Nutritional Status, Dietary Practices and Physical Activities among Female Adolescents: A Cross Sectional Study in District Okara, Pakistan

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Abstract

Adolescence is a period between childhood and adulthood and is important period of human growth cycle. During this significant period dietary pattern have important impact on lifetime nutritional status and health. The prevalence of overweight and obesity among children and adolescents has increased at an alarming rate in many parts of the world.

The present study was designed to assess the nutritional status, physical activity pattern and dietary Practices among female adolescents in district Okara, Pakistan.

A cross sectional study was designed among female adolescents of secondary school. There were 449 students from government schools and 401 were from private schools.

Overall private school girls were significantly (**p<0.005**) taller and heavier than government school girls. Most of the private school students have sedentary lifestyle. Most of the students spend more time on screen than recommended. There was no significant difference in mean BMI of both the schools. There was significant result (**p<0.005**) of the dietary pattern of both the schools private school adolescents were having greater consumption of fast food than government school due to urbanization and due to socioeconomic differences.

Most of the Pakistani adolescent girls do not perform physical activities adequately and have sedentary lifestyle. They spend most of their time on watching TV, using internet and other computer based activities. They also have unhealthy eating pattern. So there is need of implementing some interventions to promote physical activities and healthy eating pattern.

Introduction

Adolescence can be defined as the teen agers and that is a most important time of growth. Because at this age maximum growth occur in adolescents related to their mind and physically as well. During this significant period dietary pattern have important impact on lifetime nutritional status and health [1]. Adolescence is that period of life in which an adolescent learns healthy eating pattern which in future leads to healthy nutritional status of an adolescent [2].

In Pakistan patterns of diet has converted to grains roots of starch and legumes vegetables and fruits with low quantity of foods of animal genesis with large amount of added sugar, preservatives and fats. The diversity in socioeconomic have influenced on the living style of adolescents. Eating patterns are affected by short of time to cook food in the home, accessibility of junk food outlets and food selling machines [3].

Many studies describe that use of junk food is linked with more intake of energy in these days than the days without junk food in adolescents [4].

Life style choices or eating patterns fluctuates to children's body weight. As they eat junk food and other unhealthy food items that are nothing but just calories, rate of physical activity decreases over a period of time which leads to excessive weight gain that is generally known as obesity, and it leads to various CVD's and metabolic disorders [5].

Culture is the most important thing in our daily life that effects our body weight it is not genetically predetermined it is learned from our environment, our surroundings and our companies from where we belong and culture passes through generation to generation, every ethnic group has its own culture that they deliver to their ascendants [6].

Most of the Pakistani students especially girls have a sedentary lifestyle means no or less physical activity and have poor diet. There is a need to implement true intervention that promotes physical activity habits in girls [7].

Material and Methods

Present cross sectional study was carried out using a questionnaire based interview. It was conducted in local schools of district Okara. Okara is the 9th district of province Punjab in Pakistan comprising of ethnic groups (Sial, Gujjar, Kamboh, Balouch, Watto, Joyia, Ranghar, Arain, Kharal, Chandoor, Pathan, kamyana).

These schools were both private and government while location was both rural and urban. First of all written permission was taken from the principal of all the schools. Students participate according to their desire. Data collection was interview based.

Study participants

The study group comprised 850 students 401 from private schools

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and 449 from government schools, aged 13 to 18, who were students of grades 9th and 10th in secondary schools in district Okara. A multistage stratified random sampling technique was used to obtain the sample. In the rest stage, schools were selected using a systematic random sampling procedure. The schools were stratified into public and private schools and further stratified on the basis of rural and urban locations all schools were girls' secondary schools. There were total 6 private schools and 7 government schools. All students in the selected classes who were free from all physical health problems (physical challenge to perform physical activity) were invited to participate in the study. Data were collected during September to March.

Data collection

Demographic profile: In demographic profile their Name, School type (private or government), School location

(Urban or rural), Father's education, father's profession was asked.

Anthropometric measurements: Body weight of each participant was measured to the nearest 100 g using a calibrated scale. Measurements were taken in the morning with the minimal clothing and without shoes. Height was also measured with calibrated scale in straight standing condition. BMI was calculated as a ratio of weight in kilograms by the square of height in meters. International standards of overweight and obesity were used to identify how many of them were obese and overweight. In determining the nutritional status of adolescents anthropometric measurements are useful because they provide useful information about being under nutrition, overweight and obesity, adiposity etc. [8].

Physical activity assessment: Any activity in which our body's movement occurs that results in energy expenditure. Questionnaire was used to determine the physical activities of students. They were asked either they know what physical activity is or not. If they know that what is physical activity then they had to tell that which kind of physical activity they were performing like light, Moderate and vigorous they had to tell about the different activities they were performing like floor exercises, dancing, football, hockey, cricket and martial arts they were also asked about the household work they were performing like cleaning up the house, washing or ironing the clothes, cooking etc.

- Different questions related to adolescents' different activities like time spending on watching T.V, Using internet, sleeping time etc.
- Questions related to different physical activities like floor exercises, jogging, tennis or badminton, football or hockey, cricket, martial arts etc.
- Questions related to different household activities like preparing food, going for shopping, cleaning of house, laundry or ironing etc.

Calculation of physical activity: To calculate daily physical activity of adolescents I used this formula.

$$TEE = (PAL)(BMR)$$

TEE (Total energy expenditure)

PAL (Physical activity level) for sedentary BMR × 1.2 and for active lifestyle BMR × 1.3

BMR (Basal metabolic rate)

Sedentary behaviors: To evaluate the sedentary behaviors of participants their amount of time spending on watching television,

using internet and sleeping time was asked. According to international standards they should spend no more than 2 hrs on screen if they were spending more time than recommended they were moving towards sedentary lifestyle which was major cause of overweight and obesity because during nights when adolescents were spending more time on internet or watching TV they were also having snacks which contain bundle of calories which ultimately have unhealthy effects.

Eating habits: A separate portion of questionnaire was used to assess the eating habits of adolescents either (healthy or unhealthy). Information on the frequency of selected food items was collected. The questions included those related to how many times per typical week they were consuming breakfast and how many times they were skipping this important meal.

There were different food groups like cereals group, meat group, vegetables and fruits group, milk and dairy products, Sweets and confectionaries, Fast food items like pizza, burger, shawarma, chips, samosay, pakoray etc. The students had choice of answers from never intake to daily intake. Healthy dietary habits were those when breakfast was consumed on daily bases. Vegetables fruits and milk were also consumed 7 days in a week. Unhealthy eating habits were defined when sweets, chocolates, soft drinks, energy drinks, sugar sweetened drinks fast food more than 3 times per week.

Statistical analysis: The X2 (chi square) test was used to check the proportion of different parameters in adolescents. P value<0.05 was considered significant. SPSS (statistical package for social sciences) version 22.0 was used to enter the data.

Results, Discussion and Conclusion

Of the 850 participants 52.8% were Government school (GS) students and 47.2% were Private school (PS) students. Mean age of participants was 15 and standard deviation was 1.272. Mean heights of students were 4.9 ± SD and overall PS girls were taller and their mean weight was higher than GS girls (p=0.000). In addition to that there was significance difference between BMI of both the school girls.

It was seen that there was no significant difference in breakfast consumption 36.4% of PS girls and 37.4% of GS girls were ever having breakfast in a week.

There was significant difference(**p=0.000**) in eating of chapatti in both the schools 60.8% of PS and 41.6% of GS students were taking chapatti on daily basis.

There was significant difference (**p=0.005**) in consumption of Nan in both the schools. There were 67.8% students of PS and 74.8% students of GS were taking Nan 3 times in a week which was not good for their health.

In the consumption of paratha there was significant difference (**p=0.000**) among both the schools as 45.1% of PS school students and 58.1% of GS were taking paratha at least 3 times in a week. There was also significant difference (**p=0.044**) between both the schools in eating of rusk as 49.6% of PS students and 58.8% of GS students were taking rusk 1-3 times in a week and 35.9% of PS school students and 27.6% of GS students were never taking rusk in a week (Table 1).

In the consumption of porridge there was also significant difference 35.4% of PS and 48.8% of GS students were taking porridge 1-3 times in a week while 56.4% of PS and 45.2% of GS were never taking in a week.

In case of noodles there was significant difference (**p=0.001**) as 56.1% of PS students and 67.5% of GS were taking noodles at least 1-3 times in week.

Variables	Private			Government		
	Mean	95% CI	P-value	Mean	95% CI	P-value
Age (year)	15.2	15.2, 15.5	0.154	15.5	15.3, 15.6	0.154
Weight (kg)	53.8	52.8, 54.9	0	49.1	48.1, 50.2	0
Height	5	4.9, 5.0	0.008	4.9	4.8, 4.9	0.008
BMI	23	22.7, 23.9	0.004	22	21.6, 22.7	0.004

Table1: Calculation of different parameters of the study participants by school type.

There was significant difference (**p=0.000**) in consumption of milk 38.9% of PS students and 55.5% of GS girls were drinking milk 1-3 days in a week while there were 36.7% of PS and 20.9% of GS were taking milk on daily basis. In the consumption of yoghurt there was also significant difference (**p=0.016**) among both type of schools as 52.6% of PS and 62.4% of GS were eating yoghurt 1-3 days in a week while 9% of PS students and 94% of Gs students were eating yoghurt 7 days in a week.

There was also significant difference (**p=0.032**) in consumption of cheese 51.9% of PS students and 42.8% of GS were never taking cheese while 39.4% of PS and 49.9% GS students were taking 1-3 times in a week. In the consumption of ice cream there was significant difference (**p=0.069**) among both the schools as 16.2% of PS students and 10.5% of GS students were taking ice cream 4-6 days a week.

There was also significant difference between both the schools in the consumption of dry fruits and fresh fruits (**p=0.000 and 0.001**) respectively 57.1% of PS and 71.0% of GS students were taking dry fruits 1-3 days of week while 19.2% of PS and 12.9% of Gs students were never taking dry fruits in a week and in the consumption of fresh fruits 47.4% of Ps students and 60.6% of GS students were taking fresh fruits 1-3 days in a week.

In the consumption of green vegetables there was significant difference (**p=0.017**) and in the consumption of roots and tubers there was also significant difference (**p=0.028**) 47.9% of PS GS students and 57.2% government school students taking 1-3 times in a week.

In the consumption of chocolate significant difference was found (**p=0.007**) while in drinking of soft drinks there was also significant difference (**p=0.000**) 68.3% of PS students and 34.7% of GS students were having drinks 4-6 days in a week. There was also significant difference (**p=0.000**) between both the schools as 41.1% of PS students and 54.8% of GS students were taking tea 1-3 days in a week. In the consumption of burger there was also significant difference (**p=0.004**) in both the schools.

There was no significant difference in these foods like bread, biscuits, rice, daalein, eggs, chicken beef, fish, fresh fruit juices, raw vegetables, juices, pakoray samosay, gol gappay, dahi bhaly, shawarma, potato chips, pizza and milk shakes.

In Pakistan there are fewer opportunities for girls for different physical activities. Home environment matters a lot as there are no facilities for girl's adolescents for different activities to perform in the home they spend their little bit time on household activities like cooking, washing, ironing, cleaning of house etc. It was studied that Saudi adolescents and conclude that there were very less opportunities for female adolescents as their parents do not provide an environment for physical activities that's why they were physically inactive [8-15].

Present study reveals about the physical activity pattern of both the school adolescents. It was seen that 63% of PS students and 38% of GS were never doing any exercise the whole week which is not a good sign for their health also describe about the physical activity pattern of

Saudi adolescents 71% of adolescents were not performing any physical activity [16-20].

In a study (Janssen and LeBlanc 2010) describe that there are many health benefits of different physical activities and an adolescent must spend 30 minutes on different physical activities in a day revealed that there are guidelines for adolescents that they should spend 1 h/day on moderate to vigorous physical activities [21-23].

Strong et al. describe about the health consequences of physical inactivity among Saudi adolescents. Adolescents suffer from cardiovascular diseases, diabetes, different types of cancers [24].

Sedentary behavior is also the contributing factor in overweight and obesity. This study describe that most of the students of both the schools spend their more time>2h on watching TV, using internet and playing videos than recommended. 57% of PS students and 16% of GS were spending 3h/day on watching TV while 53% of PS adolescents and 60% of GS were spending>2h/day on internet. As they spend their more time on sedentary activities ultimately they suffer from unhealthy life. A study was conducted in South Africa in which revealed that most of the adolescents spend 7-10 hrs/day on sedentary activities [25-27].

Bowman et al. 2006 carried out a study in USA in which it was revealed that most of screen time results in obesity because when adolescents spend their more time on screen they definitely suffers from overweight and obesity in future which results in different diseases. A study which was conducted by reveals that watching television is the only activity on which most of the adolescents spend their time in a day.

In present study it was seen that 36.4% of PS adolescents and 37% of GS students were never taking their breakfast in a week. Breakfast skipping is not a healthy habit for adolescents as they skip their important meal of the day and at lunch they definitely took more calories than required which results in overweight and obesity.

In a study conducted in Bangladesh revealed that the adolescents who do not take breakfast they suffer from nutrients deficiency later in life.

A study which was conducted in USA concluded that the adolescents who skip breakfast will have high cholesterol level later in life.

Resnicow et al. 1991 also revealed that the adolescents who skipped their breakfast take more caloric snacks like shawarma, samosa, pakoras, fries and sugar containing energy drinks which ultimately results in overweight and obesity [21].

In present study it was seen that dietary pattern of both the school adolescents was not so healthy. Most of the students of both the schools PS and GS were consuming unhealthy diet like shawarma, pizza, burger, samosay, pakoray, chips and other junk foods.

There was significant difference in consumption of milk 37% of PS and 21% of female adolescents were never taking milk in a week which is not a healthy eating pattern. There was also significant difference in consumption of soft drinks 68% of PS and 35% of GS students were taking soft drinks 4-6 days in a week which is not good for their health. They were not taking vegetables and fruits but they were taking more fast food and readymade food stuff.

Al-Hazzaa et al. 2011 also reported the same findings as their female adolescents were also taking soft drinks 3-7 days in a week. There is also the lack of nutrition education among the adolescents they don't know the after effects of fast food and unhealthy eating pattern. Similar results were found in Iraq study was conducted by in which it was explain that eating habits also depends upon the family eating

pattern as most of the parents now a day prefer hostelling or buy ready to eat food because they don't know it's bad effects on health later in life so there is need for intervention about nutrition education in parents as well [1,2].

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