KAP STUDY

Assessment of Knowledge, Attitudes and Practices towards Nutrition amongst Adolescents in Karachi

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ABSTRACT

Background: The association between health and nutrition are eminent. Quality nutrition is acknowledged as one of the most important determinants of optimal development, good health, and wellbeing. Therefore, the study aimed to determine the knowledge, attitudes, and practices amongst adolescents regarding nutrition.

Methods: It was a cross-sectional study conducted between 2016 to 2017 in Karachi. The sample size was 384; the purposive sampling technique was applied with a target population of adolescents between 14 and 19 years of age. Informed consent was taken before the questionnaire submission. Data were collected via self-administered questionnaires from students of various schools in Karachi. The Chi square test was applied for associations and a *p*-value of <0.05 was considered statistically significant.

Results: The mean age of 394 adolescents was (mean±SD) 17.08±1.63 years and found female predominance 282(71.6%). The average weight of the participants was 58.60 ± 18.58. Protein 305(77.4%) was the most widely consumed food. Breakfast was seen as the most important meal of the day among 213(54.1%) all participants. There was a significant association between healthy dietary habits and the frequency of exercise per week (*p*-value=0.001). Only 57(14.5%) followed a specific meal plan and the mostly 151(38.3%) not following a meal plan was due to lack of time.

Conclusion: Most of the adolescents 87(22.2%) understand the importance of various food nutrients. However, appropriate nutritional practices were not found in the majority of the adolescents, possibly due to the lack of time and sedentary lifestyle.

Keywords: Nutritional Quality; Adolescent Medicine; Non-Communicable Diseases.

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INTRODUCTION

Nutrition is the intake of food, according to the body's dietary needs. Good nutrition comprises of an adequate, well balanced diet combined with regular physical activity; these are keystones of good health[1]. Body mass index (BMI) is an important indicator of health and nutrition in individuals and half of the Pakistani population has a BMI within the normal range, which is between 18.5-$24.9 kg/m^2$ compared to South Asian adolescents[2]. Since 22.3% of the Pakistani population comprises adolescents, this makes nutritional awareness amongst adolescents critical to ensure that the young adults of the future have a healthy base[3]. Adolescence is characterized by increased energy and nutrient requirements along with changes in dietary habits, which introduces nutritional problems[4]. The number of overweight/obese adolescents has tripled in the last 30 years, particularly in females[5,6]. This has contributed

to an increase in the prevalence of various conditions including Type II diabetes mellitus, hypertension, and arteriosclerosis[7]. Moreover, micronutrient deficiencies including Vitamin A, Vitamin D, folate, iron and iodine are a major health concern in developing countries[8].

A comparative study has shown a remarkable increase in deranged BMI and associated problems owing to unhealthy eating habits and sedentary lifestyles[6]. According to a study conducted in Pakistan, 17% of the students were underweight, 65% were normal weight and 18% were overweight[9]. Even though breakfast is the most nutritious meal of the day, two studies conducted in Europe and Ireland showed half the study group did not consume breakfast[9]. A study conducted in Karachi identified that 85% of the students were leading a sedentary lifestyle but when they were asked about ways to lose weight, 96% listed exercise among their answers[10,11].

Many studies have been conducted to determine the prevalence and causes of nutritional deficiencies in Pakistan. However, very little research has been conducted to determine the source and accuracy of the nutritional information being delivered to adolescents, which will be an important aspect of this study. Since health education interventions in schools have been successful in reducing levels of obesity amongst adolescents and future risk of non-communicable diseases[12], therefore suitable measures can be taken to improve subsequent influence on health. The study aimed to determine the knowledge, attitudes, and practices amongst adolescents regarding nutrition.

METHODS

This was a cross-sectional study conducted from November 2016-October 2017. The sample size was n=384 based on a prevalence of 50% knowledge regarding nutrition with a bound of error of 1% and a confidence level of 95. The sample was selected using a purposive sampling technique. Institutional ethical approval was taken from Ziauddin University. The inclusion criteria were based on adolescents aged between 14-19 years, currently enrolled in a private school at similar levels of education. Exclusion criteria included those who were suffering from a medical condition that affected their dietary habits or spoke a language other than English.

A self-designed questionnaire was used to collect data. Students from various schools in Karachi were approached for data collection after obtaining consent from the schools. Moreover, consent was obtained from the participants before filling out the questionnaire. Data was entered and analyzed using SPSS version 20. Frequencies and percentages were calculated for categorical variables, mean and standard deviation (SD) was calculated for numerical data. Pearson Chi Square test was used to find associations between various qualitative variables of interest. For all purposes, a p-value of <0.05 was considered statistically significant.

RESULTS

The sample population consisted of n=394 adolescents between 14-19 years of age. Mean age of adolescents investigated was 17.08 ± 1.63 years. The sample was predominantly female n=282(71.6%) and the average weight recorded was 58.60 ± 18.58. The average height was 5 feet 6 inches ± 3 inches.

Table 1: Nutritional practices among adolescents

Dietary habits and practices of adolescents				
Most widely consumed food	**Proteins n (%)**	**Grains n (%)**	**Dairy products n (%)**	**Fruits and vegetables n (%)**
	305 77.4	n=205 52.0	n=245 62.2	n=215 54.6
Most important meal of the day	**Breakfast**	**Lunch**	**Dinner**	
	n=213 54.1	n=89 22.6	n=89 22. 6	
How often do you skip breakfast?	**Always**	**Sometimes**	**Never**	
	n=40 10.2	n=137 34.8	n=127 32.2	

Reason for skipping breakfast	Running late for school	Not hungry	No help in preparing it	
	n= 141 35.8	n=112 28.4	n=14 3.6	
Daily water consumption (number of glasses)	Less than 5	At least 5 or more		
	n=137 34.8	n=257 65.2		
Factors considered when choosing a meal	Taste	Convenience	Price	Healthy food
	n=259 65.7	n=35 8.9	n=34 8.6	n=66 16.8
What kind of lifestyle do you have?	Traditional	Sedentary	Active	
	n=152 38.6	n=92 23.4	n=150 38.1	
How often do you exercise per week?	Everyday	Once a week	Twice a week	Thrice a week or more
	n=42 10.7	n=87 22.1	n=67 17.0	n=84 21.3

Proteins were the most widely consumed nutrient in 305(77.4%) participants (Table 1). Only 205(52%) of the adolescents had grains daily. Dairy products were consumed by 245(62.2%) every day. Fruits and vegetables were consumed daily by 215(54.6%) and 191(48.5%) of the population, respectively. Water was one of the most neglected portions of the daily intake in 137(34.8%) of the participants with consumption of fewer than 5 glasses of water every day whereas, 257(65.2%) of the adolescents were drinking at least 5 glasses of water each day.

The majority 222(56.3%) of the participants ate out once a week and most of the people denied eating out very frequently. Some important factors that people consider while choosing a meal were identified. Only 66(16.8%) opted for a health-based meal and 259(65.7%) chose taste as their priority. A small percentage 35(8.9%) and 34(8.6%) of the adolescents listed convenience and price as their utmost priority, respectively.

More than half the sample, 213(54.1%) identified breakfast as the most important. However, 89(22.6%) and 75(19%) considered lunch and dinner as their priority, respectively. Despite understanding the importance of breakfast, only 127(32.2%) were having it every day. On the other hand, 40(10.2%) always skipped breakfast and the majority 137(34.8%) mentioned skipping breakfast some-times. 141(35.8%) mentioned skipping it because they are running late for school, whereas, 112(28.4%) claimed that they do not feel hungry in the morning.

A decent understanding was found in the adoles-cent age group regarding physical exercise as 280(71.1%) was exercising. Out of 280(71.1%), the highest percentage of 87(22.1%) was of who preferred exercising once a week. The majority of adolescents 129(32.7%) exercise for about half an hour to 1 hour and restricted themselves to less than half an hour and the rest worked out for more than an hour each time. However, when asked about lifestyles, the majority 152(38.6%) claimed to have a traditional lifestyle and 92(23.4%) sedentary.
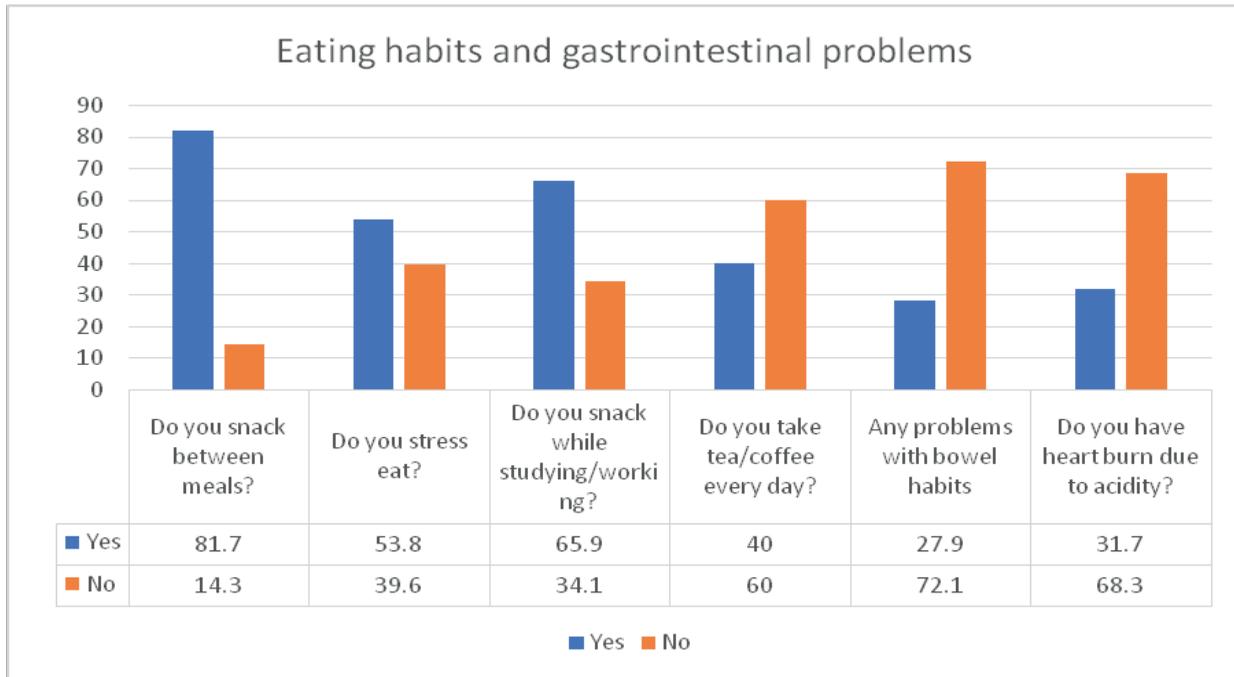
Figure 1: Eating habits and associated gastrointestinal problems.

Among eating habits and health related concerns, snacks, chips, cookies, and fried items were consumed by 117(29.7%), 64(16.2%) and 36(9.1%), respectively (Figure 1). On the other hand, fruits were consumed by 109(27.7%). The majority of the adolescents 125(31.8%) preferred working/studying in the evening which might explain the consumption of snacks. Whereas, 116(29.4%) preferred mornings followed by 93(23.5%) who preferred late night studying. The majority of the adolescents 208(52.9%) were sleeping for 7-8 hours every day. However, 130(32.9%) were getting only 5-6 hours of sleep or less. There was no significant association found between the hours of sleep they get and the level of physical activity.

Table 2: Association of diet, exercise, and medical problems.

How often do you exercise per week?	Do you think your habits are healthy?		p-Value
	Healthy	**Unhealthy**	
Everyday	25	17	
Once a week	34	53	
Twice a week	26	41	**0.001**
Thrice a week or more	42	42	
Never	30	84	
How often do you skip breakf ast?	Do you consume snacks?		
	Consumed	**Unconsumed**	
Never	104	27	
Sometimes	115	22	**0.438**
Very often	73	13	
Always	30	10	
How often do you exercise per week?	Do you have any medical problems?		
	Medical History	**Healthy**	
Everyday	9	33	
Once a week	19	68	
Twice a week	11	56	**0.484**
Thrice a week or more	10	74	
Never	20	94	

A significant association (Table 2) was found between the frequency of physical exercise and the participant perception of whether their dietary habits are healthy or not (*p*-value=0.001). The majority of the people who exercised daily believed they had healthy eating habits. Moreover, there was a rising trend in the perception of healthy habits with the number of days an individual exercised. Moreover, contrary to normal perception, a significant association was not found between snack consumption and the habit of skipping breakfast in adolescents (*p*-value=0.438). The association between exercise and experiencing medical problems was insignificant (*p*-value =0.484).

Following specific meal plans was not a common practice with only 57(14.5%). Amongst those following a plan, 37(9.4%) had made it for themselves, 21(5.3%) was following the one given by their parents and only 5(1.3%) were relying on one provided by a professional dietician. Out of 337(85.5%) of the population that was not following a specific plan, majority 151(38.3%) stated it was due to the lack of time. Moreover, 87(22.2%) stated that they felt healthy with their current style of eating and 99(25.1%) claimed that they have a balanced diet and do not feel the need for a specific diet plan. Most of the participants (Figure 2) correctly identified the functions of Vitamin A, D, C, zinc, sodium, and iron. However, the majority were unable to identify the functions of Vitamin B and K.
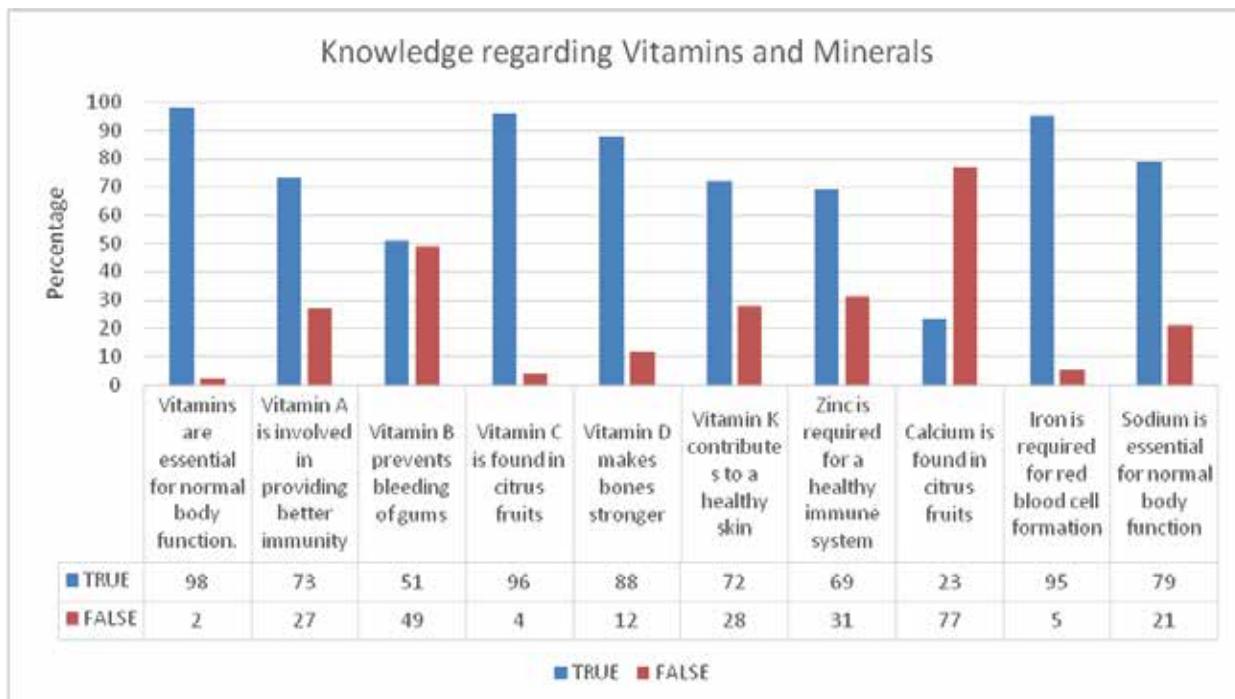

Figure 2: Knowledge of adolescents regarding the functions of vitamins and minerals.

	Vitamins are essential for normal body function.	Vitamin A is involved in providing better immunity	Vitamin B prevents bleeding of gums	Vitamin C is found in citrus fruits	Vitamin D makes bones stronger	Vitamin K contributes to a healthy skin	Zinc is required for a healthy immune system	Calcium is found in citrus fruits	Iron is required for red blood cell formation	Sodium is essential for normal body function
TRUE	98	73	51	96	88	72	69	23	95	79
FALSE	2	27	49	4	12	28	31	77	5	21

DISCUSSION

Adolescence is a group that requires good nutritional practices as it is the final period of growth and development and it has been identified as a high-risk age group for the development of obesity[13]. Moreover, the eating habits developed at this age are more likely to persist throughout adulthood therefore; interventions in this age group prove to be more effective[14]. Thus, more attention needs to be paid to the adolescent age group to decrease the incidence of non-communicable, chronic diseases in the older population[15]. A study conducted in 2003 in Pakistan amongst the adolescent age group showed 17% people were underweight, 65% were in the normal range, 18% were overweight, and since then extremes of weight have been on a rise[10].

Various factors contribute to the development of eating habits, including family environment, cultural makeup and socioeconomic status of the adolescents[16]. These factors determine the rejection and acceptance of various foods and may even encourage unhealthy eating. Studies have confirmed that intake of fast food is associated with parents who directly attempt to control the dietary habits[17].

Furthermore, eating out was also recognized as a significant health hazard and hence majority (56.3%) ate only once a week and only 6.1% claimed to eat out every day. A study has reported that adolescents consume half the recommended number of fruits and vegetables, less than two-thirds of the recommended amount of milk products and consume more fats and sweets[18]. Our study also revealed similar results and showed dairy products consumption by a majority (62.2%) everyday.

The most consumed food nutrient was proteins as they were regarded as one of the richest sources of energy. Grains, despite being a part of the staple diet in Pakistan, were only consumed by 52% of adolescents. Therefore, emphasis needs to be laid on the consumption of fruits and vegetables. Similarly, a study has shown that there is more reliance on fruit juices and other sweetened beverages and the water was still consumed by the largest percentage of adolescents[19]. Our study is consistent with these findings, 65.2% of the study group was having at least 5 glasses of water a day.

Studies conducted in the West have shown that food choices were primarily based on convenience and hence the widespread availability of rich caloric foods with low nutritional value has led to their increased consumption[20]. Other major barriers identified to healthy eating comprised of cravings for unhealthy, rich food that predominantly contains fats[21]. However, in our study results, 65.7% of participants made food choices based on taste and only 16.8% opting for healthy food.

Studies have shown that adolescents who consume breakfast regularly have lower body fat content and healthy cardiovascular profile[22]. Thus, an attempt was made to understand the youth's opinion on the most important meal of the day, which was correctly identified as breakfast (54.1%). Previous studies have also shown similar results with half the population not consuming breakfast[23]. The most common reason listed for missing breakfast was being late for school or college as opposed to previous literature in which the main reason was not feeling hungry[16].

A significant proportion of the study group was found to be suffering from medical problems related to the alimentary tract, which included irregular bowel movements (27.9%), and chest burn due to acidity (31.7%). These problems occurring at such a young age and are directly associated with unhealthy, eating habits. Hence, there is a need to improve eating habits by providing appropriate knowledge and introducing effective interventions.

In accordance with previous studies, a reasonable understanding was seen amongst adolescents regarding exercise. The majority (71.1%) of the population claimed they were doing physical exercise on a regular basis[9]. However, only 10.9% were exercising every day, this is mainly due to an increased workload from schools and colleges at this age, which leaves lesser time for formal exercise.

Furthermore, sleep is known to have a major impact on the lifestyle of an individual. Studies have revealed that individuals who sleep at least 7 hours are more likely to be active in the hours that they are awake[24]. Our study showed similar results as amongst those who slept 5-6 hours, only 9.2% exercised daily. There was no significant association between the number of sleep-ing hours and engagement in physical activity. Therefore, interventions are required to inculcate healthy eating habits, encourage physical exercise regularly and improving sleeping habits[25].

According to the results, adolescents exhibited a variable understanding of important vitamins for instance role of Vitamin B and K in bleeding gums and healthy skin, respectively. However, they seemed to have more sound knowledge about various minerals as they correctly identified the roles of zinc, iron, and sodium. Majority of the study group did seem to have above average knowledge but further enhancement of it could improve their dietary practices. Previous studies have shown that the main source of information for adolescents were friends (71%) and television (52%) [14]. Various studies have established that an unhealthy lifestyle has multiple contributory factors to it. This includes the family setup, order of the child amongst siblings, socioeconomic status, frequency of various food groups' consumption and spending time on television and computers, which inevitably reduces time spent on outdoor activities[17].

CONCLUSION

Mostly adolescents understand the importance of food nutrients especially vitamins and minerals. However, appropriate nutritional practices were not found in the majority of the adolescents. This highlights the importance of health education and timely intervention in this age group with particular importance for stress reducing practices.

CONFLICT OF INTEREST

There is no conflict of interest among the authors in this study.

ETHICS APPROVAL

The Ziauddin University granted an institutional approval for the study.

PATIENT CONSENT

There were no patients involved in the study. The study was conducted on healthy adolescents and consent was taken prior to filling of the forms.

AUTHORS' CONTRIBUTION

KAZ designed the questionnaire, collected data, analyzed data, and wrote the manuscript. WM suggested the topic, did literature review and partial analysis. FA supervised the research and helped with sampling and reviewing the manuscript.

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