

Nutritional Knowledge, Attitude and Practices of Adolescent Girls : A Comparative Study between Rural and Urban

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ABSTRACT

Adolescence is the period of life spanning the ages between 10-19 years. Among adolescents, girls are more nutritionally vulnerable. Nutrition related KAP have a substantial influence on health and nutritional status and it is a tool to explore nutrition, diet, foods and closely related hygiene and health issues of individual. A cross-sectional comparative study was conducted among 200 adolescent girls aged between 12-15 years purposively selected from four government schools located at rural and urban areas of Bengaluru district. Structured questionnaire was used to collect information. A nutrition knowledge, attitude and practice score was determined, classified into different categories based on scores obtained. Data was statistically analyzed. Majority of the adolescent girls had medium level of knowledge (knowledge index between 66.33 to 78.30), neutral attitude and poor nutrition practice (practice index below 61.29). It was found that nutritional knowledge, attitude and practice did not differ significantly between rural and urban. However it was observed that there was significant increase in nutritional knowledge ($\chi^2=41.03^{**}$, 60.33^{**}) and practice ($\chi^2=80.30^{**}$, 40.21^{**}) as age progress. Nutritional knowledge, attitude and practices are less influenced by study areas. Though study locations are different, the influencing factors such as socio economic status and education curriculum remained similar among the respondents. Various socio economic variables influence on increasing knowledge level and practice as age progress.

Keywords : Adolescent girls, Rural, Urban, Nutrition knowledge, Attitude, Practices

ADOLESCENTS are persons aged 10-19 years. Adolescence is a unique period as physical, cognitive and psychological development occurs (Asim *et al.*, 2019). It is a transition period from childhood to adulthood and characterized by rapid physical, biological and hormonal changes resulting in psychosocial, behavioral and sexual maturity in an individual. It is also known as the second growth spurt of life (Vir *et al.*, 2014). Nutritional knowledge, attitude and practice have a significant influence on health and nutritional status. Nutrition related KAP is a tool to explore nutrition, diet, foods and closely related hygiene and health issues of individual (FAO, 2015). Knowledge means the ability of pursuing information

by understanding and learning experience. Attitude indicates the result of making reaction *via* some ways in some situations and observes and explains based on the result of reaction or combine into one point of view. Practice indicates working together of knowledge and habit (Mini *et al.*, 2010) Nutrition knowledge is one of the factors which affect nutritional status and nutritional habits of individuals, families and societies (Nazni and Vimala, 2010). Studies suggest that in addition to knowledge, good practices, positive attitudes are important for maintaining good health (Fasola and Abosedo, 2018). There is growing evidence that young children are increasingly making unhealthy food choices especially due to lack of

knowledge and wrong perception towards healthy foods (Mirmiran *et al.*, 2007 and Zaborskis *et al.*, 2012). Nutritional knowledge is required for a healthy lifestyle. Improving nutritional knowledge, attitude and practices of adolescent girls will lead to more economic growth and healthier individuals (Jalambo *et al.*, 2017) as it will lead to a more food-conscious society, healthier and disease free individuals. Nutritional knowledge can influence the consumption pattern and enhance the nutritional status as it improves the behavior and change the attitude towards wrong practices of food consumption. Adolescent girls often lack basic information on health, food and nutrition which is more among rural adolescents as they lack access to required information from mass media, information on government and non-governmental programs aimed at well-being of adolescents and also rural people are probably more attached to their tradition and beliefs. In South Asia, the prevalence of undernutrition among adolescent girls is always in the same conditions as before due to a lack of proper knowledge and little attention in nutrition (Shekar *et al.*, 2006.) Therefore, to overcome the emerging issue of malnutrition among children and related health risks, school children have to be empowered to make the right food choices by providing them with nutrition knowledge and changing their attitudes towards healthy eating. KAP surveys reveal misconceptions or misunderstandings that may impede behaviour and conduct barriers to behavior change (Macias, Y. F. and Glasauer, P., 2014). where it is possible to generate a change mechanism to improve the situation. Nutrition education and counselling plays an important role in improving nutritional status of community (Shamshad Begum *et al.*, 2013) In this context the present study was undertaken to assess and compare the nutritional knowledge, attitude and practices of school going adolescent girls of rural and urban of Bangalore district.

METHODOLOGY

Study design and selection of locale : The present cross-sectional comparative study was conducted among adolescent girls aged 12-15 years from four randomly selected government schools located at

rural and urban areas of Bengaluru district over a period of three months from December 2019 to February 2020. At the school level purposive sampling was used to select respondents. A total of 200 adolescents girls (100 = rural and 100 = urban) were selected based on purposive sampling from class 7th, 8th and 9th standard. The work is overviewed, approved and signed by PG research committee which involves subject matter specialists and permission was obtained from the principals of each school included in the study witnessed by the school authority.

Data collection tool and grouping of subjects based on scores : A well semi structured interview questionnaire was prepared in accordance with the methodological procedure and in consultation with statistician to collect data from the selected respondents. The validity and reliability of the questionnaire was evaluated by the pilot study. The questionnaire in native language of respondents was administered to the school girls to adjudicating current level of nutrition knowledge, attitude and practice which comprised list of questions relating to food, nutrition, hygiene and healthy eating. To evaluate the level of nutrition knowledge and practice of the adolescent girls one score was awarded for right response and zero for wrong response of each question. Knowledge index and practice index was calculated ($K_i = \text{Total score by each individual} / \text{Highest score obtained} * 100$) and ($P_i = \text{Total score by each individual} / \text{Highest score obtained} * 100$). Based on the scores obtained, the respondents were classified into three categories *viz.*, low (Less than (Mean -1/2 SD)), medium (Between (Mean \pm 1/2 SD)) and high (More than (Mean + 1/2 SD) level by using mean and standard deviation as a measures of check. The responses for the statements on nutrition attitude agree, disagree and don't know were recorded. Then they were classified into positive, neutral and negative attitude by counting the number of the responses to each question.

Analysis : Data obtained were entered into Microsoft Excel and analyzed using the SPSS version 22 and findings were reported in the form

TABLE 1
Responses of respondents to various nutrition knowledge aspects

Statements	Responses	Rural	Urban	÷2 value
Balanced diet is essential for good health	Correct	65	75	2.38 ^{NS}
	wrong	35	25	
Skipping meals is not good for health	Correct	27	11	8.31 [*]
	wrong	73	89	
Cutting nails frequently is hygienic practice	Correct	100	100	NS
	wrong	0	0	
Anaemia is due to deficiency of vitamin- A	Correct	4	3	0.14 ^{NS}
	wrong	96	97	
Ideal body weight is necessary to maintain good health	Correct	23	32	2.03 ^{NS}
	wrong	77	68	
Intake of green leafy vegetables enhance vitamin –C	Correct	14	24	3.24 ^{NS}
	wrong	86	76	
Drinking tap water is not good for health	Correct	66	71	2.98 ^{NS}
	wrong	34	29	
Washing hands before eating food is a good practice	Correct	100	100	NS
	wrong	0	0	
Morning walking and jogging are good for health	Correct	44	59	4.50 [*]
	wrong	56	41	
Kitchen garden provides fresh fruits and vegetables	Correct	33	27	0.85 ^{NS}
	wrong	67	73	
Cereals are rich source of carbohydrates	Correct	21	34	4.97 [*]
	wrong	79	66	
Sprouting will not improves nutrient availability	Correct	0	0	NS
	wrong	100	100	
Obesity is due to excess intake of fat	Correct	11	17	2.03
	wrong	89	83	
Egg is complete protein	Correct	2	5	6.05 [*]
	wrong	98	95	
Regular consumption of junk food is not good for health	Correct	92	100	80.33 [*]
	wrong	8	0	
Milk and milk products enhance calcium and is important for bone health	Correct	7	13	3.49 ^{NS}
	wrong	93	87	
Females need more iron in diet than male	Correct	0	0	NS
	wrong	100	100	
Green leafy vegetable's are good source of folic acid	Correct	0	0	NS
	wrong	100	100	
Supplement diet is necessary to overcome deficiency of nutrients	Correct	0	9	12.17 [*]
	wrong	100	91	
Protein is necessary for good Haemoglobin status	Correct	11	21	3.54 ^{NS}
	wrong	89	79	

*Significant at 5% level, **Significant at 1%, NS:Non-significant

of descriptive statistics and chi-square tests were used to establish relationships and associations between nutrition knowledge and practice. Mean score derived for knowledge, attitude and practice of the respondents was recorded. Results were considered significant at $P < 0.05$. Inferences were made from particular data under each theme then conclusions were drawn from the findings.

RESULTS AND DISCUSSION

The positive and negative responses by the adolescent girls for the each question on nutritional knowledge was recorded and is as depicted in Table 1. The findings revealed that majority (65%) of rural and urban (75%) respondents knew balanced diet is good for health. All the respondents irrespective of locale responded positively to frequent cutting of nails ashygienic practice. Sixty six per cent rural and 71 per cent urban adolescent girls responded positively to drinking tap water not good for health. In rural and urban 44 per cent and 59 per cent responded morning walk and jogging are good for health. All respondents in the urban knew that regular consumption of junk food is not good for health, however in rural it was 92 per cent. Majority respondents irrespective of study area were not aware about role of micro nutrients in human nutrition *viz.*, source of calcium and is important for bone health, women need more iron in diet than male. Green leafy vegetables as a source of folic acid and this difference is statistically non significant between rural and urban respondents. With less supervision of parents with low educational level to impart good nutritional knowledge, their economic status might be the contributory factors for present findings. Less exposure to nutrition related education and programmes may also be influencing factors.

Based on the score they were further classified and is as presented in Table (2). Assessment of nutritional knowledge revealed that 45 per cent of rural and 54 per cent urban respondents had medium knowledge level. Among the rural respondents it was found that 41 per cent had low and 14 per cent with high level of knowledge. Similarly among urban respondents 28 per cent had low and 18 per cent high level of knowledge. Mean knowledge scores of rural and urban respondents was found to be 6.5 ± 1.05 and $7.25 \pm$

TABLE 2
Nutritional knowledge of rural-urban respondents

Level of knowledge	% respondents		χ^2 value
	Rural	Urban	
Low	41	28	3.76 ^{NS}
Medium	45	54	
High	14	18	
Mean \pm SD	6.5 ± 1.05	7.25 ± 1.61	

*Significant at 5% level; **Significant at 1%;
NS : Non-significant

1.61 out of 10, respectively. The knowledge level of rural and urban adolescent girls was found to be statistically non significant. Similar findings was recorded in a study to assess the effect of eating behavior on nutritional status and nutritional knowledge of adolescent girls of rural, urban and slum areas of Lucknow where urban respondents had high mean nutritional knowledge score (18.43 ± 5.42) compared to rural respondents (6.66 ± 3.98) (Dixit *et al.*, 2014). The higher mean knowledge score (9.3 ± 3.76) than present study was recorded in intervention study to assess the knowledge, attitude, practice and health seeking behavior change regarding anemia among adolescent school girls of Delhi (Singh *et al.*, 2019). Similar results for nutritional knowledge was recorded by Angadi and Ranjitha, 2016 and Antony and Bhatti, 2015. Majority of the respondents in the present study belonged to lower socio economic status which may have influence on nutritional knowledge. In addition to this other socio economic variables such as parents education, occupation, family income, family type, family size all might have influence on the nutritional knowledge level of the respondents. Lack of exposure to nutrition information through various environmental factors such as mass media, governmental programmes also be a contributory factor for low nutritional knowledge on health (Khawairakpam Beembem *et al.*, 2012).

Nutritional Attitude of Rural - Urban Respondent

Nutritional attitude of the rural urban respondents is as presented in the Table 3. Majority 49 per cent rural, 44 per cent urban respondents had neutral attitude towards nutrition followed by 28 per cent rural

TABLE 3
Nutritional attitude of rural-urban respondents n = 200

Nutritional attitude	Rural	Urban
Positive attitude	28	37
Neutral attitude	49	44
Negative attitude	23	19
χ^2 value	1.89 *	

*Significant at 5% level; **Significant at 1%;
NS:Non-significant

respondents with positive and 23 per cent urban respondents with negative attitude, same trend was observed among urban respondents with 37 per cent having positive and 19 per cent had neutral attitude. Statistically significant difference existed between rural and urban respondents at 5 per cent level as indicated by (χ^2 value = 1.89*). Education curriculum and age of the respondents might be the reason for the research findings with regard to nutritional attitude (knowledge is ability to pursuing the information but attitude depends on situation and observation) Poor nutrition attitude was recorded by a cross sectional study conducted among 175 adolescent school girls of Davangere (Angadi and Ranjitha, 2016).

A study on knowledge, attitude and nutritional practice of secondary school students in Darab city located in Iran, revealed majority (89.3%) of urban and 61.5 per cent of rural respondents had sufficient awareness and attitude related to consumption of snacks.

Nutrition Practice of Rural - Urban Respondents

Responses to different nutrition practice statements is presented in Table 4. It is surprising to note that all the respondents responded negatively to not having balanced diet daily. Thirty five per cent of rural and 27 per cent of urban respondents had a habit of skipping meals. All the respondents were aware about hygienic practices and had habit of cutting nails frequently, washing hands before having foods, keeping themselves clean and hygiene. Good nutrition practice may be attributed by increased awareness as age advances. All the adolescent girls irrespective of study area adequately consumed major food groups daily

TABLE 4
Responses of respondents to nutrition practice n=200

Statement	Response	Rural	Urban	χ^2 value
Do you consume balanced diet daily	Yes	0	0	NS
	No	100	100	
Do you skip meals	Yes	35	27	1.38 NS
	No	65	73	
Do you cut your nails frequently	Yes	100	100	NS
	No	0	0	
Do you keep yourself hygienic	Yes	100	100	NS
	No	0	0	
Will you do any work out to maintain ideal body weight	Yes	0	0	NS
	No	100	100	
Do you consume Green leafy vegetable's daily	Yes	92	45	39.45 *
	No	8	55	
Do you drink tap water	Yes	24	19	0.98 NS
	No	76	81	
Do you wash your hands before having food	Yes	100	100	NS
	No	0	0	
Will you do daily walk and jogging	Yes	0	0	NS
	No	100	100	
Are you maintaining kitchen garden at home	Yes	8	0	15.74 *
	No	92	100	
Do you consume cereals in daily diet	Yes	100	100	NS
	No	0	0	
Do you consume enough sprouted grains	Yes	12	11	2.26 NS
	No	88	89	
Do you consume fried, baked foods frequently	Yes	100	100	NS
	No	0	0	
Do you eat enough fruits	Yes	0	0	NS
	No	100	100	
Do you drink milk and milk products daily	Yes	100	100	NS
	No	0	0	
Do you exercise daily	Yes	0	0	NS
	No	100	100	
Do you consume roots and tubers daily	Yes	87	54	28.79 *
	No	13	46	
Do you take supplement diet	Yes	0	0	NS
	No	100	100	
Do you eat egg daily / frequently	Yes	0	0	NS
	No	100	100	
Do you eat pulses daily	Yes	100	100	NS
	No	0	0	

viz., cereals, pulses and milk. The consumption of cereals namely rice and ragi on daily basis is reported by rural as they are staple foods of southern Karnataka. Further ragi is grown in their own field in rural area, rice is purchased through PDS (Public distribution system) on subsidized rate. Further many

governmental programmes such as mid day meal provide rice based food daily. The urban respondents are also beneficiaries of mid day meal programme and governmental programmes. same reason's hold good for frequent consumption of pulses. daily consumption of milk and milk products as reported by the respondents which may be attributed to mid day meal programme where milk is provided daily. Only 8 per cent of rural respondents maintained kitchen garden. All the respondents irrespective of study area regularly consumed fried and baked foods. This is due to the schools did not have food policy to regulate food items sold in the surrounding shops this may providing an easy access to variety of snacks from the shops in various packaging sizes, which children would afford. None of the respondents had a habit of consuming sprouted grains, fruits, eggs and supplementary foods

frequently. However, the nutritional knowledge not reflected in their daily practices of the respondents.

Nutrition practice of respondents is presented in the Table 5. Poor nutrition practices core was recorded by 43 per cent of rural and 41 per cent of urban adolescent girls. Good level of practice was observed among 29 per cent of rural and 35 per cent of urban respondents. However this difference between rural and urban adolescent girls was found to be non significant.

Lower mean scores (3.56 ± 1.99) for the nutrition practice was recorded in intervention study to assess the knowledge, attitude, practice and health seeking behavior change regarding anemia among adolescent school girls of Delhi (Singh *et al.*, 2019).

Mean score lower (1.6 ± 0.64) than present study was recorded in a cross sectional study among 175 adolescent school girls of Davangere (Angadi and Ranjitha, 2016) and Majority (82.5%) had average level of nutrition practice in a cross-sectional study conducted among 400 secondary school students to examine the Knowledge, Attitude, Nutritional practice on food consumption in Darab city (Moadel *et al.*, 2015).

Association of Nutritional Knowledge with Age

Association of Nutritional knowledge with age Association between Nutritional knowledge and age of adolescents is depicted in the Table (6). Low level of knowledge was observed among lower age

TABLE 5
Nutritional Practice of rural-urban respondents n = 200

Level of Nutrition Practice	% respondents	
	Rural	Urban
Poor	43	41
Fair	28	24
Good	29	35
Mean±SD	6.31 ± 1.58	6.52 ± 1.80
χ ² value	0.91 ^{NS}	

*Significant at 5% level; **Significant at 1%;
NS : Non-significant

TABLE 6
Association between Nutritional knowledge and age of adolescents n = 200

Age in (years)	N	Knowledge level							
		Rural			Urban				
		Low	High	Medium	N	Low	High	Medium	
12	16	11	4	1	32	24	8	0	
13	49	27	20	2	25	0	21	4	
14	13	2	4	7	30	4	18	8	
15	22	1	17	4	13	0	7	6	
Total	100	41	45	14	100	28	54	18	
χ ² value		41.03			**	60.33			**

*Significant at 5% level; **Significant at 1%; NS: Non-significant

TABLE 7
Association of Nutritional practice with age

n = 200

Age in (years)	Level of practice							
	Rural				Urban			
	N	Poor	Fair	Good	N	Poor	Fair	Good
12	16	12	4	0	32	23	9	0
13	49	31	18	0	25	9	7	9
14	13	0	2	11	30	9	7	14
15	22	0	4	18	13	0	1	12
Total	100	43	28	29	100	41	24	35
χ^2 value	80.30 **				40.21 **			

*Significant at 5% level; **Significant at 1%; NS: Non-significant

respondents irrespective of rural or urban and as the age advances the level of knowledge was observed to slightly increase for which education curriculum and awareness may be a reason for the findings. Statistically highly significant association at 1 per cent level was found between age and nutritional knowledge of the respondents in both rural and urban (41.03**, 60.33**). Increase in knowledge score with increase in age is reported in a descriptive study to assess junk food consumption and knowledge about ill effects among teenagers (Antony and Bhatti, 2015).

Association of Nutritional Practice with Age

Association of nutrition practice with age is as presented in Table 7. From the table it is evident that poor and fair nutrition practice was more among lower age irrespective of rural (31%,12% and 18%, 4%) or urban (9%, 23% and 7%, 9%). whereas as age advances good nutritional practice increased. A highly statistically significant association was found between age and nutritional practice of rural and urban respondents as indicated by chi square value (80.30**, 40.21**) Education curriculum, age of the respondents, socio economic variables might be the reason for the research findings with regard to nutritional knowledge and practice.

Assessment of nutritional knowledge, attitude and practice revealed majority had medium level of knowledge, neutral attitude and poor nutrition practice irrespective of study area. Association between Nutritional knowledge and age of adolescents revealed that there is age wise increase of nutritional

knowledge. Poor and fair nutrition practice was more among lower age. As age advances good nutritional practice increased. Proper nutritional knowledge should be introduced with to all levels of public education (primary and high school level). Interventions and programs, Behavioral change programmes, health education through Information, Education and Communication, can be designed to improve knowledge, attitude and practice so that adolescent girls can have a proper nutrition during their sexual maturation phase and imparting good habits which will be carried to the next generation. Hence this is necessary to conduct nutritional status educational programs in colleges as well schools to empower the community health status.

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