



ISSN: 2456-0057
 IJPNPE 2019; 4(1): 106-108
 © 2019 IJPNPE
 www.journalofsports.com
 Received: 07-11-2018
 Accepted: 09-12-2018

Vishvanath Pise
 Ph.D., Scholar, S-VYASA,
 Eknath Bhavan, Gavipuram
 Circle, Kempegowda Nagar,
 Bangalore, Karnataka, India

Balram Pradhan
 Assistant Registrar, S-VYASA,
 Eknath Bhavan, Gavipuram
 Circle, Kempegowda Nagar,
 Bangalore, Karnataka, India

Gharote MM
 Director, Lonavla Yoga
 Institute, Lonavla, Pune,
 Maharashtra, India

Body mass index status among children with intellectual disability

Vishvanath Pise, Balram Pradhan and Gharote MM

Abstract

Context: Individuals with intellectual disability (ID) have certain limitations in mental functioning and experience poorer health as compared to general population. The adults with ID have a high risk of developing obesity, and women with ID have a high risk of developing morbid obesity

Objective: The objective of this study was to assess the prevalence of obesity among children aged 12-15 years.

Method: All intellectually disabled children between 11 to 15 years old attending special education schools in Pune, Maharashtra were included in the study. Two hundred twenty-five children (83 females and 142 males) were participated in this study. There was no age difference between male (Mean=12.36 years, SD=1.51) and female (Mean=12.61 years, SD=1.63). The degree of intellectual disability of participants ranged from mild to severe based upon the IQ records available in school. A non-stretching metric tape-measure was used to determine Participants height. Height was measured in centimeters (cms) using a custom-made 3.5 metre wooden ruler and weight was measured in kilograms using a digital weighing scale which give a reading of weight in kilograms to one decimal place. Body Mass Index was calculated using Quetelet's ratio.

Results: The total sample, as well as male and female respondents, was classified into one of the three groups based on their BMI rating: that is, overweight, normal weight, and underweight. In the total sample, 6.2% of participants were overweight, 23.11% normal weight, and 70.22% were underweight. The results help to interpret that majority of children with ID were underweight.

Conclusion: Children below 15 years of age having ID seems to be underweight.

Keywords: ID, BMI, obesity, underweight

1. Introduction

Individuals with intellectual disability (ID) have certain limitations in mental functioning and experience poorer health as compared to general population. Among individuals with ID, higher body mass index is associated with various metabolic disorders^[1, 2, 3] and hypertension.^[4, 5] Additionally, it has been found that adults with ID have a high risk of developing obesity, and women with ID have a high risk of developing morbid obesity^[6]. Overall, the rates of obesity in individuals with ID is quite high and number of countries have indicated an increase risk of obesity in these people^[7, 8]. Prevalence of being overweight and obese among adults with ID is reportedly 28% to 71% and 17% to 43%, respectively. The major reasons for susceptibility of being overweight or obese have been found to be increasing age, mild intellectual disability, as well as living independently/with family, consuming certain medications, and non-participation in physical activities^[9]. Compared to the general population the individuals with ID engage in less than the recommended amount of physical activity^[10, 11, 12, 13]. In fact, the impact of overweight on the lives of people with ID is found to be greater as compared to the general population. The consequences of obesity predispose adults with ID to greater risk of secondary risk factors such as low physical activity, lack of social support^[14].

Several studies have reported prevalence of obesity among people with ID however, few studies reported that adults with profound intellectual disability tended to be underweight (Wallen & Roszkowski, 1980)^[15]. Further, Lloyd *et al.*, (2014) reported that the low-income countries had higher rates of underweight and the high-income countries had higher rates of obesity^[16].

Correspondence
Balram Pradhan
 Assistant Registrar, S-VYASA,
 Eknath Bhavan, Gavipuram
 Circle, Kempegowda Nagar,
 Bangalore, Karnataka, India

The research findings in relation to obesity, overweight and underweight among people with ID found to be contrasting. Further, there are very few studies conducted in children with ID reporting status of obesity. Therefore, the main objective of this study was to assess the prevalence of obesity among children aged 12- 15 years.

2. Method

2.1 Participants

All intellectually disabled children between 11 to 15 years old attending special education schools in Pune, Maharashtra were included in the study. Two hundred twenty-five children (83 females and 142 males) were participated in this study. There was no age difference between male (Mean=12.36 years, SD=1.51) and female (Mean=12.61 years, SD=1.63). The degree of intellectual disability of participants ranged from mild to severe based upon the IQ records available in school.

2.2 Materials

A non-stretching metric tape-measure was used to determine participants height. Height was measured in centimeters (cms) using a custom-made 3.5 metre wooden ruler and weight was measured in kilograms using a digital weighing scale which give a reading of weight in kilograms to one decimal place.

2.3 Procedure

The participants were recruited from Kamayani, Sai Sanskar & Sai Seva School for mentally challenged students situated in Pune, Maharashtra. The authorities of each school were contacted to seek the permission to conduct this survey further, consent from parents/guardians were obtained before start of this survey study. No parent or guardian expressly refused permission. Following receipt of this permission, the 225 potential parents were approached individually, the purpose of the study was explained to them and their children were invited to participate in the study. All 225 agreed and were then asked to sign a simplified informed consent form. All measurements, including height and weight, were taken at the school premises. During their measurement session, participants were dressed in their typical light clothing, such as t-shirt and slacks, wearing their socks but no shoes. Height was measured to the nearest millimeter, with participants aligned against a wall, looking straight ahead. A tester ensured that participants were standing in an upright position. Weight was entered to the nearest 100 grams as indicated on the scales. Body Mass Index was calculated using Quetelet's ratio. The formula is $BMI = \text{kg}/\text{m}^2$ where kg is individual's weight in kilograms and m^2 is their height in meters squared.

2.4 Ethical Consideration

Signed informed consent was obtained from the parent or guardian of the child at the time of registration, after they had read the proposal that involves noninvasive data collection methods and risks free intervention. All procedures were reviewed and accepted by the institutional ethical committee of S-VYASA University. Participation in this project was voluntary in nature and participants were not provided with any incentives for their participation.

3. Results

Table 1 contains participants' average weight, height, and BMI by gender for the total sample. The total sample, as well

as male and female respondents, was classified into one of the three groups based on their BMI rating: that is, overweight, normal weight, and underweight. In the total sample, 6.2% of participants were overweight, 23.11% normal weight, and 70.22% were underweight. The results help to interpret that majority of children with ID were underweight.

Table 1: Weight, Height, Body Mass Index Means by Gender

	Weight (Kg)	Height (cms)	BMI (W/H ²)
	Mean	Mean±SD	Mean±SD
Females	35.33±11.20	139.09±11.88	18.07±4.32
Males	33.85 ±11.54	139.93±14.16	16.99±4.32
Total	34.40±11.41	139.62 ±13.34	17.39±4.34
Weight classifications by using Body Mass Index			
	Overweight	Normal Weight	Underweight
Total (n=225)	6.25%	23.21%	70.53%

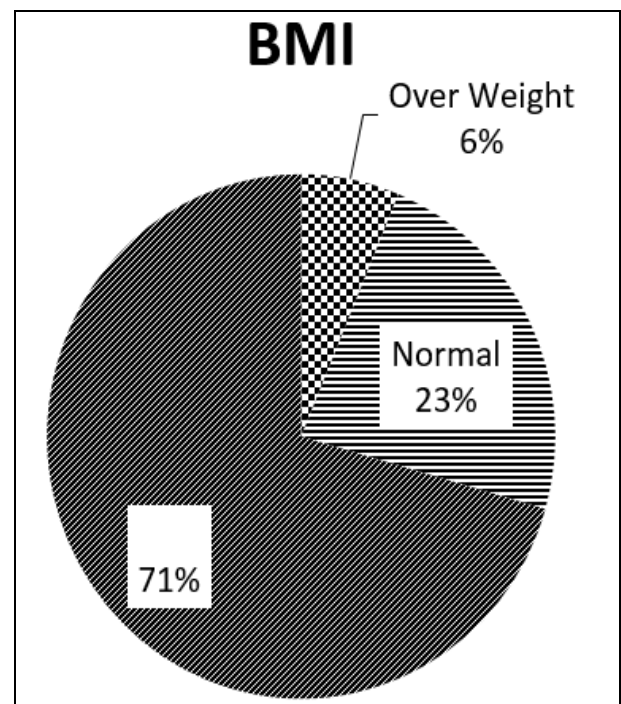


Fig 1: Body Mass Index

4. Discussion

The findings of present study indicate that majority of children aged 12-15 years with ID were underweight and only 6.2% children were overweight. The results of present study differ from earlier research reports wherein obesity was found to be prevalent in individuals with ID^[17, 18, 19]. Most of earlier research studies were conducted on adults with ID and with specific disorder such as Down's syndrome^[20, 21, 22, 23, 24]. This means that age and specific disorder may be considered as the contributing factor for obesity or overweight.

Nevertheless, results of present investigation are in consistent with earlier research studies. In one of the study it was seen that rates of underweight were higher for younger adults in low income countries of Asia-Pacific, and highest for males aged 11–13 from lower-middle income countries of Africa^[25]. Thus, from the results it can be concluded that children below 15 years of age having ID seems to be underweight. The primary limitation of this study was selection of limited variables. In fact, future studies may consider body composition and anthropometric characteristics for the assessment of obesity among children with ID. Further, longitudinal studies are needed to establish findings of present study.

5. References

1. Sohler N, Lubetkin E, Levy J, Soghomonian C, Rimmerman A. Factors associated with obesity and coronary heart disease in people with intellectual disabilities. *Soc Work Health Care*. 2009; 48:76-89.
2. Hsu SW, Yen CF, Hung WJ, Lin LP, Wu CL, Lin JD. The risk of metabolic syndrome among institutionalized adults with intellectual disabilities. *Res Dev Disabil*. 2012; 33(2):615-620.
3. McDermott S, Moran R, Platt T, Dasari S. Prevalence of diabetes in persons with disabilities in primary care. *J Dev Phys Disabil*. 2007; 19(3): 263-271.
4. van de Louw J, Vorstenbosch R, Vinck L, Penning C, Evenhuis H. Prevalence of hypertension in adults with intellectual disability in the Netherlands. *J Intellect Disabil Res*. 2009; 53(1):78-84.
5. Giordano U, Turchetta A, Giannotti A, Digilio MC, Virgili F, Calzolari A. Exercise testing and 24-hour ambulatory blood pressure monitoring in children with Williams syndrome. *Pediatr Cardiol*. 2001; 22:509-511.
6. Hsieh K, Rimmer JH, Heller T. Obesity and associated factors in adults with intellectual disability. *J Intellect Disabil Res*. 2014; 58(9):851-63.
7. Krause S, Ware R, McPherson L, Lennox N, O'Callaghan M. Obesity in adolescents with intellectual disability: Prevalence and associated characteristics. *Obes Res Clin Pract*. 2016; 10(5):520-530.
8. Mokdad AH, Bowman BA, Ford ES *et al*. The continuing epidemics of obesity and diabetes in the United States. *JAMA*. 2012; 286:1195-200.
9. Ranjan S, Nasser JA, Fisher K. Prevalence and potential factors associated with overweight and obesity status in adults with intellectual developmental disorders. *Journal of Applied Research in Intellectual Disabilities*. 2018; 30(S1):29-38.
10. Bhaumik S, Watson JM, Thorp CF, Tyrer F, McGrother CW. Body mass index in adults with intellectual disability: Distribution, associations and service implications: A population-based prevalence study. *Journal of Intellectual Disability Research*. 2008; 52(4):287-298.
11. Koritsas S, Lacono T. Weight, nutrition, food choice, and physical activity in retarded adults. *Nutrition Reports International*. 2016; 21:469-477.
12. Barnes TL, Howie EK, McDermott S, Mann JR. Physical activity in a large sample of adults with intellectual disabilities. *Journal of Physical Activity and Health*. 2013; 10(7):1048-1056.
13. Haider SI, Ansari Z, Vaughan L, Matters H, Emerson E. Health and wellbeing of Victorian adults with intellectual disability compared to the general Victorian population. *Research in Developmental Disabilities*. 2013; 34(11):4034-4042.
14. Rimmer JH, Yamaki K, Lowry BM, Wang E, Vogel LC. Obesity and obesity-related secondary conditions in adolescents with intellectual/developmental disabilities. *J Intellect Disabil Res*. 2010; 54(9):787-94.
15. Wallen A, Roszkowski M. Patterns of weight disorders in institutionalized mentally with intellectual disability. *Journal of Intellectual Disability Research*. 1980; 60(4):355-364.
16. Lloyd M, Foley JT, Temple VA. Body mass index of children and youth with an intellectual disability by country economic status. *Preventive Medicine*. 2014; 69:197-201.
17. Pan CC, Davis R, Nichols D, Hwang SH, Hsieh K. Prevalence of overweight and obesity among students with intellectual disabilities in Taiwan: A secondary analysis. *Res Dev Disabil*. 2016; 53-54:305-13.
18. Stancliffe RJ, Lakin KC, Larson S, Engler J, Bershadsky J, Taub S *et al*. Overweight and obesity among adults with intellectual disabilities who use intellectual disability/developmental disability services in 20 U.S. States. *Am J Intellect Dev Disabil*. 2011; 116(6):401-18.
19. De Winter CF, Bastiaanse LP, Hilgenkamp TI, Evenhuis HM, Echteld MA. Overweight and obesity in older people with intellectual disability. *Res Dev Disabil*. 2012; 33(2):398-405.
20. Gazizova D, Puri BK, Singh I, Dhaliwal R. The overweight: obesity and plasma lipids in adults with intellectual disability and mental illness. *J Intellect Disabil Res*. 2011; 56(9):895-901.
21. Mikulovic J, Vanhelst J, Salleron J, Marcellini A, Compte R, Fardy PS *et al*. Overweight in intellectually-disabled population: physical, behavioral and psychological characteristics. *Res Dev Disabil*. 2014; 35(1):153-61.
22. Al Husain M. Body mass index for Saudi children with Down's syndrome. *Acta Paediatr*. 2003; 92(12):1482-5.
23. Bell AJ, Bhate MS. Prevalence of overweight and obesity in Down's syndrome and other mentally handicapped adults living in the community. *J Intellect Disabil Res*. 1992; 36(Pt 4):359-64.
24. Rubin SS, Rimmer JH, Chicoine B, Braddock D, McGuire DE. Overweight prevalence in persons with Down syndrome. *Ment Retard*. 1998; 36(3):175-81.
25. McConkey Roy, Sadowskym Molly, Shellard Amy. An international survey of obesity and underweight in youth and adults with intellectual disabilities. *Journal of Intellectual & Developmental Disability*. DOI: 10.3109/13668250.2018.1426287