Clinical assessment and nutritional awareness among school going adolescent girls of Kanpur (U.P.)

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The present study was conducted in Kanpur (U.P.) among 400 school going adolescent girls (13-19 years) for finding out their clinical problems, general health status and nutritional awareness. From the investigation conducted it was observed that 97.2 per cent school going adolescent girls were suffering from problems of hair; 43 per cent teeth , 36.5 per cent nails, 31.5 per cent skin, 30.7 per cent lips and tongue, 24 per cent eyes and 13.5 per cent from problems related to gums. Regarding their health status, about 78 per cent girls were suffering from general health problems like constipation, acidity, headache etc. Irregular menstrual cycle was reported by 35.5 per cent of girls and extra hair growth by 17.3 per cent of girls. Only 9.3 per cent girls were aware of their haemoglobin level and 29.5 per cent of their blood group. De worming course and vaccination was done by 12.3 per cent and 58.5 per cent adolescent girls, respectively. Knowledge that egg yolk is rich in cholesterol was reported by only 16.5 per cent of girls, similarly only 27.3 per cent knew that yellow fruits and vegetables are rich sources of vitamin A. Awareness of fats restriction for preventing heart problems and obesity was found only in 34.8 per cent of girls. Less than fifty per cent of girls were not aware of the fact that iron deficiency causes anaemia. It was observed that the health status of the girls was not good and the nutritional awareness level was also low. Therefore, it is the time to take immediate steps to overcome the problems of adolescents. Family, peer group, medical organizations, media and school together should plan and make needful efforts so that they live healthy life.

Key Words : Adolescence, Clinical observation, Nutritional awareness

INTRODUCTION

Adolescence represents one of the critical transitions in the life span and is characterized by rapid physical growth and changes in body composition, physiology and endocrine with profound biological, emotional, social and cognitive changes (Alam *et al*., 2010). Adolescents are

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the young people aged between 10 to 19 years. Worldwide more than 1.2 billion are adolescents. This indicates that roughly one in every six persons is an adolescent (UNICEF, 2012). Nearly 21 per cent of Indian population is adolescents (about 243 million) (Anonymous, 2014). The distribution of percentage of adolescents among the top and bottom five States, of India, Uttar Pradesh has the highest percentage (24.5%) of adolescents (Chandramouli, 2013).

Most young people are presumed to be healthy but, as per WHO, an estimated 2.6 million young people aged between 10 to 24 years die each year and a much greater number of young people suffer from illness 'behaviours'

which hinder their ability to grow and develop to their full potential. Nearly two third of the total disease burden in adults are associated in their conditions or behaviours initiated in their youth (e.g. tobacco uses, physical inactivity, high risk sexual behaviours, injury and violence and others) (WHO, 2011).

As the adolescence is the most crucial period of transition in the overall human development, so the nutritional requirements in proper proportions particularly in this period assume pivotal role for overall growth process (Vaida, 2013). Eating habits vary widely between individual adolescents and also display some general trends over time, reflecting socio-cultural trends in food availability and nutritional goals. A study done in Chennai among the school children revealed that mass media has an adverse impact on food habits which leads to intake of more junk foods and snacks. Adolescents preferred to buy food products based on television vision commercials and avoided outdoor activities (Priyadarshini *et al.*, 2013). During adolescence, young people are in a transition period when they gradually take over the responsibility for their own eating habits. Only 18 per cent of adolescents have adequate knowledge regarding effects of fast food on health. Hence, it is necessary to improve the adolescent's knowledge on health hazards of fast food in order to save them from the ill effects of fast food (Saranya *et al.*, 2016).

Adolescence is a time of opportunity, but also one of risks. It presents a window of opportunity to set the stage for healthy and productive adulthood and to reduce the likelihood of problems in the years that lie ahead. At the same time, it is a period of risk: a period when health problems that have serious immediate consequences can occur or when problem behaviours that could have serious adverse effects on health in the future (WHO, 2009). 'Health' is often negatively defined as 'absence of disease'. In 1940, the WHO formulated a positive definition of health: 'state of complete physical, emotional, and social well-being, not merely the absence of disease or infirmity' (WHO, 1948). This widely accepted definition was expanded in the 1970's and 1980's as other components were included: intellectual, environmental, and spiritual heal. Health information and knowledge about diseases and about bodily conditions and functions are evident determinants of health status and outcomes (UNICEF, 2001). But the information (learning to know) is useful only, if reinforced by positive attitudes (learning

to be) and useful skills (learning to do), the ability to recognize a potential problem must be accompanied by the will and the identification of the means necessary to avoid it (UNESCO, 1996).

Dietary knowledge and access to resources are critical to improve health and nutrition in a sustainable way. Adolescence is the time to learn and adopt healthy habits to avoid many health and nutritional problems later in life (Kurz and Johnson-Welch, 1994). Adolescents have more easy access to health and nutrition information through schools, recreational activities and mass media than they have later in their lives Particularly, health and nutrition knowledge and healthy habits of female adolescents have critical roles to play in maintaining future family health and nutrition. According to Griffiths (1972), "health education attempts to close the gap between what is known about optimum health practice and that which is actually practiced." Simonds (1976) defined health education as aimed at "bringing about behavioural changes in individuals, groups, and larger populations from behaviours that are presumed to be detrimental to health, to behaviours that are conducive to present and future health."

The foundation of good health and sound mind is laid during this period. Besides it is basic milestone in the life of an individual and responsible for many changes that take place during later life (Uddin *et al.,* 2015). Therefore, the aim of the present study is to assess the health status of the adolescent girls through the clinical observations and their level of nutritional awareness.

METHODOLOGY

The study was carried in Kanpur city of Uttar Pradesh. The study area comprised of 5 Hindi medium and 5 English medium schools, selected randomly from Kanpur Nagar by dividing it into four zones and a central part. From each school, 40 adolescent girls were selected between the age group of 13-19 years to make a total sample size of 400 girls for the study purpose.

After taking permission from the school authority, the class teachers of class were explained the purpose of the study and rapport was built up with the girl students and verbal consent was obtained from them. Briefing was done to the students regarding the questionnaire provided to them. Data on socio-demographic variables (*i.e.* occupation, income, literacy, family type, diet habit) and nutritional awareness were collected using a pre-

designed questionnaire. For clinical assessment, adolescent girls were closely observed one by one on the basis of pre-designed format for clinical observation.

General profile:
It consists of particulars related to the respondent's age, class, religion and food habits.

Demographic profile:
Data on socio-demographic variables (occupation, income and family type) were collected using a pre-designed questionnaire.

Health status:
A separate format of closed questionnaire to collect information on health and knowledge of adolescents was used. The respondents were required to tick one option from the two (yes/no).

Clinical findings:
The general physical examinations include an assessment of the adolescent's general condition and close examination of the following :
- Skin
- Hair
- Eyes
- Teeth
- Gums
- Lips and tongue
- Nails
- Muscles and joints

It also included an assessment for pallor, clinical assessment of body fat stores, wasting of muscle mass, oedema, skin rash, thinning of hair and evidence of specific nutritional deficiencies. Examples of specific signs include the flag sign or the loss of hair colour associated with a period of malnutrition, followed by recovery with a return of normal hair colour and texture to normal. It is also important to consider the clinician's clinical judgment in the assessment of nutritional status (Baker *et al*., 1982).

Nutritional awareness:
A separate questionnaire was formed to interpret the knowledge of school going adolescent girls. Multiple choice questions were given in the written format and the respondents have to tick the option according to their knowledge about food and nutrition.

Statistical analysis of data:
After collection, data were processed and analysed statistically to draw meaningful interpretations. Statistical parameters used for drawing inferences were mean and percentage. Diagrammatic representation of data has also been made for critical observation.

OBSERVATIONS AND ASSESSMENT
The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Socio-demographic profile:
The socio- demographic profile of 400 school going adolescent girls of Kanpur Nagar has been presented in Table 1. It reveals that 68.7 per cent of them were in the age group of 13 – 16 years and 31.3 per cent of them were in the age group of 16 – 19 year. The family size of the school going adolescent girls were divided into 3 categories in which 45.7 per cent of them lived in small sized families, 47.5 per cent lived in medium sized families

Table 1: Socio- demographic profile of adolescent girls (n=400)	
Particulars	Percentage
Age (in years)	
13 - 16	68.7
16 - 19	31.3
Family size	
Small (1 - 4 members)	45.7
Medium (5 - 8 members)	47.5
Large (9 and above)	6.8
Income	
Upto Rs. 50,000/-	11.0
Rs. 50,000/- to 1,00,000/-	19.0
Rs. 1,00,000/- and above	70.0
Religion	
Hindu	86.75
Muslim	7.50
Christian	3.00
Sikh	2.75
Food habits	
Vegetarian	77.5
Non-vegetarian	22.5

and 6.8 per cent of adolescent girls lived in large sized families. School going adolescent girls belonged to the low income group were found to be 11 per cent and 70 per cent to the high income group.

When classified on the basis of religion, a major part of the respondents, *i.e.* 86.75 per cent of the adolescent girls belonged to the Hindu religion and 7.5 per cent were Muslims. Small number of respondents as 3.0 per cent and 2.75 per cent belonged to Christianity and Sikhism, respectively. It was observed that 77.5 per cent of the girls were vegetarian and the remaining 22.5 per cent of them were non-vegetarian.

Health status of adolescent girls:

The general health information and knowledge of adolescents about themselves and their parents are presented in the Table 2.

It is evident from the observations presented in the Table 2 that out of 400 respondents, 15 per cent of them suffered from medical problems. In case of their parents, 11.3 per cent and 11.7 per cent of fathers and mothers, respectively were found to be overweight. About 35.5 per cent of adolescent girls were reported with the problem of irregular menstrual cycle. Only 29.5 per cent of girls had the knowledge about their blood group, whereas only 9.3 per cent of girls could tell about haemoglobin. While getting up early in the morning 43

per cent girls felt lethargic. About 17.3 per cent of adolescent girls were suffering from the problem of extra hair growth. Intake of health drink was reported by only 9.5 per cent of the respondents whereas frequent intake of medicines was reported by 17.5 per cent of girls. About 78 per cent of girls were suffering from general health problems like constipation, acidity and headache etc. and recent blood check up was done by 10.3 per cent of respondents followed by 12.3 per cent of adolescent girls gone through de worming course. Habit of substance use was reported by 2 per cent of girls. A study in Chennai reveals that parental substance abuse increases the chance of adolescent substance abuse (Anitha and Sathiyasekaran, 2013). Feeling of depression was reported by 15.7 per cent of respondents. Vaccination report of girls showed that 58.5 per cent were vaccinated.

Meagre information is available on the parameter (statements) taken for study on adolescent girls. In some countries, the overuse of drugs is a major unhealthy life style. Iran is one of the 20 countries using the most medications. They prefer medication to other intervention. Furthermore, in 15–40 per cent of cases they use medications without prescription (Karimi *et al.*, 2010).

Clinical problems:

Results interpreted from the clinical observations of 400 school going adolescent girls are shown in Tables 3

Table 2 : General health information and knowledge of adolescent girls					
Sr. No.	Statement	Yes (%)	No (%)	Mean score	Rank
1.	Medical problem in respondents	60 (15.0)	340 (85.0)	1.15	VIII
2.	Overweight father in the family	45 (11.3)	355 (88.7)	1.11	X
3.	Overweight mother in the family	47 (11.7)	353 (88.3)	1.12	IX
4.	Normal and regular menstrual cycle	258 (64.5)	142 (35.5)	1.64	II
5.	Knowledge about their blood-group	118 (29.5)	282 (70.5)	1.29	V
6.	Knowledge about their haemoglobin %	37 (9.3)	363 (90.7)	1.09	XII
7.	Felt lethargic while getting-up in the morning	172 (43.0)	228 (57.0)	1.43	IV
8.	Excess hair growth on the part of the body	69 (17.3)	331 (82.7)	1.17	VI
9.	Intake of health drink or powder	38 (9.5)	362 (90.5)	1.09	XII
10.	Frequent intake of medicines	70 (17.50)	330 (82.5)	1.17	VI
11.	Suffering from general health problems (Like constipation, headache, acidity etc.)	312 (78.0)	88 (22.0)	1.78	I
12.	Recent body check-up or blood test	41 (10.3)	359 (89.7)	1.10	XI
13.	De-worming course	49 (12.3)	351 (87.7)	1.12	IX
14.	Habit of substance use (e.g. tobacco, alcohol)	8 (2.0)	392 (98.0)	1.02	XIII
15.	Feeling of depression	63 (15.7)	337 (84.3)	1.16	VII
16.	Vaccination	234 (58.50)	166 (41.5)	1.58	III

and 4 and their corresponding histograms (Fig.1 and 2). Prevalence of gums problem was observed in 13.5 per cent girls, the lowest one in comparison to the hair problem which was observed in 97.2 per cent of girls. Other problems were prevalent in moderate percentages as eyes 24 per cent, lips and tongue 30.7 per cent, skin 31.5 per cent, nails 36.5 per cent, teeth 43 per cent and problem of muscles and joints 44.4 per cent (Fig.1).
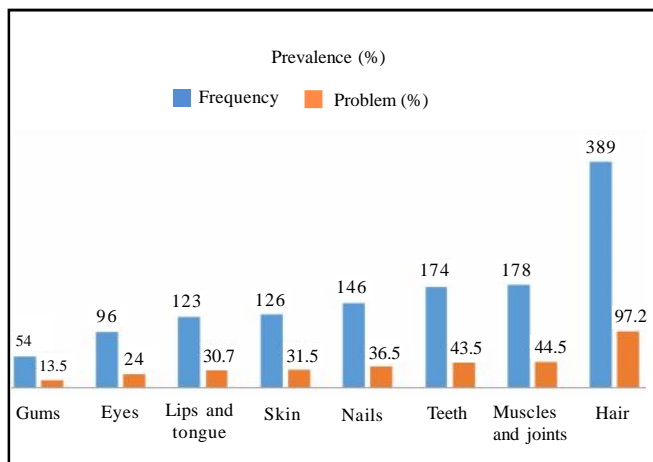

Fig. 1 : Clinical problems in adolescent girls

Kurz *et al.* (1994) and Muro *et al.* (1999) have advocated the importance and awareness of nutrients for adolescent girls. Compared with various public health approaches, school-based nutrition interventions such as regular nutritional screening, providing micronutrient supplements, ensuring consumption and nutrition behaviour development are the most cost-effective (WHO, 1998 and Muro *et al.*, 1999).

Bhattacharya *et al.* (2015) carried out study in Burdwan district of West Bengal in India among 424 school going adolescent girls in the age group of 10-19 years and reported that about 55.18 per cent had pallor, 40.33 per cent had dental caries, 33.49 per cent were suffering from refractive errors, 23.11 per cent had history of worm infestation, 38.90 per cent had skin problems, and 68.61 per cent adolescents had ENT problems. In the present study, 31.5 per cent school going adolescent girls suffered from skin problems which is quite similar to the percentage reported in the above study (38.9%) and 43.5 per cent of adolescent girls suffered from teeth problems which is on the line of observation (40.33%) made by the above authors. To a certain extent, the lifestyle of today's adolescents can also be blamed for this disorder, too much of junk food, erratic eating habits,

Table 3: Overall prevalence of clinical problems in adolescent girls

Body parts	Frequency	Problem (%)
Gums	54	13.5
Eyes	96	24.0
Lips and tongue	123	30.7
Skin	126	31.5
Nails	146	36.5
Teeth	174	43.5
Muscles and joints	178	44.5
Hair	389	97.2

Table 4: Percentage of clinical signs highly prevalent in adolescent girls (n=400)

Clinical sign	Frequency	Percentage (%)
Sensitive to bright light	30	7.5
Bleeding gums	32	8.0
Coated tongue	38	9.5
Dry skin	60	15.0
Brittle nails	80	20.0
Discoloured teeth	92	23.0
Painful muscles	98	24.5
Lustre less hair	118	29.5

lack of sleep have also been found a bit responsible for this but lack of proper nutrients appears to be ultimately responsible factor for this disorder (Baker *et al.*, 1982).

Results presented in Table 4 and its corresponding histogram (Fig. 2) indicates the percentage and frequency of specific clinical problems highly prevalent among school going adolescent girls. The highest and lowest percentage was observed in sensitive to bright light (7.5%) and lustre less hair (29.5%). Other clinical signs showed that 8 per cent girls suffered from the problem of bleeding gums; 9.5 per cent from coated tongue; 15 per cent from dry skin; 20 per cent from brittle nails; 23 per cent from discoloured teeth and 24.5 per cent from the problem of painful muscles.
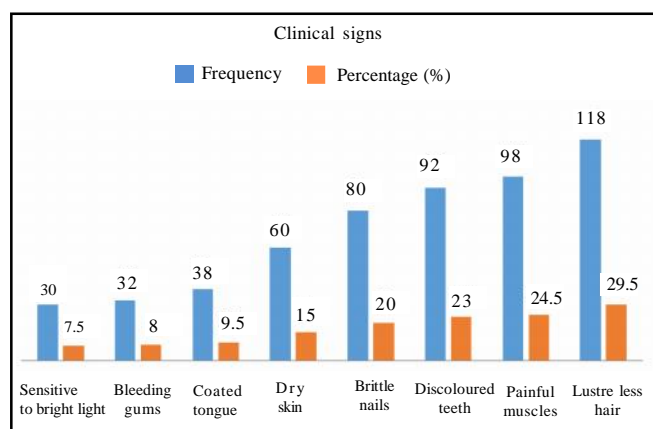

Fig. 2 : Prevalence of clinical signs in adolescent girl

Similar type of study was conducted by Hemalathaa and Mary (2013) on 150 school adolescent girls aged 12-16 years selected randomly from three schools of Madurai district of Tamil Nadu to elicit information regarding the health condition of the respondents. Majority were experiencing, hair fall, and acne. Bleeding gums and nail breaking were reported by 23 per cent and 14 per cent, respectively and few were experiencing constipation (9%), dental carries (9%) and cramps (6%). The problem of bleeding gums in the present study was found to be very less (8%) than the percentage observed in the above study (23%). But the percentage of brittle nails problem was higher (20%) in the present study than the above (14%).The difference may be quite likely due to the age of girls, environment and place of study.

Awareness among adolescents:

Results of Table 5 represent the frequency and percentage of girls about awareness of the nutritional facts. It is a known fact that protein is important nutrient for the growth and development of body. About 53.75 per cent of girls gave the correct answer and 46.25 per cent were unaware about the importance of protein. As a rich source of vitamin C, 75 per cent of girls were aware that amla and oranges are the good source of vitamin C, whereas 25 per cent of girls were not aware of these sources. About 41.8 per cent of girls were unaware of the fact that iron deficiency in diet causes anemia. Only 16.5 per cent of girls have the nutritional

Table 5: Nutritional awareness levels in adolescents				(n=400)
Statement	Correct answer		Incorrect answer	
	Frequency	Percentage	Frequency	Percentage
Protein is important for muscle growth and development	215	53.75	185	46.25
Amla, oranges are rich for vit. C	300	75	100	25
Iron deficiency causes anaemia	167	41.8	233	56.2
Egg yolk is rich in cholesterol/fats	66	16.5	334	83.5
Iodine deficiency causes goitre	265	66.3	135	33.7
Balanced diet contains essential nutrients in adequate amount	240	60	160	40
Instant energy is provided by glucose	292	73	108	27
Dal, chane, chhole are good sources of protein	173	43.3	227	56.7
Milk and pulses are rich sources of calcium	236	59	164	41
Salt provides sodium	222	55.5	178	44.5
Melons are good source of water	275	68.8	125	31.2
Yellow fruits and vegetables are rich source of vit. A	109	27.3	291	72.7
Dalia, leafy vegetables and fruits are good source of fibre	239	59.8	161	40.2
Fats should be restricted for preventing heart problems and obesity	139	34.8	261	65.2

knowledge that egg-yolk is rich in cholesterol/fats.

For balanced diet, 40 per cent of girls were not aware of the fact that how many nutrients should definitely include in their diet and in what amount. The fact that glucose is the source of instant energy was not known to 27 per cent of girls and similarly 56.7 per cent of girls were not aware that *Da, Chana, Chhole* are good source of protein in our diet. Awareness level about the calcium rich sources (milk and pulses) in adolescent girls was found to be 59 per cent whereas 41 per cent of girls were not aware of this fact. Salt in our diet provides sodium. Knowledge about this fact was known to only 55.5 per cent girls and the rest 44.5 per cent of girls were unaware of importance of it.

About 68.8 per cent of girls have the knowledge that melons are very good source of water and 31.2 per cent were not aware of this fact. A very low percentage of girls (27.3%) were aware about the fact that yellow fruits and vegetables are good sources of vitamin A. In other worlds 72.7 per cent girls did not know the vitamin which is present in yellow fruits and vegetables in higher amount. About 40.2 per cent girls were not aware of the fibre rich foods (*Dalia*, leafy vegetables and fruits) 40.2 per cent of girls were not aware of. In case of the nutrient which should be restricted in our diet to prevent heart problems and obesity only 34.8 per cent were aware and 65.2 per cent of girls were not aware of the adverse effects of fat on the body.

Conclusion:

From analysis of the clinical observations of adolescent girls it can be concluded that the prevalence rate of hair problems was very high (97.2%), especially the problems. About 78 per cent girls were suffered from general health problems. The study also reported that the adolescent's awareness about their health and nutrition was not satisfactory. More than 50 per cent of the adolescents did not know about the rich sources of protein and the deficiency of which mineral is responsible for causing anemia. They were also not very much aware of their bodily symptoms and their reasons.

The conclusions drawn from the study focuses the need to plan suitable measures and actions to improve the nutritional status as well as the nutritional awareness among the adolescent girls.

Acknowledgement:

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