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A Cross Sectional Study on BMI of Adolescent Girls, Awareness of Std. and Prevalence of Anemia among Adolescent Girls, In Rural and Urban Schools of Kerala

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Original Research Article

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Abstract: Adolescents form 22,5%population of India and is the period of rapid physical growth, psychological and social changes. The study is aimed to help in taking measures to address the problems of adolescent girls, thus yielding a healthy society and empowered youth ready to face the challenges in their future life. To study the prevalence of anemia among adolescent girls, to describe the nutritional status based on the BMI and to assess the knowledge regarding Sexually Transmitted Diseases among study participants. It is a community based descriptive cross sectional study among 200 school going adolescent girls in a one year period. Data was collected by giving questionnaire and by doing hb estimation and measuring their weight and height at the end of the study, a workshop was conducted and girls were provided fundamental health education with regard to reproductive and sexual health. They were also taught the importance of balanced diet and advised to adopt healthy eating habits and a better lifestyle. 45% of girls were aware about STD's.The prevalence of anemia among adolescent girls was 42.50%.BMI of 80% of girls were within normal range, 4.5% underweight, 12.5%overweight and 3.5% obese. Only 45% of girls had heard about STD's. The prevalence of anemia among adolescent girls was 42.5%. Mild and moderate anemia was detected in 16.5% and 26% respectively. None of them had severe anemia.BMI of 80% of girls been within normal range, 4.5% underweight, 12.5%overweight and 3.5% obese.

Keywords: Adolescent, BMI, STD awareness, Anemia, Rural and urban.

INTRODUCTION

India is the second most populous country in the world with adolescent forming a large section of population (22.5%) [1]. Adolescents have got many disadvantages, especially girls. They develop rapidly and have an extreme degree of pressure from peers, parents, society and self. Since death rate in this age group is relatively low the adolescents are considered to be healthy, however it is a misleading measure of adolescent health.

Adolescence is the period of rapid physical growth, psychological and social changes. Behavior and habits picked up during adolescence have a lifelong impact. There are various health problems faced by adolescent girls like Sexual and reproductive health problems which includes menstrual and breast problems with anxieties related to it, discharge per vagina, sexually transmitted diseases, sexual abuse. They have increased chance of anemia due to nutritional factors .Adolescents also face problems regarding underweight ,overweight and obesity.

Reaching youngsters at an earlier impressionable age before they become responsible adults can lay foundation for a better lifestyle. In traditional countries like India, formulating a program that assesses the problems of adolescent girls with specific cultural, linguistic and community specific characteristics could be very effective. Access to appropriate information and services with confidentiality is absolutely necessary and is the right of all adolescents.

This study in an attempt to find out the Prevalence of anemia, nutritional status and awareness about sexually transmitted diseases this study is aimed to help in taking measures to address the problems of adolescent girls, thus yielding a healthy society and empowered youth ready to face the challenges in their future life.

OBJECTIVES OF THE STUDY

- To study the prevalence of anemia among adolescent girls.
- To describe the nutritional status based on the BMI
- To assess the knowledge regarding Sexually Transmitted Diseases (STD) among study participants.

Working definitions

Anemia

According to WHO, normal non anemic status is defined by hemoglobin values of 12gm/dl. Anemia is classified as mild degree if hemoglobin value is between 10 to 11.9gm/dl, moderate degree if hemoglobin value is between 7 to 9.9gm/dl and severe degree if hemoglobin value is 7gm/dl[2].

BMI- Body Mass Index

BMI is a measure of weight adjusted for height. It is calculated using the formula

(3)

MATERIALS & METHODS

Study design

A community based, descriptive cross-sectional study

Study population

200 school going adolescent girls

Study setting

The study was conducted in 2 schools in Thiruvananthapuram district, Kerala. One was a school in urban area (Sree Gokulam Public School, Attingal, and Thiruvananthapuram) and another was a school in rural area (Bharateeya Vidyapeetam, Parassala, and Thiruvananthapuram).

Study period: one year

Study age group: 13-15 years

Sample size

Based on a pilot study which was conducted among adolescent girls in the same district in 2012 by Child Development Centre, the sample size for the present study was fixed to 200. 100 girls in the age group of 13-15 years from each school were included in the study. Study protocol was cleared by institutional ethical committee.

Before conducting the study, informed consent was sought from respective school principals, adolescent girls and their parents. Girls who did not give consent were excluded from the study. The space for conducting the study was provided by the respective school.

DATA COLLECTION PROCEDURES

Data was collected by pre-tested questionnaire on Awareness about sexually transmitted diseases. Hemoglobin estimation was done after explaining the procedure to all the students and taking consent for prick from the students and their parents. Hemoglobin was estimated with strips and was read automatically on hemoglobin meter. The strips were firm plastic strips onto which a multilayer dry reagent was

affixed and automat read on Hemoglobin Meter. The test strips function by lysing erythrocytes and converting the released hemoglobin into methemoglobin.

Quality control was maintained by using sterile disposable strips for each student. Level of anemia was detected according to WHO criteria. BMI of the students were calculated by finding the height and weight of the students. Height was measured by a stadiometer capable of measuring up to accuracy of 0.1cm. Height was measured by making the girls stand without footwear, with feet parallel; heels, buttocks and occiput touching the measuring rod; hands hung by the sides and head held comfortably upright. Weight was calculated with a portable balance device with an accuracy of 100gm. Girls were instructed to stand on the balance with feet apart without footwear and looking straight. Based on height and weight, BMI was calculated using the formula.

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WHO BMI percentile charts were used and those girls with BMI falling within 3^{rd}-85^{th} percentile for that particular age was considered as having normal BMI. BMI 3^{rd} percentile was taken as underweight, BMI within 85^{th}-97^{th} percentile taken as overweight and BMI 97^{th} percentile was taken as obesity.

At the end of the study, a workshop was conducted and girls were provided fundamental health education with regard to reproductive and sexual health. They were also taught the importance of balanced diet and advised to adopt healthy eating habits and a better lifestyle.

RESULTS

Awareness about STD's

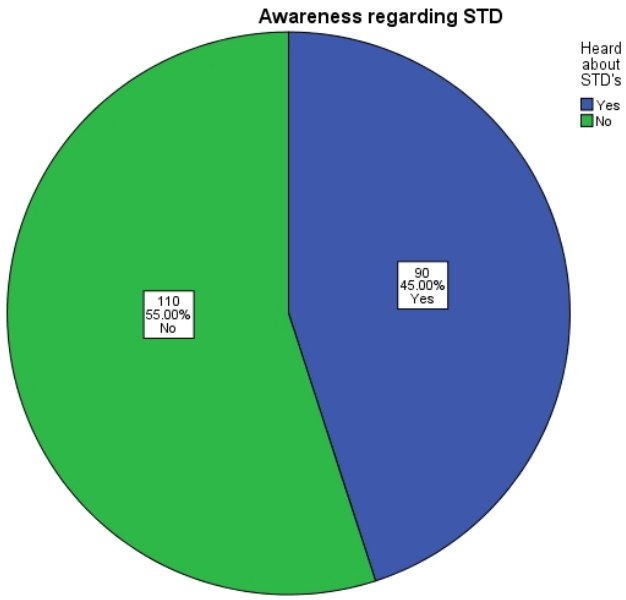

Fig-1: Among 200 study participants, only 45% were aware about STD's

Prevalence of anemia

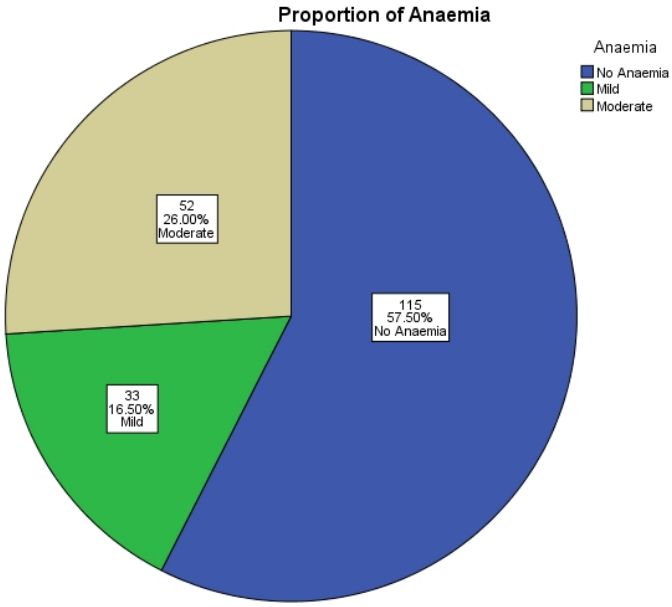

Fig-2: The prevalence of anemia in the study population was found to be 42.50% (85 girls)

Among 42.50% of girls detected to be anemic, 16.50% had mild anemia and 26% had moderate anemia. None of the girls were detected to have severe anemia.

Body mass index

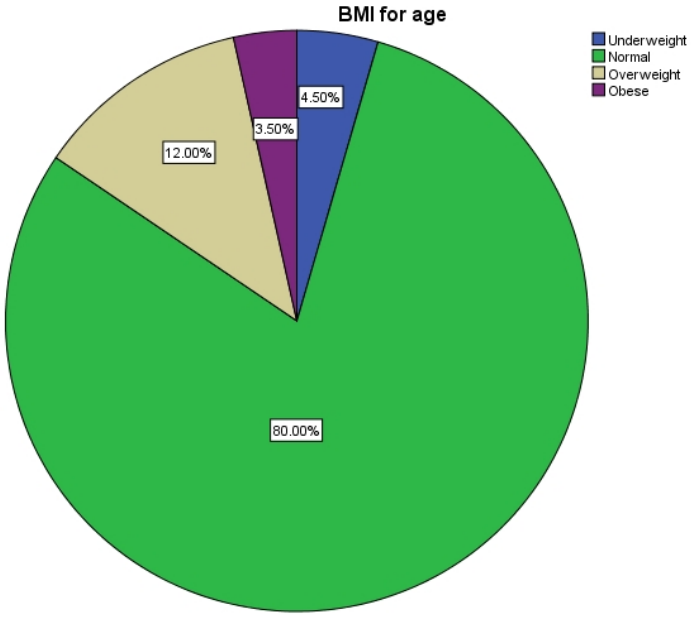

Fig-3: The percentage of girls having normal BMI was 80% (160). Underweight girls were 4.5% (9 girls), overweight were 12% (24) and 3.50% (7 girls) were obese

DISCUSSION

Adolescents play a significant role in assessing the health status of a given population. Adolescence in Latin means: to grow. It is the period of life during which the carefree child is in the path of becoming a responsible adult. It is the period of rapid change in both external and internal environment of the individual. The external environment includes social, cultural and familial while the internal environment includes awareness of one's sexuality, the associated physical and psychological changes. Adolescents try to keep pace with all of these factors. Needless to say it is a time that brings curiosity and excitement on the one hand but anxiety and confusion on the other.

Adolescent girls constitute one fifth of the female population in India. The situation in India is further complicated by a rapidly changing social and economic situation. Adolescents are the future citizens and drivers of economic growth. Health of adolescent girls is important because their situation will be central in determining India's health, mortality and, morbidity; and the population growth scenario.

Awareness of STD's

The incidence and prevalence of STD's among adolescents is increasing in both developing and developed countries. Most young people become sexually active during adolescence. In the absence of right guidance and information at this stage they are more likely to have unprotected sex with high risk groups[4].

Among 200 study participants, 45% of adolescent girls were aware about sexually transmitted infections including HIV and 55% hadn't heard about STD's.

According to National Family Health Survey III, 64.3% of adolescent rural girls of 15-19 years have heard about AIDS[5]. According to a study done in Amritsar Kaur S *et al*. 42% of adolescent girls knew about STD's[6].

A study done by NACO/UNICEF (National behavioral surveillance survey) among young people found that there is low level of awareness about STD's in Jharkhand, Gujarat, Chhattisgarh, Uttar Pradesh and West Bengal(7) No studies assessing the awareness of sexually transmitted infections have been reported from Kerala. A cross sectional study conducted among 852 high school girls in Amritsar, Punjab Kaur S, *et al*. from 2005-2007 reported that only 42% of girls knew about HIV[7].

According to NFHS III (National Family Health Survey III), 64.3% of adolescent rural girls of 15-19 years have heard about AIDS [5]. In our study population, only 45% of adolescent girls had heard about STD's which is comparable to the other studies done. This emphasizes the need for initiation of education and awareness programs about sexual health and STD's at schools and colleges. A quantitative survey conducted among 340 girls and 428 boys in a rural population, Vadodara, Gujarat Kotecha P V, *et al*. reported that of students knew various modes of transmission of STD's[8].

Anemia

Iron deficiency is the most common nutritional disorder in the developing world and most common cause of nutritional anemia in adolescent girls and women of reproductive age[2]. Anaemia was defined as per the WHO criteria for adolescent age group [9]. Non anemic status is hemoglobin level >12gm/dl. Anemia is classified as mild degree if hemoglobin value is between 10 to 11.9gm/dl, moderate degree if hemoglobin value is between 7 to 9.9gm/dl and severe degree if hemoglobin value is 7gm/dl. About 27% of adolescents are estimated to be anemic in developing countries compared to 6% in developed countries [2].

The prevalence of anemia in the study population was found to be 42.50% (85 girls). Among 85 anemic girls, mild anemia was present in 16.5% and 26% had moderate anemia. None of them had severe anemia. These results are consistent with a similar cross sectional community study which was conducted in rural area of Hassan district, Karnataka, South India in 2011 among 314 adolescent girls. The study reported the prevalence of anemia to be 45.2%[10]. A study was conducted among adolescent girls in rural areas of Ratnagiri District, Maharastra Patil S N, *et al*. to find the prevalence of anemia. Out of the 589 girls who were checked, 247 were found to be anemic[11].

A study done in 2001 among 2860 adolescent girls in Gujarat P V Kotecha *et al.*

showed the prevalence of anemia to be 75%. No difference was seen in urban and rural girls. In the same study, adolescent girls were followed for 17 months and intervention done for anemic girls by iron supplementation and health education. Post intervention the prevalence of anemia dropped from 75% to 53% [12].

It is very important to have an estimate on anemia prevalence in a population especially among adolescent girls. This is because adolescence is the golden time to correct anemia thereby, preventing many complications in the future. In most of the cases anemia can be treated by easy steps like advising to take an iron rich diet and supplementing oral iron.

Body mass index

BMI is a simple, noninvasive and inexpensive method to assess body fat. It is an appropriate measure for screening obesity. BMI is found to be a significant predictor of adolescent morbidity and their nutritional status. Low BMI as in underweight individuals can lead to poor physical stamina, amenorrhea, anemia, hair loss and weak immune system making them easily prone for infections. On the other hand, high BMI can predispose to Poly cystic ovarian syndrome, early onset of medical disorders like diabetes mellitus, hypertension, coronary artery diseases, cerebro vascular accidents and obstructive sleep apnea. Sedentary life style, eating junk foods and unhealthy dietary practices can lead to obesity. Hence, finding out the prevalence of underweight, overweight and obesity among adolescent girls in a population is very important since it can be managed by adequate counseling and providing education about proper dietary habits.

In the study population, normal BMI was recorded in 80%, underweight girls in 4.5%, overweight in 12% and obesity in 3.50%. A cross sectional study conducted in primary schools, high schools, pre university and degree colleges of Southern Karnataka among 12,916 adolescents showed 70.4% to be having normal BMI, 28.3% to be underweight and 1.3% to be having overweight/obesity[13].

The percentage of students having normal BMI in my study population was 80% with low prevalence of underweight girls. This reflects better nutritional status in this part of the country.

A cross sectional study conducted in primary schools, high schools, pre university and degree colleges of Southern Karnataka (Praveen Kulkarni, et.al,) among 12,916 adolescents showed 70.4% to be having normal BMI, 28.3% to be underweight and 1.3% to be having overweight/obesity[13].

CONCLUSIONS

- Only 45% of girls had heard about STD's.
- The prevalence of anemia among adolescent girls was 42.5%. Mild and moderate anemia was detected in 16.5% and 26% respectively. None of them had severe anemia.
- BMI of 80% of girls were within normal range, 4.50% underweight, 12.50%overweight and 3.50% obese.

RECOMMENDATIONS

The general health of adolescent girls in Kerala still needs to be improved. Adolescent Reproductive and Sexual Health (ARSH) which has been adopted by Ministry of Health and Family Welfare, Government of India as a key technical strategy under the National RCH II program[2] will help Kerala achieve its goal The awareness regarding sexual health and sexually transmitted disease has to be improved by conducting health education classes and awareness programs in schools and colleges.

The obesity and overweight among the adolescent girls are in the rise that may increase the incidence of metabolic disorders like diabetes and hypertension which is on the increase in the society hence awareness of healthy eating habits and regular exercise has to be inculcated into the young minds through study classes and awareness programs

Conflict of interest

There is no conflict of interest or external funding for this project

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