

# Role of Pharmacist in Nutrition Management-The Unexplored Path

Neelam Singla<sup>1,\*</sup>, Avani Jindal<sup>2</sup>, Debarshi Kar Mahapatra<sup>3</sup>

<sup>1</sup>Department of Pharmaceutical Chemistry, Suresh Gyan Vihar University, Jaipur, Rajasthan, INDIA.

<sup>2</sup>Birla Institute of Technology, Mesra, Ranchi, Jharkhand, INDIA.

<sup>3</sup>Department of Pharmaceutical Chemistry, Dadasaheb Balpande College of Pharmacy, Nagpur, Maharashtra, INDIA.

## ABSTRACT

Public health aims at improving the health and well-being of populations, reducing health inequalities, and ensuring the sustainability of health systems. The prevention of disease is anticipated to be a more cost-effective and long-term method of reducing disease burden. One of the most important strategies for reducing this burden is nutrition management. The problems surrounding nutrition and its management are often multi-dimensional. It demands a trained workforce, forming strong alliances with the same goal, and being able to communicate effectively with all the stakeholders. Fixing the role and responsibility of pharmacists is the logical answer to address India's multidimensional nutritional challenge now and in the future. One of the critical components in managing acute and chronic diseases and overall public health is nutrition management but it requires knowledge about the importance of a balanced diet, food, and nutrition-related health concerns, drug usage, drug-drug interactions, drug-food interactions, drug-nutrient interactions, food supplements, dietary supplements, nutraceuticals, cost-effective treatments, etc. This article aims to demonstrate pharmacists' knowledge, attitude, understanding, and professional skills to tackle the issue of nutrition management by assuring cost-effective healthcare choices, offering evidence-based advice on nutritional products and therapies, management of health supplements and nutraceuticals, and advising on drug-drug, drug-food, and drug-nutrient interactions.

**Keywords:** Pharmacist, Nutrition management, Lifestyle diseases, Anatomy and physiology, Nutritional supplements, Nutraceuticals.

## INTRODUCTION

The Constitution of the World Health Organisation (1948) adopted by the International Health Conference held in New York in 1946 and came into force in 1948 showed its commitment to the principles set out in its Preamble which included "the enjoyment of good health as one of the fundamental rights of every human being without distinction of religion, race, economic, or social condition".<sup>1</sup>

### WHO (1948) definition of health

A condition of whole physiological, cognitive, and interpersonal well-being, not only the lack of sickness or ailment.<sup>2</sup>

The above definition of health differs from the traditional view of health according to which health is the absence of disease and illness. Traditionally, health can be achieved by fighting diseases through medical interventions whereas the modern view conceptualizes health more as well-being and well-being can be thought of as feeling good and functioning well physically, mentally, and socially.<sup>3</sup>

Health and well-being lead to better productivity. Such healthy individuals can contribute better to society. Social medicine and public health advocate that we should not only focus on the health of individuals but also on the health of the community as a whole because only a healthy society can

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Address for  
correspondence:

**Dr. Neelam Singla,**

Professor, Department of  
Pharmaceutical Chemistry,  
Suresh Gyan Vihar University,  
Jaipur-302017, Rajasthan,  
INDIA.

Email id: neelams.singla@gmail.com



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prosper. Social health unites clinical health with public health at large. The health of people reduces the financial burden on individuals as well as on healthcare services. Health promotion is the cornerstone of wealth.<sup>4</sup>

In line with WHO All coordinated efforts, either publicly or privately, to avoid illness, stay healthy, and lengthen life for the total society are referred to as “Public Health”. Its actions are aimed at creating environments in which people can be healthy rather than focusing on specific patients or diseases.

In a broad sense, public health refers to everyone coordinated social activities to create, preserve, and advance exactly as well as any actions that can reduce or treat illness and act on social and ecological determinants of health.

The concept of good health encompasses two fundamental issues, that is, proper and adequate medical treatment and care in case of disease and the other is acquiring and sustaining a condition of improved health through adequate nutrition, adopting a healthy lifestyle, engaging in social activities, and so on. Among all these factors, the importance of nutrition in individual and public health is well-researched and there is clear scientific evidence that establishes a link between nutritional status and disease prevention as well as health maintenance.<sup>5</sup> Several of the absolute cheapest methods to lower the burden of illnesses and achieve a healthy lifestyle are through a range of nutrients.<sup>6</sup> Additionally, better nutritional status can positively influence the clinical course in case of acute illness whereas, poor nutritional status leads to an increased risk of severe diseases and even reduced social functioning.<sup>7</sup> The developmental, social, and economic impacts of the global burden of ill health are serious not only for individuals but for countries and human society as a whole.

Nutritional management has gained relevance in addressing the issue of public health over the past few decades. People have become more conscious of its significance and are trying to make better dietary choices. Even governments and policymakers try to create several initiatives such as mid-day meals for school children or fortifying breakfast cereals with vitamins to enhance the nutritional status of the public or society.

Nutritional management requires many stakeholders. Governments, the medical fraternity, policymakers, and all members of society work in harmony to promote health. Governments develop regulations and provide resources, physicians prescribe appropriate treatments and health products, healthcare workers and dieticians

educate and individuals comply.

Among all the stakeholders, one important stakeholder whose role is sometimes undermined is the pharmacist who can perform a variety of roles in partnership with other healthcare professionals. In nutritional management, pharmacists can help in ensuring cost-effective health care alternatives, provide evidence-based advice on nutritional products and therapies, management of health supplements and nutraceuticals, and advise on drug-drug, drug-food, and drug-nutrient interactions.

## Exploring the Role of Pharmacist in Nutrition Management

A Pharmacist has the knowledge and competencies to address the issue of nutrition management. Some of the common areas are:

### *Providing cost-effective nutrition*

As the cost of healthcare is increasing day by day, health economics has evolved as an important discipline where the principal of economics are applied to the healthcare sector. Pharmaco-economics is a field of health economics whose objective is to enhance general public health by assisting industry, authorities, and the public to make appropriate decisions in selecting cost-effective and suitable healthcare products, therapies, and services. At the time of the knowledge explosion when the public feel bombarded with information, there are contrary views and opinions and information regarding different nutritional supplements and therapies to improve well-being. Pharmacists with their knowledge of Pharmaco-economics and nutrition can prove to be a stable source of facts and information. Pharmacists can guide the public about cost-effective products or alternative therapies to give the best health outcomes for the money spent.<sup>8</sup>

The pharmacist can also assist policymakers and decision-makers by providing them with information about cost-effective healthcare treatments, and the effect of diet and nutrition of individuals as well as the public on health-related quality of life.<sup>5</sup>

Nutrition-related disorders are on the rise globally and may demand healthcare interventions and hence leading to an increased economic burden on the healthcare system. Pharmacists can research and analyze to provide valuable evidence-based cost-effective dietary habits in a community that can help to minimize these nutrition-related disorders. It can also assist in educating and counselling the public in maintaining nutritional health. Reddy *et al.* (2017)<sup>9</sup> found that Pharmacists counselling

parents of malnutrition children enhanced their nutritional status.

According to the WHO, lifestyle diseases such as hypertension, diabetes, and cardiovascular problems account for 61% of all deaths. This burden is expected to rise significantly by 2030. So the greater emphasis should be on disease prevention through lifestyle management which includes adequate weight control, regular exercise, and following a balanced and nutritious diet. The management of type-2 diabetes by teaching and educating patients about the nutritional approach can save millions of rupees. To investigate how nutritional treatments might benefit various diseases, pharmacists can interact with medical practitioners and nutritionists to give significant and appropriate dietary recommendations for many diseases.

There is a need for trustworthy sources to guide healthcare professionals in applying combined health and economic outcomes of nutrition in their daily medical practice. The Pharmacists can play that role very effectively.

A good and balanced diet is the single most important factor influencing a population's health, nutritional status, and productivity. Quality of diet is strongly linked to good physical and mental development, as well as the prevention of disease but is frequently overlooked. Even homes with adequate food and calories may be deficient in important micronutrients, increasing their risk of both short-and long-term health and development effects. Pharmacists can intervene to treat malnutrition, overweight, and underweight problems as well as poor diet quality-related deficiencies of Vitamin A, zinc, iron, and other minerals. Pharmacists can help people set tangible goals to improve their lifestyles.<sup>10</sup>

### **Linkage of nutritional value to Anatomy and Physiology**

To understand the absorption of food and its nutrient benefits in health and disease, one must first understand the structure (Anatomy), and functions of the human body (Physiology). Pharmacists with their knowledge of physiology and anatomy understand the link between diet and disease as well as the interaction of various drugs with food and nutrients. For example, antacid drugs (proton pump inhibitors) increase the risk of malabsorption of zinc, magnesium, iron, and Vitamin B<sub>12</sub> in elderly and malnutrition patients. Meier *et al.* (2021)<sup>8</sup> highlighted that Pharmacology knowledge places a pharmacist in such a special situation to understand drug absorption and food-drug interaction in patients. Such interactions can be critical in the case of the elderly, as well as immune-

compromised and critically ill patients. Pharmacists understand the extent of drugs and nutrients which can adversely affect the body. Villarini *et al.* (2022)<sup>11</sup> found that the role of the pharmacist is fundamental for managing the nutrition of COVID-19 patients. In collaboration with physicians, dieticians and other therapist's pharmacists can choose the most appropriate nutrition as per the patient's needs.

### **Nutritional supplements in special categories**

#### ***Providing parenteral nutrition support***

When some hospitalized patients or otherwise are unable to tolerate oral feeding then they are provided with intravenous nutritional formulations to provide them with essential nutrients either to sustain life completely in case of critically ill or maintain their health by providing nutrients in which they are deficient. This is known as PN therapy. The extensive additives used in PN formulations contain both necessary nutrients (dextrose, intravenous fat emulsions, and amino acids) and micronutrients (electrolytes, vitamins, and trace elements). The PN formulations can be of standard composition generally provided by industry or tailor-made by pharmacists according to the individual patient's need. PN therapy is a complex process as it can cause electrolyte imbalance or metabolic complications such as glucose intolerance, Vitamin toxicity or deficiency, and so on. To ensure the safety of patients undergoing PN treatment, these formulations must be stable and prepared under sterile conditions by a trained healthcare worker.

Pharmacists with their unique set of knowledge and abilities can make a significant contribution to PN treatment including assessing patients' nutritional needs, planning, implementing, and maintaining PN formulations, compounding, dispensing, and quality control, as well as evaluating patient's responses to the therapy. They can even serve as consultants for the PN program by collaborating with physicians, dieticians and even families or caregivers in home settings to maximize the health outputs.<sup>11</sup>

#### ***Nutritional management in elderly people***

When it comes to nutritional management, older individuals are a distinct category that must be addressed differently. The burden of medication increases with age-related conditions. Because older patients are on multiple medications, drug-drug, drug-food, and drug-nutrients interactions are the key risk factors that cause adverse reactions. The declining ability to digest oral nutrients, poor absorption of nutrients, and functional disabilities among older people are some of the problems

which need to be addressed by a person who is easily accessible and well-versed with the problems. Pharmacists with their expertise and abilities related to drugs and their interactions can help older people to manage their health and assist organizations in lowering their overall cost of care for their aging patients.<sup>12</sup>

The pharmacist can undertake medication evaluations, analyze patient's prescription, and can offer input to doctors to prefer a fixed drug combination over several individual prescriptions.

As the number of drugs used to treat various ailments among the elderly rises, their nutritional health suffers as a result of a lack of appetite, gastrointestinal difficulties, and changes in bodily functioning. As a result, the nutritional condition of the elderly population should be evaluated on a regular basis. This examination should be a normal aspect of a full geriatric assessment, best undertaken in multi-professional teams that include a physician, pharmacist, and nutritionist.<sup>13</sup>

### **Infants' nutritional management**

The first few years after a child's birth are critical for its physical and mental health. There is a risk of poor growth, an undeveloped immune system, and frequent infections if the new born lacks proper nutrition. Poor nutrition during the early years of childhood hampers the development of their intellectual, social, and emotional abilities.<sup>14</sup> Therefore, one of the crucial criteria is the new borns' and adolescents optimal nutritional deficiency of their health, growth, and development, and has become a matter of concern throughout the world. In a country like India, malnutrition among young children is a huge problem. Parents of young children often need prompt and reliable information about nutritional issues like breastfeeding, formula feeding, complementary foods or food supplements, vitamins, etc. to make informed choices. An easily accessible pharmacist can play an important role in fostering infant health through nutrition. Dellarocca (2020)<sup>15</sup> described that the pharmacist can educate women regarding guidelines for breastfeeding and its long-term benefits in reducing the risks of certain diseases. They can also advise on proper breastfeeding techniques.

There are many infant formulae feeds and supplements available in the market. Parents and caregivers are often confused and intimidated. Pharmacists are knowledgeable about the regulatory guidelines and efficacy of such products. So, they can serve as a proactive resource for the parents.

Pharmacists are also well-equipped to make appropriate recommendations regarding nutritional supplements. A study conducted in Ethiopia found that 84% of community pharmacists were involved in advising about infant formula milk and more than 46% were involved in advising Vitamin supplements to children.<sup>16</sup>

### **Nutraceuticals Management**

The need for nutraceuticals is highly patient-specific and thus should be carefully taken and the pharmacist's involvement in its management should not be undermined.

Nutraceutical is a blend of two words nutrition and pharmaceutical. It is a food or food product that has medical benefits both in the prevention and treatment of disease. It mainly includes dietary supplements, functional foods, and herbal or natural products. Nutraceuticals do not fall in the legal category of drugs and food. The major role of a pharmacist is always visualized as the one who dispenses the medicines prescribed by the physicians while nutraceuticals that can be sold as OTC are not regarded to be in the preview of a pharmacist. But with careful study of the factors associated with nutraceuticals, one can understand the multiple important roles a pharmacist can play. Liliana and Aduji (2018)<sup>17</sup> found that since the food supplement business is profit-making for both manufacturers and distributors so the economic interests outweigh the medical interests and it adversely impacts the health of people. The pharmacist can play a primary role in implementing the legislative regulations and counselling people regarding non confirmed use of these food supplements.

Since no prescription is required to buy diet and herbal products, and most people are unfamiliar with the terminology used on the labels, pharmacists can assist consumers in understanding the labels of nutraceutical products, such as use, serving size, list of active and inactive ingredients, cautions and warnings, and so on. Generally strength of active ingredients is listed on the product labels but inactive ingredients are not tested for strength or potency.<sup>18</sup> With his knowledge pharmacist is in a unique position to educate patients about the use, efficacy, and potential interactions of nutraceuticals with prescription drugs and other food products.<sup>19</sup>

Inappropriate or abusive use of nutraceuticals can have a negative impact on public health by causing numerous side effects on the organ system and interfering with other medications. Many food supplements are also available for specific populations such as new-borns, young children, and pregnant women. As a result, nutraceutical production, distribution, and use must be regulated and

monitored. Pharmacists, with knowledge of medicines and nutrition, can help policymakers in developing and executing appropriate rules and guidelines, as well as counselling consumers to avoid the overuse of dietary supplements.

Supplements can be purchased without a prescription. Pharmacists are easily accessible and the first line of interaction with the patient can give appropriate suggestions after learning about the individual's medical history. Magnesium supplements, for example, can be dangerous for people who have renal problems, and too much Vitamin E can induce heart problems. If customers use a lot of dietary supplements, a pharmacist can advise them on potential medication and food interactions. Most pharmacists have a basic understanding of nutraceuticals as well as hazardous medication interactions and adverse effects. Diving deep into it, they can really prove to be a beneficial resource.

Drug-induced nutrient depletion poses an additional area of focus regarding nutraceutical products, for example, the use of histamine is associated with calcium depletion, so calcium supplements are required for such patients. Pharmacists are aware of common drug-induced nutrient depletion and can educate the patient regarding nutritional supplements. Mehralian *et al.* (2014)<sup>20</sup> through a survey found that pharmacists should be given more training regarding dietary supplements so that they can guide and counsel people properly.

According to Munjy (2020),<sup>18</sup> an increasing number of people who follow specialized diet plans such as gluten-free, vegan, and dairy-free seek for additional nutritional supplements. A pharmacist's knowledge base can help such consumers in identifying safe and effective supplements.

## CONCLUSION

Pharmacies are the participant's initial point of interaction and the most often accessed by the general public for minor health issues. Pharmacists have more regular interaction with patients than physicians; therefore their role extends beyond simply dispensing drugs. One of the critical components in managing acute and chronic diseases and overall public health is nutrition management but it requires knowledge about the importance of a balanced diet, food, and nutrition-related health concerns, drug usage, drug-drug interactions, drug-food interactions, drug-nutrient interactions, food supplements, dietary supplements, nutraceuticals, cost-effective treatments, etc. Since pharmacists have the requisite knowledge in this

field, so it strengthens their role in nutrition management and contribution to public health. With further training with regard to nutrition guidance-based initiatives and health economics, the pharmacist may evolve into a reliable resource in providing relevant information to other healthcare professionals that can be incorporated into their everyday medical practice.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

## ABBREVIATIONS

**PN:** Parenteral Nutrition; **WHO:** World Health Organization.

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