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Nutritional knowledge, attitude and practices of rural adolescents in North Bengaluru

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Abstract

Adolescence is a period of transition. It is a period where independence is established and adolescent makes choices of their own. The food environment is changing dramatically due to globalisation and urbanization. This has spiralled energy intake in adolescent's. But, there is a paucity of information about their nutritional knowledge, dietary practices and attitude. Exploration of relation between nutrition knowledge, dietary practices and attitude in this population is, therefore, of notable public health interest, and the need of the hour is improving the nutrition knowledge, attitude and practices on healthy eating and lifestyle.

Keywords: Education intervention, lifestyle modification, nutrition knowledge, rural adolescents, food choice

Introduction

Adolescence is a period of transition. The World Health Organization (WHO) defines the period of adolescents as 10–19 years of age (WHO, 2016). It is a period where independence is established and adolescent makes choices of their own. The choices made are followed for several years and food habits are greatly established during this period, and this can influence their health in the adulthood (Wennberg *et al.*, 2015) [8]. Hence, there is adequate to scope to establish and maintain healthy eating behavior during adolescence through constant motivation education.

Cultural and demographic factors have been shown to play a crucial role in sculpting dietary practices and attitude towards food among adolescents. These factors eventually influence the eating habits and also contribute towards their nutritional status. Furthermore, the demographic and nutritional transitions in the preceding decades with simultaneous socioeconomic changes have put adolescents at the core of many burning global and public health challenges. The food environment is changing dramatically due to globalisation and urbanization. As a result, global foods are widely marketed in developing countries. This has spiralled energy intake in adolescent's. However, diets remain limited in diversity, leading to dietary patterns uncondusive to a healthy lifespan free from nutrition-related non-communicable diseases (NCDs). This combined with an increase in screen-based recreational behaviours and decreased physical activity has exposed adolescents globally to a higher likelihood of adverse health outcomes in their ensuing adulthood (Guirado *et al.*, 2021) [3].

Current nutritional scenario in India has shown that while undernutrition remains as an everlasting public health problem, overweight-obesity is emerging as a new challenge in the country. In the last two decades there is increase the overall burden of overweight-obesity in Indian adolescent population. The prevalence of underweight decreased (43% to 38%) and the prevalence of overweight/obesity increased (3% to 5%), among adolescents, with high heterogeneity across states (Young *et al.*, 2020) [10]. This trend of simultaneous existence of undernutrition and overweight-obesity is referred as double burden of malnutrition (DBM).

The transition from widespread undernutrition to increasing overweight and obesity has emerged as a complex challenge facing the adolescents. Though adolescents are the most important and vulnerable segment of population, they have been largely ignored, and exclusive data pertaining to adolescent health are not widely available in Indian scenario. In addition, data on nutritional knowledge of rural adolescents in India is even more difficult to find. There is a paucity of information about their nutritional knowledge, dietary practices and attitude (Sivagurunathan *et al.*, 2015) [6]. Exploration of relation between nutrition knowledge, dietary practices and attitude in this population is, therefore, of notable public health interest, and the

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need of the hour is improving the nutrition knowledge, attitude and practices on healthy eating and lifestyle. Hence, this study aims to explore the adolescent's dietary practices and nutrition knowledge and provide them with suitable education intervention.

Methodology

Locale of the study

The study was conducted in rural areas of Bengaluru, under the supervision of researchers, headmasters and class teachers of the school.

Selection of the subjects

Purposive random sampling was followed for selection of the subjects. For the present study adolescents in the age group of 13-15 years were considered. The total sample size was 100 with 50 adolescent boys and 50 adolescent girls in each group:

Knowledge

Knowledge refers to an individual's understanding of the subject, including the intellectual ability to remember and recall information and facts (Marias and Glasuer, 2014).

Questions pertaining to nutrients and their sources, nutrient deficiency disorders, balanced diet and foods to be taken/avoided by adolescents were included. There were 20 close ended statements in knowledge section and respondents were asked to mark either 'Yes' or 'No' for each statement. Correct response was given a score of '1' and incorrect responses were given a score of '0'. This way a respondent can score maximum of 20 and minimum of '0' in this section.

Attitude

Attitudes are emotional, motivational, perceptive and cognitive beliefs that positively or negatively influence the behavior or practice of an individual. Attitudes influence future behavior no matter the individual's knowledge and help explain why an individual adopts one practice and not the other alternative. The terms attitudes, beliefs and perceptions are interchangeable (Marias and Glasuer, 2014).

Statements related to physical activity, dietary guidelines for obesity, importance of nutrition for adolescents, balanced diet were included. Questions included in the attitude section were related to the attitude and beliefs of the subject regarding food choices and habits. A total of 10 statements were provided which included both +ve and -ve statements. Attitude score was obtained by summing up the responses of the 10 statements on a Likert scale showing the degree of agreement. The positive response was given a point of 5 while the most negative response was given a point of one. This way a respondent can score maximum of 50 and minimum of 10 in this section.

Practices

Practices are the observable actions of an individual that could affect his/her choice. Practice and behavior are interchangeable terms, although practice has a connotation of long-standing or commonly practiced behavior (Marias and Glasuer, 2014). Dietary practices include consumption of

vegetables, fruits and regular habit of performing the physical activity. Questions in the practice section were designed to assess the dietary practices of adolescents. There were 10 close end questions with answers 'Yes' or 'No'. 'Yes' indicated favorable dietary practice / lifestyle and 'No' indicates undesirable dietary practice / lifestyle. Each positive practice was given a score of one and negative response a score of zero with maximum score of 10 and minimum score of zero.

Imparting nutrition education and its impact

Development of health care package: Health Care Package in this study means a package including

1. Flash cards on nutrition deficiency disorders
2. Leaflet – Focusing on dietary modifications and importance of physical activity (English and Kannada).
3. Booklet – Including Recommended Dietary Allowances of macro and micro nutrients for adolescent boys and girls, their sources (English and Kannada).

Nutrition Education Intervention

The nutritional counseling was done using developed educational materials for adolescents that included balanced diet, food groups, importance of nutrition in adolescence, management of health through nutrition and lifestyle modifications. The subjects were given education intervention for a period of three months and both boys and girls were given equal importance.

The KAP (Knowledge, Attitude and Practices) interview schedule was administered to the respondents at the baseline. After this, using the health care package education intervention was done. Impact study was conducted using the same KAP questionnaire on 90th day and on the 120th day to check the retention of knowledge, change in attitude and continuation of practices among the subjects (Intervention was done from 90th to 120th day). The per cent increase in KAP scores was calculated as follows:

Results and Discussion

At baseline nutrition knowledge of adolescents was found to be 12.86 among boys and 12.30 among girls indicating that the adolescents had fair knowledge of eating right and its importance. Knowledge related to nutrition among both adolescent boys and girls was further improved by 90th day of intervention and witnessed a raise in score of 4.38 among boys and 5.76 among girls. By the end of nutrition intervention program (120th day) the knowledge score was found to have reduced by score of 1.18 and 1.76 among boys and girls respectively, and the overall knowledge score found to be 16.06 among boys and 16.30 among girls. The overall mean score at baseline was 64 per cent and 61 per cent and at the end were 80 per cent and 81 per cent respectively among boys and girls indicating the increase in mean score 15 per cent and 20 per cent respectively. Statistical analysis revealed that the gain and reduction in knowledge were significant among both the genders at different time intervals. However, it also shows that there is significant positive improvement with respect to knowledge from baseline to 120th day (Table 1).

Table 1: Impact of education intervention on nutrition knowledge of rural adolescents

Maximum score = 20
(N = 100)

| Group | Test | Knowledge score | | | Paired 't' test |
|--------------|-----------------------|-----------------|----------|--------|-----------------|
| | | Mean±SD | Mean (%) | SD (%) | |
| Boys (n=50) | Baseline | 12.86±2.49 | 64.30 | 12.45 | 18.08* |
| | 90 th day | 17.24±1.77 | 86.20 | 8.84 | |
| | Enhancement | 4.38±1.71 | 21.90 | 8.56 | |
| | 120 th day | 16.06±1.77 | 80.30 | 8.83 | 8.87* |
| | Reduction | 1.18±0.94 | 5.90 | 4.70 | |
| Girls (n=50) | Baseline | 12.3±2.22 | 61.50 | 11.12 | 16.83* |
| | 90 th day | 18.06±1.87 | 90.30 | 9.34 | |
| | Enhancement | 5.76±2.42 | 28.80 | 12.10 | |
| | 120 th day | 16.3±1.88 | 81.50 | 9.38 | 7.55* |
| | Reduction | 1.76±1.65 | 8.80 | 8.24 | |

Table 2: Impact of education intervention on attitude towards healthy eating habits and lifestyle practices of rural adolescents

Maximum score = 50
(N = 100)

| Group | Test | Attitude score | | | Paired 't' test |
|--------------|-----------------------|----------------|----------|--------|-----------------|
| | | Mean±SD | Mean (%) | SD (%) | |
| Boys (n=50) | Baseline | 22.72±3.77 | 45.44 | 7.54 | 31.56* |
| | 90 th day | 40.34±3.88 | 80.68 | 7.77 | |
| | Enhancement | 17.62±3.95 | 35.24 | 7.90 | |
| | 120 th day | 31.14±4.10 | 62.28 | 8.19 | 17.89* |
| | Reduction | 9.20±3.64 | 18.40 | 7.27 | |
| Girls (n=50) | Baseline | 21.46±3.14 | 42.92 | 6.28 | 34.59* |
| | 90 th day | 39.40±4.61 | 78.8 | 9.22 | |
| | Enhancement | 17.94±3.67 | 35.88 | 7.33 | |
| | 120 th day | 32.28±4.16 | 64.56 | 8.32 | 34.03* |
| | Reduction | 7.12±1.48 | 14.24 | 2.96 | |

At baseline attitude scores of adolescents was found to be 22.72 among boys and 21.46 among girls. Attitude related to eating right and healthy lifestyle among both adolescent boys and girls was further improved by 90th day of intervention and witnessed a raise in score of 17.62 among boys and 17.94 among girls. By the end of nutrition intervention program (120th day) the attitude score was found to have reduced by score of 9.20 and 7.12 among boys and girls respectively, and

the overall attitude score found to be 31.14 among boys and 32.28 among girls. The overall mean score at baseline was 45 per cent and 42 per cent and at the end were 62 per cent and 64 per cent respectively among boys and girls indicating the increase in mean score 17 per cent and 22 per cent respectively. However, the statistical analysis showed that there is significant positive improvement with respect to attitude from baseline to 120th day (Table 2).

Table 3: Impact of education intervention on practices to avoid/combat dNCDs among rural adolescents

Maximum score = 10
(N = 100)

| Group | Test | Practice score | | | Paired 't' test |
|--------------|-----------------------|----------------|----------|--------|-----------------|
| | | Mean±SD | Mean (%) | SD (%) | |
| Boys (n=50) | Baseline | 1.96±0.49 | 19.60 | 4.93 | 35.17* |
| | 90 th day | 7.82±0.98 | 78.20 | 9.83 | |
| | Enhancement | 5.86±1.18 | 58.60 | 11.78 | |
| | 120 th day | 3.38±1.24 | 33.80 | 12.44 | 20.37* |
| | Reduction | 4.44±1.54 | 44.40 | 15.41 | |
| Girls (n=50) | Baseline | 1.90±0.76 | 19.00 | 7.63 | 35.18* |
| | 90 th day | 8.12±0.85 | 81.20 | 8.49 | |
| | Enhancement | 6.22±1.25 | 62.20 | 12.50 | |
| | 120 th day | 4.04±1.29 | 40.40 | 12.93 | 17.37* |
| | Reduction | 4.08±1.66 | 40.80 | 16.64 | |

At baseline nutrition practice scores of adolescents was found to be 1.96 among boys and 1.90 among girls indicating that the adolescents had very poor eating practices and lifestyle. Practices related to nutrition among both adolescent boys and girls was further improved by 90th day of intervention and witnessed a raise in score of 7.82 among boys and 8.12 among girls. By the end of nutrition intervention program

(120th day) the knowledge score was found to have reduced by score of 4.44 and 4.02 among boys and girls respectively, and the overall practice score found to be 3.38 among boys and 4.04 among girls. The overall mean score at baseline was around 19 per cent among both the genders and at the end of education intervention program were 33 per cent and 40 per cent respectively among boys and girls indicating the increase

in mean score 14 per cent and 21 per cent respectively. Statistical analysis revealed that the gain and reduction in practice scores were significant among both the genders at different time intervals. However, it also shows that there is significant positive improvement with respect to nutrition practices from baseline to 120th day (Table 3).

It was found in the study that the adolescent girl's knowledge, attitude and practice scores improved relatively better than that of adolescent boys with education intervention. This could be attributed to, relatively more interest, interaction and attentiveness of girls during the education intervention program. Adolescent girls also were more regular to schools than boys. This was also the case in a study conducted by Barar *et al.*, 2018 where the knowledge scores of girls were better than that of boys. However, the adolescents had very poor scores with respect to attitude and practices in the present study. The knowledge scores were fair compared to baseline attitude and practice scores. This pattern might be due to the influence of the environment they are living in. The immediate surrounding plays an important role in forming the behavior of adolescents (Dhir *et al.*, 2020) ^[2]. Though the practice and attitude scores were improved with nutrition education intervention, the retention scores are inadequate to avoid future diet related non-communicable diseases. It was evident from the study that the adolescents do not lack nutrition knowledge but are making poor nutritional choices and exhibit undesirable attitude towards healthy lifestyle and eating pattern. Similar findings were obtained in a research conducted by Scaglioni *et al.*, 2018 where the subjects have better understanding of health and nutrition but tend to exhibit undesirable attitude and make poor nutritional choices due to peer pressure, parental and environmental influence. Further analysis and research studies are required in this regard to better understand the influence of environment in improving the dietary behavior of adolescents.

Conclusion

Short term nutrition education programs seem to be insufficient to bring in remarkable changes in dietary behavior and can only help improve nutrition knowledge of the subjects. Long term consistent efforts like: teaching nutrition as a subject regularly from early age or including it in curriculum might help establish right attitude among adolescents and help them practice good food habits throughout their life.

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