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Nutritional Status of Rural Adolescent Girls of Dharwad Taluk

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ABSTRACT

Adolescence is a transitional stage of development between childhood and adulthood and associated with marked physical growth, reproductive maturation and cognitive transformations. Aim of this study was to assess nutritional status of adolescent girls of Amminbhavi and Marewada villages of Dharwad taluk. A total of 60 adolescent girls of age 13 to 16 y were selected. Results showed, 60 per cent of the respondent's height was 130-145cm while remaining was between 145-170cm. Seventy six per cent of the respondent's weight was 30-40 kg and remaining between 40-50 kg. Maximum respondents were in normal but underweight range of BMI. Many of respondents had no recent medical check up, while only few respondents underwent recent medical check up. Morbidity pattern was evaluated for common ailments and treatments. It was indicated that respondents experienced cough, cold, fever, headache and stomach ache. Clinical history of respondents was evaluated for iron deficiency. Majority of the respondents exhibited the symptoms of pale conjunctiva, followed by fatigue, brittle fingernails, loss of appetite, brittle hairs, pallor skin, shortness of breath, unusual food cravings and rapid heartbeat. From the results, the adolescent girls are easily prone to common ailments as they do not take treatment and irregular consumption of iron, folate, Vit A and deworming tablets in school which are provided free of cost, depicting their negligence towards their individual health. Good nutrition is needed to support the growth and developmental changes of adolescence.

Key words: *Adolescent girls, Nutritional status, Anthropometric measurements, Underweight, Deworming*

INTRODUCTION

Adolescence is a time of dramatic physical changes. It is the transitional stage of development between childhood and adulthood and is associated with marked physical growth, reproductive maturation, and cognitive transformations.

Physical changes begin in early adolescence during puberty[8]. Girls generally begin their adolescent growth spurt at an earlier age than boys, throughout adolescence girls experience greater increases in adiposity, which is required for normal menstruation[11].

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Girls also experience menarche (first occurance of menstruation) during this developmental stage, typically following the peak period of gains in height and weight[8]. Good nutrition is needed to support the growth and developmental changes of adolescence[1]. Undernutrition, has been shown to delay the adolescent growth spurt. Studies have also shown that many adolescents do not come close to meeting intake recommendations for nutrient-rich foods, such as fruit, vegetables, and milk[3,6]. Together, these dietary behaviors place adolescents at increased risk for micronutrient deficiencies. Many children in low- and middle-income countries enter adolescence thin, stunted and anemic, and often display other micronutrient deficiencies. Considering all these factors an investigation was conducted with the following objective to assess nutritional status, medical history, morbidity pattern and clinical history of adolescent girls of Amminbhavi and Marewada villages of Dharwad taluk.

MATERIALS AND METHODS

The present study was conducted to assess nutritional status of rural adolescent girls of Dharwad taluk. Two villages namely Amminbhavi and Marewad were selected for the study.

The study was also intended to focus on the growth of adolescent girls through anthropometric measurements.

Selection of subjects – a total of 60 adolescent girls of age 13 to 16 years were selected from 2 villages. 30 subjects each from 2 villages were interviewed. The methods used for collecting data are as follows - a self structured questionnaire was developed and which contains socio-economic information, anthropometric measurements, medical history, morbidity pattern and clinical history of deficiencies of adolescent girls were recorded by interviewing.

The anthropometric measurements of subjects were recorded by using standard procedures[4]. Measurements included were height, weight, MUAC, waist circumference and hip circumference. Body weights of adolescent girls were measured to the nearest 0.1 kg with the help of portable weighing machine. Adolescent girls were weighed without shoes and with minimum clothing. Heights of subjects were measured to the nearest 0.1 cm by nonstretchable measuring tape. The subject was asked to stand straight as possible on a flat floor without shoes.

Diet survey: The diet survey was conducted to collect information about dietary pattern by using questionnaire schedule to record data regarding their frequency of consumption of different food groups in a day, week and monthly.

Statistical analysis: Statistical analysis of collected data was carried out after consolidation and computation into frequencies and percentages.

RESULTS AND DISCUSSION

Socio economic status of the respondent's family was depicted in table 1. It was found that majority of 93.3 percent of the respondents belonged to Hindu religion while only 6.6 percent belonged to Muslim religion. About 76.6 per cent of the respondents belonged to nuclear type of family, while 15 percent of respondents stayed in joint family. Only 8.33 percent stayed in extended type of family. Majority of 68.3 percent respondents family size was between 4-7 members and 31.6 percent of their family size was more than 7 members. Forty percent of the respondents family income was <5000, while 56.6 per cent of their family income was between 5000-10000.Only 3.3 percent of their family income was > 10000/-.

Age of the respondents & age at menarche (table 2) showed that 53.3 percent of the respondents present age were between 13-14 yrs followed by 35 per cent (14.1- 15 yrs). Only 11.6 percent of the respondents present age were more than 15 yrs. Age at menarche of the respondents revealed that 66.6 percent had their menarche at the age between 13-14 yrs, whereas 23.3 percent respondents had still not reached menarche followed by 10 percent respondents whose age at menarche was between 12-13 yrs.

Anthropometric measurements of the respondents were [resented in table 3. It was reported that 60 percent of the respondents height ranged between130-145cm while 40 percent of the respondent's height was between 145.1-170 cm. It was found that 76.6 per cent of the respondent's weight ranged between 30-40 kg and 23.3 percent of the respondents weight ranged between 40-50 kg. Mid upper arm circumference of the respondents were assessed and ranged from 15 to 25 cm and majority (60 %) were range from 21 to 25cm. similar results are also found in the study conducted by Bhosale and Arya.

When the BMI was considered, maximum respondents (63.3%) were in normal range of BMI (18.5- 24.9), followed by 28.33 percent respondents fell into overweight category (25- 29.9).It was found that only 8.33 percent of the respondents belonged to obese category of BMI(>30). The WHR of the respondents was also calculated where it indicated that majority of respondents (75%) were in the normal range i.e., < 0.80 while only 25 percent respondents WHR was high than normal. Respondents whose family income was high consumed good amount of fruits, animal foods and milk products which resulted in overweight, thus increase in WHR.

Information regarding the menstrual cycle patterns were indicated in table 4. It was found that 73.3 percent of the respondents had their regular monthly cycles while only 26.6 percent respondents had irregular menstrual cycles, this might be due to impaired nutritional status and continuous morbid state of the respondents. Occurrence of menses based on intervals was considered where 68.3 percent of the respondents had their menses on monthly basis whereas 31.6 per cent respondents had their menses bimonthly. Forty five percent of the respondents experienced heavy menstrual flow, while 55 percent respondents experienced medium menstrual flow.

Medical history of the respondents was assessed (table 5). This table denoted that maximum percent of respondents (86.6 %) had no recent medical check up, while only 13.3 percent respondents underwent recent medical check up this may be due to their ignorance, low economic status. The respondents underwent medical check up due to reasons such as menses problem (37.5%), stomach ache & cramps (62.5%).Almost majority of the respondents (95%) consumed deworming tablets at every six months interval, while 5 percent respondents did not consume deworming tablets. Folate, Iron and Vit - A tablets were provided to the respondents at intervals of weekly thrice and once in 6 months respectively. The school was the source of tablet provision. It was found that 88.3 percent of respondents took these tablets but 11.6 percent did not consume these tablets as they did not like the taste and also experienced stomach ache after the consumption.

Morbidity pattern of the respondents were evaluated for the common ailments, their duration, frequency and treatments. It was indicated that 60 percent of the respondents experienced cough, of which 77 percent respondent experienced cough for < 1 week and 23 percent experienced it for > 1 week. Majority of the respondents (77%) experienced cough once in 6 months, followed by frequency of monthly (15%) and once in 3 months (8%). Treatment undergone by respondents for cough was home remedy (25%), doctor (5%) and remaining 70 percent of respondents did not undergo any treatment. It was found that 53 percent of the respondents experienced cold, of which 47.5 percent respondent experienced cold for < 1 week and 52.5 percent experienced it for > 1 week. Majority of the respondents (80%) experienced cold once in 6 months, followed by frequency of monthly (15%) and once in 3 months (5%). Treatment undergone by respondents for cold was home remedy (62.5%) and doctor (7.5%) remaining 30 per cent of respondents did not undergo any treatment. It was found that 37.5 percent of the respondents experienced fever, of which 62.5 percent respondent experienced fever for < 1 week and 37.5 per cent experienced it for > 1 week. Majority of the respondents (72.5%)

experienced fever once in 3 months, followed by frequency of six months (22.5%) and once in month (5%). Treatment undergone by respondents for fever was home remedy (17.5%) and doctor (82.5%).

It was found that 77.5 percent of the respondents experienced headache, of which 70 percent respondent experienced headache for < 1 week and 30 percent experienced it for > 1 week. Majority of the respondents (55 %) experienced headache every month, followed by frequency of 3 months (40 %) and once in 6 month (5 %). Treatment undergone by respondents for headache was home remedy (82.5 %) and doctor (17.5 %). Stomach ache among 47.5 percent of the respondents experienced, of which 72.5 per cent respondent experienced for < 1 week and 27.5 per cent experienced it for > 1 week. Majority of the respondents (60%) experienced stomach ache every month, followed by frequency of 3 months (40 %). Treatment undergone by respondents for stomach ache was home remedy (92.5 %) and doctor (7.5 %) and none of the respondents experienced any infections. Respondents were easily prone to common ailments as they were not regularly consuming iron, folate, Vit A and deworming tablets in school which are provided free of cost, depicting their negligence towards their individual health.

Clinical history of respondents was evaluated for iron deficiency (Fig 1). Majority of the respondents exhibited the symptoms of pale conjunctiva (32.5%), followed by fatigue(27.5%), brittle fingernails (22.5%), loss of appetite (22.5%), brittle hairs (17.5%), pallor skin (10%), shortness of breath (7.5%), unusual food cravings (7.5%) and rapid heartbeat (5%). These symptoms might be because of irregular consumption of iron and folate tablets and also of unhygienic environment.

Among the respondents only 35 percent had rough and dry skin while no other symptoms of Vit A deficiency was observed among the respondents (table 7). Respondents showed mild form of Vit –A deficiency probably due to inadequate intake of yellow and orange coloured fruits and vegetables.

Food frequency pattern of the respondents was depicted in table 8. It was found that the respondents consumed cereals (56.6%) and pulses (55%) on daily basis whereas GLV's (46.6%) was consumed weekly twice by respondents. Other vegetables (53.3%) was consumed weekly once. Roots and tubers were consumed in less quantity, however it was consumed on monthly basis (46.6%). Only few respondents consumed milk and milk products on daily basis (3.3%). Nuts & oilseeds (26.6%) such as groundnut and niger seeds were consumed weekly twice by the respondents in the preparation of bhajis. Fruits consumption (apples, pomegranate, pineapple etc.,) was on monthly basis (60%), while inexpensive fruits such as guava, ber, banana, orange were consumed regularly (6.6%) by the respondents. Among the non vegetarian respondents majority of them consumed animal foods on monthly basis (63.3%). Income level of the family might be a strong determinant in inadequate consumption of protective foods such as fruits, vegetables, milk and its products and thus they are malnourished. Similar results were found in studies conducted by Venkaiah *et.al.*[12] and Prashant K. and Chandan Shaw[7]. Deshmukh *et.al.*[2], Sweta Sing *et. al.*[9] and Kalhan M. *et.al.*[5] observed high percent of adolescent girls were malnourished.

A significant proportion of the rural adolescent girls are at risk due to inadequate nutrient intake resulting in short stature and underweight. Therefore there is need to develop strategies to improve nutritional status of adolescent girls from the rural area to achieve their maximum growth potentials. This calls for improving nutrition knowledge and health status through the nutrition education. There is need to increase the awareness regarding nutrition among the rural families.

Table 1: Socio-economic characteristics of respondent's family

Sl no.	Particulars	Total	
		Frequency N=60	%
1	Religion a. Hindu b. Muslim	 56 4	 93.3 6.60
2	Type of family a. Nuclear b. Joint c. Extended	 46 9 5	 76.6 15.0 8.33
3	Size of family a. 4-7 members b. >7 members	 41 19	 68.3 31.6
4	Income of family a. < 5000/- b. 5000-10000 c. >10000	 24 34 2	 40.0 56.6 3.30

Table 2: Age of the respondents & age at menarche

Sl no.	**Particulars**	**Total**	
		Frequency N=60	**%**
1	Present age a. 13-14 yrs b. 14.1-15 yrs c. > 15 yrs	 32 21 7	 53.3 35.0 11.6
3	Age at menarche a. 12 -13 yrs b. 13-14 yrs c. No menarche	 6 40 14	 10.0 66.6 23.3

Table 3: Anthropometric measurements of respondents

Sl no.	Particulars	Total	
		Frequency N=60	%
1	Height (cm) 130-145 145.1-170	 36 24	 60.0 40.0
2	Weight (kg) 30-40 40-50	 46 14	 76.5 23.3
3	MUAC (cm) 15 -20 21-25	 24 36	 40.0 60.0
4	BMI 18.5-24.9 25-29.9 >30	 38 17 5	 63.3 28.3 8.3
5	WHR < 0.80 > 0.80	 45 15	 75.0 25.0

Table 4: Pattern of menstrual cycle of the respondents

Sl no.	Particulars	Total	
		Frequency N=60	**%**
1	**Regularity**		
	Regular	44	73.3
	Irregular	16	26.6
2	**Interval**		
	a. Monthly	41	68.3
	c. Bimonthly	19	31.6
3	**Menstrual flow**		
	a. Heavy	27	45.0
	b. Medium	33	55.0
	c. spotting	0	0.0

Table 5: medical history of respondents

Sl no.	Particulars	Total	
		Frequency N = 60	**%**
1	Recent medical checkup		
	Yes	8	13.3
	No	52	86.6
2	Reason for medical checkup		
	Menses problem	3	37.5
	Stomach ache & cramps	5	62.5
3	Taking Deworming tablets		
	Yes	57	95.0
	No	3	5.0
4	Taking Folate, Vit-A & Iron tablets		
	Yes	53	88.3
	No	7	11.6

Table 6: Morbidity history of respondents

Common ailments	Duration(%)		Frequency (%)			Treatment(%)	
	< 1 week	**> 1 week**	**monthly**	**3months**	**6months**	**Home remedy**	**Doctor**
Cough (60%)	77.0	23.0	15.0	8.0	77.0	25.0	5.0
Cold (53%)	47.5	52.5	15.0	5.0	80.0	62.5	7.5
Fever (37.5%)	62.5	37.5	5.0	72.5	22.5	17.5	82.5
Headache (77.5)	70.0	30.0	55.0	40.0	5.0	82.5	17.5
Stomach ache (47.5%)	72.5	27.5	60.0	40.0	0.0	92.5	7.5
Infection (0%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 7: Clinical history of respondents (Vitamin – A deficiency)

Sl no.	Particulars	Total (%)
1	Night blindness	0
2	Eye lesions & dry eyes	0
3	Bitot's spot	0
4	Angular stomatitis	0
5	Glossitis	0
6	Rough & dry skin	35

Table 8: Food frequency pattern of the respondents

Sl.no	Foods	Frequency (%)				
		Daily	Weekly once	Weekly twice	Fort nightly	Monthly
a.	Cereals	56.6	13.3	30.7	-	-
b.	Pulses	55.0	13.3	30 .0	1.7	-
c.	Glv's	-	23.3	46.6	-	-
d.	Other vegetables	10.0	53.3	33.3	3.3	-
e.	Roots & tubers	-	10.0	26.6	10 .0	46.6
f.	Milk & milk products	3.3	10 .0	6.6	-	6.66
g.	Nuts & oilseeds	-	-	26.6	6.6	3.3
h.	Fruits	6.6	3.5	6.6	23.3	60.0
i.	Animal foods	-	6.6	20.1	10.0	63.3

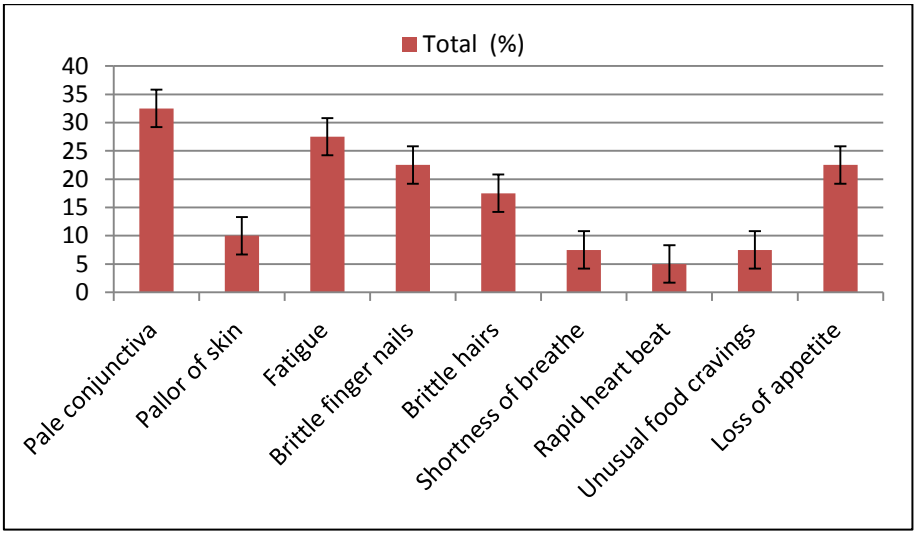

Fig. 1: Clinical history of respondents

CONCLUSION

It is concluded that there is a high prevalence of under nutrition among rural adolescent girls. Various strategies can be employed to improve the nutritional and health status of the adolescent girls as they are future mothers. Programs can reach girls through a variety of avenues, including schools, workplaces, marriage registration systems, and youth-oriented health programs. Ensuring adolescent girls receive enough food, iron and folate supplements, and iron and iodine-fortified foods, as well as helping them to delay their first pregnancy

and protect themselves from sexually transmitted infections and other diseases, can help girls become healthy women.

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