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The Dietary Assessment of Nutrient Adequacy in the Diet of the Doctors of Kanpur City of Uttar Pradesh

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Abstract: ***The present study on "dietary assessment of nutrient adequacy in the diet of the doctors was conducted in Kanpur City of Uttar Pradesh. A total number of 100 Doctors were selected as respondents from the hospitals of Kanpur City using purposive sampling technique. Survey was done by questionnaire-cum interview method. The dietary data was collected by the quantitative method of dietary assessment. The sociodemographic findings reveal that the most of respondents were of 40-50 years of age. Most of respondents belonged to Hindu religion. The findings of the present study shows that the diets of the doctors were found adequate with nutrients and their intake of nutrient were also good enough to fulfill their RDA according to their age group. For most of the nutrients the overall intake percentageof the RDA was high. Among their nutrient intake all the macro and micronutrients were available in adequate amounts. There was no strong relationship was found between the nutrient intake and age group of the doctors. Each age group that was considered in the study were have good nutrient adequacy on their diets.***

Keywords: Dietary Assessment, Nutrients Intake, Nutrient adequacy, Doctors, Kanpur

1. Introduction

Dietary assessment of an individual provides details about their diets such as the amount of food intake, nutrient intake, nutrient adequacy, food group frequency and the consumption pattern.

The assessment of diet is often a difficult task because accurate evaluation of a person's diet is dependent on that person's ability to give a detail about their food intake; Yet the act of recording a person's intake can easily influence what the person eats during that time, and people tend to have difficulty remembering what they have eaten. Moreover, the limitations of computerized nutrient databases render it impossible to calculate precise nutrient values in certain foods: these databases may not contain new food items and do not account for loss of nutrients through cooking, or geographic differences in soil nutrients where vegetables are grown. Nevertheless, a methodology does exists that can obtain adequate estimates of dietary intake. These estimates can then be used to describe intakes of populations and examine relationships between dietary intakes and disease.

Diets are rated in quality according to the balance of nutrients they provide, and not solely on the type of food eaten or the amount of caloric intake. Food guide pyramid People can have an optimal nutritional status or they can be under, over and or malnourished the nutritional status of an individual has consequences. It is a major, modifiable and powerful element in promoting health, preventing and treating diseases and improving the quality of life. Malnutrition may increase risk of (susceptibility to) infection and chronic diseases.

Assessment of Nutritional Status
Nutritional status is the current body status, of a person or a population group, related to their state of nourishment (the consumption and utilization of nutrients).An optimal nutritional status is a powerful factor for health and well-being.
The nutritional status is determined by a complex interaction between internal/constitutional factors and external environmental factors: Internal or constitutional factors like: age, sex, nutrition, behavior, physical activity and diseases. External environmental factors like: food safety, cultural, social and economic circumstances. The complex interaction between internal or constitutional factors and external environmental factors an ideal nutritional status occurs when the supply of nutrients conforms to the nutritional requirements or needs.

2. Research Methodology

The present study was carried out in the year 2015-2016 in the months of December to June among government and private doctors of hospitals in Kanpur City. 50 government and 50 private doctors were selected for the study purpose. So the data collected as subjected to statistical analysis with the statistical tools such as percentage, Mean, chi-square and correlation coefficient, Standard deviation etc. were used.

The age wise data of nutrient intake of the respondents of each and every nutrient were compared with their respective RDA to find out the overall percentage of nutrient adequacy in term of (Deficient/increment percent).

Nutrient adequacy
Nutrient adequacy of the diet refers to the amount of essential nutrient present in relation to the requirement of the individual.

Deficient Percent: - (Difference/Standards) x100
Difference = Standards-Average

$$\%\text{Deficiency} = \frac{RDA - Nutrient Intake \quad (Average)X100}{RDA}$$

Data Analysis

Data was presented on the basis of the age group of the respondents and the analysis was done in terms of the correlation coefficient which defined the correlation between the nutrient intake and the age of the respondent.

3. Results and Discussion

Table 1.1 Mean consumption of energy (kcal/day) by respondents on the basis of their age group.

Age group	Frequency	Energy (kcal)	RDA	Deficient/increment percent (%)
Up to 40 years	43	2287.7	2320	-1.39
40-50 years	46	2328.8	2320	+0.37
50 and above	11	2404.2	2320	+3.62
Total	100			
Correlation (r)	0.1365			

Table: 1.1 shows the energy (kcal/day) consumption of respondents and comparison with the Recommended Dietary Allowances (RDA). Maximum 3.62 percent increment of energy was found in the age group of 50 and above years, -1.39 percent deficient of energy was found in the age group of up to 40 years, 0.37 percent increment of energy was found in the age group of 40-50 years as compared to recommended dietary allowances.

The value of correlation coefficient between the energy intake of respondents and their age group was r=0.1365, which shows the weak positive correlation between the energy intake and their age.

Table: 1.2 Mean consumption of protein (gm/day) by respondents on the basis of their age group.

Age group	Frequency	Protein gm/day	RDA	Deficient/increment percent (%)
Up to 40 years	43	71.9	60	+19.83
40-50 years	46	71.9	60	+19.83
50 and above	11	71.9	60	+20.00
Total	100			
Correlation (r)	0.0441			

Table: 1.2 shows the consumption of protein gm/day respondents as compared to Recommended Dietary Allowances (RDA). Maximum 20.0 percent increment of protein was found in the age group 50 and above years, 19.83 percent increment of protein was found in the age group of up to 40 years, 19.83 percent increment of protein was found in the age group of 40-50 years as compared to recommended dietary allowances.

The value of correlation coefficient between the protein intake of respondents and their age group was r=0.0441, which shows the no linear correlation between the protein intake and their age.

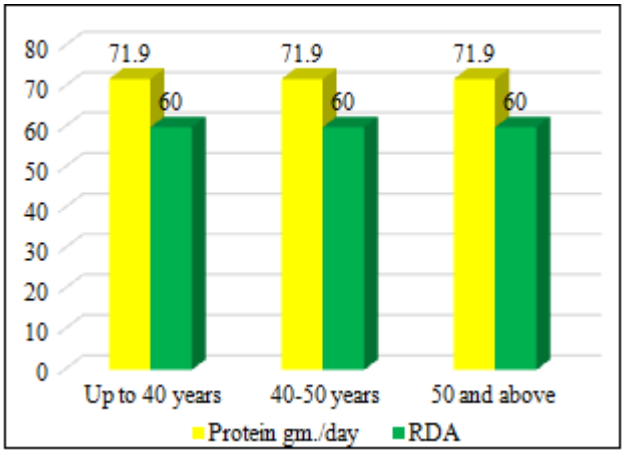

Figure 1.2

Table 1.3: Mean consumption of Fat (gm/day) by respondents on the basis of their age group.

Age group	Frequency	Fat (gm/day)	RDA	Deficient/increment percent (%)
Up to 40 years	43	25.4	25	+1.60
40-50 years	46	25.8	25	+3.20
50 and above	11	24.1	25	-3.60
Total	100			
Correlation(r)	-0.1446			

Table: 1.3 shows the consumption of Fat gm/day respondents as compared to Recommended Dietary Allowances (RDA). Maximum 3.20 percent increment of fat was found in the age group 40-50 years, 1.60 percent increment of Fat was found in the age group of up to 40 years, -3.60 percent deficient of Fat was found in the age group of 50 and above years in compared to recommended dietary allowances. Table show the maximum respondents were consuming high Fat diet up to 40 years and 40-50 years and 50 and above year's age group were having diet deficient in fat.

The value of correlation coefficient between the fat intake of respondents and their age group was r= -0.1446, which shows the weak negative correlation between the fat intake and their age.

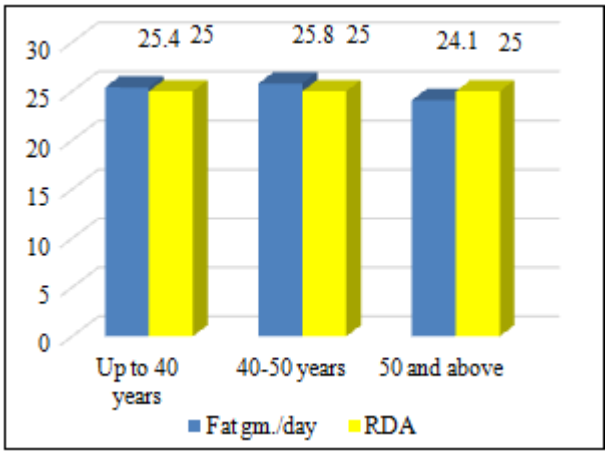

Figure 1.3

Table 1.4: Mean consumption of Beta-carotene (µg/day) by respondents on the basis of their age group

Age group	Frequency	Beta-carotene (µg)/day	RDA	Deficient/ increment percent (%)
Up to 40 years	43	4808.4	4800	+0.17
40-50 years	46	4806	4800	+0.12
50 and above	11	4816	4800	+0.3
Total	100			
Correlation (r)	0.0028			

Table: 1.4 shows the consumption of beta carotene µg /day respondents as compared to Recommended Dietary Allowances (RDA). Maximum 0.333 percent increment of beta carotene was found in the age group of 50 and above years 0.175 percent increment of beta carotene was found in the age group up to 40 years, 0.125 percent increment of beta carotene was found in the age group of 40-50 years, as compared to recommended dietary allowances.

The value of correlation coefficient between the beta carotene intake of respondents and their age group was r= 0.0028, which shows the no linear correlation between the beta carotene intake and their age.

Table: 1.5: Mean consumption of Vitamin B_1 (mg/day) by respondents on the basis of their age group.

Age group	Frequency	Vitamin B_1 mg/day	RDA	Deficient/increment percent (%)
Up to 40 years	43	1.4	1.2	+16.6
40-50 years	46	1.3	1.2	+9.8
50 and above	11	1.5	1.2	+25
Total	100			
Correlation(r)	-0.0324			

Table: 1.5 shows the consumption of Vitamin B_1 (mg/day) respondents as compared to Recommended Dietary Allowances (RDA). Maximum 25.0 percent increment of Vitamin B_1 mg/day was found in the age group of 50 and above years, 16.6 percent increment of Vitamin B_1 mg/day was found in the age group up to 40 years, 9.8 percent increment of Vitamin B_1 mg/day was found in the age group of 40-50 years, as compared to recommended dietary allowances.

The value of correlation coefficient between the vitamin B1 intake of respondents and their age group was r=-0.0324, which shows the weak negative correlation between the vitamin B1 intake and their age.

Table 1.6: Mean consumption of Vitamin B_2 (mg/day) by respondents on the basis of their age group.

Age group	Frequency	Vitamin B_2 mg/day	RDA	Deficient/increment percent (%)
Up to 40 years	43	1.5	1.4	+7.1
40-50 years	46	1.3	1.4	-7.14
50 and above	11	1.6	1.4	+14.2
Total	100			
Correlation (r)	-0.0226			

Table: 1.6 shows the consumption of Vitamin B_2 mg/day respondents as compared to Recommended Dietary Allowances (RDA). Maximum 14.0 percent increment of Vitamin B_2 mg/day was found in 50 years and above age group, 7.1 percent increment of Vitamin B_1 mg/day was found in the age group of up to 40 years, -7.14 percent deficient was found in the Vitamin B_2 mg/daywas found in the 50 years and above age group, as compared to recommended dietary allowances.

The value of correlation coefficient between the vitamin B2 intake of respondents and their age group was r= -0.0226, which shows the weak negative correlation between the vitamin B2 intake and their age.

Table 1.7: Mean consumption of Vitamin B_3 (mg/day) by respondents on the basis of age group.

Age group	Frequency	Vitamin B_3 mg/day	RDA	Deficient/increment percent (%)
Up to 40 years	43	15.3	16	-4.375
40-50 years	46	15.6	16	-2.50
50 and above	11	15.7	16	-1.875
Total	100			
Correlation (r)	0.0338			

Table: 1.7 Shows the consumption of Vitamin B_3 mg/day respondents as compared to Recommended Dietary Allowances (RDA).Maximum-4.375 percent deficient of Vitamin B_3 mg/day was found in the age group up to 40 years, -2.50 percent deficient of Vitamin B_3 mg/day was found in the age group of 40-50 years, -1.875 percent deficient was Vitamin B_3 mg/day was found in the age group of 50 and above years, as compared to recommended dietary allowances.

The value of correlation coefficient between the vitamin B3 intake of respondents and their age group was r=0.0338, which shows the weak positive correlation between the vitamin B3 intake and their age.

Table 1.8: Mean consumption of Vitamin C (mg/day) by respondents on the basis of age group.

Age group	Frequency	Vitamin C (mg/day)	RDA	Deficient/increment percent (%)
Up to 40 years	43	41.2	40	+3.00
40-50 years	46	40.8	40	+2.00
50 and above	11	40.5	40	+1.25
Total	100			
Correlation(r)	-0.1947			

Table: 1.8 shows the consumption of Vitamin C respondents as compared to Recommended Dietary Allowances (RDA). Maximum 3.00 percent increment of Vitamin 'C was found in the age group up to 40 years, 2.00 percent increment of Vitamin 'C was found in the age group of 40-50 years, maximum 1.25 percent increment Vitamin 'C was found in the age group of 50 and above years, as compared to recommended dietary allowances.

The value of correlation coefficient between the vitamin B3 intake of respondents and their age group was r=-0.1947, which shows the weak negative correlation between the vitamin B3 intake and their age.

Table 1.9: Mean consumption of calcium (mg/day) by respondents on the basis of their age group.

Age group	Frequency	Calcium mg/day	RDA	Deficient/increment percent (%)
Up to 40 years	43	619.6	600	+3.26
40-50 years	46	617.1	600	+2.85
50 and above	11	619.2	600	+3.20
Total	100			
Correlation(r)	0.0591			

Table: 1.9shows the consumption of Calcium respondents as compared to Recommended Dietary Allowances (RDA). Maximum 3.26 percent increment of Calcium was found in the age group up to 40 years, 3.20 percent increment of Calcium was found in the age group of 50 and above years, maximum 2.85 percent increment of Calcium was found in the age group of 40-50 years, as compared to recommended dietary allowances.

The value of correlation coefficient between the calcium intake of respondents and their age group was r=-0.0591, which shows the very weak positive correlation between the calcium intake and their age.

Table 1.10: Mean consumption of Iron (mg/day) by respondents on the basis of their age group.

Age group	Frequency	Iron mg/ day	RDA	Deficient/increment percent (%)
Up to 40 years	43	20.7	17	+21.76
40-50 years	46	20.1	17	+18.23
50 and above	11	21.2	17	+24.70
Total	100			
Correlation(r)	-0.0034			

Table: 1.10 shows the consumption of Iron respondents as compared to Recommended Dietary Allowances (RDA). Maximum 24.70 percent increment of Iron was found in the age group 50 and above years, 21.76 percent increment of Iron was found in the age group of up to 40 years, maximum 18.23 percent increment of Iron was found in the age group of 40-50 years, as compared to recommended dietary allowances.

The value of correlation coefficient between the fat intake of respondents and their age group was r=-0.0034, which shows the very weak negative correlation between the iron intake and their age.

4. Conclusion

On the basis of the findings it may be concluded that there was a weak positive correlation between the energy, protein and calcium, no correlation with the beta carotene and vitamin B3 and weak negative correlation was found with fat, vitamin B1, vitamin B2, Vitamin C and iron with respect to the age group if the respondents. The data depicts that the doctors of each age group were have adequate intake of protein, calcium, iron, vitamin B1, vitamin C and beta carotene and completely fulfill their RDA through their diet. Whereas, the diet of doctors of each group were found deficient in the niacin (vitamin B3). The doctors of below 40 years were found with inadequate energy intake, whereas the respondents of above 50 years were having inadequate fat in the diet and the respondents of 40-50 years old doctor were have inadequate vitamin B2 as compare to the other two age groups.

From the above results we can conclude that mostly the nutrient intake of doctors was satisfactory and nutrient adequacy was found good for most of the nutrients and they were fulfilled their RDA significantly.

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