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Original Article

Assessment of Nutritional Status and Dietary Practices Among School-Going Adolescents in Rural and Urban Area: A Comparative Study

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ABSTRACT

The nutritional status of adolescents is of utmost importance as this stage of life accounts for the massive growth and maturation of the human body. Substandard nutritional status during adolescence is a significant determinant of health outcomes later in life. **Objectives:** To assess and compare the nutritional status and dietary habits of school-going adolescents in rural and urban areas. **Methods:** A cross-sectional study was conducted to assess the nutritional status of adolescents from different schools in rural and urban areas. A total of 100 participants were selected through the non-probability sampling technique. Participants were assessed using a standardized questionnaire that included a food frequency questionnaire (FFQ), socio-demographic, nutritional knowledge and eating habits. Data was then entered and analyzed using SPSS version 24.0. Among 100 participants, 50 were male, and 50 were female. All-inclusive participants were between 14-17 years of age. **Results:** In rural areas, 40% of the students were underweight, whereas, in urban areas, only 26% were underweight. However, the percentage of normal body mass index was equal. The prevalence of the overweight category was two times greater in urban areas, 16%, compared to 8% in the rural area. Mostly urban area students consumed more junk rather than natural foods and homemade foods, which were more common among rural students. Comparatively, rural students were more undernourished and leaner. **Conclusion:** Nutritional status of students from both areas was different from each other by a considerable margin but collectively was insufficient and poor.

INTRODUCTION

Adolescence is the time covering the ages of 10-19 years and is the most crucial time of development as it highlights the changeover from life as a child to life as an adult. Dietary habits imperatively affect lifetime nutritional status and wellbeing during this critical period of growth [1]. During adolescence, 20% of final adult height and 50% of adult weight are attained, and bone mass also increases by 45%. Healthy eating patterns – eating a variety of balanced, nutritious foods and drinks have an important impact on the health, growth, and mental development of an adolescent and can also prevent them from diseases and health problems in later life [2, 3]. The crucial nutritional issues include undernutrition – stunting, wasting and overnutrition, and obesity, causing double burden malnutrition among school-going adolescents. Around the globe, 10% of adolescents are overweight, with an increasing prevalence of obesity ranging from 2 to 3% [4]. Consumption pattern is a determinant of nutrition likely to be influenced by changing demographics between urban and rural areas. The foremost causes for this perforation are the socioeconomic discrepancies between these areas, for example, occupation, income, and education

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levels [5]. The variation between the environments of these areas also plays a significant role in forming food consumption patterns in the community. Accordingly, those populations are probably to have different food choices, which might impact their consumption patterns [6]. The prevalence rate of obesity among school-going students is higher in urban areas than students in rural areas [7]. Students of age 6-16 years in urban areas were consuming more proteins and fats than students in rural areas. In rural areas, they had a low intake of fat and oil-rich foods, a higher intake of staple foods, and consuming plant-based proteins than animal-based products [8]. According to a study, the overall nutritional status and dietary habits of adolescents in Pakistan were not satisfactory [9]. Anthropometric measurements are the most frequently used means for the appraisal of the nutritional status of a population. Generally, 3 anthropometric indicators are used to evaluate the nutritional status of adolescents, i.e., underweight, stunting and leanness [10]. In our community, adolescents are mostly neglected; moreover, a lack of data suggests dietary patterns and habits conducted among urban and rural regions of Pakistan. Hence our study aims at comparing the dietary habits and nutritional status of school-going adolescents in urban and rural areas. The present study attempts to examine the effect of socioeconomic differences on students eating habits and overall health status. This study will help create awareness regarding healthy dietary practices and improve the nutritional status of school-going adolescents in both rural and urban areas.

METHODS

A cross-sectional study which is conducted for the time duration of 4 months in three different schools, such as Roots International School EME branch, Government Liaqat Boys High School, and Government Fatima Jinnah Girls High School. A total of 100 students in class 9th and 10th were taken by using the non-probability sampling technique, and data was collected through a standardized questionnaire. Data were then entered and analyzed using SPSS version 24.0.

RESULTS

The results showed that 40% of students in rural areas were underweight while 26% of students in urban were underweight. Most students fall under the normal BMI category from rural and urban areas. In the urban area, 22% of students fall in the category of overweight and obese, whereas only 8% are from the rural area. No obese student was found in rural areas, but 6% of students were obese in urban areas. This result shows that participants from urban areas are more at risk of obesity (Figure 1).

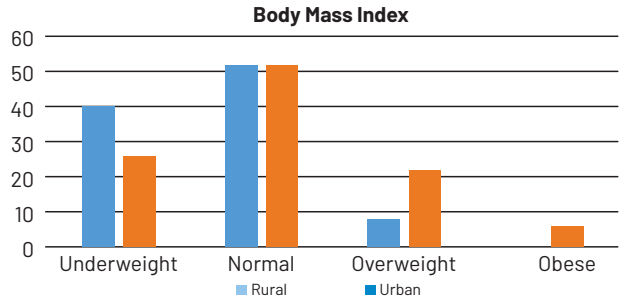

Figure 1: Frequency Distribution of Body Mass Index

According to figure 2, representing meal skipping shows that breakfast skipping was more in urban students than rural students, with a percentage of 28% and 18%

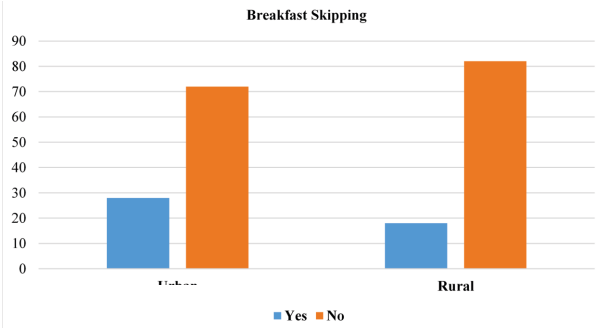

Figure 2: Distribution of Breakfast Skipping among Participants

Table 1 shows a significant correlation between the consumption of packaged fruit juices in rural and urban areas, with a p-value <0.05 representing a higher consumption of packaged juices in urban areas.

Area	Consumption of Packaged Juice				Total	p-Value
	No	1-2 cup	3-4cup	more than 4		
Rural	38	8	4	0	50	0.016
Urban	23	14	12	0	50	
Total	61	22	16	1	100	

Table 1: Association between Consumption of Packaged Juices and area

Fizzy drinks were mostly consumed in both groups, with 41% drinking 1-2 cups on a daily basis. However, the ratio of consumption was higher in urban groups. 5% out of these 26% consumed 3-4 cups of fizzy drinks daily. Apart from fizzy drinks, 12% of students mentioned other drinks in which 'carbonated energy drink' was the most consumed by the rural group (Figure 3).

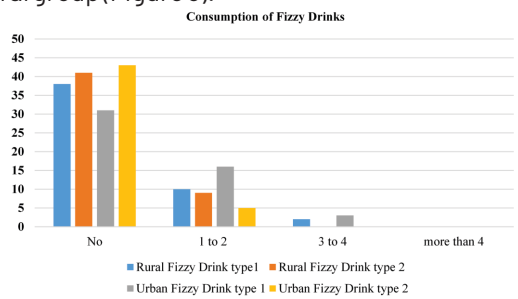

Figure 3: Frequency Distribution of Fizzy Drink Consumption

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among school-going Adolescents

In finding the preference of homemade and junk food, the results depict that 57% preferred homemade food and 43% preferred junk food. However, the participants who mostly favored homemade foods belonged to the rural group, and consequently, students of urban areas were a higher frequency of favoring junk food. The results also showed that a higher number of boys preferred homemade foods as compared to girls (Table 2).

Preference for Food	Total	Rural	Urban
Homemade Foods	57%	36	41
Junk Foods	43%	14	29
Total	100%	77	43

Table 2: Distribution of Preference for Food

According to figure 4, in rural areas, parents eating practices towards their children account for 31% of those who commend, whereas, in urban areas, the ratio is only 21%. On the other hand, children in rural areas are pestered by their parents at a rate of 23%, compared to 18% in urban areas. Aside from that, neither group differs in terms of encouraging children to consume fruits and vegetables. In both groups, the percentage of time spent discussing healthy eating habits is nearly identical. Both groups of children were equally questioned by their parents.

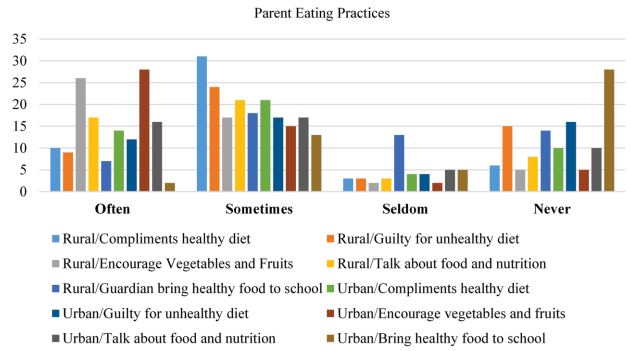

Figure 4: Frequency Distribution of Parent Eating Practices

DISCUSSION

In this study, among 100 participants majority of the students belonging to the rural areas were under-weight (40%), whereas the ratio of normal BMI in both the areas was the same (52%). Consequently, the prevalence of obesity was only seen in urban areas accounting for 6% of the whole urban population. Relatively, the percentage of the overweight category was two times greater in urban (16%) compared to rural (8%). Similarly, a study conducted by Sedibe et al., 2018 found out that under-weight students were predominantly present in rural areas accounting for (18.8%) as compared to only (2.7%) of the urban students. Likewise, the frequency of being underweight in rural areas was higher compared to urban areas, and the percentage of overweight students was higher in urban areas. Breakfast was mostly skipped by urban students than rural students. They found out that more than 60% of the adolescent sample size consumed breakfast regularly in both urban and rural areas [11]. According to our research, there is no big difference in which parents encourages their child to eat fruits and vegetables in both rural and urban areas, on the other hand, a comparative study by Hoffmann, both the rural and the urban both have the same percentage of encouragement to eat fruits and vegetables [12]. In a similar study conducted by Bargita et al., 2013 showed that 93% of adolescents parents controlled their food choices leading them to opt for more vegetables and fruits.According to our study, the students of urban areas were not interested in eating healthy food; our results found out that the students of rural areas were more interested in eating a healthy diet and comparatively in other studies found out that rural students proved that are more interested in eating or managing a healthy diet as compared to urban students adults had the most higher rate of eating fresh foods rather than eating processed foods in rural areas but the urban areas had the poorest diet [13]. Consumption of fruit juices was equal with respect to rural and urban areas, and a total of 74 students consumed fruit juices. The percentage of those consuming fresh fruit juices daily was higher in urban. In comparison, a study conducted by Xavier et al., 2014 found that rural students consumed more natural juices daily [14], whereas urban students mostly consumed soda drinks. Another study conducted by Miller et al., 2020 found out that of the multitude of packaged drinks evaluated, utilization of fruit juice was the most common [15]. Similarly, in our study, the ratio of consumption of soda drinks was similar in both the groups; however, coke consumption was higher in the urban group and sprite was consumed mainly by the rural group. In another study conducted in Old Indonesia by Esti Nutwanti showed that the consumption of sweetened and carbonated drinks was higher in urban areas as compared to rural areas [16]. A total of 57% of the total population preferred homemade foods in our study; comparatively, a study conducted by Lipoeto et al.,2013 in philipines found out that traditional and customary food choices were still kept up with large portion of population, however they did infuse a few changes in the recipe [17]. In another study conducted by Saxena, A in 2017 on female adolescents found out that junk food was one of the top priorities among teenagers, with a very high percentage (about 80%), 40 out of 50, consuming junk roughly four times each week, indicating an unhealthy trend [18]. In our study's results, the carbonated drink consumption rate is not very high. Only 25% of students were drinking cold drinks a maximum of 3 times per week; as compared to other studies of West Bengal, India, the intake of carbonated beverages was low, maybe because of economic status [19]. However, another

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study conducted by Yang et al., 2017 showed that young adolescents reported drinking carbonated soft drinks at least once a day. These findings show that young adolescents consume a lot of carbonated soft drinks[20].

CONCLUSIONS

Hence the study represents that adolescents in either rural or urban areas were at risk of being malnourished. The urban area had a higher percentage of overweight and obese category students, whereas rural students were mostly undernourished. However, urban students consumed more junk food among the participants whereas rural students consumed homemade and natural foods. In contrast, the consumption of fizzy carbonated beverages consumed by students, irrespective of the area. Nonetheless, carbonated beverage consumption by urban students was slightly more than among rural students. Healthy diet knowledge was also more evident among urban students.

Conflicts of Interest

The authors declare no conflict of interest.

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