



Review Article

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# Prescription Diet: Barriers for Preventive Medicine in the Current Healthcare Landscape

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## Abstract

Dietary interventions and dietary supplements have been clinically underutilized in preventing and combating obesity worldwide. Despite the substantial amount of research supporting the use of diet as a therapeutic approach, translational research and clinical implementation have been slow, with sporadic efforts and little improvement. This is due to challenges involving the current state of medical education and healthcare policies, physician attitudes, institutional procedures, and the balance of responsibility in patient-centered care. Despite the issues in translational research and analysis of clinical outcomes, significant data supports the benefit of dietary interventions for treating specific conditions and promoting general health. Here, we discuss the protective role of diet in numerous pathologies and the consideration of preventive care in current clinical practice.

**Keywords:** Diet, Dietary supplements, Nutrition, Preventive medicine, Personalized care, Translational research

**Abbreviations:** CVD: Cardiovascular Disease; AMA: American Medical Association

## Introduction

Globally, >30% of the adult population is overweight or obese; in America, ~40% of the population is obese. Obesity contributes most prominently to Cardiovascular Disease (CVD) and type 2 diabetes that have increased 12-fold in the last decade. Recently, obesity has been linked to various other conditions, including kidney disease, neurological disorders, and inflammatory conditions. Despite these statistics, a pre-COVID-19 survey showed that only 12% of healthcare visits involved a diet discussion. This number was lower for high-risk patients with chronic conditions, where only one in five patients received nutrition counseling [1]. Excessive energy consumption has led to an epidemic of diet-related non-communicable chronic diseases; currently, 7 of the top 10 causes of death are linked to diet [2]. Although an unhealthy diet is one of the

leading modifiable chronic disease risk behaviors, a meta-analysis evidenced the disparities between current information and practice regarding nutritional intervention in therapy [3]. In a mental healthcare setting, preventive care was deemed to be inadequate, as <80% of patients received adequate nutritional care, with <33% of patients receiving any nutritional education [4]. Of the factors assessed, nutrition was the least likely intervention to be discussed, behind smoking, alcohol, and physical activity. Additionally, although doctors aware of procedural guidelines to address these interventions were more likely to provide care, set policies or specific directives for discussing nutrition at an institutional level barely exist [4]. This lack of conceptual and procedural organization in a clinical setting reflects a larger deficit among the general population, for

which little reliable census data is available. The alarming increase in chronic diseases linked to diet indicates a strong need for physicians to promote healthy eating habits [3]. Dietary intervention in a patient with advanced disease is certainly a doctor's personal concern as the physician exerts control over the patient's day-to-day life. However, when discussing nutrition as a form of preventive care, the physician's duties in terms of responsibility to the patient and community become indistinct. There is a question of the clinician's role in fighting disease on a larger scale by emphasizing healthy eating habits, disseminating information within their circle of influence, and possibly prescribing foods with proven health benefits as prophylactic therapy.

### **Nutrition as Preventive Medicine: The Current Status Quo**

The function of preventive treatment has held a precarious position in the recent medical narrative. Despite the major benefits of implementing preventive care, it is not considered an active treatment. There are numerous practical questions such as how to assess prevention in terms of therapeutic value and what measures exist within the scope of care. Several U.S. physicians have had their licenses revoked because certain state boards do not recognize preventive care as a legitimate form of medical practice, due to its lack of direct patient contact and focused outcomes [5,6]. However, the criteria for determining the scope of patient care appears arbitrary, as medical boards do not apply the same reasoning when assessing other specialties with minimal patient contact, such as radiology or pathology. In contrast, preventive care, particularly interventions related to diet and lifestyle, has traditionally been categorized under the umbrella of homeopathy, which may impact its assessment. Historically, there has been a sharp divide between the medical field and other healing efforts as doctors have strived to delineate evidence-based care from the potentially pseudoscientific [7]. Numerous health organizations are dedicated to protecting our daily lives, combating misinformation, and ensuring high-quality patient care. Currently, clinicians are encouraged and trained to adopt a more holistic approach to patient care as research has demonstrated its effectiveness [8]. Nonetheless, there is little precedent for treating patients primarily by providing diet and lifestyle advice or providing preventive care by encouraging patients to consider modifiable risk factors, such as diet and nutrition. This might become a new and emerging area of medicine; therefore, although due scrutiny is expected, established institutions should be considering ways to foster this movement [9]. Although some physicians concentrate on preventive care, no distinct medical specialty specifically focuses on this area of practice. Furthermore, there are no experts in this field on any medical boards in the U.S. [5]. Despite the increasingly recognized importance of preventive medicine, there is a notable absence of leadership and direction in this area [10]. The lack of a systematic foundation within the medical field is reflected in the challenges faced by guiding agencies in promoting change and developing the necessary infrastructure.

The disconnect between knowledge and clinical practice regarding the application of evidence-based nutrition is becoming apparent. Several meta-analyses have identified problems in translational research and implementing dietary solutions. Although clinicians hesitate to propose dietary interventions for diseases, such as obesity and CVD, current research continues to elucidate the impact of dietary interventions on overall health and benefit the individual and their community [11]. Although curtailing negative lifestyle habits, such as unhealthy eating can limit the development of obesity and related disorders, there are numerous nutrient-rich healthy foods that can positively impact patients' health. For example, antioxidants like the polyphenols present in grapes can not only improve general health and reduce the risk for hypertension and CVD but also exert a neuroprotective effect against the cognitive decline caused by Alzheimer's disease and dementia [12].

### **Physician Attitudes and Preventive Care**

Healthcare professionals who work directly with patients are best placed to influence health behaviors. However, clinicians' perceptions of preventive care practices are largely unrealistic. In one study clinicians with > 10 years of experience or with specific training in providing CVD advice were most likely to provide care involving dietary advice. However, nearly all physicians strongly believed that their likelihood of prescribing such care had little to do with their prior medical education [13]. The reasons for physicians not discussing diet with their patients included concerns about patients' adherence, the perception of patients lacking education or financial resources, or a preference to focus on more pressing medical issues [6]. A pathway for implementing more educational initiatives throughout physician training is difficult in this framework. The concerted effort of many physicians and a push toward recognizing the entity of preventive care may be needed.

To change the status quo, physicians should take steps at an individual level to incorporate nutritional counseling into their medical practice. Accordingly, physicians can advocate the importance of dietary interventions and moderate the dissemination of accurate nutritional information [14]. An article in the *Journal of the American Medical Association* [1]. Describes six steps to incorporate nutrition counseling into daily practice, namely, validated screening tools, motivational interviewing, focusing on small behavioral shifts, using available resources, understanding that long-term behavioral changes take time, and the awareness that they should collaborate with other medical professionals to achieve the desired results. Thus, physicians can generate change at both individual and system levels, improving their patients' overall health and wellbeing.

### **Community Level Cost and Benefits of Nutritional Care**

Although the coverage and reimbursement policies of health insurance providers represent a significant obstacle for implement-

ting nutritional counseling, Medicare has expanded its coverage to include certain types of nutritional counseling, such as patients with obesity, diabetes, or renal disease. However, despite their availability, <1% of eligible Medicare beneficiaries receive these services [15]. If physicians were aware of the reimbursement possibilities of these services, they might consider offering nutritional counseling. Nonetheless, private health insurance coverage for these services is often inconsistent and unclear, which limits their availability. More clarity on private health insurance coverage could potentially motivate physicians to counsel all patients, not just those under Medicare.

A crucial question is who should decide how nutritional counseling is integrated into medical practice. Although healthcare providers have a significant role in emphasizing the importance of nutrition in preventing and managing diseases, the ultimate decision to incorporate nutrition into medical practice rests with healthcare policymakers and insurance companies [16]. These stakeholders must weigh the potential benefits of nutritional counseling against its associated costs, including the expenses of training healthcare providers, implementation of nutrition programs, and patients' reimbursement for nutrition-related services.

Health insurance providers may be reluctant to provide coverage for nutritional counseling due to concerns of increased spending. However, a cost-benefit analysis of current data indicates that the long-term improvements in overall patient health offset the initial costs of implementing these interventional measures [17]. For instance, diabetes and CVD are the two most costly chronic conditions burdening the U.S. healthcare system, comprising 14% of annual healthcare spending in 2016 [18]. Meanwhile, patients with type 2 diabetes highly benefit from early nutritional education, improving their blood glucose control, which decreases disease incidence, and thus, reducing long-term healthcare cost. Healthcare policymakers and insurance companies should therefore prioritize and invest in nutritional counseling as an essential component of medical care to improve patients' overall health outcomes, thereby reducing the burden on the healthcare system.

## Problems for Translational Research in Nutrition and Future Directions

Nutrition research has the potential to significantly impact clinical practice by improving our understanding of the effects of diet on health outcomes. Despite the wealth of scientific knowledge available, several hurdles exist in translating research into practical clinical applications. These include maintaining adherence among study participants in dietary clinical trials, which is difficult as interventions often require complex dietary or lifestyle modifications that can be challenging to sustain over a long period. Additionally, it is hard to monitor and record eating habits and differences in participant consumption even if meals are prepared and provided in a controlled setting. The dropout rates were 30%-81.5% in 13 studies evaluating the efficacy of weight loss interventions, with dro-

pout rates increasing with time [12]. A previous review on weight loss intervention adherence found adherence rates closer to 60% [3]. In comparison, similarly structured studies analyzing various lifestyle changes have less attrition, indicating specific issues related to nutritional and diet studies.

The attrition rates might be reduced by incorporating a trial period to assess potential participants' commitment before study initiation. Additionally, employing empathetic staff to provide structured dietary recommendations and ensuring the participants' understanding of the study could improve adherence. Further, in-house feeding studies provide an extremely controlled environment for rigorous intake measurement and have yielded historically significant discoveries [19,20]. However, these large-scale projects require extensive planning and major funding. Rapid collection of large-scale data can be achieved by allowing greater leniency in participant adherence; this would result in a larger margin of error that must be accounted for in the data analysis. In the future, the tradeoffs between collecting more data from a larger number of subjects versus higher quality data from a more adherent group must be assessed.

## Conclusion

Preventive care is invaluable in building a sustainable healthcare system and should be recognized as a therapeutic entity to determine a structural framework for procedural standards and quality assurance. Despite the demonstrated effectiveness of diet for several chronic diseases, implementation issues persist. This arises from a lack of medical education for both patients and physicians, inadequate institutional support, and challenges with translating research into clinical practice. However, these can be addressed at the physician and institutional levels. For example, physicians can implement the six steps proposed by the AMA into their daily practice while healthcare organizations and government agencies must make institutional changes, such as greater general insurance coverage, easier access to nutritious food, and community-level education programs to help combat health disparities. Moreover, decreasing attrition rates in dietary clinical trials by introducing a run-in period, maintaining regular contact with participants, and adopting a less stringent monitoring approach to reduce the burden on participants can help overcome the hurdles in translating research into clinical practice. Altogether, these changes will reduce the burden of chronic diseases through the promotion of healthy diet and nutrition worldwide.

## Author Contributions

E.R., A.Z., V.L., M.B. and Arielle Zur did the literature research and wrote the manuscript. V.L. and A.S. edited the manuscript. D.H. wrote, edited, and formatted the manuscript.

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## Conflicts of Interest

The authors declare no conflict of interest.

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