

Original Research Article

## **A Study on the Impact of Nutritional Education Program in the University of Hail**

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### **ABSTRACT**

**Background:** This study was designed to study the impact of a nutrition education program for the non-nutrition students in the University of Hail. The knowledge of nutrition plays a vital role in food choices, any step towards improving this paves way for better nutritional choices and consequently a resultant better health.

**Objective:** To study the impact of a Nutrition Educational program on the nutritional knowledge of non-nutrition students.

**Setting and Participants:** One hundred young adult females, from non-nutrition background in the age group 18 - 24 years, studying in the University of Hail.

**Methodology:** The study was carried out using the following tools for the purpose of imparting education and subsequently assessing the level of knowledge attained. A) Pretested questionnaire B) Educational handouts.

**Statistical Analysis:** SPSS Statistic 17 for statistical processing. Descriptive statistics of mean and standard deviation to analyze general characteristics, the non-parametric McNemar test of the paired t-test was used.

**Results and Discussion:** The findings of McNemar test revealed a highly significant difference between the correct responses obtained from the pretest and posttest indicating an overall high impact of the education imparted through this study program.

**Conclusion:** This study highlighted the effectiveness of nutritional education program provided to the randomly selected students from non-nutrition background. It was found to show significant impact on participants' nutrition awareness and their attitudes toward healthy dieting behaviors. Our findings showed a significant change in nutrition knowledge of the participants. Although, mean difference of correct responses from the pretest and posttest appeared weak but the significant differences were remarkable.

**Key Words:** nutrition education, nutrition theory and practice, health promotion, nutritional status, educational strategies.

## INTRODUCTION

Undesirable food habits and nutrition-related practices, which are often based on insufficient knowledge, traditions and taboos or poor understanding of the relationship between diet and health, can adversely affect nutritional status. However, people can adopt healthier diets and improve their nutritional well-being by changing their food and nutrition attitudes, knowledge and practices, if sufficient motivation is provided to do so.

This requires a basic knowledge of what constitutes a nutritious diet and how people can best meet their nutritional needs from available resources. Hence nutrition education is utilized to reinforce specific nutrition-related practices or behaviors to change habits that contribute to poor health; this is done by creating a motivation for change among people, to establish desirable food and nutrition behavior for promotion and protection of good health.

Nutrition education has been defined as “any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food and nutrition-related behaviors conducive to health and well-being. Nutrition education is delivered through multiple venues and involves activities at the individual, community, and policy levels.”<sup>(1)</sup>

Nutrition education needs to address food preferences and sensory-affective factors; person related factors such as perceptions, beliefs, attitudes, meanings, and social norms; and Environmental factors.

It is a combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food- and nutrition-related behaviors conducive to health and well-being. Nutrition education is delivered through multiple venues and involves activities at the individual,

community, and policy levels. <sup>(1)</sup> For those richer sectors of society where diseases of affluence are taking an increasing toll, nutrition education should be directed to proper food selection, consumption and lifestyle. Nutrition education is needed now more than ever; programs that link research, theory, and practice are more likely to be effective. The rapid economic growth and westernized diet have triggered energy overconsumption,<sup>(2)</sup> whereas the convenient modern lifestyle has led to the lack of exercise to increase metabolic syndromes, such as hypertension, diabetes and dyslipidemia.<sup>(3,4)</sup>

Dieting or restrained eating behavior is a common and widespread practice among adolescents, especially girls. The types of diets during this period may affect day-to-day wellbeing, growth, dental health, physical development and academic achievement. <sup>(5)</sup> Young people have to start now to make the right food choices for lifelong health. <sup>(6)</sup> Some illnesses are known to be lifestyle related like coronary diseases, obesity, high blood pressure, diabetes, and to a certain extent, osteoporosis.<sup>(7,8)</sup> The risk-reducing lifestyle modifications have their greatest impact if they are started in adolescence or even in childhood. <sup>(9)</sup>

Much of nutrition education is based on the relationship between nutrition and the prevention of conditions such as coronary heart disease which develop in middle age while adolescents' main interest in nutrition is based upon how it can improve their lives now and what are their immediate rewards,<sup>(10)</sup> therefore these education programs has been thought to be of little relevance to themselves.<sup>(11)</sup>

People are given help to learn new information about nutrition and to develop the attitudes; skills and confidence that they need to improve their nutrition practices. As suggested by many researchers, nutrition education should not only include

instrumental knowledge, such as food serving requirements of food groups, but also apply appropriate theories to improve the motivation of eating foods which were thought to be good for health. <sup>(12)</sup>

Several studies have indicated that students receive relatively little education in nutrition. <sup>(12)</sup> Therefore the concept of adolescent health promotion, incorporating various strategies, health education and health protection programs is receiving increasing attention from health care policy makers and providers as well as educators and health and social scientists. <sup>(12)</sup> As adolescents have a low prevalence of infections such as pneumonia and gastroenteritis compared with younger children, and of chronic disease compared with aging people, they have generally been given little health and nutrition attention. <sup>(13)</sup>

As suggested by many researchers, nutrition education should not only include instrumental knowledge, such as food serving requirements of food groups, but also apply appropriate theories to improve the motivation of eating foods which were thought to be good for health. <sup>(14)</sup> Several authors suggest that adolescents make many more dietary and physical activity choices for themselves than they did as children. <sup>(15)</sup> In addition, these choices may form the basis for adult eating patterns, cause the established eating habits, during adolescence, are difficult or even impossible to be altered in later life. <sup>(16,8)</sup>

Improvement in nutrition is a good starting point when trying to alleviate symptoms associated with menstruation like tension, anxiety, breast tenderness and others, it is safe, relatively cheap and puts the girl in control of her own treatment. <sup>(9)</sup>

Although it is well known that fruits and vegetables are key components of a healthy diet, many people including adolescents eat less than the recommended number of fruit and vegetable servings each

day. Eating plenty of fruits and vegetables of different kinds may help protect against many chronic diseases, and promote healthy bowel function. <sup>(9)</sup>

Indeed, girls are interested in diets that will make them thinner and improve their complexions, so most of them are willing to try any diet that is claimed to make the changes they desire in appearance. <sup>(17)</sup>

Dissatisfaction with body image can serve as a precipitating factor to several harmful consequences; different studies were concerned with body image and girls' weight perceptions. <sup>(18)</sup>

As a part of the health project, nutrition education and consulting programs help subjects with nutritional issues to analyze their own dietary habits, learn proper living habits and solve problems. <sup>(19)</sup>

**Objectives:**

1. To study the impact of a Nutrition Educational program on the nutritional knowledge of non-nutrition students.
2. To compare the percentage of the correct responses to nutrition related questions obtained from a pretest and a posttest.

**Design:**

For the purpose of this review, nutrition education is defined as 'any set of learning experiences designed to facilitate the voluntary adoption of eating and other nutrition-related behaviors conducive to health and well being'. <sup>(4)</sup>

Our goal was to detect a difference in pre/post scores with at least 5% level of significance. A systematic literature search was conducted by: a) searching internet databases, b) conducting backward searches from reference lists of articles of interest, c) searching the Journal of Nutrition Education and Behavior. We reviewed 21 articles derived from experimental or quasi-experimental studies.

**Setting and Participants:**

One hundred young adult females non nutrition background studying in the University of Hail, between the age group of 18-24 years were randomly selected. This was cross-sectional study. The samples were selected randomly from different colleges of the female campus, excluding Clinical Nutrition, specifically from biology, math, computer science and physiotherapy department.

## **METHODOLOGY**

The tools used for the study:

- a. Pretested questionnaire
- b. Educational handout

Nutrition questionnaires developed to date generally have limitations in one or more areas.

Either they lack the kind of psychometric valuation, or they cover only a limited area of nutrition knowledge and internal reliability, but the authors say little about how the items were generated and the content validity is therefore questionable.

The questionnaire comprised of four categories of queries:

- a. Questions pertaining to basic nutrition knowledge.
- b. Questions pertaining to knowledge about calories
- c. Questions pertaining to knowledge about fats.
- d. Questions pertaining to exercise.

Handouts comprising of selected nutrition information were used as a tool for imparting the desired education. The nutritional knowledge of the subjects was tested before as well as after imparting the nutrition education by means of the questionnaire. The questionnaire was translated into Arabic language and given to the subjects.

The educational material consisted of information on fundamental nutrition concepts like calories, food groups and food guide pyramid in the form of a leaflet. The

participants were instructed to study the material provided and learn it. After the education was imparted the participants were given a posttest with the same questionnaire.

Both the pretest and posttest questionnaires were checked for correct responses. The difference between the correct pretest and posttest responses were calculated to check the significance of correlation in the responses before and after the education.

The responses from the first administration were used to assess construct validity and internal consistency. The two sets of responses were used to measure test-retest reliability.

### ***Statistical analysis:***

This study used SPSS Statistic 17 for statistical processing. Descriptive statistics of mean and standard deviation to analyze general characteristics, the non-parametric McNamer test of the paired t-test was used. Frequencies of the percent correct and percent wrong responses were calculated for each of the question asked. Statistical results were considered to be significant at  $p \leq 0$ .

## **RESULTS**

The responses were grouped into similar categories. Comparison of the responses from pretest and posttest shown a statistically significant difference between total numbers of correct response for most questions asked.

The first category of questions based on general nutrition knowledge, Table-1, revealed that a highly significant difference existed between the correct responses of pre and posttest. Statistical analysis revealed the following results for the following questions: good nutrition important for good health (100% correct answers pre and posttest); knowledge about food pyramids-highly significant correlation between pre

and posttest correct responses ( $p < 0.005$ ); affect of food choices on appearance- significant correlation existed between pre and posttest responses ( $p < 0.05$ ); minerals and vitamins yield energy- highly significant

difference between pre and post test correct responses ( $p < 0.005$ ); willingness to change dietary habits- significant difference between pre and posttest responses ( $p < 0.05$ ).

**Table 1- Responses on general nutrition knowledge.**

QUESTIONS ASKED	PRETEST RESPONSES	POST-TEST RESPONSES	MC NEMAR TEST
1. Is good nutrition important for good health ?	% Correct 100	% Correct 100	1.000
2. Is there only one food pyramid ?	% Correct 65 % Wrong 35	% Correct 78 % wrong 22	49.020***
3. Can nutrition and food choices affect the texture of the skin, hair and nails ?	% Correct 92 % wrong 8	% Correct 78 % wrong 22	0.16*
4. Do water, minerals and vitamins yield energy ?	% correct 65 % wrong 35	% correct 81 % wrong 19	44***
5. Are you willing to change your dietary habits for the better ?	% positive 70 % negative 30	% positive 77 % negative 23	.016*

**Table 2 - Responses on questions about calories.**

QUESTION ASKED	PRETEST RESPONSES	POST TEST RESPONSES	MC NEMAR TEST
1. What are calories?	% Correct 24 % Wrong 76	% Correct 78 % Wrong 22	56.017***
2. Do men require more calories than women ?	% Correct 54 % Wrong 46	% Correct 88 % Wrong 12	32.029***
3. Are all the calories beyond what the body needs are stored as fat?	% Correct 64 % Wrong 36	% Correct 94 % Wrong 6	28.033***

**Table 3- Responses on questions about fats.**

QUESTION ASKED	PRETEST RESPONSES	POSTTEST RESPONSES	MC NEMAR TEST
1. Which of the following can be stored as fat?	% Correct 66 % Wrong 34	% Correct 82 % Wrong 18	0.000 (Exact significance, 2tailed)
2. In order to stay healthy, is it important to have fats in your diet?	% Correct 33 % Wrong 67	% Correct 82 % Wrong 18	47.020***
3. Your body naturally produces cholesterol?	% Correct 16 % Wrong 84	% Correct 52 % Wrong 48	34.028***

**Table 4- Responses on questions about physical activity.**

QUESTION ASKED	PRETEST RESPONSES	POSTTEST RESPONSES	MC NEMAR TEST
1. You work out extra hard today and when you check the scale you are down by 2 pounds. Why?	% Correct 22 % Wrong 78	% Correct 66 % Wrong 73	42.023***
2. It takes 3,500 calories to gain 1pound. If you eat 3,500 calories tomorrow you will definitely gain a pound?	% Correct 66 % Wrong 34	% Correct 73 % Wrong 27	36.026***
3. Which of these is most useful to burn pre existing fat?	% Correct 22 % Wrong 78	% Correct 76 % Wrong 24	52.019***

The statistical analysis of the second category of questions, table 2, based on knowledge of calories, also revealed significant differences between correct responses obtained in pretest and posttest. The results to all the three questions in this category showed highly significant

( $p < 0.005$ ) difference between pre and posttest correct responses.

The results of the third category of the 3 questions pertaining to knowledge of fats, table 3, showed a highly significant difference for correct responses in the pretest and posttest to two questions

( $p < 0.005$ ) and for one question, viz, storage of fats, revealed exact 2-tailed significance. The statistical analysis of correct responses to the three questions pertaining to awareness of physical activity, given in table 4, revealed a highly significant difference between the pretest and posttest responses.

## DISCUSSION

This study highlighted the effectiveness of nutritional education program provided to the randomly selected students from non-nutrition background. It was found to show significant impact on participants' nutrition awareness and their attitudes toward healthy dieting behaviors. Our findings showed a significant change in nutrition knowledge of the participants. Although, mean difference of correct responses from the pretest and posttest appeared weak but the significant differences were remarkable.

Basic nutrition knowledge was found to be lacking in most students, however, their responses to the query about importance of good nutrition for good health revealed that 100% of the students recognized the relation between health and nutrition. Knowledge regarding other nutrition topics like food guide pyramid was found to be lacking in most of the students (35%), but after receiving education most of them (78%) could answer correctly about the food pyramid.

Relationship between nutrition and physical appearance/beauty was surprisingly found to be prior known to most (92%) of the girls, confirming the fact that indeed young girls are preoccupied with bodily appearance and are well aware that proper nutrition is important for looking good. Moreover, various studies have suggested that no age group is more preoccupied with body image and appearance than adolescent girls. Body image, which refers to the feelings and

reflections that the girl has about her body, is of critical importance during adolescence. Female body image is intimately bound up with subjective perceptions of weight. <sup>(20)</sup>

The responses on knowledge about calories revealed an overall increase in the correct responses in the posttest indicating a prior lower level (47% correct responses) of awareness about the same, and a greater impact of the education imparted.

The concepts about the types, sources and storage of fats were also found to be lacking in the girls. Many of the participants (65%) couldn't answer correctly to these types of questions prior to the education. Still, the increase in the number of correct responses in posttest was not as high as compared to the other posttest responses (33.6%), suggesting that core nutrition concepts are not properly understood by the girls.

Moreover, from the observation in our study, most participants cooperated well and showed interest in gaining more knowledge on nutrition; perhaps they had some intention to lose weight. Willingness to change food habits by the participants, for the better, was also found to improve (7% in correct posttest responses) after receiving the education.

The review <sup>(8)</sup> strongly supports a positive impact of para-professionals on nutrition knowledge, attitudes and behaviors of target audiences.

Our study revealed that the students have tended either to concentrate on a specific area of knowledge like fat or cholesterol, or have covered a wider aspect of knowledge but have not been sufficiently systematic to gain a true understanding of the selected nutritional concepts.

## CONCLUSION

Despite the intuitive appeal of education as a means of improving diet,

many studies in this area have failed to find significant associations between nutritional knowledge and dietary behavior. If these conclusions are correct and knowledge really has little or no impact on dietary behavior then the implications for campaigns to improve people's diet are important. It could be that resources used for public education programs are being wasted if knowledge does not, in fact, have a major influence on behavior. (21)

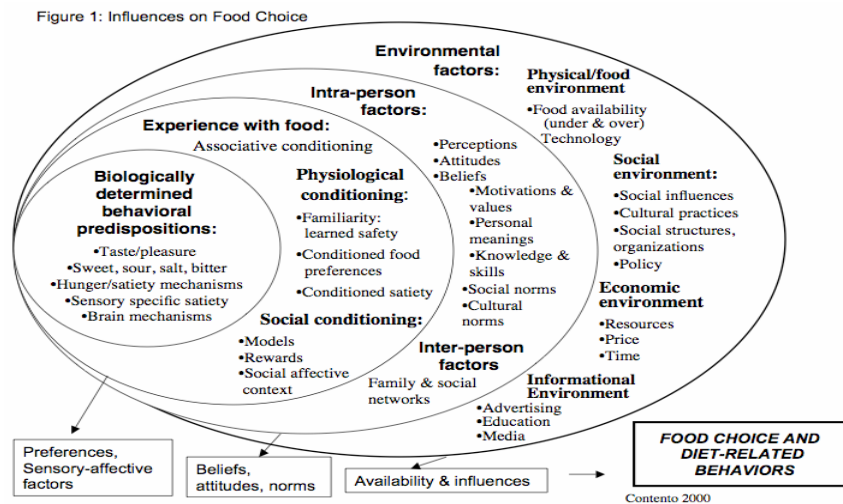
There are three essential components to nutrition education:

- a) A motivational component, where the goal is to increase awareness and enhance motivation by addressing beliefs, attitudes through effective communication strategies.
- b) An action component, where the goal is to facilitate people's ability to take action through goal setting and cognitive self-regulation skills.
- c) An environmental component, where nutrition educators work with policymakers and others to promote environmental

supports for action. Each component needs to be based on appropriate theory and research. (1)

The present study clearly indicates a strong relation between nutrition education and the rise in the level of knowledge and awareness among the population especially the young adults, who display strong enthusiasm for learning new concepts concerning their betterment. The results obtained within constraints of a university campus, hint towards creation of a larger and better awareness towards nutrition concepts if nutrition education is imparted at a mass level.

The following figure indicates the significance of different factors responsible for Food choice and diet related behaviors, one of them being Informational environment. This factor encompasses the need for nutrition educational programs at different strata of the society for improving the intake of nutritional foods. (1)



From this study it could be concluded that more such nutrition education programs at community level are required to disseminate nutrition awareness and facilitate

improvement of the nutritional status of the masses.

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