Knowledge and Attitude Regarding Rainbow Nutrition among Mothers in the Selected Urban Pocket

Sagar Alwadkar1* and Pratibha Wankhede1

1Department of Community Health Nursing, Smt. Radhikabai Meghe Memorial College of Nursing, Datta Meghe Institute of Medical Sciences, Sawangi (M) Wardha, Maharashtra, India.

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJARR/2021/v15i530400

Editor(s): (1) Prof. Rachid Masrour, University of Cadi Ayyad, Morocco.

Reviewers: (1) Asha S. A., Rajiv Gandhi University of Health Sciences, India.
(2) Ofiaeli Ogochukwu Chioma, Nnamdi Azikiwe University, Nigeria.

Complete Peer review History: https://www.sdiarticle4.com/review-history/71782

Received 20 June 2021
Accepted 27 August 2021
Published 28 August 2021

ABSTRACT

Introduction: Good nutrition is highly crucial for the Children’s development-mentally and physically. According to the Dietary Guidelines for Americans (DGAs), fruit and vegetable consumption focuses on health promotion, illness risk reduction, and chronic disease prevention. To gather all of the nutrients our bodies need, different colored fruits and vegetables must be consumed daily. Eat the Rainbow nutrition is about eating many fruits and vegetables of many different color every day, which offer different nutrients to the body.

Objective: To assess the knowledge and attitude regarding rainbow nutrition among mothers and associate the knowledge and attitude score regarding rainbow nutrition among mothers with their selected demographic variables.

Methods: The research design used for the proposed study was descriptive research design and the sampling technique used nonprobability convenient sampling technique. The population in this study is 14 years of child’s mothers who are living in urban area of wardha district.

Results: The study result is 22% of mothers were having poor knowledge regarding rainbow nutrition, while 27 (54%) mothers had satisfactory knowledge and 20% subjects had had good and

*Corresponding author: Email: Sagaralwadkar@gmail.com;
4% excellent knowledge regarding rainbow nutrition and 74% of mothers were having unfavourable attitude (<50), 13 (26%) were having moderately favourable (51-75%) attitude and none of the mothers having favourable attitude (>75%) towards rainbow nutrition. **Conclusion:** After finding all results it was concluded that there is a need to improve the knowledge and develop a favourable attitude of mothers towards rainbow nutrition. The study result is 22% of mothers were having poor knowledge regarding rainbow nutrition, while 27 (54%) mothers had satisfactory knowledge and 20% subjects had had good and 4% excellent knowledge regarding rainbow nutrition.

**Keywords:** Rainbow nutrition; Dietary Guidelines for Americans (DGAs); vegetables.

1. INTRODUCTION

Proper nutrition is one of the most important aspects of staying healthy and living a long life. People deal with food daily, and food has been a component of life since the dawn of civilization [1]. What we consume forms our diet, and our diet has a significant impact on how healthy we are and how effectively our bodies perform. Children’s growth and development are influenced by their diet [2]. Insufficient nutrition can result in malnutrition, delayed growth, diminished capacity for labor and poor mental and social development. While the discussion remains on the inclusion of meat, dairy, grains and vegetables in a balanced diet, the scientific community seems to be little dispute regarding fruit and vegetables being good for the health of the individual [3].

Eating plant-based meals is a component of many different dietary patterns. Nutrition is essential for the mental and physical development of children [4]. Fruit and vegetable consumption is supposed to focus on health promotion, illness risk reduction, and chronic disease prevention, according to the Dietary Guidelines for Americans (DGAs) [5]. Different colored fruits and vegetables must be included in the diet every day to acquire all of the nutrients our bodies require. “Eat the Rainbow” is a teaching program developed for children to urge them to include fruits and vegetables in their daily diets to acquire all of the nutrients their bodies require [6].

Good nutrition means getting the right amount of nutrients from healthy food in the right combinations. Proper nutrition helps in developing and maintaining good health, cause being healthy not only makes us feel great, but also enable us to enjoy life to our fullest potential and follow our dreams [7].

People need various quantities of fruits and vegetables, according to age, gender and daily physical activity. Most people need to increase the number of fruits and vegetables they eat daily to reach their daily target [5]. The usual recommended for fruit and vegetable consumption is at least 400 grams per person per day (five servings of 80 g per day), or around 146 kg per person per year. Similarly, national nutrition standards prescribe 300 g of vegetables (portion size= 100 gm; number of portions=3) and 100 g of fruits (portion size= 100 gm; number of portions=1) per day. Green leafy vegetables (50 gm), other vegetables (200 gm), and roots and tubers (50 gm) are among the veggies. Although whole fruit is suggested for its fiber content in conjunction with an active lifestyle, a glass of fruit juice (excluding sweetened drinks) counts towards a daily amount of fruit. All product forms count – fresh, frozen, canned, dried and 100% juice. Whole fruits, on the other hand, often contain more fiber than juice. New health advantages connected with fruits and vegetables are being reported by scientists regularly. Consuming more fruits and vegetables is a worthy aim. Eating a variety of various colored fruits and vegetables every day is a novel approach to achieving the objective. The advice to “eat the rainbow” is often used with kids [8].

Studying mother’s knowledge and attitudes on rainbow nutrition in a selected urban area that has a key role in promoting a healthy lifestyle among children. Healthy nutrition and frequent physical activity, according to school health recommendations, have a significant influence in avoiding chronic illnesses. Children's eating habits are influenced by a variety of factors, including demographic, personal, and environmental influences [9]. Therefore, it is important to educate children and inculcate healthy eating habits in them as early as elementary school.
2. MATERIALS AND METHODS

2.1 Study Setting and Design

We conducted a descriptive research study in the Wardha Districts of Maharashtra.

2.2 Sample Size and Sampling Technique

This research aims to assess the knowledge and attitude regarding rainbow nutrition among mothers in the city of Wardha. A total number of 50 mothers were taken inside this study. The study uses a non-probability convenient sampling technique.

2.3 Statistical Analysis

The data was entered into the MS-Excel 2019 software and the Social Sciences Statistical Package (SPSS, version 23) was used for data analysis. The statistical tests used for the analysis of the result were Students unpaired t test, one-way ANOVA was used.

2.4 Sample size

A total number of 50 mother were recruited for this research. The study uses a non-probability convenient sampling technique.

2.5 Criteria for Selection of Samples

2.5.1 Inclusive criteria

1. Mothers who are able to speak as well as write Marathi
2. Mothers who are available during data collection period
3. Mothers whose children were aged 14 years and below

2.5.2 Exclusive criteria

1. Mothers who are not willing to participate in the study.

3. RESULTS

Demographic Variables of Mothers in Selected Urban Pocket.

Table 1. Frequency and percentage distribution of mothers in selected urban pocket n=50

| Demographic variables          | Frequency (n) | Percentage (%) |
|--------------------------------|---------------|----------------|
| **Age in years**               |               |                |
| < 21 years                     | 10            | 20             |
| 21-25 years                    | 30            | 60             |
| 26-30 years                    | 09            | 18             |
| >30 years                      | 01            | 02             |
| **Number of children**         |               |                |
| 1                              | 37            | 74             |
| 2                              | 11            | 22             |
| 3                              | 02            | 04             |
| >3                             | 00            | 00             |
| **Education**                  |               |                |
| Up to primary education        | 10            | 20%            |
| Up to secondary education      | 27            | 54%            |
| Up to higher secondary education| 10            | 20%            |
| Graduate and above             | 03            | 06%            |
| **Monthly income of family**   |               |                |
| <10000 pm                      | 09            | 18             |
| 10001 to 15000 pm              | 23            | 46             |
| 15001 to 20000 pm              | 17            | 34             |
| >20000 pm                      | 01            | 02             |
| **Occupation of mother**       |               |                |
| House occupied                 | 25            | 50             |
| Self-employed                  | 19            | 38             |
| Salaried- government           | 05            | 10             |
| Salaried- private              | 01            | 02             |
Assessment of Knowledge of Mothers towards Rainbow Nutrition.

Table 2. Distribution of mothers towards rainbow nutrition n=50

| Level of knowledge | Score Range | Frequency | Percentage |
|--------------------|-------------|-----------|------------|
| Poor               | 0-25%       | 11        | 22%        |
| Satisfactory       | 26-50%      | 27        | 54%        |
| Good               | 51-75%      | 10        | 20%        |
| Excellent          | 76-100%     | 2         | 4%         |

Data represented in the table shows that 11 (22%) subjects had poor knowledge regarding rainbow nutrition, while 27 (54%) subjects had satisfactory knowledge and 10 (20%) subjects had good and 2(4%) excellent knowledge regarding rainbow nutrition (Table 2).

Data represented in the table shows that 37 (74%) subjects were having an unfavourable attitude (<50), 13 (26%) were having moderately favourable (51-75%) attitudes and none of the subjects having a favourable attitude (>75%) towards rainbow nutrition (Table 3).

Fig. 1. Distribution of mothers regarding the level of knowledge towards rainbow nutrition

Distribution of mothers regarding the level of attitude towards rainbow nutrition.

Table 3. Distribution of mothers regarding the level of attitude towards rainbow nutrition n=50

| Level of Attitude         | Score Range | Frequency | Percentage |
|---------------------------|-------------|-----------|------------|
| Unfavourable (< 50)       | <50%        | 37        | 74%        |
| Moderately favourable (51-75%) | 50 to 75%  | 13        | 26%        |
| Favourable (> 76 – 100%)  | 76 to 100%  | 0         | 0          |
![Bar chart showing the frequency and percentage distribution of mothers regarding the level of attitude towards rainbow nutrition.](chart.png)

**Fig. 2.** Frequency and percentage distribution of mothers regarding the level of attitude towards rainbow nutrition

Association between the Knowledge among Mothers towards Rainbow Nutrition with Their Selected Demographic Variables.

Table 4. Reveals the association of level of knowledge among women with their selected demographic variables n=50

| Demographic Variable          | Knowledge Score | Chi-square (χ²) |
|------------------------------|-----------------|-----------------|
|                              | Poor | Satisfactory | Good | Excellent | df=9     | df=6     | df=9     |
| Age in year                  |      |              |      |           |          |          |          |
| < 21 years                   | 01   | 02           | 06   | 12        | 04       | 01       | 02       | 9.366⁰⁹⁸⁶ |
| 21-25 years                  | 07   | 14           | 17   | 34        | 05       | 10       | 01       | 02       |
| 26-30 years                  | 03   | 06           | 03   | 06        | 03       | 06       | 0        | 0        |
| >30 years                    | 0    | 0            | 0    | 0         | 0        | 0        | 0        | 0        |
| Number of children           |      |              |      |           |          |          |          |
| 1                            | 05   | 10           | 17   | 34        | 06       | 12       | 01       | 02       | 1.04⁹⁸⁶   |
| 2                            | 06   | 12           | 10   | 20        | 04       | 8        | 01       | 02       |
| 3                            | 0    | 0            | 0    | 0         | 0        | 0        | 0        | 0        |
| >3                           | 0    | 0            | 0    | 0         | 0        | 0        | 0        | 0        |
| Education status of mother   |      |              |      |           |          |          |          |
| Up to primary education      | 03   | 06           | 06   | 12        | 0        | 0        | 01       | 02       | 8.18⁰⁹⁸⁶  |
| Up to secondary education    | 06   | 12           | 14   | 28        | 06       | 12       | 01       | 02       |
| Up to higher secondary education | 02 | 04           | 04   | 08        | 04       | 08       | 0        | 0        |
| Graduate and above           | 01   | 02           | 02   | 04        | 0        | 0        | 0        | 0        |
### Table 5. Association between attitude with their selected demographic variables

| Demographic Variable       | Knowledge Score | Chi-square (χ²) |
|----------------------------|-----------------|-----------------|
|                            | Poor | Satisfactory | Good | Excellent |
| **Monthly income of family** |     |             |      |           |
| < 10000 pm                  | 03   | 06 | 06 | 12 | 01 | 02 | 0 | 0 | 2.998<sup>NS</sup> |
| 10001 to 15000 pm           | 07   | 14 | 09 | 18 | 05 | 10 | 01 | 02 | df=9 |
| 15001 to 20000 pm           | 01   | 02 | 11 | 22 | 04 | 08 | 01 | 02 |        |
| >20000 pm                   | 0    | 0  | 01 | 02 | 0  | 0  | 0  | 0  |        |
| **Occupation of mother**    |     |             |      |           |
| House occupied              | 06   | 12 | 13 | 26 | 04 | 08 | 02 | 04 | 6.451<sup>NS</sup> |
| Self employed               | 03   | 06 | 10 | 20 | 06 | 12 | 0 | 0 | df=9 |
| Salaried- government        | 02   | 04 | 03 | 06 | 0 | 0 | 0 | 0 |        |
| Salaried- private           | 0    | 0  | 1  | 02 | 0 | 0 | 0 | 0 |        |

**Association between the Attitude among Mothers towards Rainbow Nutrition with Their Selected Demographic Variables.**

| Demographic variable       | Attitude scale | Chi-square (χ²) |
|----------------------------|----------------|-----------------|
|                            | Unfavourable | Moderately favourable | Favourable |
| **Age in year**            |             |                 |             |
| < 21 years                 | 15           | 05              | 0            | χ² = 0.0032<sup>S</sup> |
| 21-25 years                | 22           | 08              | 0            | df= 1 |
| 26-30 years                | 0            | 0               | 0            |        |
| >30 years                  | 0            | 0               | 0            |        |
| **Number of children**     |             |                 |             |
| 1                          | 18           | 06              | 0            | χ² = 0.262<sup>NS</sup> |
| 2                          | 04           | 04              | 0            | df= 2 |
| 3                          | 0            | 0               | 0            |        |
| >3                         | 15           | 03              | 0            |        |
| **Education status of mother** |        |                 |             |
| Up to primary education    | 01           | 0               | 0            | χ² = 0.015<sup>S</sup> |
| Up to secondary education  | 04           | 01              | 0            | df= 3 |
| Up to higher secondary education | 26 | 10 | 0 | |
| Graduate and above         | 06           | 02              | 0            |        |
| **Monthly income**         |             |                 |             |
| < 10000 pm                 | 01           | 0               | 0            | χ² = 0.0046<sup>S</sup> |
| 10001 to 15000 pm          | 03           | 01              | 0            | df= 3 |
| 15001 to 20000 pm          | 28           | 10              | 0            |        |
| >20000 pm                  | 05           | 02              | 0            |        |
| **Occupation of mother**   |             |                 |             |
| House occupied             | 24           | 06              | 0            | χ²=0.3016<sup>NS</sup> |
| Self employed              | 12           | 07              | 0            | df= 2 |
| Salaried- government       | 01           | 0               | 0            |        |
| Salaried- private          | 0            | 0               | 0            |        |
4. DISCUSSION

Eat the rainbow nutrition education intervention is an important programme to be included in the schools which play a significant role in promoting the healthy life style among school children. This study also discovered a substantial disparity in the knowledge and consumption of fruits and vegetables. Similarly, A study conducted in elementary school to examine the difference in mean fruit and vegetable are eaten, like, preference, and self-efficacy scores found a significant difference in the intervention group as well as between the pre-test and post-test intervention [10].

The study's findings indicate that integrating information and attitudes about nutrition with colourful fruits and vegetables is an effective technique for increasing fruit and vegetable consumption in the diet.

5. CONCLUSION

After the detailed analysis, this study leads to the following conclusion. Result is 22% of mothers were having poor knowledge regarding rainbow nutrition, while 27 (54%) mothers had satisfactory knowledge and 20% subjects had had good and 4% excellent knowledge regarding rainbow nutrition.

An association was not found between Age in the year, several children, education status of the mother, monthly income of family and occupation of mother Hence, based on the above findings, it was concluded that there is a need to improve the knowledge and develop a favourable attitude of mothers towards rainbow nutrition.

CONSENT

Before taking any type of history we took written consent from mother in their local language (Marathi).

ETHICAL APPROVAL

Ethics approval was obtained from Institutional Ethics Committee, Datta Meghe Institute of Medical Sciences (DMIMS(DU)/IEC/Dec-2019/8656).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Miller ED. Eat the Rainbow! An Evaluation of a Short-term Fruit and Vegetable Nutrition Education Intervention for Elementary School Children.
2. Birch L, Savage JS, Ventura A. Influences on the development of children's eating behaviours: From infancy to adolescence. Canadian Journal of Dietetic Practice and Research: A publication of Dietitians of Canada= Revue canadienne de la pratique et de la recherche en dietetique: Une publication des Dietetistes du Canada. 2007;68(1):s1.
3. Sharps M, Robinson E. Encouraging children to eat more fruit and vegetables: Health vs. descriptive social norm-based messages. Appetite. 2016; 100:18-25.
4. Joymati S, Lillypet AS. Effectiveness of eat the rainbow nutrition education intervention on knowledge and practice regarding inclusion of fruits and vegetables in the diet among school children. J Comm Pub Health Nursing. 2019;5:226. DOI: 10.4172/2471-9846.1000226
5. Tessier S, Chauliac M, Latscha BD, Pol D. Nutrition Education in Schools: Evaluation of the La Main a la Pâte Teaching Approach. Sante Publique. 2010;22(2): 229-38.
6. Siagian CM, Halisitijayani M. Mothers knowledge on balanced nutrition to nutritional status of children in Puskesmas (Public Health Center). In the District of Pancoran, Southern Jakarta 2014. International Journal of Current Microbiology and Applied Sciences (IJCMAS). 2015; 4(7):815-26.
7. Labbok MH. What is the Definition of Nutrition; 2000.
8. Sharps M, Robinson E. Encouraging children to eat more fruit and vegetables: Health vs. descriptive social norm-based messages. Appetite. 2016; 100:18-25.
9. Scaglioni S, De Cosmi V, Ciappolino V, Parazzini F, Brambilla P, Agostoni C. Factors influencing children’s eating behaviours. Nutrients. 2018;10(6): 706.
10. Othman KI, Ab Karim MS, Karim R, Adzhan N, Halim NA, Osman S. Factors influencing fruits and vegetables consumption behaviour among adults in Malaysia. Journal of Agribusiness Marketing. 2012;5:29-46.