



Original Research Article

To Find the Prevalence of Obesity and Overweight among Children Having Mental Retardation in Age Group 5 To 15 Years in Dharwad Urban

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ABSTRACT

Background and Objectives: Mental retardation is the impairment or incomplete development of mind, which is especially characterized by impairments in mind manifested during the developmental period, which contribute to the overall level of intelligence, i.e. cognitive, language, motor and social abilities. Mental retardation may or may not include motor disabilities. Many studies had been done to find the prevalence of overweight and obesity among mentally retarded children in different parts of the world. But none were conducted in India and this part of Karnataka. The objective of our study was to evaluate the prevalence of overweight and obesity among the mentally retarded children aged between 5 to 15 years and to find the difference in prevalence of overweight and obesity among mentally retarded boys and girls.

Methods: A sample size of 205 was chosen. A signed informed consent was received by the parents. Height (measured on stadiometer) and weight (measured on digital weighing scales) of the samples who met the inclusion criteria were taken and their BMI was calculated.

Results: Data analysis and results show that there 4.65% prevalence of overweight and 2.79% prevalence of obesity among the children aged 5 to 15 years boys and girls. However there was 76.28% prevalence of underweight among the samples and 16.28% prevalence of normal BMI among the samples. When prevalence was considered among the boys, 2.67% were obese, 6% were overweight, 16.00% was normal and 75.33% were underweight. Similar results were found among girls samples also; 3.08% obese, 1.54% overweight, 16.92% normal and 78.46% underweight.

Conclusion: We conclude that there is 4.65% and 2.79% prevalence of overweight and obesity among the mentally retarded children aged between 5 to 15 years.

Keywords: Mental Retardation, Overweight, Obesity, Prevalence, Urban Dharwad

INTRODUCTION

Mental retardation is the impairment or incomplete development of mind, which is especially characterized by impairments in mind manifested during the developmental period, which contribute to the overall level of intelligence, i.e. cognitive, language,

motor and social abilities. Mental retardation may or may not include motor disabilities. [1]

According to statistics, the method of ascertainment, 2.5% of the population should have mental retardation, and 85% of these individuals should fall into the range of mild mental retardation.

Severe MR varies approximately 0.3-0.5% of the population. Many of the causes associated with this form are genetic and congenital malformations that can neither be anticipated nor can be treated at present. In addition, decreases in prevalence of severe mental retardation resulting from improved health care have been offset by new populations with severe deficits. Although prenatal diagnosis has been associated with decreased prevalence of Down syndrome and early intervention has helped to reduce mental retardation caused by phenylketonuria and congenital hypothyroidism, the increased prenatal exposure to drugs of abuse and the improved survival of micro premature infants have increased the prevalence of MR.

About 3% population of United States is assumed to have mental retardation. It is four times more prevalent in men than in women. 75% of all people with MR have a mild form, 20% a moderate form and 5% a severe or profound form. [2]

Mental retardation is classified on the basis of IQ as borderline (IQ 70-85), mild (IQ 50/55-70), moderate (35/40-50/55), severe (IQ 20/25-35/40) and profound (IQ <20/25). ICD-10 characterizes mental retardation as a condition resulting from a failure of the mind to develop completely. Unlike DSM-IV and the Classification Manual of the AAMR, ICD-10 suggests that cognitive, language; motor, social, and other adaptive behaviour skills should all be used to determine the level of intellectual impairment. ICD-10 also supports the idea of dual diagnosis, suggesting that mental retardation may be accompanied by physical or other mental disorders. [3]

Levels of mental retardation are specified in ICD-10:

1. F70 Mild mental retardation
2. F71 Moderate mental retardation
3. F72 Severe mental retardation
4. F73 Profound mental retardation

5. F78 Other mental retardation
6. F79 Unspecified mental retardation [1]

The 2000 Centre for Disease Control guidelines for defining obesity and overweight mentions that:

Children whose BMI is >95th percentile (ranging 28-30kg/m²) when compared to their age matched peers are considered to be obese.

Children whose BMI is >85th percentile (ranging 24-28kg/m²) when matched with their age matches peers are considered to be overweight. [4]

The prevalence of obesity among children aged 6 to 11 more than doubled in the past 20 years, going from 6.5% in 1980 to 17.0% in 2006. Even in countries like India, which is typically known for prevalence of under nutrition, a significant proportion of overweight and obese children now exist with those who are undernourished. Obesity has now become an important health problem particularly in India, which is currently experiencing a rapid epidemiological transition. [5,6]

A study states that 50-80% of obese children will become obese adults, and their complications being are worse. Prevention of obesity is easier in children than in adults. This needs large scale studies for effective preventive strategies to be developed to halt this epidemic at the beginning. The adults who were obese children have increased morbidity and mortality rates independent of their adult weight, and therefore prevention and treatment of obesity must start during childhood. [5]

Adolescence is a sensitive and critical period for abnormal weight gain, as important changes in body composition occur during pubertal development. These changes are probably mediated by changes in hormonal concentration. However, in both boys and girls the amount of fat deposition and potentially the location of fat deposition

during puberty appear to increase the risk of obesity related co-morbidities later in life. Obesity that is present in adolescence has been associated with increased risk of morbidity from diabetes, cardiovascular disease and mortality in adulthood. [7]

The prevalence of obesity has increased by 54% in children 6 to 11 years of age and by 39% in adolescents 12 to 17 years of age. The prevalence of severe obesity jumped 98% and 64% within this group, respectively. The persistence of obesity into adulthood depends on several factors, including the age at which the child becomes obese, the severity of the disease and the presence of obesity in at least one parent. Overweight in a child under three years of age does not predict future obesity, unless one parent is also obese. After an obese child reaches six years of age, the probability that obesity will persist exceeds 50% and 70-80% of obese adolescents will remain so as adults. [5]

Assessment of obesity can be done by any of the following methods:

1. Body mass index(BMI)
2. Waist hip ratio
3. Waist circumference
4. Skin fold measurement
5. Hydrostatic weighing
6. Bioelectrical impedance analysis
7. Exercise testing
8. Exercise testing

Potential risk factors for obesity in disabled children:

It has been seen that risk factors for overweight that apply for children and adolescents without disabilities are not decisive in children with disabilities. These include the following:

1. Exercise: physical, sensory or cognitive deficits often prevent disabled children from participating in particular kind of sports. Poor physical fitness, an impaired sense of balance and poor physical co

ordination also impede their participation.

Impaired mobility, financial expenses for special equipment and lacking exercise facilities have been described as the most common barriers to such children.

Other factors include pain, children who overuse certain muscles for instance shoulder muscles in wheelchair bound children or using walking aids etc.

2. Diet: some children with asd (autism spectrum disorders) tend to eat only highly caloric food. Children with Prader-Willi syndrome or spina bifida have a predisposition to overeat since their cerebral region responsible for weight regulation may be damaged.

Frequent food consumption as a consolation for sadness, boredom, or loneliness may also result in obesity.

3. Awareness of and attention to obesity: often, a lack of knowledge and awareness of what constitutes a healthy lifestyle predisposes disabled people to a higher risk of obesity.
4. Social participation: for many children with disabilities, opportunities to engage in social events with peers are limited which may lead to the feelings of isolation and the potential for overeating to fill these social gaps. These factors contribute for obesity. [8]

Consequences of obesity in disability are arthritis, coronary artery disease, hypertension, emotional stress, increased energy cost during activity, compromised respiratory function, fatigue, pain etc. [9]

During the review of literature, several studies were found done in various parts of the world. Each study showed different percentage of childhood obesity ranging from 7.7% to 30%.

There is scarcity of studies in India and in this part of Karnataka on the prevalence

of obesity and overweight among mentally retarded children.

Hence a study is required to be done in this part of Karnataka to know the prevalence of obesity and overweight in mentally retarded, so that appropriate measures can be taken.

There is limited and conflicting evidence on obesity prevalence among ambulatory children and adolescents with ID. The present study aimed to estimate obesity prevalence in this group and to compare with population prevalence. Survey of nine schools (n = 206, 150 boys) for ambulatory children and adolescents with mild-moderate ID was done in Scotland in 2007. Obesity was defined as measured body mass index (BMI) at or above the 95th percentile relative. Obesity prevalence observed was compared against Scottish population data on obesity prevalence from the most recent nationally representative survey. Obesity prevalence was 36%, and was significantly higher among those attending secondary schools compared with primary schools. Prevalence of obesity was significantly higher than in the general pediatrics population in both boys and girls. The present study suggests that obesity may be very prevalent among ambulatory children and adolescents with ID, and that increased obesity risk may begin in childhood. [10]

A study was conducted to find the patterns of obesity in Taiwan and to compare these data with existing national norms in an attempt to identify the scale of the problem of obesity among this population. Information was collected by

RESULTS

Figure 1 shows distribution of BMI by age groups in percentage. BMI of children from age 5 to 15 years old has been described in here by gender and in table 1 by age group and gender. When the general prevalence was studied, 76.28% were

postal questionnaire on a total of 279 children and adolescents with intellectual disabilities of age 4 to 18 years .BMI was related to age and not gender, morbidity or prescribed medications at the time of the survey. The overall prevalence of obesity was 18%, with 14% of participants aged 4 to 6 years, 22% of participants aged 7 to 12 years and 16% of participants aged 13 to 18 years being obese. [5]

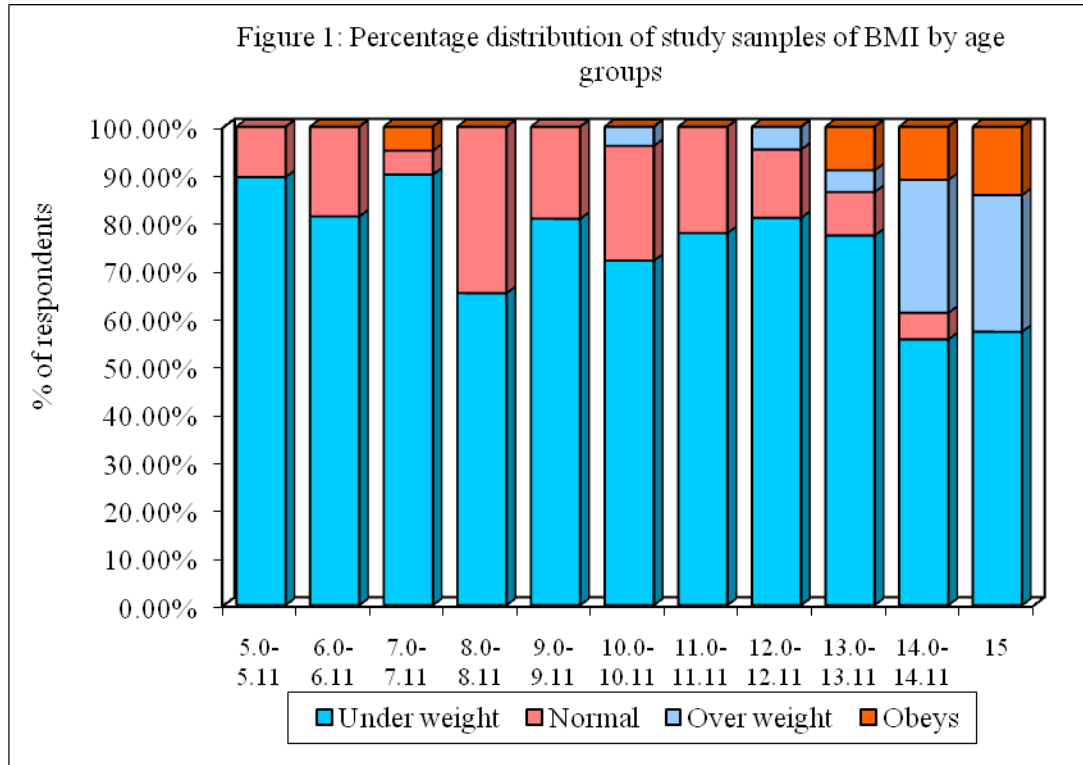
MATERIAL AND METHODOLOGY

Ethical clearance was obtained from Ethical committee of SDM College of Medical Science and Hospital. All the subjects were from 5 years to 15 years of age. Children who were aged between 5 to 15 years both boys and girls with diagnosed mental retardation (with or without disability) who were able to stand on a stadiometer were included in the study. And all disabilities that come under ICF classification and ICD 10 classification of Mental and Behavioural disorder by WHO or children with disability certificate of mental retardation. [1] Children who were not able to stand without assistance and those whose disabilities were not included under ICF classification and ICD 10 classification of Mental and Behavioural disorder and children with no mental retardation were excluded.

An informed signed consent form was taken from the parents and children's height was measured on a stadiometer and weight was measured on the digital weighing scales. BMI was then calculated and classified accordingly.

underweight, 16.28% fell in normal range while 4.65% were overweight and 2.79% were obese. Table 2 shows comparison of boys and girls with Prevalence of BMI. Table 9 compares prevalence of BMI (only obese and overweight) of boys and girls using chi square test which depicts that there is no significant prevalence of

overweight and obesity among the study samples.



DISCUSSION

Table 1 shows distribution of study samples of BMI by age groups and gender. In boys 9 were overweight (1 each in 10, 12 and 13 years age group; 4 in 14 years and 2 in 15 years) only 3 were obese (1 each in age group 7,13 and 14). In girls only 1 in 14 years age group was found overweight and obese.

Table 2 compares prevalence of BMI (only obese and overweight) of boys and girls using chi square test. Only 4.65% (9 boys and 1 girl) were overweight and 2.79% (4 boys and 2 girls) were obese.

Figure 2 shows the prevalence of BMI (underweight, normal, overweight and obese) in boys and girls. Out of 215 children, 164 (113 boys and 51 girls) were underweight, 35 (24 boys and 11 girls) were normal, 10 (9 boys and 1 girl) were

overweight and 6 (4 boys and 2 girls) were obese; i.e. 76.28 % of the study sample were found to be underweight.

When patterns of obesity among children and adolescents with intellectual disabilities were studied in Taiwan, they found the overall prevalence of obesity was 18%, with 14% of participants aged 4-6 years, 22% aged 7-12 years and 16% aged 13-18 years. This study related BMI to age but not to gender. [11]

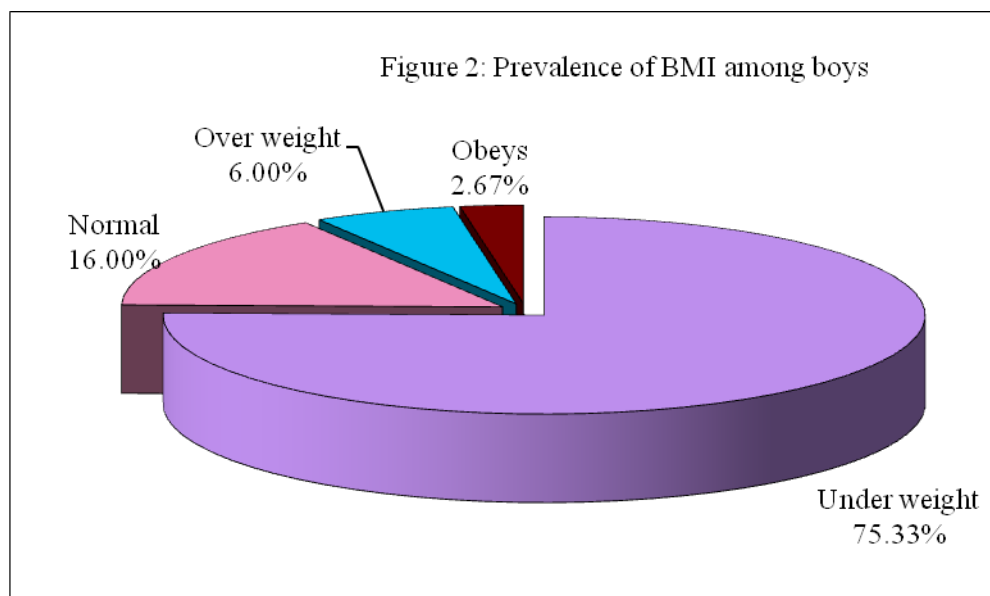
The prevalence of obesity in children with autism was 30.4% compared to 23.6% of children without autism as studied by Carol Curtin et al. The unadjusted odds of obesity in children with autism was 1.42 (95% confidence interval (CI): 1.00, 2.02, $p = .052$) compared to children without autism. [12]

Table 1: Distribution of study samples of BMI by age groups and gender

Age groups	Boys				Girls			
	Under weight	Normal	Over weight	Obese	Under weight	Normal	Over weight	Obese
5.0-5.11	13	2	0	0	4	0	0	0
6.0-6.11	8	1	0	0	7	0	0	0
7.0-7.11	16	1	0	1	2	0	0	0
8.0-8.11	12	7	0	0	3	1	0	0
9.0-9.11	14	2	0	0	7	3	0	0
10.0-10.11	10	4	1	0	8	2	0	0
11.0-11.11	11	2	0	0	3	2	0	0
12.0-12.11	13	2	1	0	4	1	0	0
13.0-13.11	11	1	1	1	7	1	0	0
14.0-14.11	5	1	4	1	5	0	1	1
15	2	0	2	0	3	0	0	0
Total	115	23	9	3	53	10	1	1

Table 2: Comparison of boys and girls with Prevalence of BMI

BMI	Boys	%	Girls	%	Total	Prevalence
Over weight	9	90.00	1	10.00	10	4.65
Obeys	4	66.67	2	33.33	6	2.79
Chi-square=1.3401 P = 0.2417, NS						



CONCLUSION

Data analysis and results show that there 4.65% prevalence of overweight and 2.79% prevalence of obesity among the children aged 5 to 15 years boys and girls. However there was 76.28% prevalence of underweight among the samples and 16.28%

prevalence of normal BMI among the samples.

When growth was considered among the boys, 2.67% were obese, 6.00% were overweight, 16.00% was normal and 75.33% were underweight. Similar results were found among girls samples also; 3.08%

obese, 1.54% overweight, 16.92% normal and 78.46% underweight.

We henceforth conclude that there is 4.65% and 2.79% were overweight and

obesity among the mentally retarded children aged between 5 to 15 years.

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