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LEARNING/TEACHING

Attitudes of Physicians and Medical Students toward Nutrition's Place in Patient Care and Education at Ben-Gurion University

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ABSTRACT **Objectives:** *To describe attitudes of physicians and medical students at one medical school toward the role of dietetic treatment in patient care and toward adding nutritional education into the medical school curriculum.*

Study description: *A cross sectional survey was conducted at Soroka University Medical Center and Ben-Gurion University's School of Medicine. The attitudes of 67 physicians and 62 medical students toward nutritional treatment were determined using an attitudes questionnaire.*

Results: *Despite recommendations in medical treatment protocols to use dietary intervention as the primary treatment for several chronic diseases, physicians did not rate nutritional treatment as the most important treatment for these conditions. Students rated the importance of nutritional treatment significantly higher for each of the medical conditions presented than did practicing physicians (*$p=0.001$*). Almost 50% of the physicians reported not using nutritional treatment due to lack of time and awareness of the available options. Physicians and students rated the importance of nutrition education in the curriculum equally. Physicians who rated nutrition treatment as important also felt the need to add this subject to the medical education curriculum.*

Conclusion: *Physicians and medical students agreed that dietary treatment and nutrition education are important. Our results suggest that there is good reason to introduce nutrition topics into medical school curricula. Improved nutritional knowledge in physicians would improve the teamwork capacity between physicians and dieticians in the realms of curative care and public health.*

KEYWORDS *Nutrition education, dietary treatment, attitudes, knowledge.*

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Introduction

During the earliest days of medicine, physicians following Hippocrates established the connection between nutrition and health, stressing the importance of food in both the prevention and the treatment of disease. Hippocrates observed that obese people died at a higher rate than those of normal weight, and that obesity also played a role in women's fertility levels. He recommended physical activity before food intake, reduction in the number of meals per day and a change in lifestyle for his patients (Bray, 1990).

In modern times, the *Surgeon General's report on nutrition and health* (United States Department of Health and Human Services, 1988) stated that 19% of deaths in the United States can be explained by lifestyle factors linked to diet, sport and alcohol use. Thirty per cent of deaths are caused by cancer associated with diet (McGinnis & Foege, 1993), an additional 30% by heart disease (Stamler, 1992) and the frequency of obesity continues to rise in the western world (Kuzmarski *et al.*, 1994). Obesity is the highest risk factor for high blood pressure, diabetes, lung disease and other chronic conditions (Kuzmarski *et al.*, 1994). According to *Harrison's principles of internal medicine* (Isselbacher *et al.*, 1999), a standard medical textbook, the first step in treating obesity, diabetes, hyperlipidemia and hypertension is change in diet. When dietary treatment does not reach the appropriate health goals, medication should be offered to patients (Williams, 1999).

Many physicians agree that nutritional knowledge is important and should be an integral part of their patients' treatment. A survey conducted in Australia (Helman, 1998) demonstrated that 80% of the public consulted with their family doctor at least once a year. Seventy six per cent of the doctors agreed that nutrition greatly influenced health status, and 96% agreed that doctors' attitudes and advice influence their patients' diet. However, over 80% of doctors felt they had inadequate knowledge and time to handle nutrition issues effectively in daily practice. Similar findings were reported in other countries (Holund *et al.*, 1997).

Other studies (Lazarus, 1997) assessed the effect of nutritional education on the nutritional care provided by physicians. The findings demonstrated that family doctors who received expert nutritional training could treat their patients more professionally than those who did not receive such training.

In Israel, conventional medical education consists of 6 years of medical school and 1 year of rotating internship. Physicians acquire nutritional information by participating in continuing education courses, conferences and professional workshops. The survey reported here was conducted in light of Ben-Gurion University's medical school's decision to consider introducing nutrition education into their curriculum. The main goals were to examine attitudes and knowledge of physicians and medical students toward the need for and importance of nutritional treatment of various diseases, as well as to

examine their attitudes to the proposal to include nutritional education in the medical school curriculum.

Study Description

Third- to sixth-year medical students (in a 6-year program) from the Ben-Gurion University (BGU) Faculty of Health Sciences Medical School were included in the study. The physicians came from the Soroka University Medical Center and from continuing education classes conducted for family physicians at BGU. All participants completed an attitudes questionnaire. Participants in the study were selected using cluster sampling in which the department serves as a cluster. As for the family physicians, their day of studying served as a cluster (different physicians participate in different days). Students were recruited using years of school as a cluster. From each cluster six physicians were randomly selected and interviewed. Out of the students' sample, 15 were interviewed from each cluster (class). Response rate was 87%.

Attitudes Questionnaire[1]

An attitudes questionnaire was developed for the purpose of this study. The questionnaire was administered in face-to-face interviews, carried out by second-year medical students.

The questionnaire included three sections.

1. Section 1 included questions regarding 19 medical conditions (obesity, diabetes, cardiovascular disease, hypertension, cancer, psychiatric disease, hyperlipidemia, liver and kidney diseases and gastrointestinal diseases) requiring nutritional treatment. The interviewees were asked to rate the importance of nutritional intervention for each condition and to indicate the stage at which intervention is most effective, whether primary or secondary, using a scale of 1–10.
2. Section 2 included questions regarding: (1) patterns of delivery of dietary treatment in medical care and (2) sources of nutritional information available to physicians.
3. Section 3 included questions regarding attitudes toward teaching nutrition in medical school.

Statistical Analyses

Statistical analyses were performed using the SPSS program. Analyses included descriptive analyses, *t*-tests for comparisons of means of continuous variables between groups, and χ^2 or Fisher's exact test, where appropriate, for testing associations between categorical variables. Pearson correlation coefficients

were calculated where both variables were continuous. A p-value of <0.05 was considered to be statistically significant.

Results

A total of 133 people participated in the survey. Four questionnaires were disqualified due to missing information.

As shown in Table 1, 67 physicians and 62 students were interviewed. The physicians displayed a wide range of experience (9.6 ± 7.7 years). Half of the physicians in the group were specialists in internal medicine, nearly a third were family physicians, and the rest were from a variety of other specialties.

Treatment Attitudes

Table 2 presents the average ratings of the physicians and medical students of the importance of nutritional intervention in the treatment of selected medical conditions. In all major medical conditions, students indicated a higher priority than physicians regarding the importance of nutritional intervention and in most cases the difference was statistically significant ($p<0.01$). The largest differences were for chronic diseases such as diabetes type 2 (NIDDM), obesity, hyperlipidemia, high blood pressure and heart disease. For pancreatitis, diverticular disease, renal failure, aging weight loss, cancer, allergy, sepsis, gestational diabetes and burns, no statistically significant differences were observed between the groups.

Physicians were asked whether they used dietary treatment as part of their medical treatment. Those who responded negatively were asked to provide the reasons why. Students were asked to evaluate why physicians avoid dietary treatment.

As shown in Fig. 1, almost half of physicians interviewed answered that they avoided nutritional treatment due to lack of time and lack of awareness of treatment possibilities. One third specified a lack of belief in patient responsiveness to nutritional treatment and one quarter cited a lack of

Table 1. Selected characteristics of the study's participants

Characteristics		Categories
Gender	Male n=84 (65%)	Female n=45 (35%)
Occupation	Physicians n=67	Medical students n=62
Years experience	Physicians (period of service)	Students (years of study)
SD $\pm$mean	9.6 ± 7.7	4.6 ± 1.2
Specialty	Internal medicine n=34 (51%)	Family medicine n=20 (30%)
		Other n=13 (19%)

Table 2. Comparison of attitudes between physicians and students on the importance* of nutritional intervention in selected medical conditions

Medical condition	Physicians' rating Average ± SD	Students' rating Average ± SD	*p*-value
Psychotic illness	3.1 ± 1.8	4.3 ± 2.8	0.011
Gastroplasty	7.2 ± 2.2	9.0 ± 1.5	0.001
Coronary heart disease	7.3 ± 2.0	8.8 ± 1.7	0.001
Hypertension	7.5 ± 2.0	8.7 ± 2.0	0.002
Crohn's Disease	7.6 ± 2.3	8.7 ± 2.0	0.008
FTT	7.7 ± 2.2	8.9 ± 1.7	0.001
Alcoholic cirrhosis	7.7 ± 2.2	8.62 ± 2.4	0.027
Hyperlipidemia	8.3 ± 1.9	9.5 ± 1.4	0.001
Obesity	8.8 ± 1.8	9.6 ± 0.9	0.001
Diabetes Type 2 (NIDDM)	8.9 ± 1.7	9.8 ± 1.1	0.001
Diverticular disease	7.26 ± 1.4	6.9 ± 1.3	NS
Pancreatitis	7.8 ± 1.2	8.2 ± 1.4	NS
Renal failure	7.6 ± 1.5	8.2 ± 1.3	NS
Allergy	7.0 ± 1.6	6.6 ± 1.5	NS
Cancer	6.0 ± 1.1	6.4 ± 0.9	NS
Sepsis	5.0 ± 1.7	5.2 ± 1.5	NS
Gestational diabetes	8.4 ± 1.3	8.5 ± 1.7	NS
Burns	6.8 ± 1.2	6.2 ± 1.1	NS
Aging weight loss	6.7 ± 1.0	6.9 ± 1.1	NS
Total (all 19 medical conditions)	7.2 ± 1.9	7.9 ± 1.8	0.001

*Scores were graded from 1 (not important) to 10 (very important).

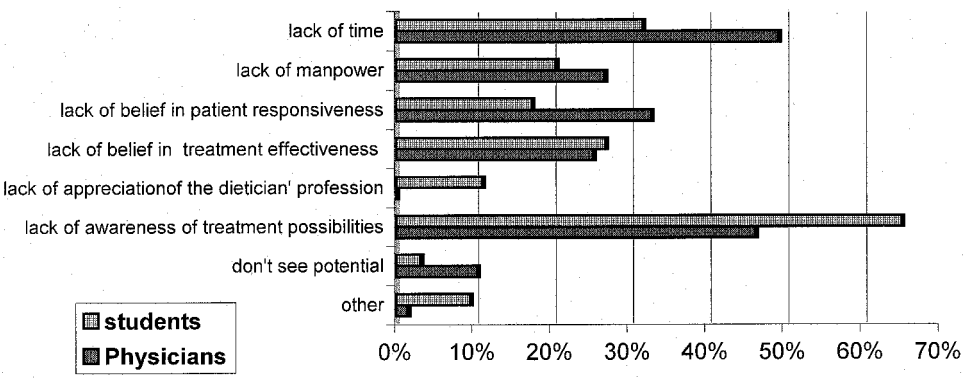

Figure 1. Reasons given by physicians and students to avoid nutritional treatment.

manpower and lack of belief in the efficacy of such treatments. Among the students, two thirds claimed that the main reason for lack of initiation of nutritional treatments by doctors was a lack of awareness of possible

treatments. Slightly less than one third of the students specified both lack of time and lack of belief in the efficacy of the treatment. A much smaller proportion reported both lack of manpower and lack of belief in responsiveness to the treatments. None of the physicians specified a lack of belief in the work of dietitians, but 10% of the students felt that this was one reason that physicians do not give dietary advice.

Regarding the application of nutritional treatment, over half of the physicians claimed to use their own knowledge or that of a dietitian on matters of nutrition (56.7% and 53.7%, respectively). Ten per cent reported consulting nurses for information on this subject.

The physicians were asked to specify to what extent they would support nutritional intervention by a dietician. The majority of physicians reported positively on nutritional consultation to patients and the writing of diet regimens (71.6% and 65.7%, respectively) in the patients' records. About one third advocated special permission for intravenous injections (TPN) (31.1%). About 16% supported the ordering of vitamins in patients' medical files and 4.5% were against allowing dieticians access to patients' files at any point.

Origins of Nutritional Information

Doctors were asked to report their sources of nutritional information. Over half specified medical training and/or consultations with dieticians (58.2% and 55.2%, respectively). Over 40% cited work experience and/or scientific journals (47.8% and 44.8%, respectively) and about 20% continuing education, lectures, conferences or instructional books (23.9%, 23.9 and 20.9%, respectively). A total of 4.5% of the physicians specified no source of nutritional information and 3% reported having no interest in the subject.

Since one of the purposes of the survey was to evaluate the need for and willingness of physicians and medical students to include nutritional education in the medical school program, we asked our subjects to rate their *feeling* of lack of nutritional knowledge from 1 to 10 (10 stands for strong feeling). Students' scores were significantly higher ($p < 0.001$), suggesting that they feel the lack of nutritional information far more strongly than physicians. Despite these results, physicians and students rated the importance of teaching nutritional courses as part of the medical curriculum at similar levels (7.39 and 7.78 out of 10, respectively).

Using Pearson correlation coefficients, we found a positive relationship between the total ratings of nutritional treatment importance and the lack of nutritional knowledge by physicians and students together ($r=0.253$, $p=0.01$). When doctors and students gave higher scores to the importance of nutritional intervention in different medical situations, they also saw a greater need for the inclusion of nutritional education in the medical school ($r=0.403$, $p=0.001$). A positive association also existed between the length of professional experience of the physicians and his/her grade of the

importance of nutritional education by the medical school. The more experienced the physician, the more positive his or her attitude was toward nutrition instruction (r=0.253, p=0.039).

Discussion

The current study presents the results of an attitudes survey conducted to examine attitudes of physicians and medical students toward the need for and the importance of nutritional treatment, and an evaluation of the need to add nutritional training to the medical school curriculum.

The last meeting of the National Institutes of Health (NIH), in 1997, on the inclusion of the topic of nutrition in the medical curriculum generally supported the practice of nutrition intervention for hospitalized patients and community-dwelling sick people (Joint Commission Accreditation Health Organization, 1997). In the United States, in recent years, the numbers of people requesting treatment for weight problems, hyperlipidemia, diabetes and other diet-related illnesses has risen (Klein *et al*., 1997; Halsted, 1998, 1999). The main treatment for these conditions, according to Harrison's *Principles of internal medicine*, is diet therapy (Brown & Goldstein, 1999; Foster, 1999; Olefsky, 1999; Williams, 1999). Medical treatment and/or surgery are used in especially difficult cases only where diet therapy has failed. Nutritional information plays a significant role in promoting the use of nutritional treatment, which is an integral element of a preventative strategy in treating these conditions. Despite the proven importance of nutrition to health maintenance, diet therapy is not fully recognized as part of medical treatment in medical schools in Israel. There are many reasons for this phenomenon, including heavy learning schedules full of subjects perceived to be of higher priority than nutrition, and difficulty in defining needs and ways of approaching this subject in a relevant and meaningful way (Weinsier *et al*., 1991).

The physician, as the provider of primary health service to patients, can act as a conduit for relaying nutritional information useful to both sick and well patients. This survey found that while diet therapy was the treatment chosen for illnesses such as obesity, hyperlipidemia, high blood pressure and diabetes (Brown & Goldstein, 1999; Foster, 1999; Olefsky, 1999; Williams, 1999), most of the physicians interviewed did not place a high importance on nutrition. Students identified near maximal levels of priority for diet therapy treatments for the above-mentioned illnesses. The gaps between the rated importance of nutritional treatment between physicians and students seem to suggest that students may be more attuned to the need for a more "holistic" approach to the treatment of the above-mentioned medical conditions, and that they may recognize the importance of the nutritional approach as an integral part of medical treatment. Indeed, we found that the higher the rating of the importance of diet therapy, the greater the feeling of inadequate knowledge on

this subject on the part of the interviewee. This may be explained by students' limited experience in medical practice. The students in this study see the greatest problem as physicians' lack of knowledge.

Most doctors from the internal medicine departments indicated the high importance of diet therapy. What, then, prevents them from progressing with this treatment? Lack of time was clearly reported by over 50% of participating physicians. Other factors reported included lack of specific knowledge about diet therapy and lack of belief in the efficacy of these treatments.

The inclusion of comprehensive nutrition training in the medical school curriculum will ultimately increase levels of knowledge, but this cannot replace the expertise of dieticians, who are trained for over three-and-a-half years on the subject of nutrition. It will, however, increase physicians' awareness of the possibilities of nutrition treatments and encourage them to consult with dieticians.

How should we prepare for the including nutrition in medical training? Research shows that the inclusion of clinical nutrition in medical school and residency programs depends on the priority given to the subject by the central figures of the medical school (Swanson, 1990; Feldman, 1991; Jensen *et al.*, 1998). Earlier research showed that resident family physicians wielded the highest degree of influence on nutritional guidelines. The residency period is the most appropriate time to include nutritional training for physicians. Within the residency program, the most effective influence on the training was the attitude of the faculty members (Feldman, 1991).

A recently published report of the meeting of the American Medical Association in 1997 (Rohack, 1997) indicates that over 100 American medical schools have already included nutritional education in their medical school curricula. The University of Pennsylvania School of Medicine is one of a number of schools that have successfully integrated nutrition courses into the medical school curriculum. Their nutrition curriculum consists of a separate required nutrition course and an elective during the first year, and integrated nutrition components in the pathophysiology course in the second year. Additionally, and perhaps most importantly, the medicine, surgery, and pediatrics clerkships all have required nutrition segments. Incorporating nutrition training in all four years of medical school will ensure that students learn the scientific basis of nutrition and that their awareness of the importance of nutrition is reinforced during their clinical years.

In the United States, a current trend is to open a new area of nutrition specialty within the residency program (Jensen *et al.*, 1998). Those physicians with expertise in nutrition could become the future leaders of nutrition education in medical schools. Since it is not expected that many physicians will choose nutrition as their specialty, there is a need to provide training to all physicians during medical school, as well as in their later training in their

chosen specialties. Physicians specializing in nutrition may serve as bridges between medical schools and nutrition schools, establishing a path of communication between the two disciplines. Such cooperation will improve the education of both physicians and dieticians, providing the basis for cooperation in the future and ultimately improving the nutritional treatment provided to patients.

The survey presented here provides important information regarding attitudes of physicians and medical students in Israel to the importance of nutritional education. However, the study was limited by the sample, which included participants from a single university and included only a small sample of clinicians.

Implications for Practice

The survey raises important questions regarding nutritional training in medicine in general and in preventive medicine in particular. According to the results, it appears that physicians and medical students alike recognize the need to encompass nutritional education within the medical school, but questions remain as to how to incorporate the subject into an already full program. Possible solutions include increasing physicians' awareness of the importance of nutrition during their studies and residencies and to encourage cooperation between dieticians and physicians in order to achieve better health for patients. The program presented in the AMA report (Rohack, 1997) included suggested objectives and examples of model medical school curricula in nutrition. The American Society for Clinical Nutrition and the University of Pennsylvania School of Medicine may serve as models for incorporating nutrition education into medical school curricula in the US and in other countries.

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Note

1. Our Attitudes Questionnaire is available as a Microsoft Word file, on request to <dshahar@bgumail.bgu.ac.il>.

References

BRAY, G.A. (1990). Obesity: historical development of scientific and cultural ideas. *International Journal of Obesity*, *14*, 909–926.

BROWN, M.S. & GOLDSTEIN, J.L. (1999). The hyperlipoproteinemias and other disorders of lipid metabolism. In: K.L. ISSELBACHER, E. BRAUNWALD, J.D. WILSON, J.B. MARTIN, A.S. FAUCI & D.L. KASPER (Eds), *Harrison's principles of internal medicine*, 13th edn. New York: McGraw–Hill.

FELDMAN, E.B. (1991). Educating physicians in nutritiona view of the past, the present, and the future. *American Journal of Clinical Nutrition*, *54*, 618–622.

FOSTER, D.W. (1999). Diabetes mellitus. In: K.J. ISSELBACHER, E. BRAUNWALD, J.D. WILSON, J.B. MARTIN, A.S. FAUCI & D.L. KASPER (Eds), *Harrison's principles of internal medicine*, 13th edn. New York: McGraw–Hill.

HALSTED, C.H. (1998). Clinical nutrition education relevance and role models. *American Journal of Clinical Nutrition*, *67*, 192–196.

HALSTED, C.H. (1999). The relevance of clinical nutrition education and role models to the practice of medicine. *European Journal of Clinical Nutrition*, *53*, S29–S34.

HELMAN, A. (1998). Nutrition and general practice: an Australian perspective. *American Journal of Clinical Nutrition*, *65*, 1939S–1942S.

HOLUND, U., THOMASSEN, A., BOYSEN, G., CHARLES, P., ERIKSEN, E.F., OVERVAD, K., PETERSON, B., SANDSTROM, B. & VITTRUP, M. (1997). Importance of diet, and sex in prevention of coronary artery disease, cancer, osteoporosis, and overweight or underweight: a study of attitudes and practices of Danish primary care physicians. *American Journal of Clinical Nutrition*, *65*, 1004S–1006S.

ISSELBACHER, K.J, BRAUNWALD, E., WILSON, J.D., MARTIN, J.B., FAUCI, A.S. & KASPER, D.S. (Eds)(1999). *Harrison's principles of internal medicine*, 13th edn. New York: McGraw–Hill.

JENSEN, G.L., LEE, P., BOTHE, A., BLACKBURN, G.L., HAMBRIDGE, K.M. & KLEIN, S. (1998). Clinical nutrition: opportunity in a changing health care environment. *American Journal of Clinical Nutrition*, *68*, 984–990.

JOINT COMMISSION ON ACCREDITATION OF HEALTH ORGANIZATIONS (1997). *Comprehensive accreditation manual for hospitals, the official handbook*. Chicago: Joint commission in accreditation of health organizations.

KLEIN, S. *et al.* (1997). Nutrition support in clinical practice: review of published data and recommendations for future research directions. *Journal of Parenteral Enteral Nutrition (JPEN)*, *21*, 133–156.

KUZMARSKI, R.J., FLEGAL, K.M., CAMPBELL, S.M. & JOHNSON, C.L. (1994). Increasing prevalence of overweight among US adults. *Journal of the American Medical Association*, *272*, 205–211.

LAZARUS, K. (1997). Nutrition practices of family physicians after education by a physician nutrition specialist. *American Journal of Clinical Nutrition*, *65*, 2007S–2009S.

MCGINNIS, J.M. & FOEGE, W.H. (1993). Actual causes of death in the United States. *Journal of the American Medical Association*, *270*, 2207–2212.

OLEFSKY, J.M. (1999). Obesity. In: K.J. ISSELBACHER, E. BRAUNWALD, J.D. WILSON, J.B. MARTIN, A.S. FAUCI & D.L. KASPER (Eds), *Harrison's principles of internal medicine*, 13th edn. New York: McGraw–Hill.

ROHACK, J.J. (1997). Report of the council on medical education. CME Report 3-1-97. Available at: http://www.ama-assn.org

STAMLER, J. (1992). Established major coronary risk factors. In: M. MARMOT & P. ELLIOTT (Eds), *Coronary heart disease epidemiology*. London: Oxford University Press.

SWANSON, A.G. (1990). ASCN nutrition educator's symposium and information exchange: nutrition sciences in medical-student education. *American Journal of Clinical Nutrition*, *53*, 587–588.

UNITED STATES DEPARTMENT OF HEALTH AND HUMAN SERVICES, PUBLIC HEALTH SERVICE (1988). *The Surgeon General's report on nutrition and health*. Washington, DC: US Government printing Office [DHHS publication no. (PHS) 88-50210].

WEINSIER, R.L., BOKER, J.R. & BROOKS, C.M. (1991). Nutrition training in graduate medical (residency) education: a survey of selected training programs. *American Journal of Clinical Nutrition*, *54*, 957–962.

WILLIAMS, G.H. (1999). Hypertensive vascular disease. In: K.J. ISSELBACHER, E. BRAUNWALD, J.D. WILSON, J.B. MARTIN, A.S. FAUCI & D.L. KASPER (Eds), *Harrison's principles of internal medicine*, 13th edn. New York: McGraw–Hill.