Original Article

Association Between Nutritional Status And Stress Among Girls- A Clinical Study

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ABSTRACT:

Background: Adolescent is a critical period in the development of lifelong patterns of responding to stress. The present study was conducted to assess any stress related hazards in relation to diet and life style in girls. **Materials & Methods:** The present study was conducted on 60 girls age ranged 11- 20 years. In all subjects food consumption of the subjects was assessed using a 24-hour recall method for three consecutive days. The daily nutrient intake was calculated in terms of energy, protein, fat, iron and calcium. Stress status was assessed by certain factors such as- socioeconomical status, academic workload, exercise, adequate sleep and unhealthy dietary habits on a scale of 1 to 6, with 6 being the highest. **Results:** The mean energy in subjects was 1410.4 Kcal, fat (31.8 g), protein (19.02 g), calcium (435.5 mg), iron (14.88 mg) and vitamin C (19.6). The difference from recommended dietary allowance was significant (P< 0.05) except fat. Stressors in girls was inadequate sleep (15%), excessive work load (50%), unhealthy diet (12%) and low socio- economic status (23%). The difference was significant (P< 0.05). **Conclusion:** It was found that most of the girls had low energy and low level of protein, fat, calcium and vitamin C than RDA. Stressors were work load, inadequate diet, inadequate sleep and low SES.

Key words: Calcium, Diet, Energy

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INTRODUCTION

Adolescent is defined by WHO as a person between 10-19 years of age. There are about 1.2 billion adolescents worldwide and one in every five people in the world is an adolescent. Adolescents constitutes 18-25% of the population. One in every five people in the world is an adolescent, and 85% of them live in developing countries. Nearly two thirds of premature deaths and one third of the total disease burden in adults are associated with conditions or behaviours that began in youth, including tobacco use, a lack of physical activity, unprotected sex or exposure to violence.[1] Adolescent is a period of magnificent and rapid change and is vulnerable to a number of nutrition and health related problems. Adolescence is a critical period in the development of lifelong patterns of responding to stress. Simultaneously changes in life style pattern, peer pressure to achieve educational success, limited finances create a stress on them.[2] Numerous studies have been done on stress response by HPA/ANS systems and results demonstrate that a reciprocal interaction between the two systems and the activity of hypothalamic pituitary gonadal (HPG) axis, highlighting the possibility of pubertal influence on stress response system.[3] The present study was conducted to assess any stress related hazards in relation to diet and life style in girls.

MATERIALS & METHODS

The present study was conducted in the department of physiology. It consisted of 60 girls age ranged 11- 20 years. All were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study. General information such as name, age, gender etc. was recorded. In all subjects food consumption of the subjects was assessed using a 24-hour recall method for three consecutive days. The daily nutrient intake was calculated in terms of energy, protein, fat, iron and calcium. Stress status was assessed by certain factors such as- socioeconomical status, academic workload, exercise, adequate sleep and unhealthy

dietary habits on a scale of 1 to 6, with 6 being the highest. Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.

RESULTS

Table I Average daily nutrient intake in girls

Nutrients	Mean value	RDA (ICMR)	P value
Energy (Kcal)	1410.4	2010	0.01
Fat (g)	31.8	35	0.5
Protein (g)	19.02	40.4	0.05
Calcium (mg)	435.5	800	0.001
Iron (mg)	14.88	27	0.02
Vitamin C	19.6	40	0.01

Table I shows that mean energy in subjects was 1410.4 Kcal, fat (31.8 g), protein (19.02 g), calcium (435.5 mg), iron (14.88 mg) and vitamin C (19.6). The difference from recommended dietary allowance was significant (P< 0.05) except fat.

GRAPH I STRESSORS IN GIRLS
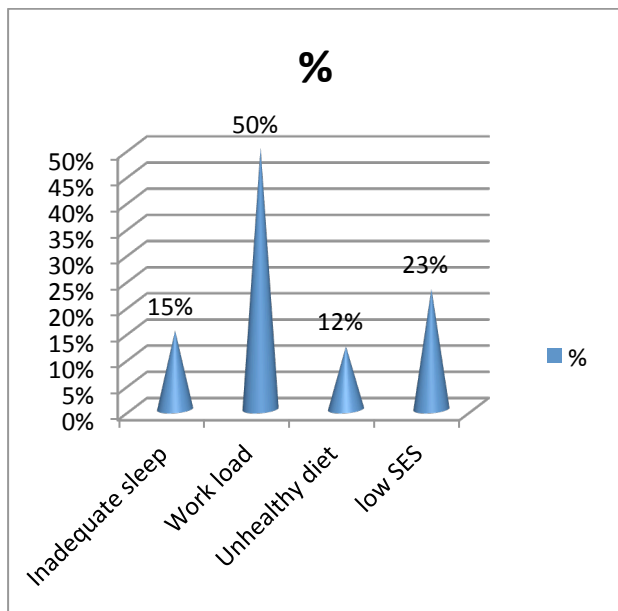
Graph I shows that stressors in girls was inadequate sleep (15%), excessive work load (50%), unhealthy diet (12%) and low socio-economic status (23%). The difference was significant (P< 0.05).

DISCUSSION

Stress causes various diseases, including infertility and ovarian dysfunction in female. Chronic stress can have a deleterious effect on the reproductive axis of females, as manifested in reduced pulsatile gonadotropin secretion and increased incidence of ovulatory abnormalities and infertility.[4] Promoting healthy practices during adolescence and efforts that better protect this age group from risks will ensure longer, more productive lives for many years. Adolescence is a phase of rapid growth and development during which physical, sexual and emotional changes occur. Adolescents are not homogeneous group and their needs vary with their gender, stage of development, life circumstances and the socio economic conditions in which they live. Many premature deaths among adults are largely due to behaviors initiated during adolescence. Young people can easily be influenced to smoke, take drugs, drive dangerously, have unsafe sex, and commit crimes.[5] In present study we included 60 girls of age ranged 11- 20 years. We found that mean energy in subjects was 1410.4 Kcal, fat (31.8 g), protein (19.02 g), calcium (435.5 mg), iron (14.88 mg) and vitamin C (19.6). The value was less than recommended dietary allowance. Prajapati et al[6] in their study included 401 students from 10 schools and colleges surveyed using pretested questionnaire about nutritional status and high risk behavior. To analyze nutritional status height, weight and BMI were taken and analyzed using WHO growth standards 2007. Mean age for menarche was 12.84 yrs. 47.4% were stunted and 19.5% were overweight according to WHO growth standards. From them 60.93% have problems during menstruation. Most common problem was dysmenorrhea (58.7%). For discussing sexual health problems, 74.64% students prefer with friends. Stressors in girls was inadequate sleep (15%), excessive work load (50%), unhealthy diet (12%) and low socio-economic status (23%). This is in agreement with Sharma et al.[7] Roy et al[8] included 50 adolescent girls and were surveyed using pre-tested questionnaires about nutritional status, general health, menstrual cycle and source of stress. Height, weight, BMI, BMR and body fat content, blood pressure, heart rate and O2 saturation was measured. The adolescent girls were stunned which indicates chronic malnutrition and lack of physical growth. Majority of them had a lower BMI (younger) and higher dysmenorrheal (older). Academic workload was found to be the most stressful event followed by, exercising, inadequate sleep, unhealthy dietary habits, and socio-economical status. Study by Sarah Bott[9] conducted in three remote rural areas found that the majority of adolescent girls were stunted and undernourished, including 72% of girls aged 10– 14 and 45% of girls aged 15–18. The majority (70%) of younger girls had a Body Mass Index (BMI) less than 5%, as did 15% of girls aged 15–18. Britz. J et. Al[10] found the adolescents as the most vulnerable group to develop chronic stress which have long lasting implications on health.

CONCLUSION

It was found that most of the girls had low energy and low level of protein, fat, calcium and vitamin C than RDA. Stressors were work load, inadequate diet, inadequate sleep and low SES.

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