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## Nutrition education in medical training: the need to reconsider the sacrosanctity of medical education in Nigeria

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### Summary

The "no controversy" status of the important role of nutrition in maintaining good health and disease management is becoming a gold standard in medical practice. Medical schools in developed countries and some in developing countries are beginning to renew interest in nutrition education for medical professionals. Despite difficulties envisaged in modifying the medical school curricula, it is inevitable that medical professionals need some basic nutrition knowledge appropriate for medical counselling in disease prevention and management. Cost effectiveness in providing health care services is now an important policy tool, which emphasizes preventive medical care. This is dependent on good nutrition education, which informs not only on food but healthcare and good environment. This article examines the need for nutrition education in medical schools, approaches that can be used to introduce nutrition education, using the available information from medical schools that have already integrated nutrition into their medical education curricula. It also identifies some of the barriers and strategies to overcome including specific actions for nutrition educators or whoever may be saddled with the responsibilities for initiating the development of nutrition curriculum for medical education.

**Keywords:** *Nutrition science education; medical training curriculum*

### Résumé

L'importance de la nutrition dans la maintenance de la santé et le ménagement des soins de la maladie est devenu un principe standard en médecine pratique. Les écoles de médecine dans les pays sous développés et développés ont commence a renouveler l'intérêt sur l'éducation nutritive pour les personnels médicaux. Cependant les difficultés envisagées pour

modifier le curriculum médical, il est inévitable que les personnels de santé ont besoin de quelques connaissances de base appropriée en nutrition pour apporter les conseils médicaux dans la prévention et les soins de santé. L'efficacité dans ces soins primaires est un important outil politique s'appuyant sur les soins préventifs. Ceci dépend d'une bonne éducation nutritive qui informe et apporte des soins de santé et de l'environnement. Cet article examine le besoin de la santé nutritive dans les écoles de médecine, les approches utilisées pour l'intégration de la nutrition dans les curriculums. Certains problèmes ont été identifiés et pour combattre les stratégies actions spécifiques pour les nutritionnistes ou l'initiation des responsabilités pour le développement d'un curriculum pour une éducation médicale effective.

### Introduction

In the last two decades or more, an enormous body of scientific data has emerged linking diet and food selection patterns to the maintenance of health and the prevention of some chronic diseases. Evidence supporting this association, its individual and public health implications, and the scientific rationale for requiring medical students to learn basic nutrition principles and their application to patient care is mounting. 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 as provided by the physicians. Every branch of medicine has used nutrition, and over time has accessed nutritional information to some measure of benefit. The public is becoming more nutrition conscious and demanding reliable sources of nutrition information [1]. This has resulted into an increased emphasis on nutrition by the medical profession and a growing public awareness that physicians are not nutrition experts [2]. Consensus exists among physicians that nutrition constitutes an essential aspect of health care [3]. In a nationwide survey in the US, Levine BS *et al* [4] found that 60% of physicians held positive attitude statements toward nutrition (e.g. diet has an important role in

the prevention of heart disease). The survey demonstrated that, in general, physicians *do* value nutrition education. However, physicians who valued nutrition did not possess an appropriate knowledge base to counsel patients [5]. Sometimes, a diabetic patient seeking nutrition information on local diets that are safe for him to eat and the quantity, may end up receiving a poor dietary advice from the medical practitioner, who has never been exposed to such education during the medical training.

It still appears surprising that traditionally very little attention has been given to the formal training provided to doctors in the field of nutrition. Indeed, there has been a long-standing concern about the lack of an adequate level of knowledge of nutrition within the medical professions. Understanding the basic concepts of nutrition sometimes may contribute to poor disposition medical practitioners have towards nutrition as a discipline of high interest. If nutrition is considered from the right perspectives of being a discipline that links what people consume or do not consume with their health, environment and available care, then the desired interest may rise. Without any doubt, high percentage of burden of ill-health, especially in sub-Saharan Africa and even globally could be linked either directly or indirectly to nutritional considerations. Several WHO reports have established that nutrition contributes to more than 60% as causative factor in child morbidity and mortality [6].

It is important to emphasize that people obtain most of their information on nutrition from the media, but consider that their most trusted sources of advice are health professionals, most especially clinicians [7; 8]. Thus, it has to be a matter of some concern how doctors should be trained in nutrition. It would be appropriate to be assured that on graduation a clinician possesses a minimal level of understanding, which ensures that they are safe to practice and capable of providing professional health and nutrition-related advice. At the very least it would be prudent to ensure that they would not be obstructive in their advice, or likely to give advice which will be contrary to current dietary recommendations. Presently, this resembles the situation in most medical practice in Nigeria, especially outside the tertiary hospital setting.

In both developed and developing countries, the cost of medical care is becoming a very strong variable in providing health care services. Consideration for cost effectiveness in medical care has shown that it is apparent that good health can better be attained by preventing disease rather than providing cutting-edge approaches to its treatment [9]. Nutrition is an important component in establishing a

healthy lifestyle and in preventing major causes of diseases including hypertension, diabetes, cardiovascular disease and cancer [9]. Presently, nutrition is not taught as part of courses in most medical schools and postgraduate education of physicians has revealed a large deficit in practical nutrition knowledge in medical care in some developed countries [10; 11].

In the US, several studies conducted by prestigious medical groups such as the National Academy of Sciences (NAS), the Association of American Medical Colleges and the American Medical Association, have strongly recommended that nutrition education be expanded within the medical school curriculum and included in residency training programmes [12]. It is important to state that nutrition education and literacy mean more than knowing technical aspects of teaching nutrition but involve examination of the world, which generates nutrition-related problems [13].

#### **Long standing disposition of medical profession to nutrition education**

Many undesirable practices concerning the nutritional care of hospitalized patients have their roots in long-standing neglect of nutrition in medical education and in health care delivery systems [14]. The professional literature documents opposition to integrating nutrition education in medical curricula. In 1987, The American Dietetic Association (ADA) issued a report [15] that suggested educational opportunities in medical school went unrecognized or underused. Subsequently, in 1994 the National Academy of Sciences (NAS) in the US established that nutrition education in medical schools was still inadequate [16]. Though nutrition courses had been recommended for the past 30 years, NAS found a downward trend in the number of required courses offered. Presently, it is doubtful if nutrition courses are part of medical curriculum, even in the leading medical schools in Nigeria.

#### **Contemporary issues reiterating relevance of nutrition education to medical training**

Several important reasons have been adduced why more practical nutrition education needs to become part of medical school teaching and to be included in postgraduate courses for practicing physicians. One of such compelling reasons is the level of undernutrition, especially among the under-5s and the emergence of obesity that has affected both paediatrics and adult patients in some cases. Ironically, the two scenarios may be found in the same household, e.g. obese mother and an undernourished

child. A phenomenon of positive deviant nutritional behaviour is also becoming an interesting observation in the field of human nutrition, where, despite all negative nutrition variables in a given community, some children are amazingly presented with good nutritional status! [17].

In the last two decades there has been a logarithmic growth in the number of children who were of low birth weight and later became obese in adulthood, thereby fulfilling the prophesy of Barker's Hypothesis [18]. Excessive weight gain resulting in "Syndrome X" has been associated with major diseases affecting the general health of individuals such as type II diabetes, cardiovascular disease, hypertension and various malignancies such as breast and colon cancer [19]. Therefore, early intervention to educate on healthy diets may have an enormous impact in disease prevention. Lack of emphasis on good nutrition by the practicing physician to their patients diminishes the importance of diet in health care and thereby lessens its impact on patient care. Because the basis for medical education begins in medical school, a strong emphasis on nutrition needs to be incorporated into all stages of medical education and continued in residency and postgraduate education.

It is sufficient to chip in that, largely through the use of various information sources including the Internet, the public is exposed to an increasing array of information, products and programmes that provide nutrition information, diets and therapeutic modalities to treat or prevent clinical disease or to promote a "healthy lifestyle." The physician and health-care provider must be aware of these sources of information and be able to adequately interpret and evaluate their importance and efficacy within the modern approach and within the context of their socio-economic and cultural milieu to promoting health and treating disease. A cogent example of this evolving health problem is the potential competition or enhancement that functional foods provide today in the setting of a pharmaceutical management of clinical conditions such as heart disease, cancer and allergic reactions among many others.

It is envisaged that when the patient's nutritional status becomes an important part of the medical evaluation and treatment plan, a major impact on the prevention of disease should follow. A report on the survey conducted among medical students in the United States of America revealed that, when asked to evaluate their curricula, medical students consistently requested more teaching hours be devoted to practical aspects of nutrition [20].

### **Barriers and likely solutions**

In spite of the fact that medical education stands to improve with the incorporation of nutrition education, formidable barriers continue to forestall its inclusion into medical curricula in most medical schools. Specific challenges to introducing nutrition into medical school curricula include institutional and organized medical committee resistance, education failures, insufficient human resources, and fear that nutrition departments would become a financial liability [2]. Time allocation to new courses is an important impediment to adding nutrition to medical school curricula due to the sacrosanct nature of teaching within medical schools. Most curriculum committees at medical schools have very little room in their teaching schedule to add additional lectures let alone complete courses to existing teaching programmes. Basically, one of the very big difficulties in moving forward with undergraduate training is that doctors still acquire their skills and abilities within a framework, which is broadly based on an apprenticeship approach. Hence, they rapidly acquire the perceptions and approaches used by their senior colleagues. If those senior colleagues have little awareness of the critical issues in nutrition, and are not well skilled in providing the necessary ethos, then the theoretical lessons learned during earlier training are not put into practice, and rapidly disappear.

Consequently, in providing adequate nutrition education for medical students, residents and practicing physicians, innovative approaches to nutrition education must be used that will allow practical nutrition teaching in the minimum time possible and with the least disruption of established programmes and courses. There are a number of reasons why in the past it has been difficult to make sustained headway in providing doctors with a sound training in nutrition, but one common difficulty has been that nutrition has been seen as being too broad and diffuse. In situations where training has been provided, it has often been driven by the personal enthusiasm of an individual, with the danger that the exposure has often been unbalanced and inappropriately detailed.

It is however equally possible for the association of medical students to initiate a move for the introduction of nutrition courses into their curriculum. This is very important because they will become better equipped with adequate knowledge to prevent and treat diseases in a more cost effective way. Although, medical students have not been usually involved in curriculum development, but an insight suggests that

postgraduate medical students can provide useful suggestions in the upgrading and improvement of medical education curriculum, since they are in contact more with the patients and can easily identify area of needs for medical education training.

### The task ahead of introduction of nutrition into medical curriculum

It becomes very necessary to determine all the basic steps that are necessary in the introduction of nutrition into medical training. In most medical schools' curriculum development committees, the attempt to address the following questions is very weak:

- What is the minimum nutrition information and understanding required to make a doctor safe to practice as far as recommending diets is concerned?
- At what point should a doctor refer patients to nutritionist/dietitian for more counselling?
- How best should nutrition information and understanding be communicated to doctors and medical students in a way which is manageable and accessible?

As stated in a review [21], there is need to attempt overcoming "common barriers to nutrition education for physicians" such as:

- (1) Lack of a curriculum guide for training physicians;
- (2) Overcoming the misconception that nutrition is not clinically relevant to a proper medical school education;
- (3) Evaluating patients in the absence of standardized nutrition assessment methods, and
- (4) A general lack of innovative teaching tools.

A well orchestrated nutrition education programme should effectively address each of the barriers and proffer approaches to overcoming them. This article is an attempt to disseminate to the medical and nutrition communities innovative and yet time-efficient ways to integrate nutrition science into medical education curriculum. Success in this adventure may lead to further enhancement in the quality of medical professionals with sound nutrition education.

### Tested approaches to introduce nutrition into medical education

Medical education curricula are "sacred" and the addition of new lectures or courses is carefully scrutinized and usually begun as electives. The scheduled classes and activities are continuously expanding, allowing little room for new programmes. In addition, traditional courses/lectures are guarded by their organizers and rarely are these programmes eliminated or replaced. Therefore, to add a new body of information (e.g. nutrition science) requires creative ways to make use of an already existing curriculum. The problem is compounded in residency and postgraduate education programmes in which physicians have to spend long hours caring for sick patients. Accordingly, innovative strategies are needed throughout the spectrum of medical education to instill a basic knowledge of nutrition and its application into medical care.

To consolidate the learning experience, it is necessary that more senior doctors be equipped and skilled in providing a suitable environment within which undergraduate training is, as a matter of course, reinforced and consolidated by desirable clinical practice and approaches to health promotion and public health awareness [9]. In other words, there is the need to develop appropriate postgraduate training, a seemingly simple task, but which presents its own special problems.

Training in nutrition at the postgraduate level of training is of paramount importance. As a consequence, the first step should include planning, organizing and delivering a basic nutrition foundation course for all specialties, using an evidence based approach. The lecture will seek to characterize what is fundamental and hence of general relevance and common to all doctors, regardless of specialty. Different approaches may be used to ensure the overall quality, but of very considerable value may be the thoughtful comments from the participants themselves [9].

Tension between trying to enhance the medical curriculum and manage a programme already replete with coursework presents a challenge [2]. It may prove difficult to determine why one specific discipline, or topic, outside the traditional medical curricula is more important, or deserves more time, than another. We do know, however, that coronary artery disease, obesity, some cancers and diabetes are devastating medical conditions from which people suffer and die every day. Modifying nutrition risk through lifestyle change represents one of the most sensible approaches to preventing complications from

the leading causes of morbidity and mortality [22]. If the medical community seeks to address the health needs of the public, it must be skilled at examining and treating the underlying determinants of disease, such as nutritional, psychosocial and other biological elements, and not merely patients that present with symptoms. While many of the potential new topics may be valuable, inclusion of new topics should be based, at least to some extent, on need and impact on patients' health and quality of life. Ideally, evidence gives rise to advocacy on the part of those who desire to obtain or provide some services, and this gives rise to action. At the level of implementation, however, the process is more convoluted and recursive, with evidence and advocacy influencing action at many parts of the process of initiating teaching nutrition courses in medical schools.

In conclusion, it was suggested that the following is necessary to achieve nutrition-literacy among prospective physicians:

- (i) adequate organizational and administrative supports,
- (ii) innovative nutrition curricula,
- (iii) committed faculty nutrition mentors,
- (iv) clear nutrition education goals,
- (v) methods for evaluation of programme activities/outcomes,
- (vi) substantive research agenda,
- (vii) multidisciplinary medical curricula, and collaboration.

In addition to these, the local medical community should show high level of willingness to integrate nutrition into the medical training curricular at all levels [2].

The nutrition curriculum for medical training may be structured along the following patterns:

#### *Principles of nutritional science*

1. Diets, foods and nutrients (substrates and cofactors)
2. Metabolic demand, digestion and absorption, balance and turnover, physical activity, metabolic effects of excess, obesity
3. Requirements, essentiality, bioavailability, limiting nutrients, effects of nutritional status on biochemical and organ function
4. Adaptation to low nutrient intakes, body composition (form and function)
5. Assessment of diet and nutritional status

6. Physiological mechanisms that determine appetite, sociological, psychological, economic and behavioural aspects of food choice

#### *Public health nutrition*

1. Average diet, including subgroup differences (e.g. region, gender, ethnic origin), lifestyle, risk factors and epidemiology (socio-economic factors, smoking and activity)
2. Pre-conception, pregnancy, breast-feeding, infant nutrition, growth and development, ageing
3. Dietary reference values, dietary recommendations and guidelines, diet and CHD and stroke, the health targets
4. Nutritional surveillance and identification of markers of nutritional status
5. Achieving change, education and motivation (education resources, theory and skills)
6. Food supply, monitoring, cost-benefit of nutritional interventions, legislation, food labelling and policy which affects food consumption

#### *Clinical nutrition and nutritional support*

1. Assessment of clinical and functional metabolic state, effect of functional state on nutritional intake and status, effect of status on clinical outcomes
2. Anorexia and starvation, response to injury, infection and stress
3. Altered nutritional requirements in relevant disease states, unusual requirements
4. General principles of nutritional support, routes of support
5. Basis of nutrition-related diseases, therapeutic diets (diabetic, renal), weight reduction
6. Drug-nutrient interactions [23].

With support and collaboration between health professionals, nutrition-literacy (e.g. improved knowledge and problem-solving skills, attitudes, practices in applied nutrition) among prospective physicians may be at our disposition. However, before this goal can become reality, additional organizational and administrative supports, such as inter-faculty and/or inter-departmental collaborations must be firmly established.

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