THINK INDIA JOURNAL

ISSN:0971-1260
Vol-22-Issue-37-December -2019

Knowledge of attitude and practice of balanced diet and RDA on healthy population (19-45 years)

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ABSTRACT

BACKGROND: Nutritional knowledge plays an important role in providing information regarding balanced diet. A person with good knowledge does not necessarily follow a healthy diet because of the lack of attitude and practice. Limited findings have been reported depicting nutrition knowledge, attitude, and practice (KAP) on RDA and balanced diet of macro and micro-nutrients.
MATERIALS AND METHOD: A cross-sectional study was carried out to select participants from Delhi NCR regions (N=100; 50 females; 50 males; Age 19-45 years). Self-made questionnaire was used to assess the parameters mentioned in the background. Chi-square analysis was used to study the statistical difference of KAP between males and females and also to study the nutrition effect on knowledge on practice and attitude.

RESULT AND DISCUSSION: A significant ($p<0.05$) difference in the frequency distribution of good and poor knowledge in participants (both females and males) was observed .A significant effect of nutritional knowledge on attitude was found in both males and females ($p<0.05$) but there was no effect of knowledge on practice.

CONCLUSION: Participants had good nutrition knowledge and positive attitude towards balanced diet and RDA of macro and micro-nutrients. However, the practice of balanced diet was poor. Knowledge had significant effect on attitude but not on practice.

KEY WORDS: Balanced diet, RDA, macro-nutrient, micro-nutrient.

Introduction

To lead an energetic and a healthy life, human body requiresvarietyof nutrients and for this, favorable nutrition and appropriate food ingestiondepending upon the dietary needs of the body is vital. A balanced diet is a diet containingwiderange of foods in rightamount so that theneeds of all nutrients are adequately met. A balanced and healthy diet depends on many factors such as age, physical workout, cultural traditions, gender, living style, local cuisines and dietary customs. A healthful diet consumed during the life-course aids in preventing malnutrition and non-communicable diseases (NCDs). In this era ofurbanization and globalization, people are having altered lifestyles with a higher dependence on the processed and junk foods, thereby leading to a change in dietary patterns [1]. Food performs an important part in health and well-being [2].The diet of Indian People mostly include foodshigh in triglycerides, salt, carbohydrates, but deprived

ISSN:0971-1260
Vol-22-Issue-37-December -2019

of good healthy vegetables and fruits high in dietary fibers contributing to animbalanced consumption. Regular physical workouts with well- balanced diet are a cornerstone of good health.Deprived nutrition is aprimary reason foran abridgedimmunity, heightened vulnerabilityto ailment,decreased physical and mental progress. Major problems in India related to nutrition are Kwashiorkar and Marasmus (Protein Energy Malnutrition disorders) in children, less weight of the newborns at the time of birth, energy and essential micronutrients deficiency in adults, and NCDs due to diet.

The consumption of nutritious food involves meeting the recommended dietary allowances (RDA) in order to increase the life span. In order to meet the requirements of majority of the people in each population group, the RDA was set up by The Institute of Medicine Food and Nutrition Board [3]. RDA means the adequate consumption of the nutrients according to the set RDA values so that the necessities of individuals in a given population group are met.

The Indian Council of Medical Research (ICMR)computed and published the dietary standards for Indiansas Nutrient Requirements and Recommended Dietary Allowances for Indians (ICMR 2010). However, because of doubts in the knowledge, it is impossible to establish RDAs for all the identified nutrients. It is suggested that diet needs to be composed of variety of foods resulting from diverse food groups rather than by supplementation or fortification.In spite of the recommendations being given by the ICMR, there is still scarcity of knowledge among Indian population regarding RDA value and because of lack of knowledge people unnessarily consume more amounts of the nutrients. Also, in the rural sector, there may be less consumption of the nutrients primarily due to unavailability of the sources.

Nutritional knowledge plays a key role in healthy eating habits, resulting in maintenance of appropriate body weight[5].Gates, 1998 indicated that students with normal weight eat healthier diet and have better nutrition knowledge and attitudes compared to others[6]. In co-relation with other previous literature, one of the study has revealed that poor eating habits and poor nutrition knowledge leads to health problems[7].In-spite of the many health benefits of having balanced dietmaximum students areignorantofhealthy foods needed by the body in different situations[8].

Henceforth, it is important to impart education on nutrition to the students of all the age groups starting from the root level through various channels. This should lay emphasis on healthy dietary practices and nutrition intervention measures in order to improve the nutritional knowledge [9]. Moreover, individuals thoughtful of bad dietary practices and their worse implications on health conditions aremost likely to adopt a healthy nutritious and balanced diet thereby mitigating the chances of unnecessary weight addition. This indicates thatreinforcementof nutritional knowledge can be a helpfulapproach in controlling certain health illnesses [10].

Therefore to make people aware, a study is needed to find out the knowledge, attitude and practice of RDA so that proper recommendations can be given to the individual to practice eating good food which can provide them the recommended values of RDA and help them in leading a healthy life.So keeping in view the above said factors so as to improve the health and lifestyle of individual, we planned to conduct the (KAP) study of balanced diet and RDA values for micro and macro-nutrients with the following objectives:

ISSN:0971-1260
Vol-22-Issue-37-December -2019

- To evaluate the nutritional knowledge, attitude and practice regarding balanced diet and RDA on healthy population
- To study the effect of nutritional knowledge on attitude and practice in both females and males
- To study the effect of attitude on practice in females and males

MATERIALS ANDMETHODS

A cross-sectional study was conducted to assessnutrition knowledge, attitude and practice of balanced diet and RDA of macro and micro-nutrient in healthy populationof Faridabad and Delhi. Random sampling was done to select participants (N=100) (N=50 Females and N=50 Males). Written and verbal informed consent was obtained from all participants.

Development of study tool

A self-planned questionnaire wasdeveloped to studyKAP of balanced diet and RDA of macro and micro-nutrient in a healthy population. The questionnaire included six parts: demographic information, anthropometric measurement, nutritional knowledge, attitude, practice along with 3-day dietary recall The demographic information included participant's characteristics consisting of following items: age, gender, socio-economic group, food habit, residence and education. Anthropometric measurementconsisted of measurement like: Height, weight, BMI and Waist hip ratio.

Assessment of Nutritional knowledge

A questionnaire related to nutrition was designed in order to broadlyevaluate the nutritional knowledge of people. Different parameters like balanced diet, macro and micro-nutrients, knowledge of biomolecules like carbohydrates, proteins, fats, food pyramid, RDA, portion size etc. were incorporated in the questionnaire. An assignment model was used to calculate the score judged as true or false. A score of zero indicates good knowledge and a score of one indicates a poor knowledge.

Assessment of Nutritional attitude

The nutrition attitude towards balanced diet and RDA consisted of a total of 23 questions including topics such as "breakfast makes it easier to learn", "do you think portion size is helpful", "healthy foods is expensive", "consumption of 2-3 servings of fruits and vegetables" etc. The score was calculated using assignment method. Good attitude received a score of 0 and poor attitude received a score of 1.

Assessment of Nutritional practice

The nutritional practice consisted of 11 questions ranging from consumption of fruits and vegetables, skipping meals, food excluded from the diet, meal timings, consumptions of unhealthy foods, RDA distribution in meals, sufficiency of carbohydrates, protein, fats, vitamins

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and minerals in the daily diet to meet RDA. The score was calculated using assignment method. Good practice received a score of 0 and poor practice received a score of 1.

Assessment of Dietary recall

The sixth section of the questionnaire was a 3- day dietary recall which was used to assess their food intake. The participants in the study were asked to recall the food itemsand portions of food consumed by them for the last 3-days.

Statistical analysis:

Data analysis was performed using GraphPad PRISM 5.0. Results are represented asMean±SD for demographic and anthropometric measurements. Thefrequency distribution of good and poor Knowledge, Attitude and Practice are represented by N and % (percentage). χ^2 test was used to analyse the difference in the frequency distribution of good & poor knowledge, attitude and practice and also to study the effect of nutritional knowledge on attitude and practice.

RESULTS

The subjects of the study were aged between 19-45 years (Mean Age: 23.40 ±5.40 females and 22.54±3.52 males). Most of the participants were from MIG group (females-88%, males-84%). The food habit of both the group were observed to be more of non- vegetarian with 56% females and 68% males. Most of the participants were from urban residence (84% females; 90% males). About 64% females and 78% males had undergraduationeducation,withonly 34% females and 16% males with postgraduationeducation. (Table 1)

The BMI of the participant's was 23.42±3.99 for females and 23.91±3.78 for males. The WHR of the males was slightly higher 0.89±0.02 in comparison to females 0.86±0.03 although the difference was not significant. (Table 2)

Atotal of 95 participants had good nutritional knowledge regarding balanced diet and RDA .The nutritional knowledge regarding balanced diet and RDA was found to be slightly good in males (100%)in comparison to females (90%). There was a significant difference in the frequency distribution of good and poor knowledge ($p=0.0218$). (Table 3)

A total of 99 participants out of 100 had good attitude on balanced diet and RDA. It was found that female participant's attitude towards balanced diet and RDA was slightly better (100%) as compared to males (98%) although the difference was not significant.(Table 4)

Only 27 out of the total 100 participants followed good nutritional practice of balanced diet and RDA while majority (N=73) of the participants had poor practice It was found that good practice was seen in only 26% females and 28% males. Results of χ^2 analysis showed no significant difference in good and poor practice between the females and males. (Table 5)

Out of 45 female participants with good knowledge about balanced diet and RDA, all had good attitude while only 27% followed good practice. All participants with poor knowledge (N=5) had good attitude and 4 followed poor practice.There was a significant effect of knowledge on attitude in females ($p<0.05$) but no effect of knowledge on practice. The result highlights that good knowledge does not always lead to good practice even though the attitude was good.(Table 6a). Also, Out of 50 female participants with good attitude, only 26% followed good practice

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and the remaining followed poor practice. The results point out that the good attitude does not always lead to good practice. (Table 7a)

Out of 50 male participants with good knowledge about balanced diet and RDA, 98% had good attitude while only 28% followed good practice. There was significant effect of knowledge on attitude but not on practice(Table 6b)
Only 28.5% of the participants with good attitude followed good practice while 71.4% followed poor practice.There was no significant effect of attitude on practice (Table 7b).

DISCUSSION

This study was designed in healthy population to assess different parameters like RDA and knowledge, practice and attitude of a healthy balanced diet.

Deep knowledge and understanding of the good dietary practices boost up the nutritional status of individuals. So, accordingly, school and college children with good knowledge on nutrition are able to better adopt good dietary habits consumingunhealthy food to the minimal extent[11].In our study, we found that nutritional knowledge and attitude score of both females and males were good. Whereas, the practice score for both females and males were poor.The nutritional knowledge of the study participants (females and males) from the study explains that majority of the participants had good knowledge regarding balanced diet and RDA of micro and macro-nutrients. Also, males had significantly good nutritional knowledge in comparison to females. This may be due to the fact that males were more mindful about health since most of the male participants were indulged in physical activity like sports and gyming. Their BMI and WHR were also found to be in good healthy state.

The attitude score of the participants weremostly observed to be good. Most of the female participants pursued good attitude in relation to balanced diet and RDA.The practice of females and males in relation to balanced diet and RDA was observed to be poor. The practice score of participants showed that nearly all followed poor practice. However, when we compared the nutritional practice between females and males, it was observed that most of the female participants pursued poor practiceinspite of having good nutritional knowledge.

Various studies have been carried out in the past years showing knowledge, attitude and practice regarding balanced diet and RDA. The findings of this study are concordant with the findings of a study conducted by [12]which stated that teenagers had good knowledge regarding nutrition but nearly half of the teenagers were found to have an inconsiderate approach towards their healthy nutritional practices. Moreover, in an another study [2], it was shown that nearly forty percent of the subjects had poor awareness about balanced diet, greater than fifty percent did not pay any heed to the balanced diet, and nearly forty seven percent practiced poor balance diet. Moreover, it was shown that microcytic- hypo-chromic anemiawas independent of the attitude and Knowledge of healthy balanced diet but dependent upon the practices of balanced diet ($p=0.048$). Henceforth, inclusion of balanced diet education in the pedagogy for school children in order to improvisethe balanced diet behaviour was recommended.

The dietary intake was also assessed using 3-day dietary recall. The findings showed that females followed poor practice in both macro and micro-nutrients. The effect explains the excess consumption of energy, fats and calcium with the decrease iron. This may be due to the fact that

ISSN:0971-1260
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most of the females followed irregular eating pattern, skipped meals and mostly everyday they opted to eat out.

The male's dietary intake consumption was observed to be slightly healthier than female participants except with the moderation consumption of fats and calcium. This may be due to the fact they were physically indulged in gyming and sports activity followed by sticker diet plan.

CONCLUSIONS

Participants had good nutrition knowledge and positive attitude towards balanced diet and RDA of macro and micro-nutrients. However, the practice of balanced diet was poor. Knowledge had significant effect on attitude but not on practice. The study participants did not interpret nutrition knowledge in addition to practice. This concludes that there was good knowledge and attitude between the study participants but not practices.

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TABLES:

Table-1: Demographic characteristics of participants in the study.

S. No.	Parameter		Females	Males
1	Age (years) Mean ± SD	19-45	23.4±5.4	22.54±3.5
2	Sex(Gender)		50	50
3	SEG	MIG	44	42
		HIG	6	8
4	Food Habit	Vegetarian	17	16
		Non-vegetarian	28	34
		Ova-vegetarian	5	0
5	Residence	Urban	42	45
		Rural	8	5
6	Education level	Basic Primary education (below 10^{th} standard)	0	0
		Higher secondary	0	1
		UG	32	39
		PG	17	8
		PhD	1	2

**Abbreviations: MIG (Middle Income Group); HIG (high income group); UG (under-graduate); PG (post graduate).*

Table 2: Anthropometry measurements of the participants

	Females	Males
BMI Mean ± SD	23.42±3.989	23.91±3.783
WHR Mean ± SD	0.861±0.034	0.899±0.025

**Abbreviations: BMI (body mass index); WHR (waist hip ratio).*

Table 3:-Nutrition knowledge regarding balanced diet & RDA

	N		%	
	FEMALES	MALES	FEMALES	MALES
GOOD KNOWLEDGE(0) (N=95)	45	50	90	100
POOR KNOWLEDGE(1)	5	0	10	0

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(N=5)				

Table 4: Attitude regarding balanced diet & RDA

	N		%	
	FEMALES	MALES	FEMALES	MALES
GOOD ATTITUDE (0) (N=99)	50	49	100	98
POOR ATTITUDE (1) (N=1)	0	1	0	2

Table 5: Practice regarding balanced diet and RDA

	N		%	
	FEMALES	MALES	FEMALES	MALES
GOOD PRACTICE (0) (N=27)	13	14	26	28
POOR PRACTICE (1) (N=73)	37	36	74	72

Table 6a: Effect of nutritional knowledge on attitude and practice

(for females)

KNOWLEDGE SCORE	ATTITUDE SCORE				PRACTICE SCORE			
	GOOD (0)	%	POOR (1)	%	GOOD (0)	%	POOR (1)	%
GOOD (0) (N=45)	45	100	0	0	12	27	33	73
POOR (1) (N=5)	5	100	0	0	1	20	4	80

Table 6b: Effect of nutritional knowledge on attitude and practice

Knowledge score (for males)

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KNOWLEDGE SCORE	ATTITUDE SCORE				PRACTICE SCORE			
	GOOD (0)	%	POOR (1)	%	GOOD (0)	%	POOR (1)	%
GOOD (0) (N=50)	49	98	1	2	14	28	36	72
POOR (1) (N=0)	0	0	0	0	0	0	0	0

Table 7: Relationship between attitude and practice

Attitude score (for females)

ATTITUDE SCORE	PRACTICE SCORE			
	GOOD PRACTICE (0)	%	POOR PRACTICE (1)	%
GOOD (0) (N=50)	13	26	37	74
POOR (1) (N=0)	0	0	0	0

Attitude score (for males)

ATTITUDE SCORE	PRACTICE SCORE			
	GOOD PRACTICE (0)	%	POOR PRACTICE (1)	%
GOOD (0) (N=49)	14	28.5	35	71.4
POOR (1) (N=1)	0	0	1	100