

# ***Knowledge , attitudes , and practices of adolescent school girls towards dietary habits and physical activity***

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Key wards : adolescent , diet , physical activity , knowledge , attitude, practice

# **Knowledge ,attitude and practice of Adolescent school girls towards dietary habits and physical activity in Baghdad**

## **Abstract:**

Adolescence is a period of rapid development ,when young people acquire new capacities and are faced with new challenges. Therefore it is considered as a time of opportunity but also of vulnerability to risk behavior which can have life long consequences especially for health .

## **Objectives:**

To asses knowledge ,attitudes and prentice toward dietary habits, physical activity and to assess the adolescent females ‘ perception of body image.

## **Design:**

Across sectional study using a pretested questionnaire ,face to face interviews by the researcher herself, were carried out. Our sample included 303 adolescent girls randomly chosen from 20 school of Baghdad

## **Finding:**

A large proportion of adolescent females do not practice a healthy dietary habits . The majority of the older adolescents rarely consume milk . While breakfast skipping was more among the younger girls . A significant relation was found between having a housewife mother and eating the morning meal . Eating the main three meals regularly was significantly higher among the 12-15 year olds .

It was found that fun was the main motivational factor for exercise participation among adolescent females . Another interesting finding was that , the satisfaction with body weight was significantly lower among the 16-18 year olds . Also the level of satisfaction was significantly associated with the BMI .

## **Key Words:**

Knowledge, Attitude, practice, adolescence , diet , physical activity

## INTRODUCTION

Adolescence refers to the long transitional , developmental period between childhood and adulthood , and to a maturational process involving major physical , psychological , cognitive and social transformation. (1)

It is defined by the WHO as a person between 10 and 19 years of age . (2)

The onset of it is marked by puberty , which is primarily a physical , maturational , hormonal and growth process .(1) One in every 5 people in the world is an adolescent , and out of 1.2 billion adolescents worldwide about 85% live in developing countries and the remainder in the industrialized world .(2)

The importance of adolescence life period is becoming increasingly evident in all cultures , in particular as short , ritualized transitions from childhood to adulthood gave way to more prolonged periods of adolescence in developing nations , consequent upon rapid urbanization and erosion of traditional social structures .(3)

Adolescence is a period of rapid development , when young people acquire new capacities and are faced with new challenges , therefor it is considered as a time of opportunity but also , of vulnerability to risk behavior which can have lifelong consequences , especially for health .(4)

Adolescence offers a unique opportunity for health promotion because it is a formative stage and presents a crucial period to shape young peoples' health behaviors .(3,4,5)

Some illnesses are known to be lifestyle related like coronary diseases , obesity , high blood pressure , diabetes , and to a certain extent , osteoporosis .(6, 7)

The risk- reducing lifestyle modifications , have their greatest impact if they are started in adolescence or even in childhood .(8) Therefor the concept of adolescent health promotion , incorporating various strategies , health education and health protection programs is receiving increasing attention from health care policy makers and providers as well as educators and health and social scientists .(3)

As adolescents have a low prevalence of infections such as pneumonia and gastroenteritis compared with younger children , and of chronic disease compared with aging people , they have generally been given little health and nutrition attention. (5)

During adolescence , nutritional problems originating earlier in life can potentially be corrected in addition to addressing new ones .Thus it is regarded as a timely period to shape and consolidate healthy eating and lifestyle behaviors , thereby preventing or postponing the onset of nutrition related chronic diseases in adulthood .(5)

Young people have to start now to make the right food choices for lifelong health.(9) Several authors suggest that adolescents make many more dietary and physical activity choices for themselves than they did as children (10)In addition , these choices may form the basis for adult eating patterns , cause the established eating habits , during adolescence , are difficult or even impossible to be altered in later life .(8,9)

The types of diets during this period may affect day-to-day wellbeing , growth , dental health , physical development and academic achievement .(8)

Much of nutrition education is based on the relationship between nutrition and the prevention of conditions such as coronary heart disease which develop in middle age while adolescents' main interest in nutrition is based upon how it can improve their lives now and what are their immediate rewards .(8) therefore these education programs has been thought to be of little relevance to themselves, (10)

Three key influences on food intake in adolescents (as opposed to younger age group) have been described : altered meal patterns, changing food consumption , and concern with body weight ( e.g. Appearance ) . It has been suggested that many of these features reflect teenagers' needs to express their freedom from parental control and from adult taste and lifestyle .(8)

Improvement in nutrition is a good starting point when trying to alleviate symptoms associated with menstruation like tension , anxiety , breast tenderness and others , it is safe , relatively cheap and puts the girl in control of her own treatment .(11)

Although it is well known that fruits and vegetables are key components of a healthy diet , many people including adolescents eat less than the recommended number of fruit and vegetable servings each day . Eating plenty of fruits and vegetables of different kinds may help protect against many chronic diseases , and promote healthy bowel function .(11)

Despite the well-known benefits of physical activity, most adults and many children lead a relatively sedentary lifestyle and are not active enough to achieve these health benefits.(fund) It has been proved that physical activity helps build and maintain healthy bones , muscles , and joints as well as controlling weight and reducing fat .(12)It is considered as an important determinant in the density and strength of the proximal femur , and thus a crucial factor in the prevention of hip fractures due to osteoporosis in postmenopausal women .(13) For those reasons , several reports have suggested that the critical time for adoption of physical activity behaviors is during adolescence .(14))

Sports and exercises are important during the growth years , and they are more important when the individual must spend time in inactivity .These forms of activity contribute also to mental health by offering opportunities , first , to express aggressions that do not find an outlet because of restrictions of school ; second , to be constructive or creative ; and third to relax and thus ease the tensions created by everyday living .(15)

Therefore to be well adjusted , the adolescent must have strong and satisfying recreational interests that involves physical activities and plays .(15)

Though most youth experience physical education at some point in their school experience , few have daily physical education . Elementary and middle school aged youth are much more likely to participate in regular physical education than high school students . Many evidences suggest that well conducted physical education programs can result in increased activity levels during school days as well as outside the school settings .(14)

Indeed , girls are interested in diets that will make them thinner and improve their complexions , so most of them are willing to try any diet that is claimed to make the changes they desire in appearance .(15)

Moreover , various studies have suggested that no age group is more preoccupied with body image and appearance than adolescent girls . Body image , which refers to the feelings and reflections that the girl has about her body , is of critical importance during adolescence . Female body image is intimately bound up with subjective perceptions of weight . (16) Because dissatisfaction with body image can serve as a precipitating factor to several harmful consequences , different studies were concerned with body image and girls' weight perceptions . (16)

The present study aims to investigate in depth the knowledge , attitudes and practices of adolescent girls towards health related issues .Emphasizing on : dietary habits particularly during menstruation ; age- specific dietary practice concerning mainly breakfast , regular meal eating , and milk consumption ; also to identify whether

mother's work affect breakfast eating habits . To examine the attitudes and practice of adolescent females towards physical activity .In addition , to explore the adolescent females satisfaction with body weight to identify if satisfaction is associated with age and / or BMI .

## **SUBJECTS AND METHODS :**

A cross sectional study was carried out to assess the physical activity and dietary patterns of adolescent school girls in Baghdad.

Official approval and consents were obtained from the Ministry of Education to visit the intermediate and high schools of girls to conduct the study there .

A questionnaire form was constructed that consisted of three categories of questions ; the first , regarding demographic characteristics of the participants , the second and third were concerned with dietary and physical activity patterns respectively.

A pilot study was carried out, on fifty female students , from two schools located in the two banks (Al-Risafa and Al-Karkh ) of Baghdad, through a four-week period , prior to launching into the project . The aims of this pilot study were to evaluate the questionnaire , augment the researcher's interviewing skills , estimate the time needed for each girl to be interviewed and examined ,also to avoid some technical and administrative obstacles . As a result, the questionnaire was modified , some questions were changed or new ones were added in order to gain an optimum information .The researcher's approach to girls was also modified , to have a better way of communication and , thus, their optimum cooperation was achieved .

Twenty out of (319) secondary and high schools were randomly chosen from different sectors of Baghdad city in order to cover all socially-different areas . The data collection was carried out from the 15<sup>th</sup> . of September 2002 to 10<sup>th</sup> . of January ,2003 .

By using systematic random selection method , a sample of (303) female students , with age range of 12 - 18 years was chosen for the study participation ,from all school grades . Each participant was interviewed , individually , in a private room by the researcher herself to avoid inter-observers' bias ,using a well- constructed , standardized questionnaire .During the interview , the girl was asked about various personal demographic characteristics e.g. (age, religion , residency , parental education and work , and birth order ) , and physical activity patterns , the reasons and obstacles behind abandoning sport in its different forms were explored . In addition , the dietary habits of each participant were investigated ,concentrating on the following points : whether she eats meals regularly , skips breakfast ;consume milk . and her choices for a snack. Then ,she was asked to express her perception of her own body image , being overweight or underweight and what are the measures taken accordingly .Moreover , the knowledge of each participant was evaluated , regarding healthy dietary practice during menstruation , and also knowledge of the benefits of physical activity and appropriate body weight .

After the questionnaire had been answered , each participant stayed for height and weight measurements . With a bare foot and without heavy clothes , each participant with her head in Frankfurt plain, her weight in (kg) was taken by means of a portable digital bathroom scale , which was standardized prior to use . The subjects' heights were taken then .

The time needed to complete an interview was about twenty minutes for each . Body mass index (BMI) was calculated as the ratio between the subjects' weight and the square of her height in meters . $BMI = wt./height(m)^2$

Statistical treatment of the data was performed by means of the SPSS 9.0 for Windows . The sample was classified according to age into two groups , from 12 to 15 and 16 to 18 years , as younger and older adolescents respectively,  $\chi^2$  and p value were used to assess the significance of differences .

## RESULTS

The baseline social and demographic characteristics of the population under study are depicted in table 1 . The age of participant girls was ranging from 12 to 18 years , representing both secondary and high school students . The sample was divided into two groups the first aging 12 –15years (53.13%) and the second 16-18 years (46.86) representing younger and older adolescents respectively. Most of the population under study (95.7%) was Moslems.

The highest percentage of our study sample ranked as the second and first birth order (29.4%) and (25.7%), respectively . Fortunately , the majority (85.5%)of the girls was living with both parents . Most(70.95%) our adolescent girls were living in urban areas .It is a good sign that the highest percentage of the study girls were the offspring of highly educated (college and more) fathers (68.64%) and mothers (46.86%) . On the other hand , high percentage (72.6%)of the population under study , their mothers were housewives .

By estimation of BMI , all participants were divided into four groups according to BMI vales as less than normal (<20) , normal (20-25) , over weight (>25-30) and obese (>30).]Regarding BMI , although high proportion (49.8%) of our adolescent girls was within the normal range . A considerable percentage (39.6%) of them was below the normal range.

Table 2 represents some dietary practices during menstruation , a quarter 77 (25.4%) of the adolescent girls stated, that, they usually prefer some food item. Highest percentage (11.6%)of our sample preferred hot drinks. While 8.3% of them preferred to have sweets during menstruation . On the contrary , about 33% of the females practice restriction upon some types of food . Cold drinks and ice creams rank as the highest (22.1%) avoided food .

Table 3 illustrates the dietary habits of the study population with respect to age . Younger and older adolescents aging, 12 to 15 and 16 to 18 years, respectively . More than half 83 (51.6%) of the younger girls eat meals regularly , while only third (33.1%) of the older adolescents , eat regularly the main three meals .

As our study found that, young people are inclined to miss breakfast , 45.9 % of them leave the house in the morning without eating ( skipping breakfast). Milk consumption habits per week , are also depicted in table 3 . A trend was noted in the decreasing consumption of milk among both age groups of adolescence, which is perhaps, worrying especially in relation to calcium intakes. On the contrary, snacking was prevalent among the two age groups (table 4) . They appear to consume a wide variety of snacks and may consume 2 or more choices together , as on snack . Overall , the total 251 (82.8%) indicates the popularity of sweets and chocolates as snack selections , in comparison to fruit 205 (67.6%) .

The level of physical activity of adolescent girls was detected specifically during their last summer holiday, 223 (73.5%) girls had answered positively when asked about leisure- time sport and exercise performance . While 80 girls declared that they never performed any sporting exercise during the holiday. Table 5 shows the types and frequencies of plays and exercises .Only 69 girls said that they did perform aerobic exercises regularly .Swimming and cycling were the least performed activities in a regular manner by girls(9 and 6 girls respectively ) .

In addition we studied the frequencies of motivators and barriers. Table 6 showing the frequencies of motivators with exemplars of each category. The highest motivations for sports, 121 (54.5%) girls played for fun. In spite of girls being more concerned with the cosmetic aspects of physical activity , only quarter 56(25) of the

girls played to have a good shape . Unfortunately few 13 girls identified exercise as a means of achievement .On the other hand , concerning barriers to participation in exercise. Female adolescents did not perceive the lack of time as their greatest barrier (10.5%) . Instead , problem with interests and motivations (78.1%) were most frequently cited by them , they would rather spend the time doing something else . Only 3 girls stated that they were not allowed, by family, to play exercise and sport (table 6a).

In current study we found, that, dissatisfaction was significantly higher (73.2%) among older adolescents compared to (49%) younger group ( $\chi^2=17.4$   $p<0.001$ ) .(table 7). Regarding BMI, Our study revealed that (44.2%) of the population under study were satisfied with their weights in spite of being( with BMI  $<20$ ) under weight. On the contrary, 6(25%) of the over weight girls ( $>25$ ) considered their body weights as normal .Moreover , half (50.3%) of the adolescents with normal BMI levels (20-25) considered their weights to be excessive .(table8).

Dissatisfaction with weight was found to be significantly associated with BMI ( $\chi^2 =6.97$   $df=2$   $p<0.05$ ) .Table 8 a shows that dissatisfaction was increasing steadily with BMI .

Interestingly in our study we found that girls show a significant inverse age – related difference in taking the main three meals regularly ( $\chi^2$  with Yates correction = 9.71  $p< 0.005$ ) , being an older adolescent is associated with irregular eating habits . About 95 (66.9%) girls of the 16 – 18 year olds answered negatively when asked about regular eating habits (table 9). Table 10 illustrates the association of milk consumption habits among the study population with age . An insignificant difference ( $\chi^2= 3.11$   $p >0.05$ ) was observed among the two age groups , in the frequency of milk consumption . A considerable proportion 125 (41.2%) of girls , belonging to both age groups , reported disliking of milk and thus rarely drinking it .

The trend of adolescents being most likely to miss breakfast is substantiated by 138 girls skipping breakfast . A significant relation of missing breakfast habits with mothers' work, was found( $\chi^2$  with Yates correction =16.56  $p <0.001$ ) . Having a mother who is a housewife , means that the girls (60.9%) are more likely to eat before leaving to school in the morning . on the other hand, 52 (66.6%) of girls whom their mothers are working (outside house) used to skip their breakfast. Table 11

## DISCUSSION:

Interviews are usually preferred in community health research , because they provide more assurance that the data will be reproducible , and people are more able to describe their attitudes , perceptions , motivations , feelings and behaviors .(17)

Our study employed a structured pre tested questionnaire as a guide when interviewing the participants . In an attempt to provide detailed information about the knowledge , attitudes and practices , of adolescent girls with respect to different aspects of dietary habits and physical activity . Since at present , most researches on adolescent risk behavior are school based . ( 18) Schools were randomly chosen to conduct the present study there and have a better contact with adolescent girls . Adolescence is a powerfully formative time of transition to adulthood , roughly concurrent with the second decade of life , What happens between the ages of 10 and 19 , whether good or ill shapes how girls and boys live out their lives as adults in the future (19,20)

Psychological behavior , involving peoples' beliefs and attitudes , also affect food choices . So people develop various beliefs about food , which may direct behavior and alter their diets (9) Our data analysis revealed that some girls have specific dietary practices during menstruation . Girls pass through the menstruation days cautiously and try to observe their diets for some reason or another . Information about such practices is passed from mother to daughter at this age . Most cultures have some kind of menstruation taboos for girls and women . They consider menstruation as a medical condition and the menstruating girl is referred to as a patient who must observe dietary restrictions during her menses .(21)

Several ethnohistorical studies reported that the girl was forbidden the use of some types of food like meat and allowed to eat others . (21) Our investigations have shown that 25% of girls participated in the study , have some kind of preferred food items. Hot drinks and sweets are most commonly consumed during menstruation . As they believed that these items would help in reducing the physical pain and discomfort associated with menstruation .

In fact , there are some ideal dietary guidelines to be followed , for continuing wellbeing for all women , and certainly help those who suffer from symptoms associated with menstruation . (22) Several authors had suggested that increasing consumption of fruit and vegetables , and starch ; cutting down on fat ; decreasing salt and caffienated beverages are proved to relieve some of the symptoms prior to and during menstruation (11,22) Our adolescent girls have several misconceptions , they have linked food items with the severity of bleeding and future fertility . Although only 7 girls , reported avoiding coffee during this period .Which is considered as a healthy practice since caffeine is known to aggravate tension which may already be upset by menstruation (11) . Moreover , only 2% of the study population used meat in abundance during this period , in order to help replace blood loss . It is a well known fact that meat is a good source of iron . During menstruation there is a loss of iron due to bleeding . Unfortunately only 2% of our sample get that iron source . This may be due to the difficulty in obtaining such a valuable food due to our situation (embargo) .

Ice creams and cold drinks are avoided or restricted by about 22.1% of the girls .Girls did so in an attempt to lessen the physical pain and discomfort . Despite the importance of nutrition during adolescence ,till now not enough is known about the eating behaviors of young people .(23) An attempt is made by this study to examine some of these habits in depth , specifically for young females . Since the diet

of adolescent women should be of concern not only with regard to their own health , but also with regard to health of their offspring .(8)

The diet of any individual , whether child , adult , or adolescent , is the result of the intermeshing of a range of factors , many of which are complex and conflicting . This complexity increases when the focus is placed on young people , who are at a stage of development described as “turbulent”and characterized by major physical and psychological changes (9) .

The most noticeable difference between the 12 - 15 and 16 -18 year olds , in terms of dietary habits , was that the regular eating habits were more prevalent among the younger age group . This statistically significant association may be attributed to the rejection of parental values in regard to eating .Or this could be due to their finicky appetite .Girls are more likely to suffer from food aversions and loss of appetite in response to stress .(15)

Recommendations for calcium intakes peak during adolescence , because this is a critical period for bone development (10) Unfortunately , calcium intakes of many adolescent girls are bellow the current recommendations .(24)

Our investigation into age revealed that milk consumption was low. About 36.6 % and 46.5% of both age groups reported disliking milk and rarely consuming it , but no significant relation was found with age .This finding is consistent with the general trend of decreasing consumption of milk among adolescents in a study on young people in Northern Ireland .(9)

Among adolescents , consumption of most food groups increased with age , with main exception for milk and specifically among girls .(25)

The result of the present study showed that a large proportion of the girls did not take breakfast before leaving to school . Although the current recommendation in most developed countries , is to emphasize on having breakfast . The usefulness of breakfast consumption is well recognized by nutritionists . The omission of breakfast relates to dietary patterns which are unfavorable for health .(26)

Some claimed that the shortage of time was the main reason for that . The rush to school each day means some things have to be sacrificed and often that includes breakfast . Another reason was the loss of appetite especially in the morning .

A study on American adolescent girls found a similar finding , more than third the adolescent female population do not eat breakfast .(27) Other study found that 19% of the 9<sup>th</sup> grade girls used to skip breakfast (28) some people believe that skipping breakfast may help them to lose weight , while skipping meals often leads to over eating later in the day . Although breakfast is often referred to as the most important meal of the day , many young people start their day without the benefits of a balanced diet .(29) About quarter (25%) the interviewed girls , skip the morning meal . A significant relationship ( $X^2 = 16.56$   $p < 0.001$ ) was found between breakfast consumption and mothers' work . Being a housewife was associated with more girls eating the morning meal . Since mothers can positively influence their young daughters intake of dairy food in the morning (29) , being a worker may lead the mother to rush to work without eating breakfast herself . Results of this study clearly indicate that snacking is prevalent among the two age groups . These findings are consistent with other studies on adolescent dietary habits .(8,9) Sweets were the most frequently chosen snack item , by adolescents . About 80.0% of the total sample said that they had consumed sweets ( cakes , chocolates ) during the previous day . This trend is line with a similar study indicating popularity of high fat and / or sugar snacks ( as cited in Ire ) .Half the girls had consumed chips and soft drinks during the day before the interview.This finding supports the concepts of high popularity of

carbonated drinks especially among the 15 –17 year olds .(9) On the other hand chips consumption is also notable with almost half the sample reported eating it , a similar result was found in a study conducted on adolescent in the west of Scotland .(8) This pattern of sweets , chips and soft drinks high consumption may be due to their availability especially in schools, and their affordable prices .

Indeed , health has to be sold as a fun ticket and not as a health ticket which may have a more positive influence on food choice among young people .(9)

Physical activity is widely recognized as an important health behavior , providing benefits against cardiovascular diseases and some cancers , as well as improving mental health .(30) Around quarter of the girls under study engaged in no physical activity during the last summer holiday . Which is similar to the proportion of inactive young women in UK(30) evidences clearly point at the declining levels of physical activity as the population progresses from childhood to adulthood , with this feature , particularly pronounced in females .(30,31) In our study aerobic exercises were the most frequently performed type of sport (n=69) , in a regular manner . This may be attributed to the fact that these exercises need no equipment no companions and could be performed in the house , garden and even the bedroom .Moreover , such kind of exercises were highly encouraged through TV series . As for the motivations to play , fun was the most important reason behind performing sports by this age group of girls . When considering barriers to activity ,as stated by the girls , the loss of interest in activity , appeared to be the most prominent motivational barrier . And this came to agree with the study finding in UK .(30) So enjoyment was identified as a key component of young s' perception of exercise . This was reflected in fun as a motivator and barrier such as loss of interest in exercise and preference to do something else . Although ,our girls were asked about their leisure time physical activity , some stated that the lack of time was their main barrier . Nonetheless , the use of time as barrier to exercise by young people is disturbing . One possibility is that time is not a true barrier , but rather an excuse for non participation .(30)

It is very important to increase the level of adolescent participation in physical activity. Cause if activity is successfully attempted in the formative years , then the positive experience and consequent elevation of exercise self – efficacy will contribute to greater probability of adults participation .(30) Girls had mentioned different motivators to play , which reflect their wide knowledge about the benefits of exercise to both physical and mental health .Like providing benefits against cardiovascular diseases and some cancers (30) . unfortunately , still a large proportion of them engage in virtually no habitual physical activity .And despite their proven benefits , a substantial proportion of people do not yet get enough physical activity to provide health benefits .(31)

Since adolescence is a highly vital stage of life in which it is very important to have a physical appearance that fits the current aesthetic patterns (32) . Several authors have studied the correlation between BMI and self perceived body weight and the degree of satisfaction with their own image in American and European youths (32) The current study showed a significant association ( $X^2 = 6.97$   $p < 0.05$  at  $df=2$ ) between dissatisfaction and BMI , which came to agree with a study conducted on Spanish teenagers (16,29,32,) . A significant association ( $X^2= 17.4p <0.001$ ) between increasing age and the level of satisfaction was detected .This is expected as young women are bombarded with messages of female thinness , as the desired body image . (16) Our data had showed that more than half (59.6%) of the girls had no idea what their weight should be , since according to the current standards , their weight is adequate but they consider it to be unsatisfying . A similar study in USA in , 1986

had found 81.0% of adolescent females were of normal weight , 78% of the total group wanted to be less .(33) Despite the normal range of BMI , many girls of the present study felt they were too heavy , which suggests an awareness of body shape or image and a dissatisfaction with their own weight . Therefore , 44.0% of the girls under study were quite happy being under weight. In fact , the vast number of young women and girls who have no real need to cut down their nourishment and do it in response to what may justly be called a craze of fashion .(34) About 60.3% of our sample were dissatisfied with their weight .Which co insists with several other similar studies reported that an alarming number of adolescent females , today , feel badly about their bodies .( 16,33) Therefore where thinness is undeniably a strived beauty ideal , young women in the process of establishing their identity , are especially vulnerable to dissatisfaction with their body image .(16) Disappointingly , negative body image in adolescent females have several harmful consequences on health . Since body dissatisfaction among adolescents may contribute directly to depression because appearance is a central evaluative dimension for girls .(16)

Another alarming finding that should draw the attention , is that about 39.6% of all the participants were bellow the normal range of BMI . This finding could be attributed to the disturbed psychological status , which characterize this age . In turn the appetite will be affected . Or it may be a natural result of their poor living standards nowadays due to the current situation of the of Iraq (Embargo).So in a world suffering from all types of short and long term effects of under nourishment , it seems strange that among living amidst plenty should deliberately choose the risks of under nourishment .(34)

## **CONCLUSION :**

A large proportion of adolescent females do not practice a healthy dietary habits . The majority of the older adolescents rarely consume milk . While breakfast skipping was more among the younger girls . A significant relation was found between having a housewife mother and eating the morning meal . Eating the main three meals regularly was significantly higher among the 12-15 year olds .

It was found that fun was the main motivational factor for exercise participation among adolescent females . Another interesting finding was that , the satisfaction with body weight was significantly lower among the 16-18 year olds . Also the level of satisfaction was significantly associated with the BMI .

## **RECOMMENDATIONS :**

Adolescents should be taught as this stage of life how to live a healthy lifestyle , to avoid so many health problems . School curricula should include the needed information and guidelines for a healthy dietary habits . Emphasis should be upon the following points : having adequate diet ; minimizing intake of sweets and snacks in between the meals ; regular physical activity and never to skip breakfast .

They should be provided with the adequate information about appropriate weight. The role of parents as role modeling in following a healthy lifestyle , should be stressed upon through messages of the mass media .

**Table 1:****Baseline social and demographic characteristics of 303 adolescent schoolgirls**

	<b>Count</b>	<b>Percent</b>
Age: (years)		
12-15	161	53.13
16-18	142	46.86
Religion:		
Moslem	<b>290</b>	<b>95.7</b>
Christian	9	3.0
Others	4	1.3
Birth order:		
1 <sup>st</sup>	78	25.7
2 <sup>nd</sup>	<b>89</b>	<b>29.4</b>
3 <sup>rd</sup>	61	20.1
4 <sup>th</sup>	38	12.5
5 <sup>th</sup> and more	37	12.2
Living with:		
Both parents	<b>259</b>	<b>85.5</b>
Mother only	39	12.9
Father only	5	1.7
Residency:		
Urban	<b>215</b>	<b>70.95</b>
Rural	88	29.0
Educational levels of parents:		
Father		
Primary	40	13.2
Secondary	16	5.3
High school	39	12.9
College and more	<b>208</b>	<b>68.64</b>
Mother		
Primary	41	13.53
Secondary	21	6.9
High school	99	32.7
College and more	<b>142</b>	<b>46.86</b>
Mother occupation		
Housewife	<b>220</b>	<b>72.6</b>
Worker	83	27.39
Body mass index:		
<20	120	39.6
20-25	<b>151</b>	<b>49.8</b>
> 25 - 30	24	7.9
>30	8	2.6

**Table 2:**  
**Dietary patterns during menstruation among studied female adolescents**

Food items	Preferred n=77*(25)		Avoided n=100**(33)	
	(n)	(%)	(n)	(%)
Egg	5	1.7	-	-
Hot drinks	35	11.6	-	-
Meat	6	2.0	-	-
Milk	3	1.0	-	-
Sweets	25	8.3	-	-
Others	3	1.0	-	-
Coffee	-	-	7	2.3
Cold drinks & ice cream	-	-	67	22.1
Spicy food	-	-	22	7.3
Others	-	-	4	1.3

\* Total of 203 do not avoid,

\*\*Total of 226 do not prefer specific items

**Table 3:**  
**Dietary habits of study population distributed according to age**

Meals eaten regularly:	Age (years)					
	12-15 (n=161)		16-18 (n=142)		total	
	Count	(%)	Count	(%)	Count	(%)
Yes	83	51.6	47	33.1	130	42.9
No	78	48.4	95	66.9	173	57
Milk consumption/week						
5-7	63	39.1	49	34.5	112	63.9
1-4	39	24.2	27	19.0	66	21.7
rarely	59	36.6	66	46.5	125	41.2
Breakfast:						
Having	83	51.6	81	57.0	164	54.1
Skipping	78	48.4	61	43.0	139	45.9
Having snacks *:						
Yes	161	100	142	100	303	100
No	0	0	0	0		

\* Snack: any item eating not in the main meal.

**Table 4:**  
**Kind of snack usually chosen by adolescence girls (yesterday)**

Food item	(n)	(%)
Chips	149	49.2
Sweets	251	82.8
Fruit	205	67.7
Soft drinks	159	52.5

**Table 5:**

**Types and patterns of sport and exercise performance among  
223 adolescent females**

<b>Types of sporting exercise</b>	<b>Regular</b>	<b>Sometimes</b>	<b>Rare</b>	<b>Never</b>
Swimming	9	24	7	183
Team games	32	18	2	171
Aerobics	69	41	13	100
Cycling	6	0	3	214
Walking and jogging	28	19	0	176

**Table 6:**  
**Motivational factors to exercise and sport among**  
**223 adolescent girls.**

<b>(A) Motivational factors</b>	<b>No.(%)</b>	<b>Examples</b>
1. good shape	56 (25.1)	“to look better with a slender waist”
2. health	65 (29.1)	“I think it is healthy and important”
3. relaxation	47 (21.1)	“I feel relaxed and ease the tension”
4. achievement	13 (5.8)	“I like to play ... it makes me special among the team”
5. refreshment	56 (25.1)	“I feel new and energetic again”
6. have fun	121 (54.3)	“I enjoy sports a lot ,it is good exercise and fun”
7. weight control	42 (18.8)	“it burns off fat and keeps me slim”
8. others	22 (9.8)	

**Table 6A:**

**Barriers to exercise and sport among 105 adolescent females  
(never or rarely to play)**

<b>(B) Barriers</b>	<b>No.(%)</b>	<b>Examples</b>
1. no interest	82 (78.1)	“I would rather do something else”
2. no mood	2 (1.9)	“I don’t have the mood to do it”
3. no place	2 (1.9)	“we don’t have a garden”
4. no time	11 (10.5)	“sometimes there is no time”
5. not allowed	3 (2.9)	“mother says it is unfitting for a girl to play”
6. too thin	6 (5.7)	“I’m too thin ,and tire easily”
7. others	13 (12.3)	

**Table 7:**  
**Body weight satisfaction according to age of 303 adolescent girls.**

Age (years)	Wt. Satisfaction		Total
	Yes n,(%)	No n,(%)	
12-15	82 (50.9)	79 (49.0)	161
16-18	38 (26.7)	104 <b>(73.2)</b>	142
Total	120	183	303

$\chi^2$  (Yates correction) =17.4    p<0.001

**Table 8:****Body weight perception in relation to BMI  
among 303 student girls No. and percent.**

BMI Status	Perception of weight as			Total
	Less than Normal N(%)	More than normal N(%)	Normal N(%)	
<20	54 (45.0)	13 (10.8)	53 (44.2)	120
20-25	14 (9.3)	76 (50.3)	61 (40.4)	151
>25 - 30	0	18 (75)	6 (25.0)	24
>30	0	8 (100)	0	8
Total	68	115	120	303

**Table 8 (A) :**

**Body weight Satisfaction in comparison  
with BMI among 303 girls.**

BMI	satisfied	Not satisfied	Total
<20	53 (44)	67 (55.5)	120
20-25	61 (40.3)	90 (59.6)	151
>25	6 (18.75)	26 (81.1)	32
Total	120	183	303

$\chi^2 = 6.97$ ,  $df = 2$   $p < 0.05$

**Table 9 :**

**Association of having 3 main meals regularly  
with age of the study group.**

Age (years)	Having the meals regularly		Total
	Yes n,(%)	No n,(%)	
12-15	83 (51.5)	78 (48.4)	161
16-18	47 (33.0)	95 (66.9)	142
Total	130	173	303

$\chi^2 = 9.71$   $p < 0.005$

**Table 10 :**

**Milk consumption habits (weekly) in respect to age of 303 adolescent girls.**

Milk consumption (times per week) count (%)	Age (years)		Total
	12-15	16-18	
5-7	63 (39.13)	49 (34.5)	112
1-4	39 (24.2)	27 (19.0)	66
Rarely	59 (36.64)	66 (46.4)	125
Total	161	142	303

$$\chi^2 = 3.11 \text{ p} > 0.05$$

**Table 11:****Having breakfast among adolescent girls in relation to mothers' work**

Mothers' work	Breakfast		Total*
	Having n,(%)	Skipping n,(%)	
Housewife	134 (60.9)	86 (39.0)	220
Worker	26 (33.3)	52 (66.6)	78
Total	160	138	298

\*5 girls reported death of their mother.

$\chi^2 = 16.56$   $p < 0.001$

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