

Review Article

Developing and implementing dietary guidelines in India

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Single nutrients are no solution to the problem of malnutrition. It is essential that food based dietary guidelines (FBDG) are developed and implemented to overcome the diet related diseases and promote health in the population. A multidisciplinary group was constituted to develop FBDGs in India. A manual with scientific details and an abridged version were prepared with 6 goals and 14 dietary guidelines covering all age groups to overcome the public health nutritional problems. The guidelines are based on dietary patterns and specific outcomes of health and disease. Dietary diversification has been suggested as the practical approach. Diets from locally available and culturally accepted foods in household measures have been suggested to ensure optimal health. For successful implementation of FBDGs, political/bureaucratic commitment are essential. It must become a tool in the developmental plans for food, nutrition, agriculture, rural, educational and biotechnology policies. Workshops and meetings were organized to sensitise the administrative set-up. The intersectoral nature of FBDG for implementation was highlighted. The department of women and child development, which is responsible for implementing the National Nutritional Policy, was recognized as nodal agency. Meetings were organised for secondary target audiences. The press was invited to participate in popularisation of the FBDGs. Social marketing strategies were used to match the local dietary and cultural aspects. Interpersonal communication and professional societies were used for better dissemination. Industry and legislative bodies were requested to take active action in this regard. The FBDGs have to be implemented to achieve food and nutrition security and the Millennium Development Goals.

Key Words: turmeric, dietary guidelines, dietary diversification, human development, nutrition policy

INTRODUCTION

Nutrition and health are two important and closely related determinants of human development and productivity. The focus of nutrition and health care must be directed towards disease prevention and health promotion. For disease prevention, public health issues, life styles viz. dietary practices and patterns, physical activity and personal habits are known to play a pivotal role in the maintenance of an appropriate body weight, BMI and blood biochemistry - all promoting physiological functions to create an environment *in vivo* which is conducive for a long, healthy, happy and productive life. Good nutrition is a pre-requisite for good health and the foods/nutrients that are consumed at all ages, in both sexes and in all physiological stages must be able to provide them. There is enough scientific evidence to suggest that dietary patterns have specific health or disease outcomes.¹ In this modern post human genomic era, one may argue that the genes we inherit, cannot be altered. But certainly one can change its responses to the environment (dietary) and obtain the desired results.² In fact in the 21st century, from analytical epidemiological studies, one can link foods and dietary habits and not just nutrients, with distinct outcomes. The bioactive phytonutrients further add to the wholesomeness of food and it is time that a shift is made from reductionism to a holistic view. In other words a paradigm shift from nutrients to foods is required.

Foods/diets have cultural, ethnic and social dimensions, which are deeply rooted and difficult to change. The

Recommended dietary intake (RDI) and Dietary Reference Intake (DRI), create confusion among policy makers, educators and consumers. Dietary guidelines therefore need to replace our nutrient-centered thinking on public health issues while taking into account the traditional and cultural background, together with socio-economic and environmental issues, to help consumers to make healthy and informed choices.

The nutritional status of the population is a critical determinant of the development of a nation.³ The dietary guidelines can serve as an instrument of nutritional policies and programs and can be directly applied to the general population or to specific physiological or high risk groups to derive health benefits. The guidelines should be such that medical and health personnel, nutritionists, dieticians, allied scientists and peripheral workers can use them.

DEVELOPING DIETARY GUIDELINES

Key actors and players in the development and implementation of food based dietary guidelines (FBDGs) start from professionals from multiple disciplines - nutritionists,

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agriculturists, technologists, home scientists, dieticians, industrialists, social scientists, economists and moves over to policy makers and opinion leaders, concerned government agencies, educators, communicators, and the consumers. Media personnel, non-governmental agencies, industries and international agencies, all have important roles to play in the translation of science based information to a practical and productive action, namely acceptance and implementation of the food based dietary guidelines for the prevention of diseases and promotion of health.⁴

Outcomes of nutrition policies are usually expressed as FBDGs. It is also possible to attain some of the objectives by altering the nutritional components of existing food production, processing, distribution as well as through the use of new biotechnological approaches and industrial applications.

The FBDGs can be implemented easily in simple practical terms only when it takes into consideration the nutrition and health scenario of the country, its existing traditional dietary patterns and practices, as well as the geographical, social, political, economic and cultural factors. All this, in addition to being based on the recommended dietary allowances set by a multidisciplinary group of scientists.⁵ In fact the nutrition well being itself is an indicator of synergistic performance of social, economic and health sectors.⁶ The dietary guidelines (DG) are an integral component of the country's comprehensive plan to reach the goals specified in the National Nutrition policy and should be consistent with other national policies on health, agriculture and economy.

NUTRITIONAL PROBLEMS OF PUBLIC HEALTH SIGNIFICANCE

A series of developmental programs in the country helped to bring down population numbers living below the poverty line. Despite several National programs related to nutrition, the major problems are low birth weight, protein energy undernutrition in children, stunting and wasting in preschool children; which has not declined in the last five years. Chronic energy deficiency in adults, adolescents and pregnant and lactating women, results in poor reproductive performance, and several micronutrient deficiencies particularly iodine, iron, folate, and riboflavine, vit. B12, vit.A, zinc, vit.D and calcium are widely prevalent in vulnerable segments.⁷ They result in several adverse functional consequences. India is passing through a developmental, demographic, nutritional and epidemiological transition with traditional habits being replaced by certain unhealthy dietary practices leading to diet related chronic diseases such as diabetes, hypertension, coronary artery disease and cancer, with origins in poor nutrition during foetal stages and early childhood and fast rate of urbanization.⁸

With the above health scenario in mind, the National Institute of Nutrition (NIN), which is the premier institute of research in nutritional sciences in India, went ahead to prepare the FBDGs. A working group consisting of senior scientists of the NIN with an expert advisory group consisting of nutritionists, pediatricians, gynecologists, obstetricians, technologists, dieticians, public health and home scientists, educationists along with planning commission

members and experts in the field of diabetes and CVD arrived at the dietary goals and spelt out the guidelines which have been brought in the form of a manual with appropriate illustrations for easy understanding. The RDAs for nutrients have been presented in terms of a diet that should be consumed by the population, keeping in the mind the variety and diversity in the Indian sub-continent. Appropriate food based approaches, both qualitative and quantitative, have been indicated in the manual. The dietary goals are as follows:

1. Maintain a state of positive health and optimal performance in populations at large.
2. Ensure adequate nutritional status for pregnant and lactating mothers.
3. Improve birth weights and promote the growth of infants, children and adolescents to achieve their full genetic potential.
4. Achieve adequacy in all nutrients and prevent deficiency diseases.
5. Prevent chronic diet related disorders.
6. Maintain the health of the elderly and increase life expectancy.

To achieve the six goals, fourteen guidelines have been spelt out from a diversified balanced diet for all ages, with emphasis on exclusive breast feeding and appropriate complementary foods for infants and healthy foods for children, adolescents, pregnant and lactating mothers. The DG emphasized liberal consumption of vegetables and fruits, as miracle foods for micronutrient malnutrition and chronic disorders. Moderation has been suggested for cooking oils and animal foods, salt and processed foods. Overeating as a cause for obesity and related disorder and physical activity to increase energy expenditure have been stressed. In addition, food and water safety issues have received attention. A separate guideline for the elderly is included. These guidelines represent a practical way to reach the six goals mentioned above and satisfy the RDA.

Information is also provided on a wide range of dietary patterns that need to be adopted to ensure optimal health in different physiological states and in different age groups. Authentic scientific data is presented in the manual in simple terms, which can be easily and effectively explained by extension workers to community members. The suggested diets are based on locally available and culturally acceptable foods, which are within the reach of the people.

IMPLEMENTATION

Multiple approaches are needed for implementing the guidelines. Political and bureaucratic commitment and will are essential. Dietary guidelines, in fact, should become a universal tool in food and nutrition policy development and also in nutrition education. It is essential to realise that policy makers and administrators as important personnel for improving the nutritional status of the community. Hence, the very first step in implementation was to sensitise the administrative set up through workshops, meetings, etc. with regard to the inter-sectoral nature of the DGs. Several ministries and departments in the Govt. of India and the State concerned with food production, distribution and nutrition / health programmes,

agriculture, health, education and rural development, were invited to incorporate the DGs in their policies and translate them into action. Every state has a department for women and children (DWCD) and has its own networking throughout the country and therefore was recognised as the nodal agency for the implementation of the DGs. The food and nutrition board is an integral part of DWCD and hence, its staff engaged in nutrition education had a special meeting for propagating the DGs.

AGRICULTURE AND FOOD PRODUCTION

Favourable policies for promoting, producing and increasing the per capita availability and accessibility of nutritionally rich foods are needed. The productions of foods in India over a period of time have shown some good and some bad trends. There is a necessity to increase protective foods such as milk, milk products, vegetables, fruits, fish, poultry, millets, and legumes to improve nutrition security. Technological innovations, increases in cultivation area, water harvesting and land reforms have to keep pace with the population growth. The focus was much more on food security in terms of energy sufficiency and the green revolution was no doubt – a success. Swaminathan, however argues for an ever green revolution and an symphony approach in agricultural sciences for nutrition security.⁹ Coarse grains and pulses, which constitute the poor man's staple and satisfy protein and micronutrient requirements, have largely been neglected. It is also important to mention here that these are better sources of soluble fiber, which are needed for the prevention of chronic disease as well.

NUTRITIONAL STATUS, SURVEILLANCE AND PROGRAMS

A database is required on the nutritional status of the population and their dietary practices, which will give adequate information to suggest suitable modifications. An appropriate nutritive value of foods is also essential which could be translated into nutrient rich foods. Further, DGs should be a part of all nutrition programs.

The National Nutrition Bureau and the National Family and Health surveys have generated sufficient information on dietary practices and nutritional deficiencies in vulnerable groups. The FBDGs have targeted these groups in several National Nutrition programs by using a simple booklet, which the peripheral workers at all levels, can translate into action.

As a part of policy instruments, Nutrition policy has recommended a nutritional surveillance system to provide early warnings for the initiation of prompt action and to ensure optimal nutrition of the 'at risk' groups. It is based on the triple A approach of: assessment, analysis and action. FBDGs can be built into this programme to facilitate action. A majority of functionaries identify 'at risk groups' and hence it will be easy to build DGs into this activity through peripheral functionaries.

NUTRITION EDUCATION – TARGET GROUPS

The dietary guidelines have to be very simple, as they have to be understood by the general public. The reading level of the document should be up to the 5th or 6th grade level. In a country where the literacy rate is really poor,

communication experts have to convert the messages prepared by the scientists into more attractive forms to change the individual or the community eating behaviours in a positive manner. Effective nutrition communication strategies (Information Education Communication (IEC)) are the most important strategies in disseminating FBDGs. We need to have a multi media communication package aimed at local opinion leaders, women, celebrity personalities, teachers, students, youth groups and community elders, who will have a positive bearing on the family members.

NIN has already produced booklets, leaflets, attractive posters and folders with emphasis on pictorial representation of the messages for dissemination. Communication strategies to improve the nutrition and health related knowledge of the National Social Service scheme students were prepared, popularised and promoted so that they can serve as agents of change.¹⁰ The guidelines have been translated in different languages. In this context, the social marketing strategy assumes significance. An innovative approach like the social marketing strategy (SMS) was used to increase the vitamin A awareness in the community about and to changed attitudes and improved dietary behaviours.¹¹ The analysis also revealed that for effective communication, frequent contact by the agent communicators and the use of multiple media are essential.

PUBLICITY PROGRAMME

The press and other print media should play a proactive role in the implementation program. Press conferences were held when the guidelines were prepared. The DGs are being publicized through professional societies and special lectures in educational institutes and industries. Through the education media research center, nation wide class programs are being propagated. In addition to these, traditional arts like folk media and street plays are being used as effective communication strategies for reaching the population. NGOs participation are included in such activities.

FOOD SCIENCE, CO-OPERATION AND PARTNERSHIPS

The implementation process should adopt a co-operative partnership with several experts involved in the promotion of better nutrition and health. Communication experts can be called upon to devise effective means of conveying – by developing or translating the scientific message with appropriate and appealing messages. Nutritionists should verify the validity/ scientific accuracy. In collaboration with a well known NGO, a special document has been prepared for pregnant and lactating women and infants based on the DGs. DGs have been translated into a variety food lists in different languages and illustrations, made to match the local culture and cuisine with multiple dishes to satisfy all ages with relevant cooking techniques to preserve nutrients.

The food industry contributes to the economic advancement of a country. It can partner with the government and professionals to improve nutrition and health. It can translate dietary goals and guidelines in a practical manner. As the Western experience documents that

several processed/refined foods are energy dense, low in fibre, high in salt and unless fortified, micronutrients depleted, a special guideline on processed foods to be used cautiously and to prefer fortified foods was added so that industries concentrate on fortification. Industries can also take care of post harvest losses reducing seasonality issues by appropriate preservation/packaging and provide opportunities for income generation (urban/rural based). They also add to food safety issues. Legislation about nutrition labelling and claims are important and nutrition labelling will serve to enhance the knowledge of the public to make informed choices.

Food science and technology, including biotechnology, are creating a new framework for FBDG. New nutrient rich varieties including GM foods, formula foods, functional foods or designer foods also have an impact on FBDGs implementation. If facilities exist and costs are minimal for value addition, such foods can form part of the FBDGs. Consumers however, need education as to whether such foods are in any way superior to traditional foods in terms of: nutrient content, bioavailability, special functional effects or risk reduction of diseases and promotion of health. Fortified foods in several countries have become a part of everyday life. In countries such as India, only recently have the Ministry of Food Processing and the department of biotechnology made attempts to draw up policy/program for food fortification.

MONITORING AND EVALUATION

Monitoring and evaluation are crucial to all program activities. It starts with formative evaluation and moves onto process and impact evaluation. These should be in-built into the program, for continuous feed back, to achieve dynamic changes in the FBDGs.

CONCLUSIONS

A multi sectoral expertise has been used in the development and formulation of the FBDGs in India and nationwide efforts have been made to ensure that the DGs reach the core community. Healthy food choices are central in the prevention of both under and over nutrition. The Indian DGs, indicating food groups, which can be consumed adequately, liberally, moderately and sparingly as steps to nutrition and health (food guide), have been widely publicized.

The dietary guidelines are expected to influence social, educational, agricultural, health and rural development policies, programmes and actions. The government, food industry, health/nutrition professionals and the consumers can influence the demand/supplies. The food industry however needs to balance its commercial interests or profit motive and the community requirement and make marketing practices more conducive to healthy food choices.¹²

The nutritional/health scientists need to update the FBDGs based on new scientific evidences and focus on issues of public health relevance. The ultimate objective of the FBDGs is to grow what is needed and preserve what is required. It is necessary to prepare / package what is seasonal and add value and facilitate appropriate imports / exports and eat what is essential to promote positive health and productivity in the population.

AUTHOR DISCLOSURES

Kamala Krishnaswamy, no conflicts of interest.

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The method to develop Ethiopian food-based dietary guidelines is adapted from the 2015 Dutch food-based dietary guidelines and the Dutch healthy diet index development and validation process, and the 1998 FAO/WHO preparation and use of food-based dietary guidelines. A multidisciplinary technical working group will be established to develop FBDGs. The working group will identify key messages for the guidelines that can address priority diet-related public health problems in Ethiopia based on the evidence that will be generated by the PhD student from Wageningen University and Research. The evidence generation will begin by identifying top ten diet-related diseases that lead to high morbidity and mortality in 2016. Indian food played a pivotal role on immunity, inflammation, brain function and people were healthy. Now, the scenario across the globe has changed and India has also become a part of it. Nutraceutical market is flourishing predominantly in United States, India and European countries. In developing country like India, it is difficult to implement stringent guidelines and regulations for manufacturing, labelling and marketing of nutraceuticals. Lately, USFDA warned India about unlawful marketing of recalled products (the product that is brought back or summoned back after discovery of safety issues that might endanger public health and put manufacturer at risk of legal action) of nutraceuticals in US market through internet. A set of dietary guidelines, the National Dietary Guidelines (NDGs) for Brunei Darussalam, is thus developed to provide the general public with up-to-date and more informative dietary guidelines. The NDGs also aims to improve the dietary practices and lifestyle habits among the Bruneian population while serving as a guide to healthcare providers and policy makers. Unhealthy eating coupled with sedentary lifestyle have a cumulative effect and consequently contributed to significant nutrition and health challenges in Brunei Darussalam. The review and revision of the NDGs 2000 is essential so as to adapt the guidelines to evolving scientific knowledge on nutrition and public health in the past decade. Dietary guidelines are essential for dieticians and health professionals, who give dietary advice to those with health issues related to their current diet. These guidelines need to be updated from time to time based on sound science, so that the professionals can be confident that their advice is evidence-based. Furthermore, dietary guidelines should be practical and must be written in plain language, in order to avoid misinterpretation. Therefore, guideline development is more than just grading systemically collected evidence. We appreciate papers that provide evidence for recently revised or developed dietary guidelines, together with the introduction of the guideline itself, for example, how it is implemented, and the setting in which it is used.