

Assess the prevalence and factors contributing to obesity among preschool children aged 3 to 5 years.

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Abstract- A comparative survey was conducted to assess the prevalence and factors contributing to obesity among preschool children aged 3 to 5 years from selected schools of urban and rural areas of Thiruvananthapuram district. The objectives of the study were to assess the prevalence of childhood obesity and the factors contributing to obesity among children aged 3 to 5 years, to compare the prevalence of childhood obesity in selected schools of rural and urban area and to determine the significant association between childhood obesity with selected independent variables. The conceptual frame work used in the study was Nora Pender's Health Promotion Model (1996). By multistage sampling method samples size of 529 preschool children, 265 from rural and 264 from urban areas of Thiruvananthapuram district were selected. The tool consisted of a structured questionnaire to assess the socio demographic data, factors contributing to obesity and anthropometric measurements to assess the prevalence of obesity. The data was tabulated and analysed using differential and inferential statistics. The findings revealed that there was 14.4% of obesity among children and it is more among girls of rural areas. The factors that contribute to obesity are birth weight, increased fat intake, type of snacks mainly shallow fried snacks, intake of juices mainly fresh juice and less time of physical activity at school. By doing binary regression, it was found that obesity has association with independent variables like birth weight, fat intake and juice intake. The study concluded that prevalence of obesity among preschool children is increasing.

Key words: prevalence; childhood obesity; factors contributing; preschool children.

INTRODUCTION:

Childhood obesity is a burden in developed and developing countries. Obesity is defined as a body mass index above the 95th percentile for children of the same age and sex. It is also defined as an increase in body weight resulting from an excessive accumulation of body fat relative to lean body mass. Childhood obesity is one of the most serious public health challenges of the 21st century. The problem is global and is steadily affecting many low- and middle-income countries, particularly in urban settings. According to CDC, body mass index is a measure used to determine childhood obesity. Obesity is defined as a BMI at or above the 95th percentile for children and teens of the same age and sex. BMI is calculated by dividing a person's weight in kilograms by the square of the height in meters. For children, BMI is age and sex specific. A child's weight status is determined using age- sex specific percentile for BMI. The children's body composition varies as the age and sex varies.

Childhood obesity has immediate and long-term effects on physical, social and emotional health. The children with obesity are at higher risk of having other chronic health conditions and diseases that influence physical health. These include asthma, sleep apnea, bone and joint problems, type 2 diabetes and risk factors for heart diseases. Children with obesity are bullied and teased more than their normal weight peers and are more likely to suffer from social isolation, depression, and lower self-esteem. In the long term, a child with obesity is more likely to have obesity as an adult. An adult with obesity has a higher risk of developing heart disease, type 2 diabetes, metabolic syndrome, and many type of cancers.

Need and significance of the study

Obesity in childhood is associated with a range of serious health complications and an increased risk of premature onset of illness, including diabetes and heart disease. Healthy life style habits, including healthy eating and physical activity, can lower the risk of becoming obese and developing related disease.

Obesity prevention is critical because those who become overweight tend to have co morbidities as obese adults. The childhood obesity epidemic demands action, but action requires an evidence base to ensure optimal outcomes that are also cost effective. Multidisciplinary research is needed to develop effective and efficient behavioral interventions to prevent childhood obesity. These preventive interventions will need to produce changes at multiple levels, including individuals, families, schools, healthcare providers, communities and government policy.

Obesity is largely preventable. Supportive policies, environments, schools and communities are fundamental in shaping parents' and children's choices, making the healthier choice of foods and regular physical activity the easiest choice like accessible, available and affordable, and therefore preventing obesity.

Childhood obesity is a known precursor to obesity and other non- communicable diseases in adulthood. The magnitude of the problem is unclear due to paucity of well- conducted nationwide studies and lack of uniformity in the cut- off points used to define childhood overweight and obesity reported from India during 1981 to 2013. There is lack of national representative data on obesity in children from India with its widely varying geographical, social and cultural norms.

Statement of the problem

A study to assess the prevalence and factors contributing to obesity among preschool children aged 3 to 5 years from selected schools of urban and rural area of Thiruvananthapuram district.

Objectives

- To assess the prevalence of childhood obesity among children aged 3 to 5 years.
- To assess the factors contributing to obesity among children aged 3 to 5 years.
- To compare the prevalence of childhood obesity in selected schools of rural and urban area.
- To determine the significant association between childhood obesity with selected independent variables.

Operational definitions

Prevalence: Prevalence is a statistical concept referring to the number of cases of a disease that are present in a particular population at a given time. In this study, prevalence is the measurement of children affected by obesity.

Risk factors: In epidemiology, a risk factor is a variable associated with an increased risk of disease or infection. In this study, risk factors are attributes or variables associated with an increased risk of getting obesity.

Obesity: Obesity is defined as a body mass index above the 95th percentile for children of the same age and sex. In this study obesity is body mass index above the 95th percentile of the same age and sex according to the Agarwal's growth chart.

Preschool children: Preschool children are children below the official school starting age, usually a child 3 to 5 years. In this study, preschooler is a child between the ages of 3 to 5 years, who is attending school.

Independent variables: Independent variables are variables that are thought to influence the dependent variable in research. In this study, the independent variables are dietary intake, food consumption pattern, physical activity and leisure activity.

Anthropometric measurements: Anthropometric measurements are used to assess the size, shape and composition of the human body. In this study, it is the measurement of child's body physical dimension which includes height, weight and body mass index.

Dietary intake: Dietary intake refers to the daily eating patterns of an individual, including specific foods and calories consumed and relative quantities. In this study, it is the level of calorie, protein, carbohydrate and fat in dietary consumption.

Food consumption pattern: Food consumption pattern can be defined as the way of eating foods. In this study, it is way by which foods are consumed by preschool children in a day.

Physical activity: Physical activity means the movement of the body that uses energy. In this study physical activity means the activities of children like playing, walking, sports activities and dance.

Leisure activity: Leisure activity means an activity chosen for pleasure, relaxation, or other emotional satisfaction, typically after work and other responsibilities are done. In this study, it is activities like computer games, watching television, indoor and outdoor games during the leisure time.

Sleep pattern: Sleep pattern also referred to as sleep- wake pattern, is a biological rhythm that guides the body as to when it should sleep and when it should wake. In this study, it is pattern of sleep of preschool children.

Assumptions

- There will be significant number of preschool children who are obese.
- Obesity will have a significant correlation between the selected independent variables

Hypothesis

- H1: there will be significant difference between prevalence of obesity in selected schools of rural and urban areas.
- H2: there will be significant association between childhood obesity and independent variables.

Methodology

Research approach: A quantitative study approach was chosen, as the study was to assess the prevalence and factors contributing to obesity among preschool children.

Research design: A comparative survey design was adopted for the present study to assess the prevalence and factors contributing to obesity among preschool children aged 3- 5 years from selected schools of urban and rural area of Thiruvananthapuram district.

Variables

Dependent variables: In this study the dependent variable was obesity in preschool children, measured by structured questionnaire and socio- demographic data.

Independent variables: In this study the independent variables are the risk factors that contribute to obesity.

Extraneous variables: In this study extraneous variables are family history and obesity secondary to drug intake.

Settings of the study: The study was conducted in Thiruvananthapuram district at four schools from rural (St. Ritas LP School Aruviyode, Childrens Day Care Centre Aruviyode, Govt. LPS Chittazha, Lourdes Mount School Vattappara) and two schools from urban areas (Sarvodaya Vidyalaya Nalanchira, Sarvodaya Central Vidyalaya Nalanchira).

Sample and sampling technique: In this study the samples included preschool children 3- 5 years of age of both sex from selected schools of rural and urban areas in Thiruvananthapuram district. Multi stage sampling technique was used for the study. The sample size was 529.

Inclusion criteria: It includes preschool children aged 3 to 5 years from selected schools of Thiruvananthapuram district whose parents are willing to take part in the study.

Exclusion criteria: It includes preschool children aged 3 to 5 years from selected schools of Thiruvananthapuram district who are absent on the day of data collection.

Tool/ instruments: In this study the investigator used revised Kuppaswamy scale to assess the socio-economic status, weighing machine and inch tape to assess the weight and height, Agarwal's growth chart to compare the body mass index and a structured questionnaire to assess the factors contributing to obesity.

Description of the tool: A questionnaire with open ended questions was used in the study. It consisted of four parts.

Part A: Socio demographic data

Socio demographic data include data such as age, sex, class, father's education and occupation, mother's education and occupation, monthly income, dietary pattern, birth weight, history of chronic illness and long-time medications.

Part B: Anthropometric measurements

Anthropometric measurements that include height in cm, weight in kg and body mass index in kg/m².

Part C: Dietary pattern

Dietary pattern was assessed by doing 24 hrs dietary recall. The food was classified under 4 categories like calories, protein, fats and carbohydrates.

Part D: Structured questionnaire regarding factors contributing to obesity

A structured questionnaire consisting of 20 questions was prepared to assess the factors contributing to obesity among preschool children. The questions were classified under 4 divisions such as: physical activity, nutrition, sleep pattern and from teachers. Each questions had 2 to 6 options. The informants need to pick the appropriate answers from the options.

Scoring and interpretation

According to Agarwal's growth chart, the weight and age of the children was used to classify obese and non-obese children. Children whose weight is above 95th percentile is considered obese.

For 4 years boy weight > 19 kg

For 4 years girl weight > 19 kg

for 5 years boy weight > 21 kg

for 5 years girl weight > 21.5 kg

Content validity

The questionnaire except the socio-economic status was self-developed. Revised Kuppaswamy scale was used to assess the socio-economic status. The tools were given for content validity to five experts from nursing, pediatric medicine, and biostatistician. They were requested to give their comments on the adequacy and relative appropriateness of the content. The suggestions of experts were incorporated into the tool and the tool was modified as required by eliminating certain questions and adding new questions to them. The corrected tool was translated into Malayalam to administer to the samples. Pilot study also assured the validity of the tool.

Reliability of the tool

The reliability of the tool was assessed by test-retest method. Reliability coefficients 'r' ranges from 0.00 to 1.00. 60 preschool children (30 each from rural and urban areas), Were selected and questionnaire was administered. Again the same questionnaire was re-administered after 3 days and r value was calculated. Calculated r value is 0.84. Thus, indicates that the tool was reliable.

Results of the study:

Results of the study are presented under the following headings:

The sample size for the study was 529. The results were analyzed and interpreted with the help of SPSS 19.0 version and statistician.

Socio demographic variables

- 265 samples from each rural and urban area were selected out of which one sample didn't return the filled questionnaire. So the analysis was done for 529 samples. Rural 265(50.1%) and urban 264(49.9%).
- In the samples 335(63.3%) were boys and 194(36.7%) were girls and out which 100(18.9%) were 4 years of age and 429(81.1%) were of 5 years of age.
- Almost all fathers were educated of which 2(0.4%) had honors, 313(59.2%) had graduation or post-graduation, 79(14.9%) had diploma, 73(13.8%) had higher secondary education, 61(11.5%) had high school education, 1(2%) had middle school education.
- The occupation status of fathers were 307(58%) had a professional job, 57(10.8%) had semi-professional job, 91(17.2%) are skilled workers, 31(5.9%) are semi-skilled workers, 39(7.4%) are unskilled workers and 4(0.8%) are unemployed.
- The mothers were educated of which 2(0.4%) had honors, 374(70.7%) had graduation or post-graduation, 71(13.4%) had diploma, 59(11.2%) had higher secondary education and 23(4.3%) had high school education.
- The occupation status of mothers were 211(39.9%) had a professional job, 30(5.7%) had semi-professional job, 10(1.9%) are skilled workers, 5(0.9%) are semi-skilled workers and 273(51.6%) are unemployed.
- The monthly income of one fourth of the family, 138(26.1%) is above 40,000, 108(20.4%) is between 30,000 and 40,000, 104(19.7%) is between 20000 and 30000, 112(21.2%) is between 10000 and 20000 and 66(12.5%) is less than 10000.

- The dietary pattern of samples are 495(93.6%) are non-vegetarians and 34(6.4%) are vegetarians.
- Among the samples the mean birth weight is 2.96, median 3 and standard deviation of 0.6962.
- In the sample 18 (3.4%) of children has chronic illness, out of which 10 of them have bronchial asthma and are on inhalers like asthalin, budocort, etc and two of them are taking homeopathic medications. 2 of them are taking medicines for adenitis. And 1 child is taking medicines for epilepsy and one child had not mentioned for what the illness is.

Prevalence of obesity among preschool children by comparing the weight for age level according to the agarwals growth chart.

- Anthropometric measurements like height and weight was taken. Height was measured using inch tape in centimetre and weight was measured using weighing scale in kilogram. Then BMI was calculated in kg/m². Then the BMI was compared according to Agarwal's growth chart. It shows 76 (14.4%) total prevalence of obesity among preschool children aged 3 to 5 years.

Comparison of prevalence of obesity among preschool children from selected schools of rural and urban areas

- In rural area, 42 (15.8%) were obese and in urban it was little less, that is 34 (12.9%).
- The prevalence according to age and sex of children shows, in boys 4years of age the obesity prevalence was 11 (18.6%) which then decreased to 41 (14.9%).
- In girls also at 4 years of age the obesity prevalence was 8 (19.51%) which then decreased to 16 (10.5%).

Assess the factors that contribute to childhood obesity

- The dietary pattern was also assessed by 24 hours dietary recall method. This was classified under 4 groups. They are calorie, protein, fat and carbohydrate. In obese children, the mean calorie intake was 1605.83 with SD 77.62, mean protein intake was 27.5914 with SD 2.771.5, mean fat intake was 67.7577 with SD 2.1835, and mean carbohydrate intake was 158.82 with SD 2.833. When compared with obese children, the non-obese children's mean intake of calorie, protein and fat were less and the mean carbohydrate intake was more.

The other factors contributing to obesity was measured using structured questionnaire. It was divided into 4 section. They are physical activity, nutrition, sleep pattern and information from teachers regarding the physical activity and food intake of children in schools.

- It shows that sleep pattern doesn't have any significant association in obese and non- obese children.
- In physical activity, the time provided by schools for physical activities has a significant association in obese and non-obese children. Obese children spend less time i.e only 1- 2 hrs in physical activity.
- In dietary pattern, there is significant association in fat intake and juice intake, ie, the p value is 0.00 and 0.042. The mean fat intake of obese children is 67.7577 With SD of 2.183 and se 0.250. The frequency of juice intake in obese children is 60(78.9%) and almost 52(85.2%) drink fresh juices.
- The remaining factors doesn't show any significant association.

Association of childhood obesity with the selected independent variables of the study.

- Association was found between obesity and selected independent variable. It was calculated using enter method and it showed that there is association between obesity and birth weight of children, fat intake and type of snacks consumed.

Conclusion

Comparative survey was conducted to identify the need of promoting knowledge regarding childhood obesity to parents. A major goal was to find the prevalence of obesity and its contributing factors. More studies need to be conducted in order to identify the extent of the problem.

The following conclusions were drawn from the study;

- Preschool children had increase in prevalence of obesity
- Obesity is more seen in rural areas
- Obesity is more seen in girls than in boys
- The contributing factors of obesity were birth weight, increased fat intake, intake of juice and less time of physical activity at school.
- Birth weight and fat intake has association with obesity.

Nursing implications

The findings of the study reveals the prevalence and factors contributing to obesity that can be implicated on various aspects like nursing practice, nursing administration, nursing education and nursing research.

Nursing practice

The nurses play a vital role in patient care. From the day of admission till the discharge the nurse is with the patient providing care.

- A nurse is expected to provide a preventive care. Because prevention is better than cure.
- The present study identifies a major emerging condition, the childhood obesity and the factors contributing to it.

- The nurses need to provide health education to promote health.
- In the study as a part of ethical consideration health education was given.
- A nurse need to take initiative in identifying more emerging conditions.

Nursing administration

- Nurse administrators can play a better role in planning researches and educational programmes in hospital and also in community to promote health.
- Nurse administrators should formulate policies to conduct research and health education in hospital and community.

Nursing education

- Nursing education and curriculum should be planned in a way that it should encourage the nursing students to conduct research and also teach parents regarding childhood obesity.
- Along with doing research specific attention can be given to provide knowledge to parents of children who are admitted in hospitals, school teachers and anganwadi teachers, as they can influence children.

Nursing education should emphasize on preparing prospective nurses to impart education by various methods.

Nursing research

- Nursing research is the means by which nursing profession is growing
- More research can be done on prevalence of health problems, specific health problem management and self-care management in order to prevent the complications and reduce mal practices.

Limitation

- Sample size was high for a 6 week study
- Study was limited to preschool children
- Only 6 schools in Thiruvananthapuram district was selected.
- There was no experimentation in the study
- Couldn't individually meet the informants due to large sample size and short duration.

Recommendations

On the basis of the study that has been conducted, certain recommendations are suggested for future students

- The similar study can be done on large setting
 - An experimental study on assessing the knowledge, attitude and practice of parents regarding obesity can be conducted
- A follow up study could be carried out to find the effectiveness of the study.

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