Original Article

A CROSS-SECTIONAL STUDY ON THE PREVALENCE OF STUNTING AMONG ELEMENTARY SCHOOL STUDENTS IN LAHORE

Saleem Ahmed[1], Qazi Mumtaz Ahmad[2], Tazeem Akhtar[1], Noorulain Mehak[4], Muhammad Usman[5], Masood Nizam Tabassum[6]

[1]Department of Community Medicine, University college of Medicine & Dentistry, University of Lahore

[2]Pediatric Unit 1, King Edward Medical University of Lahore

[3]Department of Pediatrics Medicine Unit 2, Services Hospital, Lahore

[4]Department of Pediatrics, Medical Unit-2, The children Hospital and University of Child Health Sciences, Lahore

[5]Department of Community Medicine, Avicenna Medical & Dental College, Lahore

ABSTRACT

Objective: *Our study aims to determine the prevalence of obesity and stunting in Pakistani children between the ages of 03 to 12 years.*

Study design : *A Cross-Sectional Study*

Duration and place of study: *Community Medicine Department University College of Medicine and Dentistry, UOL, Lahore from jan 2022 to jan 2023*

Method: *The study included 65 children between the ages of 3 to 12 years. Age, sex, weight, and height were recorded for each enrolled patient after obtaining the parents of any minors' informed written permission. The demographic status of mothers was also noted. In relation to the weight of the patients that were included, the frequency of stunting was noted. The whole set of data was analyzed using SPSS 28.0.*

Results: *In this research, out of 65 youngsters, 40 (60.4%) were male and 25 (39.6%) were female. The children involved in the study had a mean age of 04.08±13.38 years and a mean weight of 16.15±11.49 kg. Children measured 104.05 +/- 1.18 cm on average.n-38 (56.4%) of the patients were underweight, n-43 (33.6%) were fat children, and 05 (06.2%) of the patients were very underweight. According to maternal status, the majority of them came from low-income families. There were 10 (12.2%) stunted children, of whom 04 (5.4%) were fat and the remaining 07 (12%) were underweight. Of the ten children with stunting, five (54.6%) were female and four (37.3%) were male.*

Conclusion: *This study highlights a exceptional occurrence of stunting amongst number one school youngsters in Lahore, with a great proportion being underweight. Addressing maternal socioeconomic status and imposing focused interventions are crucial to mitigate the weight of stunting and promote healthful increase and development in this population.*

Keywords: *Stunting, Children, Lahore, Socioeconomic Status*

INTRODUCTION

Children's health is a major topic in public health since they comprise a significant portion of the world's population. Diet affects how mentally and physically children develop. Underweight, obesity, wasting, and stunting are all results of child malnutrition[1]. A sequence of stunted development that starts in early infancy and lasts through school is called

stunting[2]. It results in a 1% drop in adult height and a 1.4% loss in productivity[3]. Due to its negative effects on mental development and academic achievement, stunting is a public health concern[4]. This connection is explained by complicated socioeconomic and environmental factors as well as a lack of information about nutrition[5].

South Asian children with low peak numeric values have stunted growth, much as those in India and Pakistan. There has been no improvement in Pakistan's high incidence of malnutrition in any age group in recent years[6]. In 2011 and 2014 the stunting rate in Punjab, the country's biggest and most developed province, was 36% and 33.5%, respectively. Punjab accounts for more than half of the country's GDP and 56% of its population[7]. Because one of Pakistan's most populated provinces has a high prevalence of stunting, this research looks at the rates of stunting among elementary school students in Punjab[8].

METHODOLOGY

This cross-sectional study with 65 participants was conducted at government elementary schools in Lahore. Informed permission was given by parents and students, who emphasized the privacy and confidentiality of the study. The study was approved by the High Institute Ethics Research Committee. Demographic and socioeconomic information, such as age, gender, grade level, home location, parents' educational and employment status, household size, number of rooms, and monthly income, were gathered by a pre-made self-report questionnaire. To create socioeconomic scores, data was utilized. According to Gibson (2005), each student's anthropometric measurements comprised height in meters and body weight in kg. Z scores for height, weight, and BMI for age were computed using SPSS software and the WHO Growth Reference for School-Aged Children and Adolescents. Stunting was defined as HA readings less than -2 SD and severe stunting as less than -3 SD. Obesity by BMI > +2 SD, severe underweight below -3 SD, and WA below -2 SD were identified. BMI > +1 SD was considered overweight, BMI < -2 SD was considered thin, and BMI < -3 SD below WHO median values was considered very thin. Examined were the frequency of school meals, fast food, breakfast, snacks, and the main meal. To analyze qualitative data and provide descriptive statistics as percentages and numbers, SPSS version 25 was used. Significant group differences were found using the Chi-square test, with p-values < 0.05 applied to all statistical analyses.

RESULTS

The study included sixty-five Lahori children aged three to twelve. 60.4% of them have been men. With a mean peak height of 104.05 cm and a mean weight of sixteen.15 kg, the mean age changed to 4.08 years. The majority (fifty-six.4%) had been underweight, while 33.6% had been overweight and 6.2% had been severely underweight. The socioeconomic position of mothers becomes mostly impoverished. Stunted children now make up 12.2% of the population, with 5.4% being overweight and 12% underweight. Of those that were stunted, 37.4% were men and 54.6% were women. These results highlight the importance of include socioeconomic variables related to stunting and juvenile fitness tasks. Results shows in table 1 to 4

Table 1: Demographic Characteristics of Study Participants

Characteristic	Value
Total Participants	65
Male	60.4%
Female	39.6%
Mean Age (years)	4.08
Mean Weight (kg)	16.15
Mean Height (cm)	104.05

Table 2: Nutritional Status of Study Participants

Nutritional Status	Percentage
Underweight	56.4%
Obese	33.6%
Severely Underweight	6.2%

Table 3: Maternal Socioeconomic Status

Socioeconomic Status	Percentage
Poor	62%
Moderate	28%
Well-off	10%

Table 4: Frequency of Stunted Children

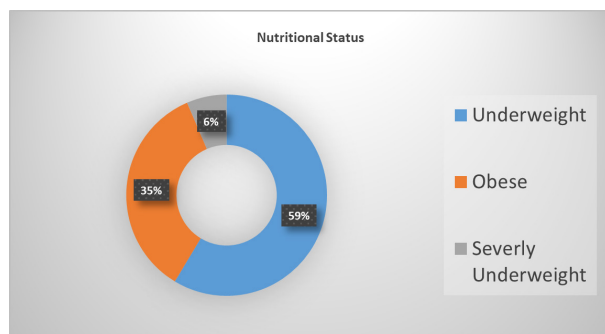| Stunting Status	Percentage
Stunted	12.2%
Obese	5.4%
Underweight	12%

Figure 1: Nutritional Status of the patients

DISCUSSION

The prevalence of stunting among top faculty children in Lahore, as demonstrated by this cross-sectional study, emphasizes the need of tackling malnutrition and related socioeconomic determinants in early childhood fitness activities. Low height for age, or stunting, is a sign of ongoing malnutrition and a crucial marker of long-term health and developmental impacts in children [9]. The results showed that 12.2% of children were stunted, while a sizable portion of children were underweight (56.4%) and overweight (33.6%). The effects of stunting on cognitive, physical, and socioeconomic development are profound[10]. In chronic under nutrition during the early years of life might cause irreversible growth impairment, cognitive deficiencies, and an increased susceptibility to infections. Furthermore, children who are stunted are more likely to experience poor academic outcomes overall, reduced productivity as adults, and intergenerational poverty cycles [11]. The analysis also emphasizes how maternal socioeconomic standing influences child feeding outcomes. Most moms were categorized as having a poor socioeconomic standing, which probably makes it more difficult for them to obtain wholesome food, receive quality healthcare, and provide care that isn't optimal[12]. Improving newborn nutrition and general well-being requires addressing maternal socio-financial determinants through focused interventions, such as income assistance, maternal training programs, and access to healthcare facilities [13]. Moreover, the co-occurrence of stunting in underweight and obese individuals highlights the complex nature of malnutrition in low- and middle-income nations such as Pakistan. The twin burden of malnutrition, in which undernutrition coexists with overweight and obesity within the same population, is a result of rapid urbanization, shifting dietary habits, and socioeconomic inequality [14]. This calls for all-encompassing, multi-sectoral strategies to address the root causes of malnutrition, such as poverty, low self-esteem when eating, limited access to healthcare, and limited educational possibilities[15]. the prevalence of stunting among Lahore's top college students necessitates a comprehensive strategy that targets socioeconomic disparities, expands access to wholesome food, improves healthcare services for expectant mothers and babies, and encourages early childhood development initiatives. It is possible for policymakers to guarantee the welfare and future prosperity of the next generation by giving priority to investments in programs that are sensitive to nutrients and addressing the root causes of malnutrition[16].

CONCLUSION

The study highlights a significant prevalence of stunting among elementary school students in Lahore, along with alarming rates of underweight and weight issues. In order to fight malnutrition and improve infant health in the area, comprehensive interventions and addressing mother socio-financial popularity are crucial.

REFERENCES

1.   Govender I, Rangiah S, Kaswa R, Nzaumvila D. Malnutrition in children under the age of 5 years in a primary health care setting. S Afr Fam Pract (2004). 2021 Sep 7;63(1):e1-e6. doi: 10.4102/safp.v63i1.5337. Erratum in: S Afr Fam Pract (2004). 2021 Dec 14;63(1):5416. PMID: 34677078; PMCID: PMC8517826.

2.   Benjamin-Chung J, Mertens A, Colford Jr JM, Hubbard AE, van der Laan MJ, Coyle J, Sofrygin O, Cai W, Nguyen A, Pokpongkiat NN, Djajadi S. Early-childhood linear growth faltering in low-and middle-income countries. Nature. 2023 Sep 21;621(7979):550-7.

3.   Kitole FA, Lihawa RM, Nsindagi TE. Agriculture productivity and farmers' health in Tanzania: Analysis on maize subsector. Global Social Welfare. 2023 Sep;10(3):197-206.

4.   Mohammed Z, Aledhaim A, AbdelSalam EM, El-Setouhy M, El-Shinawi M, Hirshon JM. Factors associated with injuries among preschool children in Egypt: demographic and health survey results, 2014. BMC public health. 2020 Dec;20:1-7.

5.   Al-Mandhari A, Samhouri D, Abubakar A, Brennan R. Coronavirus Disease 2019 outbreak: preparedness and readiness of countries in the Eastern Mediterranean Region. Eastern Mediterranean health journal. 2020;26(2):136-7.

6.   Syahrul AB, Rumiko KI, Tsuda AK, Susanto TA, Saito RU, Fithria AH Prevalence of underweight and

overweight among school-aged children and it's association withchildren's sociodemographic and lifestyle in Indonesia international journal of nursing science 2016;3:169-177. internationaljournal-of- nursing sciences/2352-0132.

7. Abd El-aty NS, Osman SR, Ahmed ES, GadAllah MA. Overweight and obesity prevalence among upper Egypt primary schools' children using Egyptian and CDC growth charts. Applied Nursing Research. 2020 Dec 1;56:151346.

8. Hadhood, S.E.S.A., Ali, R.A.E., Mohamed, M.M. and Mohammed, E.S. Prevalence and Correlates of Overweight and Obesity among School Children in Sohag, Egypt. Open Journal of Gastroenterology 2017;7:75-88.https://doi.org/10.4236/ojgas.2017.72009

9.   Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., de Onis, M., ... & Maternal and Child Nutrition Study Group. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. The Lancet, 382(9890), 427-451.

10.   Hawkes, C., Ruel, M. T., Salm, L., Sinclair, B., & Branca, F. (2019). Double-duty actions: seizing programme and policy opportunities to address malnutrition in all its forms. The Lancet, 395(10218), 142-155.

11. Popkin, B. M., Corvalan, C., & Grummer-Strawn, L. M. (2020). Dynamics of the double burden of malnutrition and the changing nutrition reality. The Lancet, 395(10217), 65-74.

12. Ruel, M. T., Alderman, H., & Maternal and Child Nutrition Study Group. (2013). Nutrition-sensitive interventions and programmes: how can they help to accelerate progress in improving maternal and child nutrition? The Lancet, 382(9891), 536-551.

13. Shankar, A. H., Prasad, A. S., & Zinc Investigators' Collaborative Group. (2017). Zinc and immune function: the biological basis of altered resistance to infection. The American Journal of Clinical Nutrition, 68(2), 447S-463S.

14. UNICEF. (2021). Stunting in a nutshell. Retrieved from https://data.unicef.org/topic/nutrition/malnutrition/ stunting/.

15. Victora, C. G., Adair, L., Fall, C., Hallal, P. C., Martorell, R., Richter, L., ... & Maternal and Child Undernutrition Study Group. (2008). Maternal and child undernutrition: consequences for adult health and human capital. The Lancet, 371(9609), 340-357.

16. Soofi SB, Khan A, Kureishy S, Hussain I, Habib MA, Umer M, Ariff S, Sajid M, Rizvi A, Ahmed I, Iqbal J, Ahmed KM, Achakzai ABK, Bhutta ZA. Determinants of Stunting among Children under Five in Pakistan. Nutrients. 2023 Aug 7;15(15):3480. doi: 10.3390/ nu15153480. PMID: 37571417; PMCID: PMC10421501.