

# Medical Interns' and Clerkship Students' Viewpoints on Nutrition Course in Birjand University of Medical Sciences

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## Abstract

**Background and purpose:** Nutrition plays a key role in maintaining and promoting health and preventing diseases. In most medical schools, Nutrition education is not sufficient and only 26% of college students have proper nutritional education programs. Physicians should use their knowledge through education and counseling with patients and healthy people to increase people's level of health. Poor eating habits are considered as a factor of chronic disease. Therefore, the aim of this study was to determine medical interns and clerkship students' viewpoint about nutrition course at a specific medical school.

**Methods:** This study was descriptive and 87 interns and clerkship students of Birjand University of Medical Sciences participated. The data were collected using a valid and reliable questionnaire based on the existing topics in nutrition, the time allocated, their educational needs as well as the issues that physicians have the greatest exposure to. After completing the questionnaire, all of the data were collected, coded, and analyzed using SPSS software, version 15. The chi-square test was used to compare the views of interns and medical students.

**Results:** Of the participants, 72.4% were female, 27.6% were male, 57.5% were medical students, and 42.5% were interns. According to these students, 51.7% considered one nutrition course in the second semester to be appropriate, and that the topic of improved nutrition in vulnerable groups was more effective during the clinical stage (63.2%). In addition, the need to learn about nutrition in vulnerable groups, foods and nutritious, diseases caused by malnutrition, and food health (66.7%, 57.5%, 54%, and 52.9%, respectively) was considered to be more important. Moreover, 55.2% of the participants considered nutrition in vulnerable groups to be highly relevant, while 51.7% believed that malnutrition-related diseases was more relevant. Most of the students considered the topics of foods and nutrients, food health, nutrition of vulnerable groups, and malnutrition-related diseases with high professional applicability to be highly functional (64.4%, 56.3%, 51.7%, and 50.6%, respectively); and most participants (89.7%) believed that learning about hospital diets was essential. There was a significant difference between men and women in terms of their views on the appropriateness of the topics of the nutrition course with regard to current social problems so that 70.8% of the men believed they fit the current social problems, while 55.5% of the women thought they were inappropriate.

**Conclusions:** Considering the importance of a nutrition course, it is better to provide topics related to the clerkship period, with the applicability of the clinical setting being taught at the same time.

**Keywords:** NUTRITIONAL EDUCATION, MALNUTRITION, MALNUTRITION-RELATED DISEASES

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## Introduction

Changes in science, technology, social conditions, and the role of nutrition in the pathogenesis of chronic diseases revealed the need to revise the content and topics of the nutrition courses in medical schools. (1-3) Nutrition plays a key role in maintaining and promoting health and preventing disease. By changing epidemiology of the causes of death and disease in the world, the nutritional status and dietary habits have been more obvious (2, 4).

Diet plays a major role in the pathogenesis of chronic diseases such as heart disease, cancer, cerebrovascular accidents, atherosclerosis, diabetes, liver disease, osteoporosis, and sudden deaths. Wide and growing influence of nutrition in health and disease necessitate that health care providers have knowledge and basic skills in the field of nutrition (1, 5). Studies in the US show that the nutrition education provided by medical schools is not sufficient, and only 26% of these schools have appropriate nutritional education programs for their students (5-7). In recent years, following widespread global interest in improving maternal and child health, the issues of health and nutrition in adolescents and the elderly group has a certain extension, although still further attention is required (8-11). Most studies in the field of nutritional epidemiology, with regard to the relationship between nutrition and disease, have investigated the relationship between nutrients or foods and the risk of chronic disease. Based on the analysis of dietary patterns we can encompass feeding behaviors and the researchers can have more information on the etiology of eating disorders (8, 11, 12).

One way to describe the entire diet is to evaluate the agreement between a person's diet and the available food standards. This

method is based on prior knowledge of specialists on the relationship between nutrition and disease and is known as *a priori* (12). In this method, a person's diet is scored based on existing knowledge. In describing the Healthy Eating Index (HEI), an individual's diet is assessed with regard to how much it matches the United States' nutritional standards. However, the major disadvantage of this method is the incomplete nutritional knowledge of specialists about the relationship between a diet and a variety of diseases (12). This necessitates practical learning in a nutrition course, with subjects such as dietary and hospital regimens.

Malnutrition is among the most important nutritional diseases of developing countries, while obesity is an important disease in developed countries that has been rapidly spread over the past two decades (8). Since one of the causes of cancer is environmental factors, diet and food intake can be controlled to reduce the prevalence of the most common cancers in developed countries and prevent their outbreak in developing countries (3, 8).

Nutrition, as a clinical field, is concerned with those food qualities that make the body fit and increase health. Since good nutrition is essential for health and disease prevention, each person requires enough nutritional knowledge to maintain health throughout their lives. Nutritional studies should focus on improving health, which ultimately requires a high level of physicians' knowledge of nutritional issues (3). Physicians should use their knowledge to increase an individual's level of health through education and counseling with patients. Poor eating habits are considered as a significant factor in patients with chronic disease. Therefore, the first step in planning patient care is to assess a patient's nutritional status and diagnose their nutritional needs in order to achieve a balanced diet (3, 8).

Several studies show that the nutritional education in medical schools is not adequate and so we decided to analyze Birjand University of Medical Sciences' medical students' viewpoint on nutrition course.

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## Methods

This is a cross-sectional study. The study population consisted of Birjand University of Medical Sciences' medical students who are studying at undergraduate internship and clerkship. This study was conducted in 2007-2008 academic year and all interns and clerkship who were studying clinical stages enrolled in the study. The convenience sampling method was used to recruit 87 interns and clerkship students. The data was collected using a valid and reliable questionnaire. The questionnaire was based on the existing topics, the time allocated, their educational needs, and the issues that physicians have the greatest exposure to. Executive distributed the questionnaire among all clinical students who had passed nutrition course in basic sciences stage and explanations about the purpose of the project were given to the students and they were asked to answer the questions very carefully. After completion of the questionnaires, all of them were collected and data was encoded and analyzed using SPSS software version 15.

Then, the relative frequency of the data was determined using descriptive statistics, while the chi-squared test was used to compare the

viewpoints of the interns and clerkship students.

## Results

In the population studied, 72.4% were women, 27.6% were men, 57.5% were medical students, and 42.5% were interns. Of these, 51.7% considered one course of nutrition in the second semester to be appropriate, while 48.3% considered it inappropriate. Students considered the topic of nutrition in vulnerable groups to be more effective in the clinical stage (63.2%), and the knowledge of food and nutrients essential in this stage (40.2%), while they considered the topic of malnutrition-related diseases to be more effective during the clerkship (49.4%) (Table 1).

Most of the students considered the need to learn the role and importance of nutrition topics, nutrients, and their basic sources, as well as the role of culture, in food habits as average (50.6%, 54%, and 59.8%, respectively). While they also stated that there was a need for topics of nutrition related to vulnerable groups, knowledge of food, and diseases caused by malnutrition and food safety (66.7%, 57.5%, 54%, and 52.9%, respectively) (Table 2).

**Table 1.** The frequency distribution of students' viewpoints on the appropriate level for teaching nutrition

Stage Topic	Basic science		Physiopathology		Clinical training		Total	
	No.	%	No.	%	No.	%	No.	%
The role and importance of nutrition	43	49.4	24	27.6	20	23	87	100
Nutrients and their main sources	54	62.1	22	25.3	11	12.6	87	100
Knowledge of food and nutrients	24	27.6	28	32.2	35	40.2	87	100
Knowledge of culture and food habits	52	59.8	14	16.1	21	24.1	87	100
Nutrition of vulnerable groups	11	12.6	21	24.1	55	63.2	87	100
Assessment methods of nutrition status	47	54	21	24.1	19	21.9	87	100
Malnutrition-related diseases	11	12.6	43	49.4	33	37.9	87	100
Food health	25	28.7	29	33.3	32	36.8	87	100

**Table 2.** Frequency distribution of students' viewpoints on the need for learning each topic in nutrition course

Viewpoint Topic	Low		Average		High		Total	
	No.	%	No.	%	No.	%	No.	%
The role and importance of nutrition	5	5.7	44	50.6	38	43.7	87	100
Nutrients and their main sources	4	4.6	47	54	36	41.4	87	100
Knowledge of food and nutrients	9	10.3	28	32.2	50	57.5	87	100
Knowledge of culture and food habits	18	20.7	52	59.8	17	19.5	87	100
Nutrition of vulnerable groups	3	3.4	56	29.9	58	66.7	87	100
Assessment methods of nutrition status	36	41.4	33	37.9	18	20.7	87	100
Malnutrition-related diseases	4	4.6	36	41.4	47	54	87	100
Food health	9	10.3	32	36.8	46	52.9	87	100

**Table 3.** Frequency distribution of students' viewpoints on appropriateness of each topic in the nutrition course

Viewpoint Topic	Low		Average		High		Total	
	No.	%	No.	%	No.	%	No.	%
The role and importance of nutrition	26	29.9	26	29.9	35	40.2	87	100
Nutrients and their main sources	8	9.2	42	48.3	37	45.5	87	100
Knowledge of food and nutrients	8	9.2	46	52.9	33	37.9	87	100
Knowledge of culture and food habits	15	17.2	43	49.4	29	33.3	87	100
Nutrition of vulnerable groups	2	2.3	37	42.5	48	55.2	87	100
Assessment methods of nutrition status	17	19.5	47	54	23	26.4	87	100
Malnutrition-related diseases	6	6.9	36	41.4	45	51.7	87	100
Food health	10	11.5	42	43.3	35	40.2	87	100

**Table 4.** Frequency distribution of the student's viewpoints on the time allocated for teaching each topic in the nutrition course

Viewpoint Topic	Low		Average		High		Total	
	No.	%	No.	%	No.	%	No.	%
The role and importance of nutrition	20	23	60	69	7	8	87	100
Nutrients and their main sources	19	21.8	57	65.5	11	12.6	87	100
Knowledge of food and nutrients	33	37.9	45	51.7	9	10.3	87	100
Knowledge of culture and food habits	13	14.9	63	72.4	11	12.6	87	100
Nutrition of vulnerable groups	29	33.3	52	59.8	6	6.9	87	100
Assessment methods of nutrition status	9	10.3	46	52.9	32	36.8	87	100
Malnutrition-related diseases	53	60.9	24	27.6	10	11.5	87	100
Food health	37	42.5	46	52.9	4	4.6	87	100

The evaluation of the appropriateness of the topics of nutrition course showed that 55.2% of the participants considered the topic of the nutrition of vulnerable groups, and 51.7% considered the topic of diseases caused by malnutrition to be highly relevant. The other

topics were considered to be moderately suitable (Table 3).

With regard to the time allocated for teaching the topics in the nutrition curriculum, the participants considered the topic of diseases caused by malnutrition to be insufficient.

**Table 5.** Comparing students' viewpoints (interns and externs) about the need to learn nutrition course, appropriateness of nutrition topics with current and prevalent issues in society, application of professional performance, and time allocated to teaching

Level Topic		Clerkship		Internship		Statistical test
		No.	%	No.	%	
Need to learn	Yes	24	48	20	54	$X^2=0.312$ $P=0.58$ , $df=1$
	No	26	52	17	46	
Fitness of each Topic	Yes	24	48	21	56.7	$X^2=0.653$ $P=0.42$ , $df=1$
	No	26	52	16	43.3	
Application to professional performance	Yes	26	52	19	21.8	$X^2=0.004$ $P=0.95$ , $df=1$
	No	24	48	18	78.2	
Time devoted to teaching	Yes	14	28	13	35.1	$X^2=0.506$ $P=0.48$ , $df=1$
	No					

**Table 6.** Comparing students' viewpoints (male-female) about the need to learn nutrition course, appropriateness of nutrition topics with current and prevalent issues in society, application of professional performance, and time allocated to teaching

Level Topic		Clerkship		Internship		Statistical test
		No.	%	No.	%	
Need to learn	Yes	15	62.5	29	46	$X^2=1.88$ $P=0.17$ , $df=1$
	No	9	77.5	34	53.4	
Fitness of each Topic	Yes	17	70.8	28	44.5	$X^2=4.84$ $P=0.02^*$ , $df=1$
	No	7	29.2	35	55.5	
Application to professional performance	Yes	16	66.7	29	46	$X^2= 5.97$ $P=0.45$ , $df=1$
	No	8	33.3	34	54	
Time devoted to teaching	Yes	8	33.3	19	30.2	$X^2=0.082$ $P=0.78$ , $df=1$
	No	16	66.7	44	69.8	

\* Significant at  $\alpha=0.05$ 

They believed that the times spent on the rest of the curriculum were average (Table 4). Concerning the use of food and nutrition topics on professional performance, most participants considered the knowledge of food and nutrients, food safety, diseases caused by malnutrition, and the nutrition of vulnerable groups to be highly applicable to their professional performance (64.4%,

56.3%, 51.7%, and 50.6%, respectively). In addition, they believed that the other topics had moderate functions in this regard.

Most of the participants (89.7%) believed that learning hospital diets is essential. Most students (73.6%) believed that hospital diets should be provided in the clinical stage. Most students (75.9%) believed in the essential need to learn hospital diets. Comparing

students' viewpoints (interns and clerkship students) about the need to have a nutrition course, the appropriateness of the nutrition topics to current and prevalent issues in society, application in professional performance, and time allocated to teaching did not show significant differences (Table 5).

Furthermore, comparing students' viewpoints (male-female) about the need to learn nutrition, application in professional performance, and time allocated to teaching did not show significant differences and only the comparisons of the students' viewpoints (male-female) of the appropriateness of the nutrition topics to current and prevalent issues in society showed significant differences (Table 6).

## Discussion

In this study, 51.7% of the students believed that providing the nutrition course in a 34-hour course in the second semester was appropriate, while 48.3% considered it to be inappropriate.

Students considered topics of nutrition in more vulnerable groups to be more effective during the clinical stage (63.2%), as well as the knowledge of food and nutrients (40.2%), while they considered presenting topics of diseases caused by malnutrition to be more effective during their clerkship (49.4%). Various studies have shown the importance of nutrition in vulnerable people like the elderly, so that it was concluded in a study in Isfahan (13) that poor nutrition leads to obesity in the elderly. Furthermore, in one study in Tehran (14), it was found that poor nutrition among children and the elderly leads to disease.

Students considered the need to learn the role and importance of nutrition, nutrients and their basic sources, and culture and food habits (50.6%, 54%, and 59.8%, respectively) to be average, while they considered the need to learn about the nutrition of vulnerable groups, food knowledge and nutrients, diseases caused by malnutrition, and food safety (66.7%, 57.5%, 54%, and 52.9%,

respectively) to be of high importance, with regard to previous studies. 55.2% of the participants considered the topic of nutrition in vulnerable groups, and 51.7% considered the topic of diseases caused by malnutrition to be highly appropriate and other topics were considered to be moderately appropriate.

Various studies (14, 15) have proven the association between nutrition and the incidence of diseases. In a study that evaluated foods such as vegetables and fatty foods dealt with metabolic syndrome (15), it has determined that fatty foods consumption increases the metabolic syndrome. Concerning the time allocated for teaching topics of nutrition course, the participants considered the time spent on diseases caused by malnutrition to be insufficient. However, they described the rest of the curriculum as being average with regard to the time spent on the other topics. This shows that the students were aware of the importance of nutrition, and were willing to become familiar with this topic and its related diseases.

Concerning the use of nutrition topics on professional performance, most participants considered the knowledge of food and nutrients, food safety, diseases caused by malnutrition, and the nutrition of vulnerable groups to be highly applicable to professional performance (64.4%, 56.3%, 51.7%, and 50.6%, respectively). However, they believed that the other topics were only moderately applicable. In general it can be said that the majority of students are familiar with nutrition and its close relationship with their profession, and believe in its importance.

Most of the students (89.7%) believed that learning hospital diets is essential. In a study in Lorestan (16), it was concluded that doctors do not have enough information about hospital diets, parenteral nutrition, and gavage, thus, teaching these regimens to medical students seems absolutely necessary. Most students (73.6%) believed that hospital diets should be provided in clinical stage, which seems logical, because the interval between the basic sciences and the clinical stage is long, and the information may be

forgotten. Finally, most of the students (75.9%) believed that it was essential to learn hospital diets. This conclusion is hopeful, since the clinical students do not want to have any incidents at the hospital, at a patient's bedside.

We did not find a significant difference in the students' viewpoints about the need to learn nutrition with regard to the stage in which they were studying. Additionally, no significant difference was found between the internship and clerkship students' viewpoints regarding the applicability of the nutrition topics to the current social problems, application of the nutrition topics in professional performance, and the appropriateness of the time allocated for teaching the topics in the nutrition course. Furthermore, we found no relationship between male and female students' viewpoints about the appropriateness of the time allocated for teaching topics of nutrition course; need to learn the lessons, and the application of the nutrition topics in professional performance. But there was a significant difference between male and female students' viewpoints in terms of the appropriateness of the nutrition course topics to current social problems; so that 70.8% of men considered it appropriate and 55.5% of women considered it inappropriate.

## Conclusion

According to the results of this study and previous studies, the importance of a nutrition course in medicine is obvious. Furthermore, it is better to present the topics in the internship that have the most application in hospital practice.

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