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Short Communication

Proposal for Incorporation of Nutrition Science in First Year Undergraduate Medical Curriculum in India

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Abstract

Health and nutrition are intimately and intricately connected. Effective use of dietary interventions and nutritional advice is integral part of the art and science of effective clinical care. The general public and patients approach doctors as the most reliable and trusted source of information on diet and nutrition. Surprisingly very little attention has been given to the formal training provided to doctors in this area. First-year in medical course is an excellent avenue for introducing basic concepts in nutrition. Purpose of this paper is to suggest incorporation of Nutrition science in first year MBBS curriculum. Teaching learning will be accomplished according to following three domains: Cognitive domain (Knowledge of basic physiological and biochemical aspects of nutrition science), Affective domain (appreciate the importance of good nutrition in reducing the incidence of diseases) and Psychomotor domain (measuring anthropometric parameters, calculating body mass index etc).Lectures sessions of 45 minute to 1 hour will be developed for each topic area to address cognitive objectives and will be divided between Physiology and Biochemistry faculty. Reading assignments on the content area will be provided to students and informed about the reference books. Demonstrations and practical sessions of 1 hour duration weekly will be incorporated to meet the psychomotor objectives. Small group discussion sessions of one hour per week will be conducted to achieve affective objective and also to give feedback to students. This proposed clinical nutrition curriculum will be of horizontal integration between Biochemistry and Physiology. By incorporating this plan in First year MBBS curriculum student will develop knowledge, attitude and skills regarding science of nutrition with better clinical correlation.

Keywords: Curriculum plan, nutrition, undergraduate medical education.

Introduction

Health and nutrition are intimately and intricately connected. From the earliest times the effective use of dietary interventions and nutritional advice has been an integral part of the art and science of effective clinical care[1]. In recent decades the whole world has been facing obesity as a huge problem of health and longevity of life. While India is no exception, and obesity prevalence is on the rise right from childhood, there is a peculiarly India-specific problem of high prevalence of both obesity and under nutrition, existing side by side. Further nutrition-related metabolic disorders lead to risk factors of obesity, diabetes mellitus, cardiovascular and neurovascular catastrophes and chronic renal failure[2]. WHO report shows that because of changes in dietary and lifestyle patterns, chronic Non-Communicable Diseases - like obesity, diabetes mellitus, cardiovascular disease (CVD), hypertension, stroke and some types of cancer - are becoming increasingly significant causes of disability and premature death in both developing and newly developed countries [3]. In India due to cultural reasons patients are very keen to know from the doctor what foods to eat and what to avoid during the acute illness or during the management of chronic disease[4]. The general public approach doctors and other health professionals as the most reliable and trusted sources of information on diet and nutrition. Surprisingly very little attention has been given to the formal training provided to doctors in this area. There is a long-standing concern about the lack of an adequate level of knowledge of nutrition within the health professions[1]. Many physicians are not routinely assessing or addressing nutrition issues[5, 6] and they feel less confident in discussing diet related issues with their patients[7]. Moreover Students are routinely reporting inadequate training in nutrition during medical school training[8]. John & Bamji in their editorial on "Nutrition Security" advocate inclusion of appropriate curriculum in general and professional (health, agriculture) education[2].

Krebs and Primak considers first-year medical course as an excellent avenue for introducing basic concepts in nutrition. But they also mention that it is too early in the curriculum to spend significant amounts of time on nutrition and disease because the students have had limited exposure to pathophysiology and clinical medicine. They have briefly described a comprehensive vertically integrated nutrition curriculum that includes integrated components for all 4 y of medical school and for residency training. [9]. Medical Council of India stipulates the rules for medical school curriculum structure and content. These rules start with the three-phase framework of preclinical or first MBBS (12 months); paraclinical, or second MBBS (18 months); and clinical or third MBBS (24 months) plus internship (12

months), a period devoted to rotating clinical experiences. First year MBBS encompasses Anatomy, Physiology and Biochemistry subjects and curriculum followed in Indian medical colleges is discipline based.

Purpose of this paper is to suggest a proposal for incorporation of Nutrition science in first year undergraduate medical curriculum in India.

Objectives to be achieved are as follows.

Cognitive objectives: i. List the functions, sources, calorific values and recommended allowances of Proteins, Carbohydrates and Lipids, ii. Explain the followings, giving appropriate examples Basal metabolic rate, respiratory quotient, Specific dynamic action, biological value, Net protein utilization, essential amino acid, Saturated and unsaturated fatty acids, iii. Discuss the role of ventromedial hypothalamus and lateral hypothalamus in regulation of food intake (sensory factors and metabolic factors), iv. Describe the function of white and brown cells, v. Recall the functional, metabolic and nutritional aspect of fat-soluble vitamins and discuss briefly their Deficiencies Toxicity Dietary sources recommended dietary intake, vi. Discuss briefly the water-soluble vitamins in the human diet with regard to their Functions, Metabolism, Deficiencies and toxicity, Dietary sources, recommended dietary intake, vii. Discuss briefly the macrominerals and microminerals with regard to their Functions Metabolism, Deficiencies, toxicity Dietary sources recommended dietary intake.

Affective objectives: Appreciate the importance of good nutrition in reducing the incidence of diseases as important.

Psychomotor objectives: i. Measure Anthropometric parameters (body weight and height, waist circumference, hip circumference and mid-arm circumference) according to the checklist. ii. Calculate body mass index and waist hip ratio according to standard formula.

Material and Methods

Lectures sessions of 45 minute to 1 hour will be developed for each topic area to address cognitive objectives. These lectures will be divided between Physiology and Biochemistry faculty. Initially reading assignments on the content area will be provided to students. They will be informed about the reference text books. Demonstrations and practical sessions of 1 hour duration weekly will be incorporated to meet the psychomotor objectives. Small group Discussion sessions of one hour per week will be conducted to achieve affective objectives and also to give feedback to students. (Content is given in appendix I)

Two faculties, one from biochemistry and other from physiology under the guidance of departmental chairs will meet 2 hour per week for 2 months to develop and to plan for piloting the curriculum. Two lectures per week for 6 months (divided into two semesters) will be incorporated in the existing curriculum. For Practical and Demonstrations one hour per week for 6 months will be incorporated. During these sessions students will be given hands on training to measure anthropometric parameters using a checklist. One Lecture hall with audiovisual aids for lectures and one practical hall for demonstrations and practical will be utilized. Two support staff, one from each respective department will be utilized.

Faculty from biochemistry department will act as the curriculum coordinator. He will coordinate the lecture/discussion sessions, conducting practical, reviewing syllabus material and communication among faculty regarding curriculum. Evaluation will be simple as in traditional examinations like written tests, practical examination and oral examination. Data collection will be integrated into the curriculum. (evaluation questions, design and instruments are mentioned in appendix II)

Results and Discussion

In this paper we have suggested a proposal for incorporation of nutrition science in first year MBBS curriculum. After incorporating into first year, nutrition curriculum can be developed for subsequent years which will be vertically integrated. Taren et al conducted a study to evaluate the integrated nutrition education program developed at the University of Arizona College of medicine. Their study indicated that the integrated curriculum was a successful and time-efficient model for inclusion of multidisciplinary information into undergraduate medical training. They found that Students could apply their knowledge, received advanced clinical skills and could identify integrated topics as specific to the multidisciplinary curriculum area. Students reported adequacy of nutrition education in their medical school program [10]. Walker .W.A explains Medical school curricula as "sacrosanct" and the addition of new lectures or courses is to be carefully scrutinized and usually begun as electives. The scheduled classes and activities are continuously expanding, allowing little room for new programs. In addition, traditional courses/lectures are guarded by their organizers and rarely are these programs eliminated or replaced. He suggests adding a new body of information (e.g., nutritional science) requires creative ways to make use of an already existent curriculum. Accordingly, innovative strategies are needed throughout the spectrum of medical education to instill a basic knowledge of nutrition and its application into medical care [11].

Conclusion

This proposed clinical nutrition curriculum will be of horizontal integration between three preclinical subjects. Users will be predominantly first year medical students, but also faculty from preclinical departments and medical college**.**

Uses will be formative information to help students achieve learning objectives, formative information for curriculum

coordinator and faculty of preclinical departments to guide improvement of curriculum, summative information for departmental chairs and dean of the college regarding performance and program effectiveness.

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Appendix-I: Content (Nutrition Task Force, 1994) (1), Principles of nutritional science, i. Diets, foods and nutrients (substrates and cofactors), ii. Metabolic demand, digestion and absorption, balance and turnover, physical activity, metabolic effects of excess, obesity, iii. Requirements, essentiality, bioavailability, limiting nutrients, effects of nutritional status on biochemical and organ function, iv. Adaptation to low nutrient intakes, body composition (forms and functions), v. Assessment of diet and nutritional status (Anthropometric measurements), vi. Physiological mechanisms that determine appetite, sociological, psychological, economic and behavioral aspects of food choice

Appendix-II

Evaluation: Evaluation Questions: What percentage of first year students score more than 80% on the knowledge posttest (Multiple Choice Questions)?