress respectively. In addition, there was also an emerging trend for overweight/obesity; hence, the special emphases are needed to formulate various developmental and healthcare programmes for Hijra communities to prevent adiposity.

Keywords: Body mass index, Hijra, Nutritional status, Obesity, Overweight, Transgender.

1. INTRODUCTION

Nutritional status is a major determinant of the health and well-being of people. It is now recognized to be a prime indicator of the health of individuals or community (Osibogun, 1998). The World Health Organization believes that the ultimate objective of nutritional assessments is the enhancement of human health (WHO, 2008). Good nutrition provides a stronger immune system, better health, and productivity. Various forms of malnutrition including both macro and micronutrient deficiencies affect a large segment of the population in India (Vandana & Dahiya, 2012). Body is composed of water, protein, minerals, and fat. A two-component model of body composition divides the body into a fat component and fat-free component (Kravitz & Heyward, 1992). It is clear that increased body fat affects health. Its distribution on the body influences the state of health of specific organs. Ethnicity also plays a role in fat distribution. The prevalence of overweight has rapidly increased over the last two decades in both developed and developing countries. Obesity in childhood is associated with an increased incidence of hypertension, diabetes, coronary heart disease, osteoarthritis. The most significant long-term consequences of obesity are the tracking of obesity from childhood to adulthood and its contribution to adult obesity-related morbidity and mortality. Representative data on the prevalence of obesity and associated diseases have been collected in most of the developed and many developing countries. However, there is limited data from the Indian subcontinent about the prevalence of obesity (Bose et al. 2008). The body mass index (BMI), as measured by weight in kilogram (kg) divided by height in meter (m) squared, provides a simple measure of a person's "fatness" or "thinness", allowing health professionals to discuss over and underweight problems more objectively with their patients. Therefore it has been widely used for assessing the nutritional status of adults (WHO 1995, 2006). For assessing the nutritional status anthropometry is one of the important and easy access tool, which has become especially

important in developing countries. Various measures are calculated using anthropometry including the weight for age, height for age, weight for height, BMI for age, etc (Gupta et al. 2015). Body mass index is used to assess underweight, overweight, and risk for overweight (Hammer et al. 1991). The Government of India has accepted the use of WHO (2006) standards for assessment of nutritional status (Ramachandran, 2007).

In India, the study of Hijras is relatively less in focus. Still now, various Governmental organizations have no look at their status. National Family Health Survey (NFHS)-4 recently has not reported on the nutritional status of Hijras or transgender people. There is very little research on Hijra. Most studies on Hijras focus on medical aspects of gender identity and the psychosocial identity of the individual. The medical research is pathological in nature. Non-medical research emphasizes the need to look at the person as unique with a gender identity. Some research of Hijras from both a medical stance and a psychosocial perspective. Some paper analyzed the identity-focused aspects of research and non-medical models of identity development for transgender people or Hijras. Seil (2004) discussed the diagnosis and treatment of transgendered patients. Docter and Fleming (2001) looked for further identify the components of transgenderism in their study. Lawrence (2004) got a different connection between sexual orientation and gender identity. There are also some studies which were done related to health issues of Hijras. Factors that affect the experiences of transgender youth were explored by Grossman and D'Augelli (2006) using three focus groups. Three themes emerged from an analysis of the groups' conversations. The themes centered on gender identity and gender presentation, sexuality and sexual orientation and vulnerability and health issues. Sridevi and Veena (2011) studied the nutritional status of 120 Hijras from the age group of 20-70 years. A detailed interview schedule was used to collect their demographic profile, lifestyle patterns, psychological aspects and assessment of nutritional status. Hijras faced psychological problems and social exclusion is one of the most important ones. They face exclusion starting from their family to problems in the community. Emotional changes had an impact on the food consumption pattern and hence they lacked nutrients. They were subjected to rejection and lack of medical health care.

Hijra, which is known as the 'Third Gender' globally, is considered physically and psychologically ambivalent and because of ambivalence, people consider them freaks by hiding their sexual identity. Therefore, they are a marginalized community (Jami, 2005). Although they were traditionally referred to in English as 'Eunuchs', relatively few have any genital modifications. They have five genetically groups, viz. Khusra, Zananay, Chhibri, Aaqua and Chhinni/Khhoja (Mal, 2015, 2018); and they were considered for the present study as a homogeneous group. Hijras deal with the conflicts engendered by their paradox sexual activity. They face a unique set of emotional health issues. Both social exclusion and discrimination have a negative impact on the health of these individuals (Lee, 2000). Dimensions of their social deprivation and harassments to them have never received attention in the development society. There are many myths, legends, rituals, religious roles, and themes in Hinduism which entertain the notion of "sexually ambiguous or dual-gender manifestations" (Nanda, 1999). More recently, Hijra is recognized as "transgender" which is an inclusive, umbrella term used to describe the diversity of gender identity and expression for all people who do not conform to common ideas of gender roles (Karla, 2012).

The majority of the Hijras in Paschim Medinipur are found in Belda, Ghatal, Kharagpur town and Medinipur town. Here they are mainly engaged in child dancing and money collection through a journey. There is lack of sufficient data available on health profile and nutritional status among Hijras in Paschim Medinipur district as well as in India. Various NFHS rounds and District level household survey sweeps no light on the nutritional status of Hijras in West Bengal.

2. OBJECTIVES

The basic aim of this study is to assess the nutritional status and to track the overweight/obesity prevalence among Hijras in West Bengal, India. However, information on Hijras is extremely scanty and there is no data available on BMI distribution and BMI based nutritional status of Hijras of Paschim Medinipur District. In view of this context, the present study is an attempt in this regard to evaluating the level of thinness, normal weight, overweight and obesity as measured by BMI.

3. MATERIALS AND METHODS

General Profile

The study design was a community based; cross-sectional type within a period from May 2010 to September 2010. Through the observation, out of 149 Hijras (approx), only 114 Hijras aged 17 to 78 years have responded while rests were contactless. It was too much difficult to communicate with them and take interview and case studies. They were taken for investigation by systemic random sampling method. The questionnaire was the tool for collecting data. The questionnaire

was based on demographic information, anthropometric data, and personal hygiene. Information on age, height, and weight were collected on a pre-tested questionnaire following interview and examination. Technical errors of measurements (TEM) were computed and they were found to be within acceptable limits (Ulijaszek & Kerr, 1999).

Age estimation

Date of birth was obtained from the Voter identity card in order to ensure the quality of data. All 114 individuals were categorized into five age groups: age-group I (17-26 years), age-group II (27-36 years), age-group III (37- 46 years), age-group IV (47-56 years) and age-group V (>56 years) for making even sample distribution in all five age-groups. All anthropometric measurements were conducted by using standard anthropometric techniques (Lohman et al. 1988).

Anthropometric Profile

Weight: Measured using a floor type weighing scale with due respect to the standardization of the equipment and procedure. The measurements were taken to the nearest 0.5Kg.

Height: Measured using a measuring tape (meter) applied to the wall. The measurements were taken with Hijras barefoot with their back of heels, buttocks, and head touching the wall. Readings were taken to the nearest 0.5cm.

Body Mass Index (BMI): BMI was computed using the following standard equation:

$$BMI = \text{Weight (kg)} / \text{height}^2 (\text{m}^2)$$

Assessment of Nutritional Status

Nutritional status was evaluated using internationally accepted BMI guidelines (WHO, 1995, 2006, 2010). The following cut-off points were used:

Severely underweight/ Severe Thinness: BMI < 16.0

Underweight/ moderate thinness: BMI = 16.0 – 16.9

Underweight/ mild thinness: BMI =17.0 – 18.4

Normal: BMI = 18.5 – 24.9

Overweight (Pre-Obese): BMI = 25.0– 29.9

Obese Class I: BMI = 30 – 34.9

Obese Class II: BMI = 35 – 39.9

Obese Class III: BMI = ≥ 40

Data Analysis

In the present study, the cut-off point for thinness, overweight and obesity was set as BMI of 18.5, 25 and 30 kg/m² respectively. SPSS 20.0 and Interactive statistical tool were used for analysis of data. Suitable uni-variate, bi-variate, and multivariate techniques are applied.

4. RESULTS

The literacy status of the studied Hijras is very poor due to their social exclusion; as only 37.72 percent of the Hijras have been attending any educational institution where 44.74 percent have no experiment of school and education (result not presented here as a table). Table1 presents the mean, standard deviation, minimum and maximum values of the anthropometric characteristics and adiposity measures of Hijras of Paschim Medinipur. It showed that the mean of weight and BMI of Hijras were higher than the normal range. The difference in overall weight (<0.05), height (>0.05) and BMI (<0.05) was statistically significant. Statistical significance was considered as a p-value less than 0.05.

Table 1: Descriptive statistics of anthropometric variables among Hijras of Paschim Medinipur (N = 114).

Variables	Mean	Std. Deviation	Minimum	Maximum
Age (years)	38.60	15.69	17.00	78.00
Weight(kg)	63.98	7.82	47.00	79.00
Height (cm)	159.57	5.21	147.30	172.85
BMI (kg/m ²)	25.13	3.02	16.97	35.78

The height, weight and computed BMI of the Hijras of five age groups are presented in table 2. Mean (SD) of weight, height and BMI were 63.98 kg (7.82 kg), 159.57 cm (5.21) and 25.13 kg/m² (3.02 kg/m²), respectively. The mean BMI was highest (28.10 kg/m²) at ages for above 56 years and lowest (21.05 kg/m²) at ages for 17 to 26 years. Obesity was found to be a common feature among Hijras. It is clear that mean weight and BMI were higher in elder age group than younger age group. In contrast, the prevalence of adiposity and overall adiposity were higher among aged Hijras compared to the younger. A definite trend of positive relation was observed in mean BMI with increasing ages in Hijras.

Table 2: Comparisons of weight, height, and BMI of different age groups of Hijras of Paschim Medinipur

Age groups (Years)	N	Anthropometric Variables					
		Weight (Kg)		Height (Cm)		BMI (Kg/m ²)	
		Mean	SD	Mean	SD	Mean	SD
17-26	26	54.56	7.48	160.16	5.97	21.05	2.86
27-36	30	56.21	7.51	159.62	5.48	22.26	2.91
37-46	24	65.78	6.91	160.93	5.09	25.39	3.06
47-56	18	67.80	7.12	159.13	4.75	26.78	3.01
>56	16	70.33	8.60	158.24	5.16	28.10	2.63
Total	114	63.98	7.82	159.57	5.21	25.13	3.02
Significance test		χ^2 : 7.257, p value: 0.003		χ^2 : 5.925, p value: 0.473		χ^2 : 2.366, p value: 0.024	

The comparison of overall nutritional status was presented in table 3. The results showed that the frequency of thinness (16.67%), overweight (32.45%) and obesity (15.79%) was much closer to the unhealthy condition; whereas the overall adiposity was 48.24 percent which is much higher in Hijras as well as human nutritional indices. There was a significant positive relationship between aging of the Hijras and obesity. According to the WHO classification of high BMI, it is clear that studied Hijras of Paschim Medinipur district are in critical to serious situation for all ages with special reference to aged Hijras who are experiencing the critical situation with respect to their health and nutritional status.

Table 3: Nutritional status of Hijras in Paschim Medinipur

Age Groups (Year)	Nutritional status				TOTAL (N=114)
	Thinness	Normal	Overweight	Obesity	
17-26	9 (34.61)	10 (38.46)	4 (15.38)	3 (11.55)	26
27-36	4 (13.33)	12 (40)	10 (33.33)	4 (13.33)	30
37-46	2 (8.33)	9 (37.5)	11 (45.83)	2 (8.33)	24
47-56	3 (16.67)	4 (22.22)	8 (44.44)	3 (16.67)	18
>56	1 (6.25)	5 (31.25)	4 (25)	6 (37.5)	16
Total	19 (16.67)	40 (35.09)	37 (32.45)	18 (15.79)	114 (100)

Values are frequency and percentage (%)

Besides the weight, height, and BMI, some health status-related nutritional measure components used in this study, that is the number of common health problems the respondent had, and the respondent's subjective judgment of their health condition. The specific definitions of these measures are listed in Table 4. The classifications for the body mass index (BMI) are the recognized categories established by the Centers for Disease Control and Prevention (CDC 2007a).

Table 4: Sample distribution by Health status Index components

Index Category	Body Mass Index			Health Problems		
	Healthy	Less Healthy	Unhealthy	Healthy	Less Healthy	Unhealthy
Value	Normal weight with 18.5-24.9 BMI.	Underweight or overweight with <18.5 BMI (underweight) or 25.0-29.9 BMI (overweight).	Obese with ≥ 30 BMI.	Had less than two health problems	Had two to four health problems	Had more than four health problems
Respondents (%)	35.09	49.12	15.79	27.19	30.70	42.11
Cumulative percentage	35.09	84.21	100	27.19	57.89	100

5. DISCUSSION

Body mass index is an alternative screening tool to assess fat measurement that can be used to categorize individuals as underweight, overweight, or obese, and to observe changes in body weight that may be associated to health problems (CDCP, 2007a). Other groups have explored the usefulness of BMI for age from WHO standards for assessment of severe under-nutrition during relief operations (Lopriore et al. 2007; Myatt & Duffield, 2009; Seal & Kerac, 2007). Some researcher explored the extent to which the use of the WHO 2006 standards affects the estimated prevalence of under-nutrition in low and middle-income countries (Ergo 2009).

Indian Hijras begin life with disadvantages as a social body due to their gender disorder. For a Hijra person, however, there is a conflict between one's physical sex and one's gender identity as a man or a woman (Mal, 2018). Analysis of data from the study on changes in prevalence of overweight as assessed by height for age, weight for age and BMI for age revealed some interesting findings. It depicted that Indian Hijras begin their adolescent life with a lower in weight and BMI. During their adulthood, there was no remarkable increase in overweight and adiposity rates. This might be because of the perception of their sexual deformity and emotional changes which have an impact on their food consumption pattern. They undergo lots of psychological stress resulting from discrimination and ill-treatment in the society. It does take time for them to adjust various changes within the society (Sridevi & Veena, 2011). Some study found that in the period of mental stress the use of substances such as anabolic steroids and certain supplements can adversely affect their health (Tang et al. 2005).

The rise in overweight from middle age might be due to adequate quantity and high-calorie density of complementary feeds and alcohol consumption. A high percentage of calories that came from fat intakes, a high percentage of calories in beverages that came from soft drinks, alcohol, and these are negatively related to the value of the health and weight condition. A large number of studied Hijras took fast food (93%), consumed tobacco (67%) and alcohol (89%) frequently. In spite of that, they take (71%) some types of medicinal drugs composed with "*Ethinyl estradiol*" (such as Lyndiol, Semisynthetic Steroidal) which increases the estrogen hormone (result not presented here as a table) during their staying period in Hijra community. As a result, it diminished sex hormone biosynthesis and increased fats in breasts, pelvic region and buttocks that produced a female gesture (Mal, 2015). As a side effect of the practice, there is an increasing trend of overall adiposity among Hijras. Hijras also suffered from different diseases for this practice. However, the results of the present study clearly indicated that the nutritional situation of Hijras was not satisfactory with high rates of overweight of 32.45 percent and obesity of 15.79 percent respectively. Therefore it is evident that central obesity is the dominant feature among the Hijras. It is also a cultural disposition of Hijras in West Bengal.

The trend of obesity was prevalent in the studied Hijras. It is clear from the study that 72.81 percent Hijras have health problem regarding their health issues where 64.91 percent of the studied Hijras having health problem due to their overweight regarding BMI. Some studies depicted that overweight and obesity are problems that also affect a large subset of this community. This can cause a serious of health problems which include diabetes, hypertension, cancer and heart diseases (Gruskin et al. 2001; Gilman, 2003). On the other hand, some studies revealed that Hijras are very few occupational choices and are at times forced to do jobs against their interest and satisfaction. Since they lack both education and occupation; they have poor health conditions leading to various diseases and complications. The prevalent diseases identified among them are blood pressure, underweight, overweight, obese, diabetic and HIV (Grossman & D'Augelli, 2006). Similarly, several studies have shown that dietary and environmental constraints are the major determinants of differences in growth pattern between the population of both developed and developing countries (Lopriore et al. 2007; Myatt & Duffield, 2009; Seal & Kerac, 2007). Overweight and obesity has become a global health problem so much, in this regard a new word "globesity" has been coined which refers to the universal health burden of obesity (Mukhopadhyay et al. 2005).

There are some limitations of the study such as small sample size in some age groups and inability to employ any strict sampling strategy which may make the district level extrapolation of the sample questionable. In general, health and nutritional studies of Hijras in West Bengal and India are neglected, discriminated in terms of social status and social disapproval. The prevalence of adiposity among Hijras is an indicator of health status of Hijra community (Sridevi & Veena, 2011). Nutritional assessment within the community serves as appropriate data gathering processes to enable accurate planning to reduce morbidity and mortality associated with overweight and adiposity.

6. RECOMMENDATIONS

In brief, the Hijra community remains unaware of the psychological interventions and services potentially available to aid in the management of their nutritional and mental health needs. Existing literature tells us that there is a need for further research into the nutritional status of the Hijra, which will allow researchers to better understand determinants of their health. In this regard, some recommendations should be applicable to achieve a more balanced nutritional state. These are –

1. Census, NFHS, and other organizations have to cover the Hijra population and their demographic indicators in the data sheet.
2. Initiating coverage of Hijras for employment guarantee schemes and minimum wages for work.
3. Hijras look forward to free and stable housing policies.
4. Initiating adequate pension for Hijras who are aged especially above 60 years.
5. To sensitize the society and common people with regard to their identity.
6. Support of Media both print and electronic, to highlight their status and plight rather than portraying them in poor light.
7. To identify and illuminate the health and mental health needs of Hijras, including access to appropriate health care services.
8. Recognition of the Hijra community as a minority group in need of intervention is important so that national and state policies can focus on their development and bringing them into the mainstream.
9. Focus on sensitisation of health care providers towards the special needs of Hijras is important, especially health care providers in and around areas where Hijras reside.

7. CONCLUSION

In conclusion, the present analysis indicated that the prevalence of Hijra adiposity is still a major problem. In addition, there was also an emerging trend for overweight and obesity among them for their traditional practices. Here the health problems are more pronounced for overweight than underweight. The present study found that nutritional status among the Hijras is very poor with a high rate of nutritional risks. The older portion among them was experiencing the highest prevalence of nutritional stress respectively. Nutritional status was found to be positively related to their education, occupation, and standard of living. The results also revealed that the Hijras are not considered as a part of the society. Thus they are underprivileged and lack the basic infrastructure to lead a happy living in our society. All these clearly suggest a condition of emergency for improving the nutritional status of Hijras in Paschim Medinipur as well as in West Bengal. Special care must be taken regarding nutritional status of them. This must success with the programmes of nutrition education with the help of appropriate mass media and public awareness. Awareness programs regarding affordable but nutritious foods should be introduced by the government through community participation, the involvement of NGOs and other sectors. The findings of the study will be useful for the policymakers for the formulation of effective nutritional intervention and improving the functioning of healthcare program running in the different districts of West Bengal for Hijra communities.

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Ethical considerations:

This study does not identify or affect any individual, group or society/community. This research is immensely useful for policy makers and planners. This study received an ethical approval from “AALO THE HOPE - Society for Social Development” (NGO, Government Registration No-S/1L/65856-09-10), Midnapore, Paschim Medinipur, West Bengal, India.

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