

Effects of the Dietary Habits on Late Adolescent Girl Students in a Government Aided Institution at Lucknow

¹Ruchi Saxena, ^{2*}Seema Singhand ³Ashok Kumar

¹Department of Chemistry, Nari Shiksha Niketan P.G. College Lucknow

²Department of Zoology, Nari Shiksha Niketan P.G. College Lucknow

³Department of Statistics, Lucknow University, Lucknow.INDIA

*Corresponding author Email: drseemasingh_23@yahoo.co.in

Abstract

Adolescence is the period for rapid growth in human development. This period needs superior nutrition, to have a healthy adult both physically and mentally. A nutritional survey was conducted to investigate the dietary habits, sedentary behavior and academic performance of the girl students of Nari Shiksha Niketan - A government aided Institution at Lucknow. A total of 250 students of class 9th, 10th, 11th, 12th and B.Sc. with the sample size of 50 students each of the age group 15- 19 were taken for the study. A pre-tested questionnaire was used to collect the information about breakfast, snacking, food intake frequency, sedentary habits, sleep deprivation, chronic illness, time spent on mobile phone, physical exercise and performance in exams.

Majority of the girls studying in the institution belong to lower socio-economic strata of the society. The statistical analysis indicates that there are no obese girls, 37.06% students have low BMI, 19.19% are underweight with unhealthy dietary habits. This results in approximately 70 % of the students suffering from chronic illness with 50.9% of them constantly tired during school hours. Both stunting and weight for age or wasting are highly significant (p-value < 0.001).

Keywords: Dietary habits, physical activity, sedentary behavior, insomnia.

1. Introduction

The “Happiness” of a country depends upon the wellness of the people living in it. The health of the adolescents is a major indicator for the wellness leading to happiness of the society. World Health Organization (WHO) defines adolescence as the segment of life, between the ages of ten to nineteen years [1,2]. It is marked by intense body changes resulting from puberty and psycho-social development that influences her nutritional requirements. The woman today, has a major impact on the world around her, hence the adolescent girl has to be prepared for the multiple roles, she would have to play in future. The development and wellbeing of the adolescent girl is therefore crucial and therefore, the study of her nutritional requirements is of interest. The

health of a girl depends on her lifestyle, which includes her nutritional requirements[3] and her performance in all other walks of the life.

The wellbeing of an adolescent girl in India depends upon her eating a healthy Indian diet, with a wholesome breakfast, comprising of paratha, sabzi, egg and milk, lunch and dinner of dal, roti, chawal, sabzi and dahi. She should have proper physical activity with the ability to carry out daily task with vigor and alertness without fatigue with ample energy. She must be able to enjoy leisure time, pursue hobbies and also have the ability to cope with unforeseen emergencies by maintaining an ideal body weight. It is also very important that she gets adequate sleep with minimum screen time of mobile phone and television for satisfactory academic performance together with physical activity in school or college.

A pilot study was conducted with twenty students taken randomly, who were not included in the main study. They showed a definitive relationship between nutrition, stunting, chronic illness and the academic performance. This led to a nutritional survey to investigate the dietary habit, sedentary behavior, use of mobile phones, watching television and relating it to the academic performance of the adolescent girl students of Nari Shiksha Niketan - A government aided Institution at Lucknow.

2. Material and methods

Permission and ethical clearance to conduct the study was taken from the Principal, Nari Shiksha Niketan Inter and Degree sections of the college. Medical Officer from Nari Medical Centre was informed about the objectives of the study and collection of the data. Informed verbal consent was taken from adolescent girl students. They were informed about the purpose of the study and freedom was given to be a part of the study or refuse as per their wish. They were assured that the data so collected will be used for research purposes only and confidentiality of the data will be maintained. For the adolescent girls who gave their consent, interviews were conducted with privacy.

2.1 Studied population

For the study, 250 adolescent girl students of Nari Shiksha Niketan - A government aided Institution at Lucknow from the classes 9th, 10th, 11th, 12th and B.Sc. with the sample size of 50 students each of the age group 15- 19 were taken for the study.

2.2 Inclusion criteria

- (i) Students present on the day of survey
- (ii) Students between the ages of 15-19 years.

2.3 Exclusion criteria

- (i) Students absent on the day of survey
- (ii) Students not willing to participate in the study.

Since 50 girls were selected from each age group, the data had a moderate symmetry of distribution. This study was conducted in September 2019.

2.4 Data Collection

Data collection was performed by direct methods through a questionnaire, observations, interview and anthropometric measurements. Examination results of the students were noted from institutional records. The age of the girls was also recorded from the birth record register of the institute. The study population was chosen by convenience sampling.

2.5 Questionnaire

A pretested, self-designed, close-ended, questionnaire which included questions about consistency of daily meals (breakfast, lunch and dinner), types and frequency of food, drinks and snacks consumed, physical exercises, sleep habits, number of hours spent in front of the computer, television (TV) or mobile phones, chronic illness and academic performance was used for the study. The questionnaire was in Hindi language and filled by the students in their classrooms under the supervision of their teacher.

2.6 Anthropometric Measurements

To calculate the BMI, anthropometric measurement of height (cm) and weight (kg) were taken. Height was measured in centimetres, which was marked on the wall with the help of a measuring tape. All the girls were measured against the wall without footwear, with the heels and shoulders against the wall and their heads positioned straight, so that their vision was perpendicular to the body. A glass scale was held straight on the top most point of the head to obtain the correct height. The weight was measured using a weighing machine (Crown), the girls were asked to remove their footwear before measuring their weight. The scales were recalibrated after each measurement. Accuracy of the weighing scale was verified from time to time against known weights.

3. Statistical Analysis

Analysis of the data collected by the questionnaire and the anthropometric measurement was done by Statistical Package of Social Science (SPSS version 20 (2011)). Body Mass Index was calculated by the formula (kg/m^2) as classified under standard 'Asian Criteria'[4]. BMI is evaluated using agespecific charts that take into account the different growth patterns of WHO. For all statistical tests $p\text{-value} < .05$, considered to be statistically significant. Descriptive statistics and association were also calculated wherever required.

4. Results

Lifestyle of the adolescent girls of the institution largely depends on the socio-economic status of their families which has a direct influence on their nutrition [5, 6]. Lifestyle also includes their sleeping habits and physical activity.

4.1 Distribution Family Income and Residential Area

From the study we observe that 64.32% of the girls belong to families living below the poverty line (BPL) (Fig. 1), with an approximate monthly income of 10,000 INR which is slightly below the national average of 11254 INR [7]. The girls have two or more siblings and live in shanty houses or urban slum dwellings with very poor hygiene. The next category is of 13.62% girls belonging to families living in one to two room houses with a monthly income of 10000 to 20000 INR. The next group of 9.86% girls belongs to families with the monthly income of 30000 INR. Only 12.21% of the girls belong to families with income of 30000 INR and above. These girls live in 2-3 BHK houses with good hygiene, thus the 77.94 % of the adolescent girls who hail from families with very low income (up to 20000 INR) cannot afford to eat nutritious three meals. It has also been observed that the eating habits too have shown a gradual shift from the traditional Indian prudent dietary patterns to the Western diet. This transitional phenomenon in nutrition is characterized by increased consumption of fast food, sweets, cold drinks and meat. Since fast food is high on calories and fat, it is common amongst adolescents to skip meals and snack frequently leading to nutritional deficiencies [8].

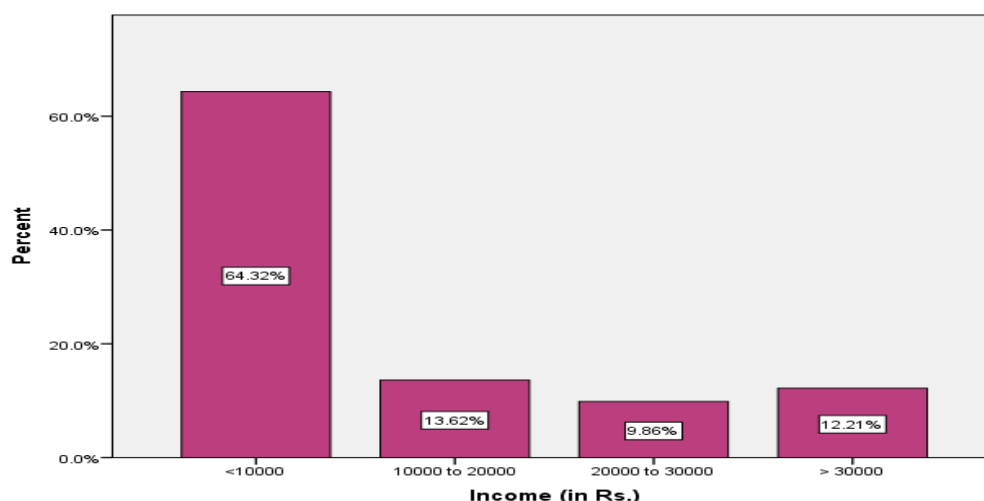


Fig-1: Distribution of family income.

4.2 Distribution of Daily mealconsisting of Breakfast, Lunch and Dinner including egg

The results of the study indicate that only 58.98% of the adolescent girl students have all the three meals of the day (Fig. 2). It was also noticed that 26.20 % of girls have only two meals a day, 25.64 % have only lunch and dinner with no breakfast and 2.56% girls have breakfast and dinner with no lunch. There are 6.13% of girls who have only one meal a day with 0.51% only breakfast, 3.06% only lunch and 2.56% only dinner. It has also been noticed that 8.06% of the adolescent girls eat eggs more than three times a week, 28.81% of them eat eggs twice a week, 16.67% of them eat egg once a week and 49.46% girls never eat eggs (Fig. 3).

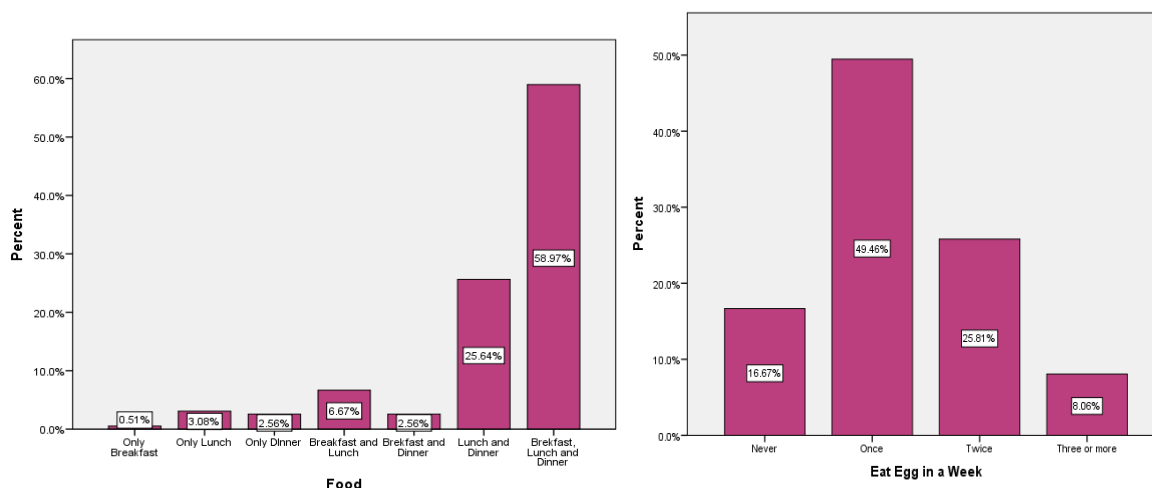


Fig. 2: Distribution of the meals consumed Fig.3: Distribution of eating egg during week

4.3 Distribution of Fast Food, Snacks and Drinks

We also observe that, 42.66 % girls consume fast food daily, 49.54% girls have fast food at least once a week whereas only 7.80% of the girls do not consume fast food at all (Fig 4). 25.13% girls drink tea regularly, 24.62 % prefer juice and 29.23% cold drinks, only 21.03 % girls drink milk daily (Fig.5)

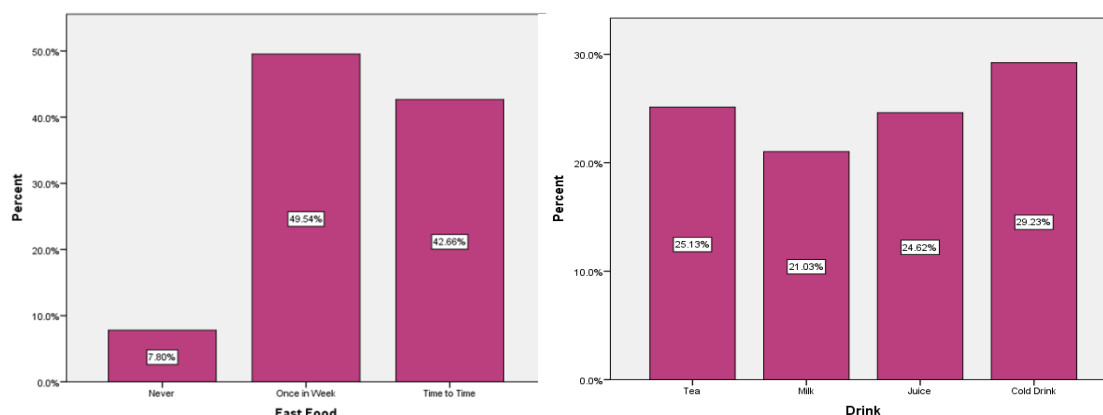


Fig.4: Distribution of fast food consumed Fig. 5: Distribution of the drink consumed

4.4 Determination of Body Mass Index (BMI) of the Sample

To assess the nutritional status of the adolescent girls hence it is imperative to know their BMI. The BMI which was calculated showed that 55.84 % of the adolescent girls were normal or well-nourished and the prevalence of underweight girls is 37.06% which is very similar to other developing countries [9] with very less number of students found to be overweight i.e. 7.11% whereas no girl was obese (Fig 6). This result is very similar to another study where out of the 250 girls, none of the girls was found to be overweight or obese[10]. In the studied population the girls are weary as their average weight for age is significantly less (p -value<0.001) than the standard weight for age given by the WHO (Fig 7).Further highly significant stunting (p -value<0.001) with reference to WHO standards (Fig 8) was observed. This clarifies that the students are either not getting a balanced diet or they are not able to afford the essential nutrition for their well-being and are therefore malnourished as is clearly seen on comparing their BMI with the WHO standards(Fig 9) [10].

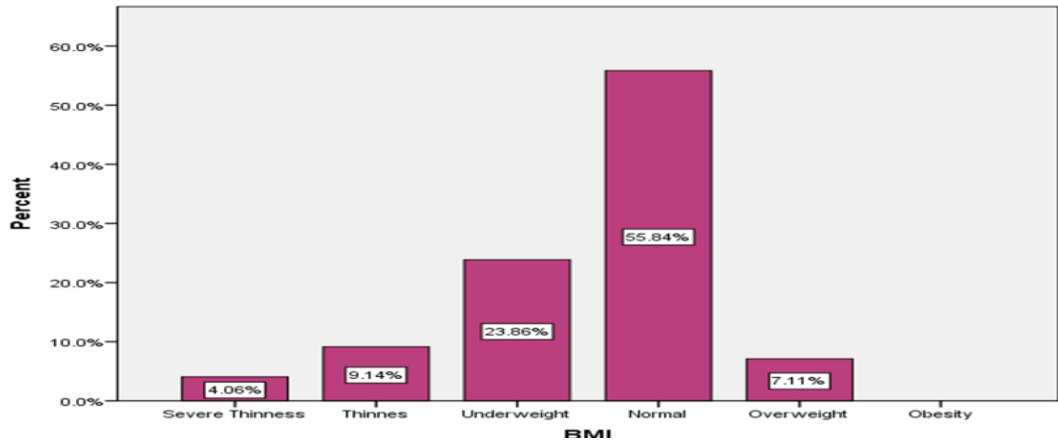


Fig. 6: Distribution of BMI

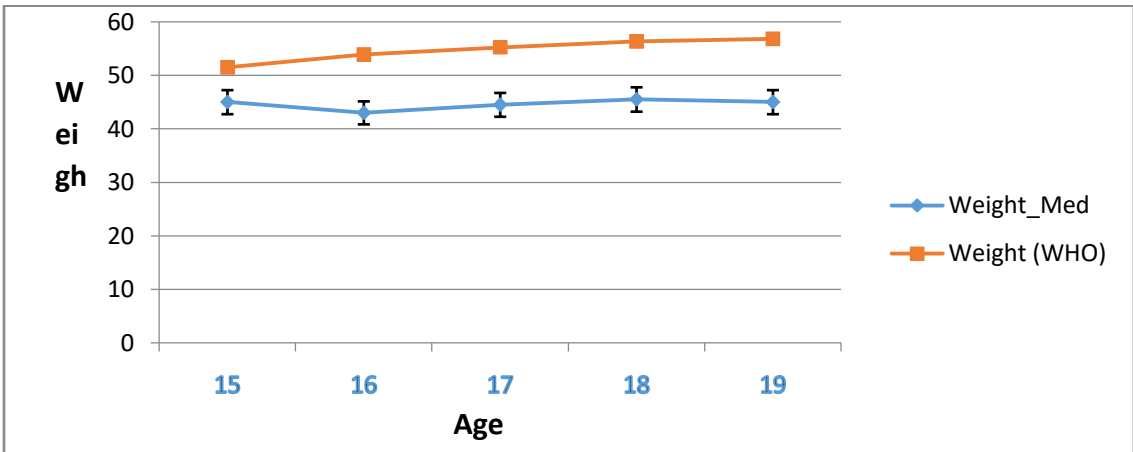


Fig. 7: Median Weight (kg) with error bar

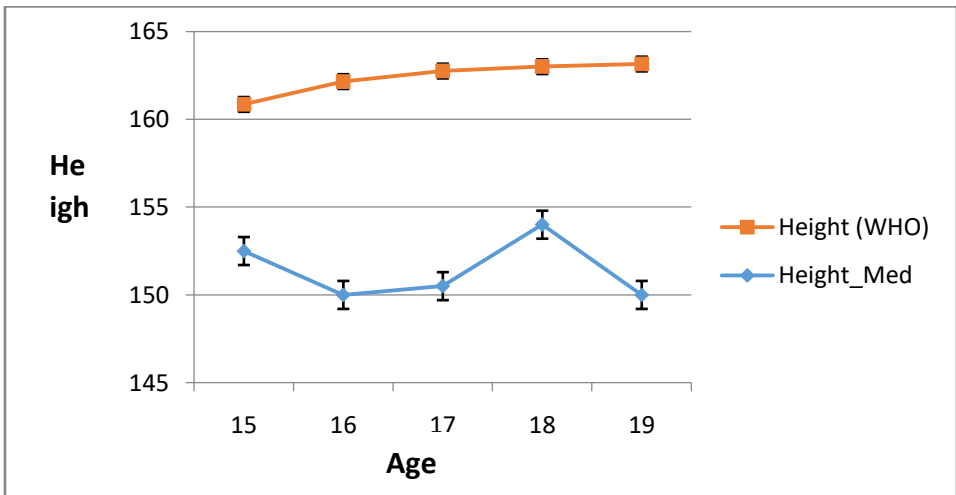


Fig 8. Median height (cm) with error bar

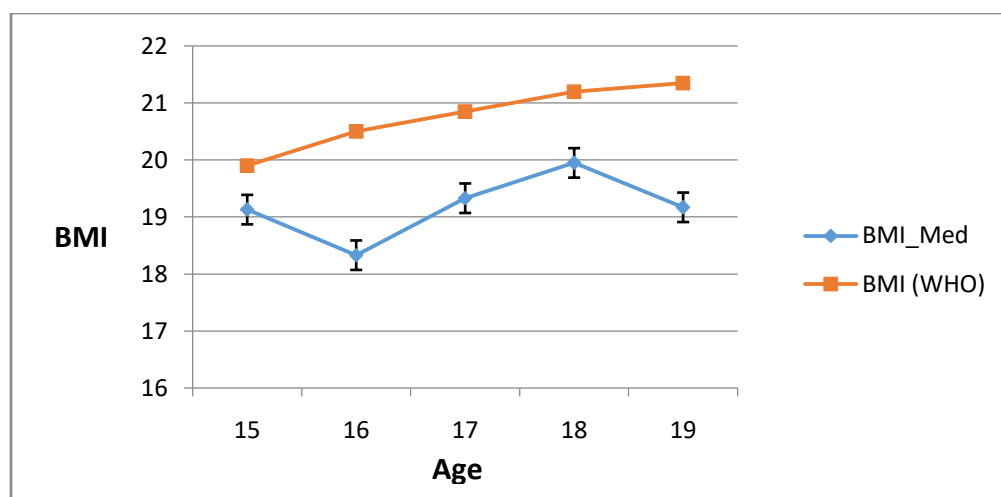


Fig. 9: Average Body Mass Index

4.5 Sleep deprived, tired and poor academic performing

Sleep is essential to the healthy development and wellbeing of the adolescent girls, as well as their success at school/college and in the workplace. According to the National Sleep Foundation USA teens need at least eight to nine hours of sleep at night[11]. Teens taking less sleep at night are more likely to be depressed and are also more likely to have suicidal tendencies. According to the present study 43% of the adolescent girls are watching TV for more than 2 hours a day, 13% girls are constantly using mobile phones and 20 % girls play with electronic gadgets for more than 3 hours at home. Consequently 37.5% of adolescent girls are sleep deprived i.e. they average 4 to 5 hours of sleep per day. This lack of sleep has led to constant tiredness in 50.9% of the girls and these girls were found to be underweight too. It should be noted here that there is an association between sleeplessness and poor academic performance at 10% level of significance ($p\text{-value} < 0.091$). It has been reported earlier that over a quarter of high school students report falling asleep in class at least once weekly [12]. The lack of sufficient sleep has been linked to poor self-rated health, psychological distress, difficulties in concentration, mentally drifting off in class, shortened attention span, memory impairment, poor decision making, lack of enthusiasm, moodiness and aggression, depression, risk taking behaviour, slower physical reflexes, clumsiness, which may result in physical injuries, reduced sporting performance, reduced academic performance, more sick days from school because of tiredness.

4.6 Chronic illness

The immunity of the adolescent girls at the institution is very low due to the inferior quality of life, making them chronically ill. The 38.79% girls suffer from fever, 30.84% from cold and cough, 21.03% girls experience stomach pain may be due to the unhygienic living conditions (Fig.10). This chronic illness is found to be significantly related to their academic performance ($p\text{-value} < 0.001$).

4.7 Physical Exercise

In the present study it was found that 70.31% of the adolescent girls are exercising for 0-3 hours/week, 20.83% for 3-6 hours/week, 1.56% for 6-9 hours/week and only 7.29% for more than 9 hours/week (Fig. 11). Thus, a very few girls are involved in physical activities, with most of them engaged in indoor activities like doing household chores, watching TV playing on the mobile. As a consequence, they are spending on an average of 9 hours per day on sedentary activities without being aware of the associated cardiovascular risk factors and other related issues [14, 15].

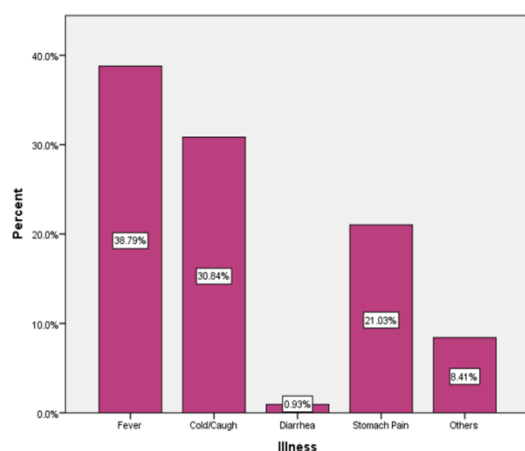


Fig. 10: Distribution of Illness

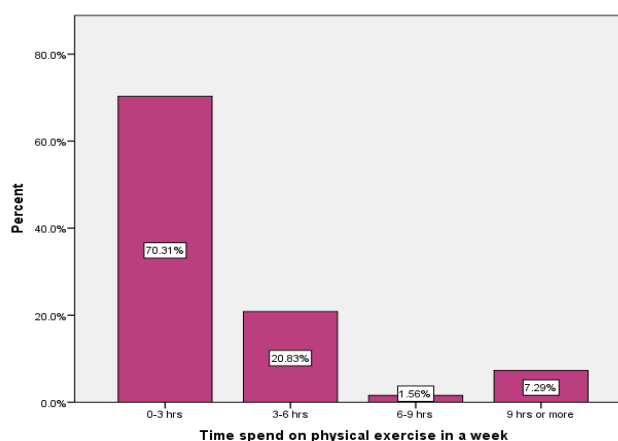


Fig. 11: Distribution of time spend on physical exercise

5. Discussion

Nari Shiksha Niketan is situated in the old city of Lucknow, which is surrounded by offices viz Health department, Red Cross, Balrampur hospital, Collectorate, lower court and the bus stand. The 64.32% girls studying in the institution belong to the families in which both the parents are working, fathers as daily wagers or vendors and mothers as domestic help, the remaining

35.68% hail from adjoining town areas and villages. The families are illiterate and with traditional Indian values of depriving the girl child[16]. These parents are unable to provide all three meals with proper nutrition, hence the 25.64 % girls come to the institution without breakfast. It is well known that after 6 hours of going without food, glycogen production reduces significantly and energy levels plummet, this leaves 50.9% girls feeling tired during school hours. Mid-day meal is being provided for the late adolescent girls too, as food is in surplus. On interview it was found that the girls are under peer pressure to project themselves of belonging to the higher socio-economic strata and therefore they prefer fast food available in the canteen over the mid-day meal. This irregular habit of missing meals on a long-term, led to the drop-in immunity with chronic illness, like headaches, fatigue and infection.

Mobile phones and television are the part of the day to day life of the adolescent girl at NSN, 37.5% of them are sleep deprived due to spending long hours watching TV and playing on the mobile phones. Since these girls are tired hence 70.31% of them do not participate in games regularly. It is noteworthy that of the 50.9% of the adolescent girls who reach the institute are very tired and sleepy, 64% of these tired girls belong to the lower socio economic class, 25% of these do not have breakfast, 48% of them do not eat eggs, 68% do not do any physical exercise making 48% of the tired adolescent girls are chronically ill, who are unable to concentrate on studies and consequently 50% of them have a poor academic performance.

This study has confirmed that the majority of the adolescent girls belong to the urban slums and are deficient on nutrition with very low BMI in comparison to the WHO standards leading to stunting and low weight for age. Their inferior lifestyle has made half of them tired and weary with a very poor academic performance. Therefore, lifestyle improvement education programs should be done for the families of the adolescent girls with special emphasis on nutrition to have healthy and happy future citizens of India.

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