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IDENTIFICATION OF EATING DISORDERS AND ASSESSMENT OF NUTRITIONAL STATUS OF ADOLESCENT GIRLS OF ALLAHABAD

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ABSTRACT

Adolescence is generally considered to begin with puberty, the process that leads to sexual maturity ability to reproduce. The study carried out with the objectives to find out the common eating disorders, to assess the nutritional status and to find out the relation between the eating disorders and nutritional status of the selected adolescent girls of Allahabad district of Uttar Pradesh. An exploratory research design was adopted for the study, Allahabad district, Uttar Pradesh has been selected, purposively for research. Survey method was used for the collection of data. The sample size was 150 respondents comprising of 55 girls from Allahabad Intermediate college, 45 from Arya Kanya Intermediate college, and 50 from Hindu Mahila Intermediate college .The survey schedule consist of the general profile, anthropometry assessment in which height and weight were taken, dietary assessment by 24 hour recall method, and clinical assessment. A standardrized Wellness Worksheet 85 developed was used to identify the eating disorder and nutritional status taken. The result revealed that there is a significant relation between the eating disorders and nutritional status. The major findings of the study were the bulimia nervosa was more prevalent (42 percent) followed by anorexia nervosa (40 percent) and binge eating disorder (28 percent). A significant relation was observed between nutritional status and eating disorders.

Keywords: Eating Disorders, adolescent, bulimia nervosa, anorexia nervosa, Nutritional status

INTRODUCTION

Eating disorders and unhealthy eating behaviours such as restrictive eating, dieting, overeating and the use of harmful weight control behavior Eating disorders and unhealthy eating behaviours such as restrictive eating, dieting, overeating and the use of harmful weight control behaviour e.g. (Vomiting, overuse of laxative) represent major health concerns affecting adolescents predominantly female adolescents. Eating disorder typically begins between the ages of 14 to 20 years **(Striegel 1997).** It is estimated that for adolescents, eating disorders constitute the third most common chronic disease after obesity and asthma **(Golden 1997)**.

There are three general categories of eating disorders – bulimia nervosa, anorexia nervosa, binge eating disorder.

Bulimia nervosa is more common than anorexia and it usually begins early in adolescence. It is characterize by cycles of bingeing and purging and typically takes the bingeing, which are episodes of consuming abnormally large amounts of food in a short period of time..

The term "anorexia" literally means absence of appetite. Anorexia nervosa involves an aversion to food that leads to a state of starvation and emaciation, different condition from bulimia and should be not be diagnosed as a simple eating disorder. **(Spear 1999)**

Bingeing without purging is characterized as compulsive overeating (binge eating) with the absence of bulimic behaviours, such as vomiting or laxative abuse (used to eliminate calories). Binge eating usually leads to become overweight

MATERIALS AND METHODS

The present study was conducted using the materials and methods described below:

1. Selection of sample:

a. Selection of district

Allahabad district of U.P. was selected purposively for the present study because of accessibility.

b. Selection of location

Inter colleges namely Allahabad Intermediate College, Arya Kanya Inter College and Hindu Mahila Intermediate College were selected purposively for the study.

c. Selection of respondents

For the study, adolescents girls between age group 14-18 years were considered as respondents.

d. Preparation of instruments and tools for data collection

For data collection, structured survey schedule and eating disorder checklist was developed.

2 a. The schedule was consisted of the following different parts:

(i) General profile :-In general profile respondent's general information regarding name, age, educational qualification, family type, etc .were recorded.

(ii) Anthropometric measurement **(Gibson 1990)**

(iii) Dietary pattern **(24 hour recall method Park 2002)**

(iv) Clinical sings of deficiency diseases **(Park 2002)**

3. Collection of pre-exposure data

Collection of pre-exposure data was collected with the help of survey schedule and through eating disorder check list **(Wellness worksheet 85 Garner 1997)**

4. Statistical Analysis

The data collected was tabulated and analyzed with the help of statistical techniques. Statistical techniques viz frequency, percentage, mean score, paired 't' test was applied**.(Imran and Cover 1983)**

RESULTS AND DISCUSSIONS

The pooled data showed that majority of the respondents (25.33percent) in all the three Intermediate Colleges were 17 years old. Very few respondents (18percent) were 18 years old. Maximum respondents in all the three age groups were Hindus, the pooled data showed that 56.6percent belonged to the Hindu religion and remaining 43.3percent were muslims. Maximum respondents 84percent in all three colleges lived in nuclear families and only 16percent of the girls lived in joint families. Data shows that majority number of respondents (32 percent) families earned between 10000-20000 rupees per month,

(30 percent) had a monthly family income is between20000-30000 rupees per month. Majority number of respondents (64 percent) were vegetarian, 18.66 percent were non-vegetarian and 16.66 percent were eggitarian. Maximum respondents (43.81 percent) of adolescents girls had Breakfast, lunch, evening tea, dinner as their routine dietary habits followed by (23.81 percent) girls who had only lunch and dinner as their routine dietary habit due to their consciousness about their body image. Food consumed daily by all respondents including cereals, pulses, milk and milk products, green leafy vegetables , root and tubers, fruits, meat and poultry, fats and oils, sugar and jaggery. Regarding the consumption of cereals, it was found that all respondents consumed cereals daily and pulses consumed daily by 66 percent respondents, 16.66 percent respondents consumed it 4 to 6 times twice a week, 13.33 percent consumed it 2 to 4 times a week whereas 3.33 percent consumed it occasionally. Milk and milk products were consumed daily by 46.66 percent respondents,20 percent consumed it 4 to 6 times a week and 16.66 percent consumed it 2 to 4 times a week, whereas 3.33 percent consumed it occasionally.

Table 1 The NCHS standard values at 50^{th} percentile were greater than the observed mean height of adolescents girls in all the age groups and among all the three groups. When t-test applied it was found that the calculated value of t was greater than the table value of t at 5 percent probability level. It was seen that the observed height of adolescent girls when compared with NCHS 50^{th} standards and on 2 degrees of freedom. Therefore it was concluded that the mean height of adolescents girls were significantly lower than the NCHS standards.

Table 2 shows the observed mean weight of adolescent girls. The comparision of observed mean with NCHS standard values 50^{th} percentile, showed that the observed mean weight of the adolescent girls was lesser than the NCHS standards in all the age groups of adolescents girls belonging to the three groups. When t-test was applied it was found that calculated value of t was greater than the table value of t at 5percent probablity level and 2 degrees of freedom. Therefore it was concluded that the mean weight measurements of adolescent girls were significantly lower than the NCHS standards.Similar results were found by **Saibaba and Syamola (2002)** who found that more than 65 percent girls were found to have below normal values in all the indices of anthropomentry

Table 3 shows the mean nutrient intake of the respondents aged 14-15 years and 16-18 years. The mean value of the nutrients with S.E calculated are summarized in the table with the application of analysis of variance and their significance.On applying analysis of variance technique it was found that the calculated value of t is greater than the table value of t at 5% probability level, there is highly significant difference in all nutrients intake among the groups 13-15 years and 16-18 years, which is presented in the table. Thus it may be stated that there is significant relation between eating disorders and nutritional status. The mean nutrient intakes (energy, protein, fat, beta carotene,Vitamin A, Vitamin B1,Vitamin C,iron and calcium) of the respondents in all the groups were less than the ICMR RDA.

There were a noticeable percentage of respondents having fatigue (90 percent) due to deficiency of iron. Depression and pale nails were found among (79.33 percent) and (60 percent) respectively.

These signs are well recongnized to be due to deficiencies of iron, folic acid, The findings were similar with **Kapil and Bhavna (2002)** who reported that despite India's substantial progress in human development since independence 7 to 9 percent of adolescents girls are anaemic in a particular selected geographic area, 53 percent have the vitamin B deficiencies and 7 percent have goiter. The body cannot synthesise them, so they must be available through the diet. Deficiencies if these micronutrients are known to have devastating effects on health.

Findings shows that 33.33 percent of 14-15 years of adolescent girls and 20 percent of girls of 16-18 years were malnourished. 26.66 percent girls of 14-15 years were at risk of malnutrition and 13.33 percent girls of 16-18 years were at risk of malnutrition and only 4 percent girls of 14-15years and 2.66 percent girls of 16-18 years were at normal.

Similar findings were also reported by **Story (2000)** that 56 percent of adolescent girls who suffers from eating disorders were malnourished whereas 34 percent were at risk of becoming malnourished and only 10 percent were normal

Table 4 shows that majority of girls suffers from bulimia nervosa (42 percent) ,followed by (40 percent) girls suffers from anorexia nervosa. Lesser numbers of girls suffers from Binge eating disorder (28 percent). The findings were also supported by **Gabriella *et.al*.(2005)** that the overarching category of eating disorder was relatively stable. The stability of the three specific eating disorder was found variable. Bulimia nervosa was found most dominant among the three eating disorders.

Table 5 shows that 33.33 percent of 13-15 years of adolescent girls were suffer from eating disorder and 20 percent of 16-18 years were suffers from eating disorder. 26.6 percent girls of 13-15 years suffers from borderline eating disorder and 13.33 percent girls of 16-18 years suffers from borderline eating disorder. Very few girls 4 percent of 13-15 years and 2.66 percent of 16-18 years were normal.

The findings is supported by **Olesti and Pinol (2008)** that the diagnostic criteria of anorexia nervosa were 4.9 percent ,bulimia nervosa were 8.6 percent and other eating disorder were about 3.9 percent.

Table 1. Comparision of mean Height (cm) of adolescent girls with NCHS standard:-

Age(years) groupI	**No.of respondents**	**Observed mean (cm) S.E**	**50th percentile NCHS std.**	**Difference (Cm)**	**t-calculated**	**T table (5%)**
14	9	159.5 (±0.43)	160.4	-0.9	0.015 NS	2.262
15	10	157.8 (±0.67)	161.8	-4	4.856 S	2.281
16	11	160.5 (±0.87)	162.4	-1.9	3.168 S	2.2010
17	14	161.4 (±0.18)	163.1	-1.7	2.578 S	2.1448
18	11	155.6 (±0.21)	163.4	-7.8	4.627 S	2.1009
GroupII						
14	9	157.8 (±0.56)	160.4	-2.6	5.176 S	2.2622

15	10	159.7(±0.49)	161.4	-2.1	1.131 NS	2.2281
16	12	160.5 (±0.72)	162.4	-1.9	3.156 S	2.1788
17	9	162.8 (±0.89)	163.1	-0.3	2.031 S	2.2682
18	5	158.5 (±0.73)	163.4	-4.9	4.171 S	2.4469
GroupIII						
14	12	156.9 (±0.69)	160.4	-3.5	3.176 S	2.1788
15	8	159.8 (±0.17)	161.8	-2	5.164 S	2.3060
16	10	160.6 ±(0.31)	162.4	--1.8	0.589 NS	2.2281
17	15	162.1(±0.26)	163.1	-1	4.149 S	2.1314
18	5	160.9(±0.52)	163.4	-2.5	6.156 S	2.5706

Source:- (Srilakshmi 2007)

Table 2. Comparison of Mean Weight (kg) of adolescent girls with NCHS standard:-

Age (years) groupI	**No. of respondent**	**Observed Mean (kg) S.E**	**50th percentile NCHS standard**	**Difference (Kg)**	**t-calculated**	**t at 5%**
14	9	45.6 (±0.76)	50.3	-4.7	3.163 S	2.2622
15	10	49.4 (±0.56)	53.7	-4.3	5.154 S	2.2281
16	11	52.8 (±0.94)	55.9	-3.1	1.176 NS	2.2010
17	14	40.1 (±0.59)	56.7	--6.6	4.482 S	2.1488
18	11	50.5 (±0.67)	56.6	-6.1	4.761 S	2.1009
GroupII						
14	9	49.8 (±0.84)	50.3	-1	4.165 S	2.2622
15	10	50.6 (±0.78)	53.7	-3.1	1.569 NS	2.2281
16	12	52.3 (±0.67)	55.9	-3.6	3.167 S	2.1788
17	9	54.1 (±0.76)	56.7	-2.6	4.848 S	2.2622
18	5	53.3 (±0.94)	56.6	-3.3	0.178 NS	2.4469
Group III						
14	12	48.7 (±0.19)	50.3	-1.6	1.764 NS	2.1788
15	8	49.4 (±0.16)	53.7	-4.3	3.154 S	2.3060
16	10	53.2 (±0.76)	55.9	-2.7	1.698 NS	2.2281

17	15	54.1 (±0.54)	56.7	-2.6	4.156 S	2.1314
18	5	53.2 (±0.39)	56.6	-3.4	5.175 S	2.5706

Source: (Srilakshmi 2007)

Table 3. Average Daily nutrient intake of adolescent girls (13-18 years):-

Group I	**Particular**	**Calorie kcal**	**Protein g**	**Fat g**	**Retinol µg**	**Thiamine mg**	**Pyridoxin mg**	**Vitamin C mg**	**Calcium mg**	**Iron mg**	**Vitamin B12 ug**	**Riboflavin mg**	**Folic Acid µg**
14-15	Average intake	1970	61	50	425	1	0.59	36	420	25	0.376	1	73.08
	S.E	±0.107	±0.165	±0.157	±5.36	±0.015	±0.01	±1.247	±5.36	±0.573	±0.75	±0.087	±3.16
n=47	RDA	2060	65	22	600	1.2	2	40	600	28	0.2-1	1.2	100
	Difference	-90	-4	-28	-175	-0.2	-1.41	-4	-180	-3	0.166	-0.5	-26.9
.	t- cal.	40.17 S	18.17 S	36.5 S	15.84 S	22.13 S	19.94 S	12.58 S	26.58 S	26.84 S	7.584 S	1.048 NS	2.156 S
31.33 %	t table(46at5 %)	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013
Group II	**Particulars**	**Calorie kcal**	**Protein g**	**Fat g**	**Retinol µg**	**Thiamine mg**	**Pyridoxine mg**	**Vitamin C mg**	**Calcium mg**	**Iron mg**	**VitaminB12 ug**	**Riboflavin mg**	**Folic acid µg/d**
16-18	Average intake	2020	59	47	480	1	0-69	32	328	22	0.157	1	74.5
n=28	S.E	±0.159	±0.168	±0.147	±4.84	±0.015	±0.06	±2.678	±4.567	±3.173	±0.154	±0.168	±2.16
	RDA	2060	63	22	600	1.2	2	40	500	30	0.2-1	1.2	100
	Difference	-40	-4	25	-120	0.2	-1.31	-8	-172	-8	-0.043	-0.2	-25.5
	t-cal.	38.15 S	14 S	36.79 S	5.16 S	4.78 S	62.15 S	10.15 S	4.18 S	5.32 S	30.64 S	4.154 S	1.78 NS
	t table(27at5 %	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009
Group I	**Particulars**	**Calorie kcal**	**Protein g**	**Fat g**	**Retinol µg**	**Thiamine mg**	**Pyridoxine mg**	**Vitamin C mg**	**Calcium mg**	**Iron mg**	**Vitamin B12µg**	**Riboflavinn mg**	**Folic acid µg/d**
13-15	Average intake	2020	60	48	455	1	0.79	34	480	22	0.458	1	71.08
N=47	S.E	47.08	0.516	0.67	14.35	0.02	0.023	1.103	6.501	1.273	0.155	0.066	1.467
%=31.33	RDA	2060	65	22	600	1.2	2	40	600	28	0.2-1	1.2	100
	Difference	-40	-5	26	-145	-0.2	-1.2-1	-6	-120	-6	0.258	-0.2	-28.9
	t-cal.	4.754 S	4.893 S	5.0621 S	4.048 S	2.615 S	4.764 S	3.931 S	5.035 S	3.809 S	1.475 NS	3.064 S	2.191 S

	t-table(46at5%)	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013	2.013
Group II	**Particulars**	**Calorie kcal**	**Protein g**	**Fat g**	**Retinol µg**	**Thiamine mg**	**Pyridoxine µg**	**Vitamin C mg**	**Calcium mg**	**Iron mg**	**Vitamin B12µg**	**Riboflavin mg**	**Folic acid µg/d**
16-18	Average intake	1990	60	55	432	1	0.739	33	418	26	0.567	1	71.08
N=28	S.E	±31.90	±0.768	±0.89	±23.7	±0.032	±0.015	±1.325	±12.04	±0.736	±0.147	±0.095	±0.082
%=19.33	RDA	2060	65	22	600	1.2	2	40	500	30	0.2-1	1.2	100
	Difference	-70	-5	33	-168	-0.2	-1.21	-7	-82	-4	0.367	-0.2	-28.92
	t-cal	3.754 S	17.14 S	39.79 S	5.63 S	3.78 S	1.654 NS	3.152 S	4.587 S	6.123 S	7.132 S	1.567 NS	0.0592 NS
	T(table27 at5%)	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009

Table value=P(,<0.05) Non-significant
Table value=P(>0.05) significant

Table 4 Distribution of adolescents girls according to identification of eating disorder:-

Type of eating disorder	**GroupI 55**		**GroupII 45**		**GroupIII 50**		**Total 150**	
	N	**%**	**n**	**%**	**N**	**%**	**N**	**%**
Anorexia Nervosa	25	45.45	15	33.33	20	40	60	40
Bulimia Nervosa	20	36.36	18	40	25	50	63	42
Binge eating disorder	10	18.18	12	26.66	5	10	42	28

. Table 5Distribution of adolescent girls according to the eating disorders:-

S.No	Age group	Eating disorder score	N	%
1.	13-15 years	.>50 points	50	33.33
	16-18 years	>50 points	30	20
2.	13-15 years	30-50 points	40	26.6
	16-18years	30-50 points	20	13.33
3.	13-15 years	<30 points	6	4
	16-18 years	<30 points	4	2.66

Scoring of the test :

Norms	**Range (0-120 points)**
Eating disorder	> 50 points
Borderline eating disorder	30-50 points
Normal	< 30 points

Average score among these with normal eating habits = 15.4

CONCLUSION

It is concluded that the nutritional status of adolescents girls residing in Allahabad are below standards. The eating disorders commonly found among the girl respondents were anorexia nervosa, (40 percent) bulimia nervosa, (42 percent) and binge eating disorders (28 percent). The nutritional status of 53.33 percent of the respondents was unsatisfactory, showing inadequate intake of important nutrients like energy, protein, calcium, iron, vitamin A, vitamin C, folic acid, thiamine, riboflavin, pyridoxine required for proper growth and development among girls. The presence of clinical signs and symptoms of nutritional deficiencies which were below ICMR standards is a matter of concern.A significant relation was observed between the eating disorders and nutritional status of adolescent girls indicating that eating disorders and nutritional status are correlated.

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