Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v31i3.4922

EFFECTS OF NUTRITIONAL STATUS AND LIFESTYLE ON PHYSICAL FITNESS AMONG URBAN AND RURAL CHILDREN

Pinky[1*], Ghazala Langah[2], Syed Mukhtar Ahmed[3], Priyanka Ratan Kumar[4], Reya Chawla[5], Muneeza Lodhi[6]

[1]*Lecturer, Institute Of Physiotherapy and Rehabilitation Sciences, Liaquat University of Medical and Health Sciences Jamshoro, Hyderabad, Pakistan. Email: pinky.bhatia@lumhs.edu.pk
[2]Lecturer, Institute of Physiotherapy & Rehabilitation Sciences (IPRS), Liaquat University of Medical & Health Sciences, Jamshoro, Pakistan ghazalangah@gmail.com
[3] Physiotherapist,Institute of Physiotherapy & Rehabilitation Sciences (IPRS), Liaquat University of Medical & Health Sciences, Jamshoro Email: smukhtar92physio@gmail.com
[4] Lecturer, National Institute Of Physical Therapy And Rehabilitation Sciences Affiliated With Dow University Of Health Sciences, Karachi Email: priyanka.ratan301@gmail.com
[5]Physiotherapist, Milestone & Adaptive Fitness Academy, Karachi Email: chawlariya368@gmail.com
[6]Assistant Professor, Faculty of Pharmacy, Ziauddin University, KarachiEmail: muneezalodhi25@gmail.com

***Corresponding Author:** Pinky
*Lecturer, Institute of Physiotherapy and Rehabilitation Sciences, Liaquat University of Medical and Health Sciences Jamshoro, Hyderabad, Pakistan.Email: pinky.bhatia@lumhs.edu.pk

Abstract:

Background:

Urban children tend to have sedentary lifestyles due to screen time, longer commutes, and limited outdoor recreational spaces, while rural children engage in more physical activity. Access to recreational facilities and socioeconomic factors also influence these lifestyle differences.

Objective: This study provides an overview of the effects of nutritional status and lifestyle on physical fitness among urban and rural children.

Material and methods: The study used a random sampling technique to select 30 urban and 30 rural primary school students from Karachi and Mirpur mathelo. A questionnaire with eight questions was filled out, and the data was examined. SPSS 22.0 was used for the data analysis.

Results: Results have shown that there is little to very low difference among lifestyle patterns among urban and rural children. When comparing urban and rural youngsters, we discovered a significant p-value (0.006). We asked how many hours you spent performing any of the following activities on an ordinary school day: watching TV/movies, games, reading, and schoolwork, and we found a significant result, as the mean was greater in urban children than rural children. The results revealed a higher significance level in urban children than in rural children.

Further, results show that how many days students attend physical education classes. When the weights of urban and rural children were compared, it was discovered that among Urban children 22 had balanced weight, 5 were little overweight, and 3 were slightly underweight. Among rural children, 21 had a balanced weight, seven were little overweight, and two were slightly underweight. After using the chi square test, the results showed an insignificant p value (0.757).

Conclusion: Urban and rural children face unique nutritional and lifestyle challenges, affecting physical fitness. Addressing these requires a multidimensional approach considering availability of healthy foods, physical activity opportunities, and socioeconomic factors.

Keywords: nutritional status, lifestyle, physical fitness

INTRODUCTION

Global childhood obesity rates have risen significantly in children experiencing a rise from 0.7 to 7.6% (Yanovski, 2018). A review of 137 studies found a significant decrease in cardiorespiratory fitness in children aged 9-17 between 1981 and 2014, with a strong trend towards obesity in Asian children. Chinese elementary school students' physical activity and strength levels were lower than normative reference values(Tomkinson et al., 2019). Poor physical fitness and obesity are linked to high blood pressure, coronary heart disease, and stroke, with symptoms appearing in childhood or adolescence. Establishing high fitness potential and sustainable lifestyle habits during childhood and adolescence is crucial for preventing obesity and maintaining healthy body composition(Mora-Gonzalez et al., 2019).

A child with good or high socio-economic status will have assessed to better education, food and nutrition, health care environment, physical education facilities and opportunities, which will affect their physical fitness, motor ability, health status, and academic achievements, especially cardiovascular health. Although some studies have shown that the physical fitness levels of children, in general, are not sufficient to promote optimal health and the health-related benefits(Chen et al., 2020). Physical activity offers significant physiological benefits, particularly for the cardiovascular and musculoskeletal systems, as well as the metabolic, endocrine, and immunological systems(Kruk et al., 2019).

A nutritious meal plan provides adequate nutrition for children's growth and wellness. A child's nutritional requirements are determined by his age and level of physical activity. A healthy meal plan restricts harmful meals heavy in fat and sugar. This can help a youngster maintain a healthy weight and avoid some health issues later in life. Diabetes, hypertension, and excessive cholesterol are among the health issues(Haines et al., 2019).

Healthy food for children include lean meats, fruits, vegetables, and low-fat dairy products. If a child consistently consumes high-fat foods, it may become a habit as he grows older. Avoid storing high-fat foods at home. High-fat foods include fried dishes, chips, and a variety of snacks. A high-fat diet in childhood can lead to obesity and other health concerns in adulthood. Make healthy eating choices in school. A protein-rich sandwich, such as lean meat, cheese, or peanut butter, might be a nutritious lunch option. It may also include a fruit, vegetable, and milk(Baroni et al., 2019). As much as possible, use fresh, tinned, or dried fruit for fruit juice. 1 cup of fruit juice and 1 cup of sliced, diced, cooked, or canned fruit 1 large peach, orange, or banana and ½ cup dried fruit(Huff, 2022).

School age is an ideal time for youngsters to learn about healthy eating, bodies, and movement.This is when they begin an active social life, earn pocket money and begin to help creat their own lifestyle (Eng et al., 2019).

Children require a diverse range of foods for a well-balanced diet. The amount of physical activity kids undertake each day will influence how much they need to eat. When youngsters are busy and energetic, snacking is essential for maintaining high energy levels. A healthy morning snack at recess and one after school are usually required every day(Bucher Della Torre et al., 2021).

It is essential to encourage breakfast. A good night's sleep followed by breakfast helps your child be active and focused at school. It also reduces the likelihood of your youngster becoming overly hungry in the morning, which can improve academic performance. Set a good example for your youngster by eating breakfast yourself. A bowl of cereal with milk and fresh or stewed fruit makes an excellent starter for the entire family(Lopez-Minguez et al., 2019).

MATERIAL AND METHODS

The study involved children from several schools participating in a survey analysis. The study conducted for a full year. The 5^{th} –class students from both rural and urban primary schools had included in the study. Children with disabilities, however, were excluded. The study was non-experimental, cross sectional and observational in nature. Sampling technique was random sampling technique drawn from the students of urban (N=30) and rural (N=30) primary school children from Karachi and Mirpur mathelo. A questionnaire with eight questions was filled out, and the data was examined.

DATA ANALYSIS

Data analysis was undertaken using the statistical package for social sciences (SPSS) version 22. Descriptive statistics were calculated via means and standard deviations. Chi square and independent t test were used to examine differences between key elements of the study. P value of < 0.05 percent was considered as significant.

RESULTS

TAB-1-COMPARISON AMONG URBAN AND RURAL GROUPS

S.No.	Questions	N=30	Mean	SD	P-Value
1	How many days during the school week (mon_fri) do you eat breakfast?	Urban	4.9	0.25	0.13
		Rural	4.0	1.78	
2	How many days during the school week (mon_fri) do you eat lunch?	Urban	5.0	0.0	0.22
		Rural	5.0	0.0	
3	How many times you eat fruit?	Urban	0.9	0.6	0.68
		Rural	1	0.5	
4	In an average school day (Mon-Fri) how many hours do	Urban	2.0	0.00	0.006

	you spend doing any of the following activities i.e. Watching TV/ movies, games, reading, homework ?	Rural	1.7					0.43	
5	How many days you do exercise/ physical activity for at least 20 min: without stopping that made you breathe hard, such as jogging, running, fast bicycling or similar aerobic activities?	Urban	3.9					1.4	0.001
		Rural	1.9					2.4	
6	In an average week when you are in school (mon_fri) on how many days do you go to physical education classes?	Urban	2.00					0.00	0.001
		Rural	0.00					0.00	
7	How do you describe your weight?	Urban Rural Total	Balanced weight	Over weight	Under weight	Total			0.75
			22	5	3	30			
			21	7	2	30			
			43	12	5	60			
8	How do you describe your health?	Urban Rural Total	Good	Fair	Poor	Total			0.13
			22	5	3	30			
			16	5	9	30			
			38	10	12	60			

Eating breakfast throughout the school week statistics are shown in (Table-1-Q1), which compares the mean values of two groups. The independent-sample t-test revealed (p=0.13) that the mean was greater in urban children than in rural children.
Eating lunch throughout the school week statistics are shown in (Table-1-Q-2), which compares the mean values of two groups. An independent-sample t-test revealed no significant difference between urban and rural youngsters.
Eating fruit descriptive statistics are shown in (Table-1-Q-3), which compares the mean values of two groups. The independent-sample t test revealed an insignificant level (p=0.689) and a substantially higher mean for rural children compared to urban children.
When comparing urban and rural youngsters, we discovered a significant p-value (0.006). We asked how many hours you spent performing any of the following activities on an ordinary school day: watching TV/movies, games, reading, and schoolwork, and we found a significant result, as the mean was greater in urban children than rural children (Table-1-Q-4).
The results of how many days you do exercise or physical activities for at least 20 minutes without stopping that made you breathe hard, such as jogging, running, fast cycling, or similar aerobic activities (p=0.01) statistics are presented in (table 1-Q-5), which provides a comparison of mean values between two groups.
The results revealed a higher significance level in urban children than in rural children.(Tab-1-Q-6) displays the results of how many days students attend physical education classes. According to the independent t test, urban children attend physical education classes two days a week, whereas rural children do not attend any.
(Tab-1-Q-7) When the weights of urban and rural children were compared, it was discovered that among Urban children 22 had balanced weight, 5 were little overweight, and 3 were slightly underweight. Among rural children, 21 had a balanced weight, seven were little overweight, and two were slightly underweight. After using the chi square test, the results showed an insignificant p value (0.757).
Comparision between urban and rural children with describing health revealed that among Urban children 22 have good health,5 were fair and 3 were poor while among rural children 16 have good health,5 were fair and 9 were poor. Chi square test was applied, result showed insignificant p value(0.139) (Tab-1-Q-8).

DISCUSSION

This study evaluated differences or similarities in food habits and eating practices between urban and rural children. The findings of this study revealed no significant difference in breakfast and lunch eating habits between urban and rural children. The present study's findings are consistent with previous study, which also revealed that kids from both sites consume breakfast and lunch equally(Sedibe et al., 2018). A large number of urban children reported skipping three or more times per week breakfast (27%), lunch (14%), and breakfast and/or lunch (32%) (Gross et al., 2004).
We found that habit of eating fruits among urban and rural children didn't differ substantially, similarly a big study found that children's consumption of fruits, vegetables, and soft drinks did not differ between rural and urban schools across Europe and Central Asia. Both urban and rural eating practices were found to be suboptimal and in need of modification(Heinen et al., 2021).
We discovered significant value in comparing urban and rural children when we asked them how many hours they spent doing any of the following activities on an average school day (Mon-Fri): watching TV/movies, games, reading, and homework, with urban children outperforming rural children. In *a* study, the distribution of Chinese Leisure-Time Sedentary Behavior and its impact on excess weight varied by age, with children and adolescents reporting longer *time* than adults*(Su et al., 2023)*. Another study on Mexican children found that Sedentary time was linked to cardiometabolic risk variables in Mexican youth in a context-specific manner. Some cardiometabolic markers improved after replacing inactive time with higher-intensity activity(Aljahdali et al., 2022).
When we asked students how many days they exercised/did physical activity for at least 20 minutes, we found a favorable link between urban and rural youth. We discovered that urban children had a

higher mean value than rural children for activities that required strong breathing without halting, such as jogging, running, rapid bicycling, or other similar aerobic activities.
Walking and jogging are aerobic exercises that improve health and increase fitness levels, with well-documented health benefits since Dr. Kenneth Cooper's book Aerobics in the early 1960s(Aljahdali et al., 2022). According to a chinese study, the updated figures adequately explain the need to prioritize the promotion of physical exercise as a critical public health priority. The sustained use of PAFCTYS (Physical activity and fitness in China-The Youth Study) to survey and track these behavioral health outcomes is also required to guide policies and programs aimed at boosting physical activity and lowering obesity among Chinese school-aged children and adolescents(Zhu et al., 2019). Furthermore when we compare urban and rural children on how many days they go to physical education classes, we observed a significant p-value. Attending Physical education courses leads to higher levels of physical activity and lower levels of screen time during weekdays in children from different development levels(Silva et al., 2018). The importance of physical activity in generating not only better health but also social, cultural, and economic benefits must not be overlooked by authorities in their government plans, particularly when distributing budget recommendations to stop and reverse disparities associated with this complicated scenario(Aguilar-Farias et al., 2018).
Additionally, our study found no significant weight differences between urban and rural youngsters. High junk food consumption and sedentary behavior were found to be substantially linked with childhood overweight/obesity. It is critical to implement school health and awareness programs that aim to limit children's consumption of energy-dense meals and promote an active lifestyle, including active commuting to school(Karki et al., 2019). Obesity and severe obesity prevalence varied by age, race, and Hispanic origin, as well as household education; severe obesity was inversely associated with urbanization. Demographics were unrelated to the urbanization findings(Ogden et al., 2018).

Finally, our study produced insignificant results when comparing the health statuses of urban and rural children.There is a shortage of interdisciplinary methods that emphasize the complexity of urban structures and dynamics, as well as their potential impact on urban health and well-being. In an era of increased urbanization, residents' health and well-being are increasingly acknowledged as a problem. There has been a significant amount of research on the relationship between urban settings and health or well-being(Krefis et al., 2018).

CONCLUSION

Our extensive literature search revealed that in times of rapid urbanization, citizens' health and well-being are increasingly recognized as a challenge, and there is a need to conduct more research on potential associations between urban areas and health or well-being. In conclusion, whereas urban and rural children experience different nutritional and lifestyle issues, both environments present unique opportunities and constraints that can influence physical fitness. Addressing these gaps requires a multidimensional approach that takes into account availability to healthy foods, chances for physical activity, and socioeconomic issues affecting both urban and rural people.

REFRENCES

1. AGUILAR-FARIAS, N., MARTINO-FUENTEALBA, P., CARCAMO-OYARZUN, J., CORTINEZ-O'RYAN, A., CRISTI-MONTERO, C., VON OETINGER, A. & SADARANGANI, K. P. 2018. A regional vision of physical activity, sedentary behaviour and physical education in adolescents from Latin America and the Caribbean: results from 26 countries. International journal of epidemiology, 47**,** 976-986.
2. ALJAHDALI, A. A., BAYLIN, A., RUIZ-NARVAEZ, E. A., KIM, H. M., CANTORAL, A., TELLEZ-ROJO, M. M., BANKER, M. & PETERSON, K. E. 2022. Sedentary patterns and cardiometabolic risk factors in Mexican children and adolescents: analysis of longitudinal data. International Journal of Behavioral Nutrition and Physical Activity, 19**,** 143.

3. BARONI, L., GOGGI, S. & BATTINO, M. 2019. Planning well-balanced vegetarian diets in infants, children, and adolescents: The VegPlate Junior. Journal of the Academy of Nutrition and Dietetics, 119**,** 1067-1074.
4. BUCHER DELLA TORRE, S., FABBI, S. & CARRARD, I. 2021. Healthy Snacks in School: How Do Regulations Work? A Mixed-Design Study. Journal of School Health, 91**,** 697-705.
5. CHEN, P., WANG, D., SHEN, H., YU, L., GAO, Q., MAO, L., JIANG, F., LUO, Y., XIE, M. & ZHANG, Y. 2020. Physical activity and health in Chinese children and adolescents: expert consensus statement (2020). British journal of sports medicine, 54**,** 1321-1331.
6. ENG, S., KHUN, T., JOWER, S. & MURRO, M. J. 2019. Healthy lifestyle through home gardening: The art of sharing. American Journal of Lifestyle Medicine, 13**,** 347-350.
7. GROSS, S. M., BRONNER, Y., WELCH, C., DEWBERRY-MOORE, N. & PAIGE, D. M. 2004. Breakfast and lunch meal skipping patterns among fourth-grade children from selected public schools in urban, suburban, and rural Maryland. Journal of the American Dietetic Association, 104**,** 420-423.
8. HAINES, J., HAYCRAFT, E., LYTLE, L., NICKLAUS, S., KOK, F. J., MERDJI, M., FISBERG, M., MORENO, L. A., GOULET, O. & HUGHES, S. O. 2019. Nurturing children's healthy eating: position statement. Appetite, 137**,** 124-133.
9. HEINEN, M. M., BEL-SERRAT, S., KELLEHER, C. C., BUONCRISTIANO, M., SPINELLI, A., NARDONE, P., MILANOVIĆ, S. M., RITO, A. I., BOSI, A. T. B. & GUTIÉRRREZ-GONZÁLEZ, E. 2021. Urban and rural differences in frequency of fruit, vegetable, and soft drink consumption among 6–9-year-old children from 19 countries from the WHO European region. Obesity Reviews, 22**,** e13207.
10. HUFF, T. 2022. Fruit Will Set You Free: The Unparalleled Benefits of the Fruit-Based Diet and How to Start Right Now, Dorrance Publishing.
11. KARKI, A., SHRESTHA, A. & SUBEDI, N. 2019. Prevalence and associated factors of childhood overweight/obesity among primary school children in urban Nepal. BMC public health, 19**,** 1-12.
12. KREFIS, A. C., AUGUSTIN, M., SCHLÜNZEN, K. H., OßENBRÜGGE, J. & AUGUSTIN, J. 2018. How does the urban environment affect health and well-being? A systematic review. Urban science, 2**,** 21.
13. KRUK, J., ABOUL-ENEIN, H. Y., KŁADNA, A. & BOWSER, J. E. 2019. Oxidative stress in biological systems and its relation with pathophysiological functions: the effect of physical activity on cellular redox homeostasis. Free radical research, 53**,** 497-521.
14. LOPEZ-MINGUEZ, J., GÓMEZ-ABELLÁN, P. & GARAULET, M. 2019. Timing of breakfast, lunch, and dinner. Effects on obesity and metabolic risk. Nutrients, 11**,** 2624.
15. MORA-GONZALEZ, J., ESTEBAN-CORNEJO, I., CADENAS-SANCHEZ, C., MIGUELES, J. H., RODRIGUEZ-AYLLON, M., MOLINA-GARCÍA, P., HILLMAN, C. H., CATENA, A., PONTIFEX, M. B. & ORTEGA, F. B. 2019. Fitness, physical activity, working memory, and neuroelectric activity in children with overweight/obesity. Scandinavian journal of medicine & science in sports, 29**,** 1352-1363.
16. OGDEN, C. L., FRYAR, C. D., HALES, C. M., CARROLL, M. D., AOKI, Y. & FREEDMAN, D. S. 2018. Differences in obesity prevalence by demographics and urbanization in US children and adolescents, 2013-2016. Jama, 319**,** 2410-2418.
17. SEDIBE, M. H., PISA, P. T., FEELEY, A. B., PEDRO, T. M., KAHN, K. & NORRIS, S. A. 2018. Dietary habits and eating practices and their association with overweight and obesity in rural and urban black South African adolescents. Nutrients, 10**,** 145.
18. SILVA, D. A. S., CHAPUT, J.-P., KATZMARZYK, P. T., FOGELHOLM, M., HU, G., MAHER, C., OLDS, T., ONYWERA, V., SARMIENTO, O. L. & STANDAGE, M. 2018. Physical education classes, physical activity, and sedentary behavior in children. Medicine & Science in Sports & Exercise, 50**,** 995-1004.

19. SU, Y., LI, X., LI, H., XU, J. & XIANG, M. 2023. Association between Sedentary Behavior during Leisure Time and Excessive Weight in Chinese Children, Adolescents, and Adults. Nutrients, 15**,** 424.
20. TOMKINSON, G. R., LANG, J. J. & TREMBLAY, M. S. 2019. Temporal trends in the cardiorespiratory fitness of children and adolescents representing 19 high-income and upper middle-income countries between 1981 and 2014. British journal of sports medicine, 53**,** 478-486.
21. YANOVSKI, J. A. 2018. Trends in underweight and obesity—scale of the problem. Nature Reviews Endocrinology, 14**,** 5-6.
22. ZHU, Z., TANG, Y., ZHUANG, J., LIU, Y., WU, X., CAI, Y., WANG, L., CAO, Z.-B. & CHEN, P. 2019. Physical activity, screen viewing time, and overweight/obesity among Chinese children and adolescents: an update from the 2017 physical activity and fitness in China—the youth study. BMC public health, 19**,** 1-8.