# Are We Eating It Right!?: A Study On Knowledge Regarding Nutrition And Balanced Diet Using R-GNKQ

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## Abstract

**Background:** Malnutrition stands as a major public health issue in developed and developing countries. Many studies have shown that the levels of knowledge and awareness were inadequate among many people irrespective of the educational status.

**Objectives:** To elicit knowledge about balanced diet among 15-45 years age group.

**Materials and methods:** This study has been conducted using a pre designed structured questionnaire based on R-GNKQ , which was administered to participants through Google forms, in order to avoid contact in person during the pandemic.

**Results:** The mean age of study participants was $22.95 \pm 7.2$. 77.5% were females. 63.5% belong to urban area. 34.64% were living in hostels. The median of monthly income of House hold in rupees was 50,000. Mean BMI was observed to be $23.16 \pm 4.1$. Only 18.2% were having proper knowledge about fatty food consumption. Only 20% of the participants knew food label reading properly and majority had no idea and habit of reading food labels before food consumption. Majority of the participants scored a mean score less than less than 46 in the questionnaire, which is observed to be poor knowledge.

**Conclusions:** Though most of the participants were educated, overall levels of knowledge has been observed to be low. To avoid this primordial nutritional education sessions should be arranged in schools so that awareness can be created in early stages of life.

**Keywords**: Balanced diet, Nutrition awareness, R-GNKQ

## Introduction

Malnutrition (under-nutrition and over-nutrition) is prevailing invariably among both high and low socioeconomic groups. Life expectancy and productivity are being severely affected by malnutrition. Thus taking healthy and balanced diet improves the health status by decreasing the burden of malnutrition.

Balanced diet is defined as one which contains a variety of foods in such quantities and Proportions that the need for energy, Amino acids, vitamins, minerals, fats, carbohydrates and other nutrients is adequately met for maintaining health, vitality and general well-being and also makes a small provision for extra nutrients to withstand short duration of leanness[1]

Now, globalization has brought a lot of changes in food habits, and because of this 'Junk food' which is

full of 'empty calories' lacking in ideal nutrients and mainly consists of excess of sugar, salt and fats stands to be on the main stay in present day nutrition. Junk foods and fast foods are not only calorigenic but leads to obesity and rise of low density lipids and fall of high density lipids (or good cholesterol)[2]

India in the recent times has entered the era of dual nutrition burden when under-nutrition and micronutrient deficiencies remain as major public health problems , obesity is emerging as a major problem.[3] With lack of physical activity, an unhealthy diet are the leading global risks to health.[4] Better nutrition is a prime entry point to ending poverty and a milestone to achieving betterqualityoflife.[5] A healthy diet helps protect against malnutrition in all its forms and is a foundation for health and development. It also helps to prevent Non-communicable diseases including diabetes, cardiovascular diseases, some cancers and other conditions linked to obesity

Now-a-days, most urban population, youth in particular thrive on junk foods, which are refined carbohydrates rich in calories, low in vitamins and dietary fibre. These foods contain lot of calories and lot of saturated fat. Salted snack food, candy, gum, most sweet desserts, fried fast foods and carbonated beverages are considered by most as junk foods.

Nutrition knowledge is one of the factors that affect nutritional status and nutritional habits ofindividuals, families, and societies. Thus, assessment of nutritional knowledge is an important tool in assessing the nutritional status of an individual, group or community. For successful health promotion of targeted audience, it's tooimportant to take their current level of knowledge into consideration.[6]

Hence, the present study is aimed to estimate the nutritional knowledge of general population and their health status.

## Materials And Methods:

This was a descriptive study carried out over a period of 2 months during July to October 2020. Due to prevailing pandemic situation, the study questionnaire was carried out using a Google Form shared through e-mail and whatsapp among 560 people in the aged between 15-45 years. By using systematic random sampling method 280 responses were selected with a sampling interval of 2, were considered for inclusion into the study to avoid random errors.

The questionnaire thus intended to be used was a Revised General Nutritional Knowledge Questionnaire (R-GNKQ)[7] which was designed to be used as a valid measure of nutrition knowledge that is consistent, reliable and sensitive to change. This R-GNKQ[7] questionnaire contains four sections regarding nutritional knowledge and one section regarding socio-demographic data. Section one contains questions related to dietary recommendations according to dietary guidelines, section two contains questions about sources of nutrients in foods,section three contains questions regarding healthy food choices and section four contains questions regarding diet and disease. All the four sections have multiple choice questions. Correct answers are rewarded with one mark. 18,40,13,21 are the maximum marks of section one, two, three and four respectively. The total marks of questionnaire is 92. A total score of 46 and above is considered good knowledge, a score below 46 is considered poor knowledge.

**Statistical Analysis:** Data entry was done using Microsoft Excel 2013 and data analysis using SPSS 16. Standard criteria has been followed all through the data collection and data analysis, a timely interim collation and analysis was done to look for the lapses of the data collected. Chi-square test and t test were used to find the significant association between the two study variables and p value of <0.05 is considered statistically significant.

## Results:

A total of 280 participants in the age group 15-45 years were included in the study. The mean age of study participants was 22.95±7.2 years. 77.5% were females. 63.5% belong to urban area in the present study. 34.64% were living in hostels while 65.35% were living with their family. (Table 1) The median of monthly income of House hold in rupees was 50,000. 63.3 kilograms was the mean weight of study participants and the mean height was 1.6 meters. Mean BMI(Kg/m2) of the study participants was 23.16±4.1.

Majority i.e. 75% of participants were students. 11.4% were studying in government colleges. 49.6% were enrolled in various medical courses. 39.6%

students had excellent grades. A meagre 18.2% were having proper knowledge about fatty food consumption. Only 20% of the participants knew food label reading properly. Most of them are unaware of color coding (green-low in added sugar, salt, fats; amber- medium level of added sugar, salt, fat; red-high in added sugar, salt, fat) on the food label and some of them don't know to look for total calories. Most of the participants are not aware of trans- fatty acid consumption and its adverse effects on health (lipid profile and atherosclerosis).

In general, when questioned perception about their health, most of the participants answered its good (66.8%). Majority of the participants scored less than 46 in the questionnaire, which is observed to be poor knowledge. (Figure 1) The overall knowledge of the participants in urban area (44.63±11.71) is more than in rural area (41.10±13.08) and the difference is considered statistically significant with (p value=0.0208). There is no statistical significance (p=0.3465) between mean scores of knowledge of participants living in hostel (44.30±11.65) and those living with their families (42.84±12.67).

The mean Total R-GNKQ[7] score among Females was more compared to males in all sections and the difference is significant in all sections except section 3 i.e. healthy food choices (Table 2)

**Discussion:**

Gender played a role in determining nutritional knowledge . Females scored higher than males. Similar study conducted by L Labban et al[6] where females had 38.37 ± 0.34 points and males had 37.29 ± 0.39 and the difference was significant (P < 0.05). The scores in this study are slightly lower than those which we got because we used a different scoring pattern which is already mentioned in the methodology. Females scored slightly higher points in all sections of questionnaire than males. There is a significant difference between males and females in all sections except for section 3 (healthy food choices). Thus the similar observation of female having higher levels of knowledge has been observed in study done by Naeeni MM et al[8] and they also stated that the older children had higher levels of knowledge when compared to the younger children. In the present study majority of the participants belonged in and around the mean age and thus this finding could not be really elicited. But the study

conducted by Shepherd *et al*. it was indicated that dietary influences vary with age, and not all interventions are suitable for all age groups[9]

Body mass index did not impact the total nutritional knowledge. There was no significant difference in points scored for BMI which is comparable to similar study conducted by O'Brien et al.[10] Most of the times it was perceived that the knowledge about nutrition is always implied on a person's BMI, but here in this study good knowledge and poor knowledge is almost equally observed among underweight , normal, over weight and obese participants.

Knowledge in the urban participants is more than that of the rural participants and the difference is significant with a p-value of 0.020, a similar observation has been made in the study done by Naeeni MM et al[8], in rural areas most of the times good sources of nutrition are available which will not be utilized properly. This finding emphasizes the need of improving the health education in nutrition especially in rural areas. Knowledge regarding growing the kitchen garden for people residing both in urban and rural areas and incorporating them into their regular food will always bring about a sustainable change.

Overall, Knowledge regarding nutrition was observed to be poor. Majority had a good knowledge regarding the major components of nutrition, but were aloof about the knowledge about the choices they can make to eat healthy. The study also magnifies the role of nutrition education as a potential tool in health campaigns to promote healthy eating patterns. It is opined that by appropriate educational action, about 50% of nutritional problems can be solved and nutritional education programmes should be a good investment at family and community level, since food expenditure often amounts to 50-70% of a family budget.[9]

**Conclusions:**

Here in this study it was observed that the level of the knowledge was influenced by gender but not by age of the participants. Mean knowledge score of the study participants was lower, thus evading a need for well planned nutritional education. Now-a-days many education strategies are surging up, but a strategy which is timely and appropriate has to be chosen which can bring a nutritional knowledge

reinforcement in the right directions. As per the observation made, nutrition education measures has to be incorporated into the curriculum so that the right knowledge is made available and brings about a behavioral change at the earliest.

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**Table 1: Descriptive statistics of the study Population**

| Variable | Distribution | Frequency (%) |
|---|---|---|
| Gender | Male | 63 (22.5%) |
| | Female | 217 (77.5%) |
| Place of Residence | Urban | 178 (63.6%) |
| | Rural | 102 (36.4%) |
| Living in Hostel /With family | In Hostel | 97 (34.6%) |
| | With Family | 183 (65.4%) |
| Perception regarding their Health | Excellent | 12 (4.3%) |
| | Very Good | 46 (16.4%) |

| | Good | 187 (66.8%) |
|---|---|---|
| | Fair | 33 (11.8%) |
| | Poor | 2 (0.7%) |
| R-GNKQ Questionnaire | Dietary recommendations | 9.58 ± 2.80 |
| | Sources of nutrients | 17.73 ± 5.46 |
| | Healthy food choices | 4.65 ± 2.36 |
| | Diet and ill-health | 11.38 ± 4.44 |

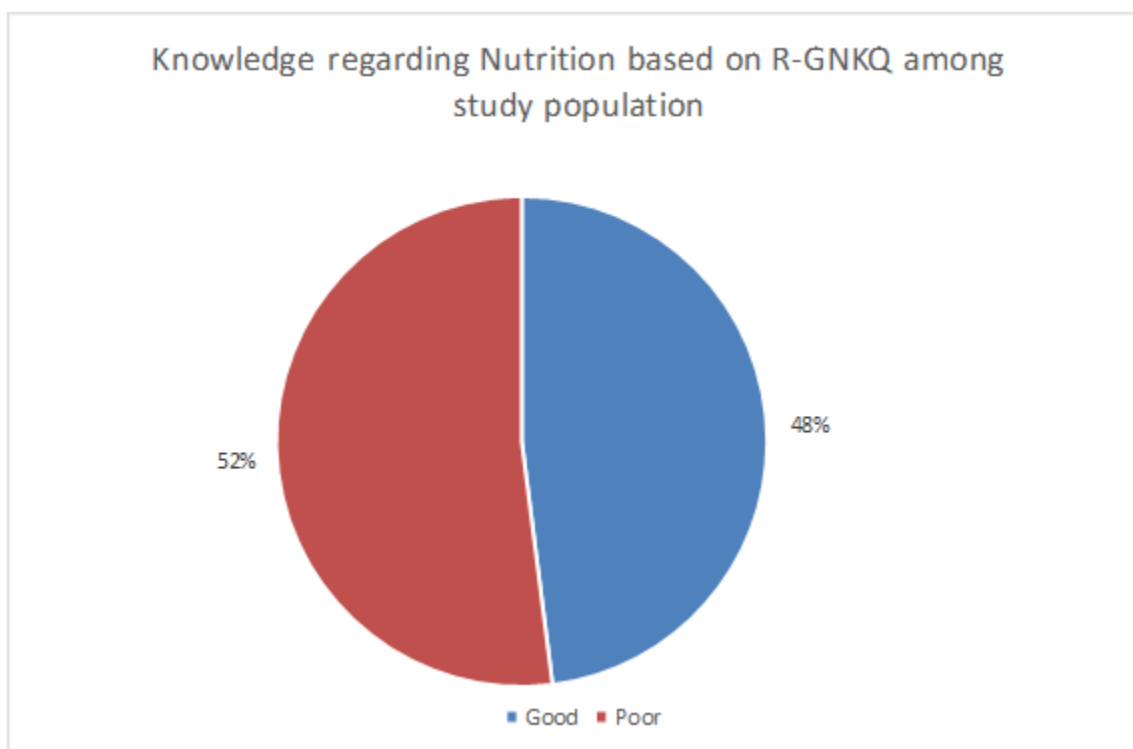**Figure 1: Distribution based on Knowledge regarding nutrition**



**Table 2: Mean R-GNKQ score between male and Female**

| | Mean score of Females (n=217) | Mean score of males (n=63) | P-value |
|---|---|---|---|
| | | | |

| | | | |
|---|---|---|---|
| Dietary recommendations | 9.92±2.59 | 8.39±3.15 | <0.0001* |
| Sources of nutrients | 18.53±5.15 | 14.96±5.65 | <0.0001* |
| Healthy food choices | 4.74±2.28 | 4.34±2.16 | 0.216 |
| Diet and ill-health | 12.00±4.13 | 9.22±4.83 | <0.0001* |
| Total score | 48.44±7.75 | 25.80±8.42 | <0.0001* |
| * Statistically significant ; Test statistic : Student t test | | | |