

## PREVALENCE OF PHYSICAL INACTIVITY AND OBESITY AMONG SCHOOL GOING CHILDREN IN SINDH

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Date of Received: 18/12/2019

Date of Acceptance: 15/02/2020

### ABSTRACT

**Background:** Physical inactivity and obesity are the two emerging problems in Pakistan. Schools have been identified as an important setting for health promotion through physical activity participation. Many schools in Pakistan mainly concentrates on the higher study level and very low attention towards children's physical health that may impair due to low physical activity level and increased sedentary behavior leading to obesity and other health issues. **Objectives:** The aim of this study is to determine the prevalence of physical inactivity and obesity among school going children in Sindh, Pakistan. **Study Design:** cross sectional study **Setting:** Schools of Tando Muhammad Khan and Nawabshah Sindh, Pakistan. **Period:** August 2018 to Jan 2019 **Material & Methods:** The Study was conducted on 400 randomly selected students from The students from 7<sup>th</sup> to 10<sup>th</sup> class were included in the study. Two tools were used for data collection including Physical Activity Questionnaire for Children (PAQ-C) for measuring PA level and weight machine and inch tape were used for measuring Body Mass Index (weight and height). **Results:** The mean age of the participants was  $13.79 \pm 1.522$ , the mean of physical activity level among participants was  $2.04 \pm 0.59$  that indicates moderate level of physical activity. The mean BMI of the participants was  $25.05 \pm 119$  which falls into the category of overweight, 328 participants were females and 72 were males **Conclusion:** A very light level of physical activity was found among the children. Most of children reported lack of physical education classes in their schools. About 2.5% of children were found obese and 10.3% were overweight.

**Key words:** BMI, physical inactivity, obesity, children

**Article Citation:** Ali M S, Lasi F F, Daudpoto R M, Waseem H M, Sangrasi A S, Samejo B. Prevalence of Physical Inactivity and obesity among school going Children in Sindh. *IJAHS*, Apr-Jun 2020;02(68-73):01-06.

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### INTRODUCTION

The important stage of our life is as a child and than puberty; the stages may carry a number of problems or risk associated with health till the age of retirement.<sup>1</sup> Low level of activity and poor dietary behavior leads to deleterious life styles.<sup>2</sup> The obesity and malnutrition; a major concern because of its occurrence during early life may lead to major health problems e-g; protein malnutrition and anemia that impede the physical and mental development.<sup>1</sup>

Mental disorders such as attention deficit

hyperactivity disorder (ADHD), disruptive behavior disorder (DBD), mood disorders, Tic disorder (TD) and anxiety powerfully affect a child's learning process.<sup>3</sup> Heavy backpacks may contribute to high risk of back pain among school going children.<sup>4</sup> Many research studies all around the world discussed that low level of athletic activities including lack of participation in sports at school or at home and less active mode of transport to and from school, accompany the higher risk of increasing weight in children.<sup>5</sup> It has become a global concern to think about rising ratio of overweight and obese children.<sup>6</sup> Globally



in 2013, 12.9 and 13.4% of young men and women in developing countries were discovered obese and almost 23.8 and 22.6% were found in developed countries respectively.<sup>7</sup>

Worldwide, almost 10% of school-aged youngster were overweight and one quarter of these are estimated as obese.<sup>8,9</sup> Increasing weight and fatness during childhood and adolescence are at inclination of risk at a higher pace in developing nations than in developed ones.<sup>10</sup> Other developing countries including Pakistan are on rise in obesity and lack of nutrition. Major health and financial challenges presented by obesity and its co-morbidities in South Asia, with Pakistan being the ninth highest ranking country in terms of weight problems.<sup>11</sup> Obesity among the young ones has a competent prevalence between 15 to 20% in Pakistan.<sup>12</sup> Heaviness during early life has many negative health outcomes and higher risk of cardiovascular diseases, diabetes, common bone and joint problems, sleep apnea and biopsychosocial problems.<sup>13</sup>

Physical activity intervention programmes aim to offer many opportunities to PA among children through school environments.<sup>6</sup> With the potential occasions, the healthy lifestyles and traits among young individuals can be developed within the schools, as they spend their considerable time in schools.<sup>6</sup> Physical activity in children can be advanced in school setting as it is thought to be a perfect place for this activity, children can have various chances to be physically fit during school week including break times, sports, physical education classes and active travel to and from school.<sup>14</sup> Regular athletic activity is thought to be very important for a desirable growth and development of a child.<sup>15</sup> Physical activity has an essential role in children's physical and mental health, with specific advantage for preschool children's social, gross motor and skills development.<sup>16</sup> Moderate to vigorous physical activity is a recognized part of a healthy lifestyle.<sup>17</sup> Many factors are believed to cause increasing weight in people, like unhealthy dietary pattern,

incorrect lifestyles, decreased level of activity, some biological factors such as; race, gender, age, medications, alcohol intake, and some diseases rises the risk of obesity.<sup>18</sup> Body mass index is a health screening tool and not a diagnostic tool. It is used to screen for obesity, overweight, healthy weight, or underweight and is only one of the data points used in a complete health assessment.

### **MATERIAL AND METHOD**

This cross sectional study design was conducted from 400 students of Government and Private Schools of Tando Muhammad Khan and Nawabshah, Sindh Pakistan, from August 2018 to January 2019. Convenience sampling technique was used to collect the data.

The participants were included in the study from 7 to 10 **classes**. The participants except 7 to 10 classes were excluded from this study. Two tools were used for data collection including Physical Activity Questionnaire for Children (PAQ-C) for measuring PA level and weight machine and inch tape were used for measuring Body Mass Index (weight and height) Physical Activity Questionnaire for children (PAQ-C): The self-administered physical activity questionnaire and 7 day recall instrument was used to assess level of physical activity throughout the elementary school among the students from 7 to 10 class, all the children were measured for PAQ -C and was administered in classroom settings. The PAQ -C contains 10 items and adapted only for measuring PA level. The first item is an activity checklist including several common sports, leisure activities and games. The remaining items (2-8) assess activity during specific periods of the day, including PE class, recess, and lunch, immediately after school, evening and the weekend as well as two additional questions that assess overall activity pattern during the week. The ninth item concerns the frequency of performed activities (games, sports, dance) each day during the week. Each question, except the item 10<sup>th</sup> was scored using a scale that ranges from 1 to 5. A score of 1 indicates low PA, whereas



a score of 5 indicates high PA.

The mean of the items was used to calculate the final PAQ-C summary score. PA level was classified using Kowalski scores Light (score=1), Moderate (score=2-4) and Vigorous (score=5). Body mass index (BMI) (Weight in kg divided by Height in meter squared) was used to judge whether an individual's weight is appropriate for their height. Body Mass Index (BMI) calculation in children considers gender, age, weight and height. All of this information was recorded accurately to determine BMI.

**RESULTS**

The participants were approached after taking informed consents from schools' principal. On the first day the participants were given informed parental consents and on the next day signed

was filled on the spot by the participants and collected back, after taking back the questionnaire, weight and height of each participant were measured. The data was

**Table 4. Activity level right after school, sports in the evening, activity level on the last weekend**

| Activity                     | None  | 1 time last week | 2-3 times last week | 4 times last week | 5 times last week | Mean ± SD   |
|------------------------------|-------|------------------|---------------------|-------------------|-------------------|-------------|
| Right after school           | 56.3% | 20.5%            | 11.7%               | 3.5%              | 8%                | 1.86 ± 1.23 |
| Sports in the evening        | 33.5% | 28.2%            | 22.8%               | 5.5%              | 10%               | 2.30 ± 1.26 |
| Activity on the last weekend | 34%   | 21.3%            | 23%                 | 10.3%             | 11.4%             | 2.43 ± 1.34 |

analyzed by SPSS version 20, categorical variables were expressed in terms of frequency and percentages and the continuous variables were expressed in terms of mean. Permission for conducting this study was given by the Ethical

**Table 1. Activity during the last 7 days**

| S. No | Activities           | No Activity | 1-2 times | 3-4 times | 5-6 times | 7 times or more | Mean ± SD   |
|-------|----------------------|-------------|-----------|-----------|-----------|-----------------|-------------|
| 1     | Cricket              | 63.5%       | 23.8%     | 6.5%      | 3.5%      | 2.7%            | 1.58 ± 0.95 |
| 2     | Skipping Rope        | 74%         | 15.8%     | 6.2%      | 1%        | 3%              | 1.43 ± 0.89 |
| 3     | Tag                  | 56.5%       | 21.8%     | 8.8%      | 5%        | 8%              | 1.86 ± 1.24 |
| 4     | Walking for exercise | 34.8%       | 27.7%     | 14%       | 8.5%      | 15%             | 2.41 ± 1.41 |
| 5     | Bicycling            | 71.3%       | 16.2%     | 5.3%      | 3%        | 4.2%            | 1.53 ± 1.02 |
| 6     | Jogging or running   | 51.5%       | 17.8%     | 13.5%     | 8%        | 9.2%            | 2.06 ± 1.34 |
| 7     | Swimming             | 91.3%       | 5.3%      | 2.5%      | 0.3%      | 0.6%            | 1.14 ± 0.52 |
| 8     | Dance                | 56.5%       | 21.8%     | 9.3%      | 5%        | 7.4%            | 1.85 ± 1.23 |
| 9     | Football             | 67%         | 20.3%     | 8%        | 2.5%      | 2.2%            | 1.53 ± 0.91 |
| 10    | Badminton            | 85%         | 7.2%      | 5%        | 1.8%      | 1%              | 1.27 ± 0.72 |
| 11    | Volleyball           | 91.8%       | 6%        | 0.8%      | 0.2%      | 1.2%            | 1.13 ± 0.54 |
| 12    | Hockey               | 90%         | 7.8%      | 2%        | 0%        | 0.2%            | 1.13 ± 0.42 |
| 13    | Basketball           | 81%         | 12.2%     | 4.8%      | 1.2%      | 0.8%            | 1.29 ± 0.68 |
| 14    | Ice skating          | 94.5%       | 2.5%      | 1.2%      | 1.8%      | 0%              | 1.10 ± 0.47 |

parental consents were returned, and the child assents were obtained from all participants in the class rooms before enrollment. A questionnaire

**Table 2. Activity level during physical education classes during the last 7 days**

| I don't do PE | Hardly ever | Some-times | Quite often | Always | Mean ± SD   |
|---------------|-------------|------------|-------------|--------|-------------|
| 87.3%         | 0.8%        | 6.2%       | 3.2%        | 2.5%   | 1.33 ± 0.91 |

**Table 3. Activity level during recess and beside lunch**

| Activity      | Sat down (talking, reading, doing school work) | Stood around or walked around | Ran or played a little bit | Ran around and played quite a bit | Ran & played hard most of the time | Mean ± SD   |
|---------------|--|-------------------------------|----------------------------|-----------------------------------|------------------------------------|-------------|
| During recess | 28.7%  | 42.8%                         | 12%                        | 5.8%                              | 10.7%                              | 2.27 ± 1.23 |
| Beside lunch  | 49.5%  | 38.5%                         | 6%                         | 3.5%                              | 2.5%                               | 1.71 ± 0.91 |

Review Committee of Institute of Physiotherapy and Rehabilitation Sciences, Peoples University of Medical and Health Sciences for Women. All participants were assured of their confidentiality.

**Demographic:**

The mean age of the participants was 13.79 ± 1.522, the mean of physical activity level among participants was 2.04 ± 0.59 that indicates moderate level of physical activity. The mean BMI of the participants was 25.05 ± 119 which falls into the category of overweight, 328 participants were females and 72 were males.

**Physical Activity Questionnaire for children:**

**Table 5. What suits you the best for the last 7 days?**

| All or most of my free time was spent doing things that involve little physical effort | I sometimes(1-2 times last week)did physical things in my free time | I often (3-4 times last week)did physical things in my free time | I quite often (5-6 times last week) did physical things in my free time | I very often (7times or more times last week)did physical things in my free time | Mean± SD  |
|--|---|--|---|--|-----------|
| 23.8%  | 31.8%   | 17.2%  | 9.7%  | 17.5%  | 2.66±1.39 |

The questionnaire consist of 9 items, The 1<sup>st</sup> item further divided into 14 sub items, including Cricket, Skipping Rope, Tag, Walking for exercise, Bicycling, Jogging or Running, Swimming, Dance, Football, Badminton, Volleyball, Hockey, Basketball and Ice skating. The mean for physical activity, during the past 7days was 1.52±0.40. The mean of “the activity level during physical

frequency of physical inactivity and fatness among school going children in Sindh, Pakistan. The activity level was calculated by the use of PAQ-C Questionnaire and obesity by calculating Body Mass Index (BMI). The study found that the mean PAQ-C was 2.04±0.59 and the regularity of heaviness and increasing weight were found to be 2.5% and 10.3% respectively.

**Table 6. Activity level for each day last week**

| Days      | None  | Little bit | Medium | Often | Very often | Mean±SD   |
|-----------|-------|------------|--------|-------|------------|-----------|
| Monday    | 42.5% | 29%        | 19%    | 0.8%  | 8.7%       | 2.04±1.19 |
| Tuesday   | 38.8% | 28.2%      | 24%    | 4.8%  | 4.2%       | 2.08±1.09 |
| Wednesday | 46.8% | 22%        | 23%    | 5.7%  | 2.5%       | 1.95±1.07 |
| Thursday  | 36.5% | 24%        | 25.3%  | 9%    | 5.2%       | 2.23±1.18 |
| Friday    | 38.5% | 19.3%      | 21.3%  | 7.7%  | 13.2%      | 2.38±1.40 |
| Saturday  | 32.8% | 19%        | 24.5%  | 9.2%  | 14.5%      | 2.54±1.40 |
| Sunday    | 29.3% | 9.5%       | 18%    | 12%   | 31.2%      | 3.07±1.62 |

education classes was 1.33±0.91. The mean of “the activity level during recess during recess during the past 7days was 2.27±1.23. The mean of “the activity beside lunch during the past 7days was 1.71±0.91. The mean of “the activity in the evening time during the past 7days was 2.30±1.26. The mean of “the activity on the last weekend was 2.43±1.34. The mean of “which one of the following describes you best for the last days” was 2.66±1.39. The 9<sup>th</sup> item was physical activity for each day last week and that item was divided into 7 sub items including Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday. The mean for “physical activity for each day last week” was 2.34±0.84. The total physical activity of the participants was found to be mean± SD of 2.04±0.59. The results showed that the 51.8% (207N) of participants involved in Light, 48% (19N) in Moderate and 0.3% (1N) in Vigorous level of physical activity. BMI values were found as, 41.5% of children with Normal weight, 2.5% obese, 10.3% overweight and 45.8% found underweight

**DISCUSSION**

The target of the study was to ascertain the

By the use of Kowalski scoring protocol the study of Dakar (Senegal) reported mean score of PAQ-C 2.42±0.85 and Italy reported mean score 3.05±0.67 which were higher than the mean we found in our study. The results of study found that 41.5% young individuals with normal weight, 2.5% obese, 10.3% overweight and 45.8% underweight. The study of Dakar (Senegal) reported 50% children with normal weight, 21.4% overweight/obese and 28.6% underweight as compared to study of Dakar which found a number of young ones below the average weight and a lesser percentage of normal weight and overweight. The constancy of overweight reported by some African countries such as Tanzania (15%), Kenya (19%) and Egypt (31.4%) and 12.2% reported by Nepal, which reported to be at a rise than results of the study conducted in our setting. The study reported frequency of overweight same as ours' was by China which was 10.4%. The study of Kerala state of India found the prevalence of overweight (7.56%) that was lower than our findings and obesity (3.10%) which was higher than our study.

The height and weightfor BMI were measure during this study rather than self-reported were used for assessment, physical activity level was reported by children there-self (Self- report) which is more accurate than reported by parents or teachers (Proxy report).

## CONCLUSION

We simply used PAQ-C Questionnaire to measure PA level and BMI to check the constancy of obesity among children. The PAQ-C appears to be handy to use and alternative tool for PA surveillance and monitoring. We found light level of PA among school going children. Most children reported that due to lack of PE classes in their schools they don't do PE classes.

They play only on the weekend or on Sunday but not on the regular basis with the proper recommendations. About 2.5% of young individuals were found heavy weight and 10.3% overweight. The practice of mild to sternous exercise at least one hour a day should be followed to prevent overweight/obesity and related chronic diseases risk among school going children. Future Recommendations: Such kind of studies should be conducted in other cities of Sindh to give basic knowledge about the level of PA among children and its recommendations to the school organizations and the knowledge about risks and complications develop from PIA and obesity or being underweight (children face many physical and mental problems). We recommend future researchers to fill the gap/limitations we faced such as use of an objective tool with questionnaire for validity.

As we found low level of PA and high prevalence of underweight children, studies should be conducted on frequency of PA and obesity related with socioeconomic status and nutrition or diet behaviors of children. Through this study we also found that most of the young individuals were not doing PE, classes because of lack of PE classes in their schools.

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