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Challenges And Opportunities For Nutrition Education And Training Among Health Care Professions: An Intraprofessional And Interprofessional Call To Action Across Nursing, Dentistry, Pharmacy, And Nutrition Disciplines

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Abstract

Nutrition plays a central role in disease prevention, management, and recovery, yet its integration into the curricula of health care professions remains inconsistent across the globe. Despite growing evidence linking dietary interventions to improved patient outcomes, the majority of health professionals—including nurses, dentists, pharmacists, and dietitians—receive limited formal education in nutrition science and counseling skills. This gap undermines the capacity of healthcare teams to deliver holistic and patient-centered care.

This paper explores the current challenges and opportunities associated with nutrition education and training within the health professions. It highlights variations in curricular structures, the lack of interprofessional collaboration, and barriers such as insufficient faculty expertise and institutional support. Conversely, emerging frameworks in competency-based and interprofessional education offer promising pathways to enhance nutrition competencies among healthcare providers.

By examining international and Saudi experiences, this review underscores the need for a unified approach that fosters both intraprofessional and interprofessional collaboration. Integrating nutrition competencies into medical, nursing, dental, and pharmacy programs is essential to align with global health priorities and the Saudi Vision 2030 goal of enhancing preventive healthcare and community well-being.

Keywords: nutrition education, healthcare professions, interprofessional collaboration, nursing, dentistry, pharmacy, dietetics, Saudi Vision 2030

Introduction

Nutrition is a cornerstone of public health and clinical medicine, directly influencing disease prevention, treatment efficacy, and patient recovery. Despite this well-established evidence base, healthcare education systems worldwide—including those in Saudi Arabia—continue to underemphasize structured nutrition instruction across medical, nursing, dental, and pharmacy programs (Crowley et al., 2019). As chronic diseases such as diabetes, cardiovascular disease, and obesity rise globally, the need for competent health professionals equipped with nutrition knowledge and counseling skills has become more urgent than ever (Ball et al., 2023).

In the healthcare context, nutrition education extends beyond dietary knowledge; it encompasses understanding metabolism, pharmacological interactions, behavioral counseling, and public health policy. However, studies have shown that most health professionals feel inadequately prepared to integrate nutrition into patient care (Hendrie et al., 2020). This gap weakens multidisciplinary teamwork, limits patient engagement, and reduces the effectiveness of preventive healthcare strategies.

From a Saudi Arabian perspective, the healthcare transformation under Vision 2030 places preventive medicine and community health at the center of national priorities. Yet, nutrition education remains fragmented across institutions. Nursing curricula often emphasize bedside care but provide minimal exposure to nutrition counseling; dental programs highlight oral health but overlook dietary impacts; pharmacy education prioritizes drug mechanisms while neglecting nutrient–drug interactions; and dietetics programs, though specialized, frequently operate in isolation from clinical teams (Al-Marzooqi et al., 2021). This siloed approach limits opportunities for interprofessional collaboration and reduces the collective impact of healthcare teams on patient outcomes.

Globally, initiatives such as the WHO Framework for Interprofessional Education and Collaborative Practice (2010) and the NNEdPro Global Centre for Nutrition and Health emphasize that nutrition should be a shared responsibility across all healthcare disciplines. Interprofessional education (IPE) and competency-based frameworks have been shown to enhance communication, improve patient safety, and align professional competencies around holistic care (Ray et al., 2022).

The present paper therefore explores the challenges and opportunities for strengthening nutrition education and training across healthcare professions. It advocates for an intraprofessional and interprofessional call to action, emphasizing collaborative curriculum development, shared competencies, and cross-disciplinary research. Through examining international models and Saudi healthcare experiences, this paper aims to provide actionable recommendations for integrating nutrition into the core of healthcare education and practice.

Theoretical Framework

A strong theoretical foundation is essential to guide the integration of nutrition education across healthcare professions. The effectiveness of nutrition training in nursing, dentistry, pharmacy, and dietetics depends on adopting educational models that promote both competency development and interprofessional collaboration.

Competency-Based Education emphasizes measurable outcomes that reflect learners' ability to apply knowledge, skills, and attitudes in real-world clinical contexts (Frank et al., 2010). In nutrition education, this means ensuring healthcare students not only understand macronutrient metabolism but can also assess patients' nutritional status, design dietary interventions, and communicate effectively with multidisciplinary teams.

CBE is particularly relevant in Saudi Arabia, where the Saudi Commission for Health Specialties (SCFHS) promotes national core competencies that include preventive health, patient safety, and effective communication (SCFHS, 2022).

The World Health Organization (WHO, 2010) defines IPE as situations where "students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes." This framework aligns directly with the paper's intraprofessional and interprofessional call to action. IPE encourages shared learning experiences between nutrition and other health disciplines, leading to improved communication, reduced duplication of care, and more holistic patient management (Reeves et al., 2016).

Effective nutrition education also requires understanding how students learn. Behavioral theories—such as Bandura's Social Cognitive Theory—highlight the importance of modeling and self-efficacy in translating nutrition knowledge into professional behavior (Bandura, 1997). Cognitive learning theories emphasize reflective practice, critical thinking, and problem-based learning as tools for building deep understanding and practical application.Within the Saudi context, these theoretical foundations support Vision 2030's strategic health objectives: strengthening preventive healthcare, developing national competencies, and improving population well-being.

The Saudi Arabian healthcare system is undergoing a profound transformation aligned with **Vision 2030**, emphasizing prevention, lifestyle medicine, and human-capacity development. Within this national agenda, **nutrition education reform** has become increasingly recognized as a vital component of sustainable health-care delivery (Saudi Ministry of Health [MOH], 2023). Despite the presence of well-established dietetics programs, nutrition education across other health professions—particularly nursing, dentistry, and pharmacy—remains fragmented, discipline-centered, and inconsistently implemented (Al-Marzooqi et al., 2021).

Recent national reports highlight the magnitude of nutrition-related health problems: approximately 59% of adults in Saudi Arabia are overweight or obese, while diet-related noncommunicable diseases (NCDs) such as diabetes and hypertension account for over 70% of premature deaths (World Health Organization [WHO], 2023). These statistics reinforce the need to train healthcare professionals who can deliver coordinated, preventive, and patient-specific dietary guidance. However, current curricula in Saudi universities often lack competency-based and interprofessional nutrition components, producing graduates with limited ability to apply nutritional knowledge in practice (Al-Qahtani et al., 2022).

Several universities have begun addressing this gap. For instance, King Saud University has incorporated elective modules on Clinical Nutrition for Nursing Practice, while Princess Nourah University has launched interprofessional workshops linking pharmacy and dietetics students in simulated patient-care scenarios. Similarly, Taif University recently initiated a pilot course integrating oral health and nutrition counseling for dental undergraduates (Al-Mutairi et al., 2022). These initiatives mark important progress, yet their scope remains limited, with variations in course length, content depth, and evaluation methods.

Expanding these models across the Kingdom requires stronger coordination among the Saudi Commission for Health Specialties (SCFHS), the Ministry of Education, and the Saudi Food and Drug Authority (SFDA). Establishing a national nutrition education framework that defines minimum learning outcomes for all healthcare disciplines would ensure standardization and quality assurance (SCFHS, 2022). Such a framework could mandate interprofessional case-based modules, shared clinical rotations, and outcome-based assessment tools.

Furthermore, the Saudi healthcare transformation emphasizes digital innovation and e-learning, providing a promising avenue for scalable nutrition training. The National e-Learning Center (NELC) can host accredited modules aligned with WHO's global nutrition competencies, while teaching hospitals can integrate **tele-nutrition clinics** supervised jointly by dietitians, pharmacists, and nurses. These digital pathways not only overcome geographical barriers but also enable continuous professional development (Laur et al., 2021).

Finally, incorporating community-based education within Healthy Cities and National Obesity Control Program initiatives can translate classroom learning into population-level impact. By involving students from different disciplines in joint outreach campaigns, Saudi universities can nurture a new generation of health professionals who view nutrition as a shared responsibility rather than a specialized task. This approach supports the Vision 2030 objective of building an empowered, prevention-oriented health workforce capable of addressing both clinical and community nutrition challenges.

Current Status of Nutrition Education in Health Professions

Nurses play a fundamental role in promoting nutrition and delivering patient-centered dietary counseling, yet multiple studies have shown that nutrition training in nursing curricula remains insufficient (Hicks et al., 2020).Diet and oral health are intrinsically connected, yet nutrition education in dental programs is often minimal and outdated. Dentists are uniquely positioned to address dietary behaviors that contribute to caries, erosion, and periodontal disease, but most receive less than ten hours of formal nutrition instruction during their entire training (Touger-Decker & Mobley, 2018).Pharmacists play an expanding role in lifestyle modification and chronic disease management, where nutrition knowledge is essential for understanding drug–nutrient interactions and micronutrient supplementation. However, most pharmacy curricula worldwide devote minimal time to nutrition-related topics (Patel et al., 2020).Nutrition and dietetics programs naturally contain the most extensive nutrition training, yet they often operate in isolation from other healthcare disciplines. This lack of interprofessional engagement limits the application of nutritional knowledge in multidisciplinary clinical teams (Ray et al., 2022).

Overall, nutrition education across healthcare disciplines suffers from fragmented delivery, inconsistent competency frameworks, and minimal interprofessional exposure.

Challenges in Integrating Nutrition Education

Integrating nutrition education into health profession curricula is an essential yet complex process. Despite international recognition of nutrition's critical role in disease prevention and management, academic institutions and healthcare systems face multiple institutional, pedagogical, and cultural barriers that limit effective implementation.

Challenges include lack of standardized curricula, limited faculty expertise, time constraints, institutional resistance, and gaps in local research (Crowley et al., 2019; Ball et al., 2023; Patel et al., 2020; Al-Qahtani et al., 2022). Addressing these barriers requires leadership, coordinated policy reform, and stronger interprofessional collaboration.

Opportunities and Best Practices

Global initiatives demonstrate that structured, competency-based nutrition education can be successfully implemented. Harvard Medical School's Nutrition Curriculum integrates nutrition across basic sciences and clinical rotations (Adams et al., 2015). The NNEdPro Global Centre promotes interprofessional education using blended learning modules (Ray et al., 2022).

Digital and simulation-based learning approaches improve access and engagement (Laur et al., 2021), while policy incentives from SCFHS and ETEC could help Saudi universities standardize nutrition training.

Community-based projects and partnerships with the Ministry of Health provide students with real-world nutrition experience and align academic training with Vision 2030 goals of preventive care and public health empowerment.

Intraprofessional and Interprofessional Collaboration

Collaboration enhances communication, teamwork, and shared accountability in nutrition care. Interprofessional learning methods include joint case discussions, simulation labs, and reflective group projects (Morris et al., 2021; Reeves et al., 2016).

These approaches build mutual understanding among healthcare disciplines and improve patient outcomes through coordinated interventions. Implementing interprofessional learning hubs in Saudi universities would unify teaching across nursing, dentistry, pharmacy, and nutrition, while hospital–university partnerships would reinforce collaborative clinical training.

Recommendations

- Develop a unified national nutrition competency framework for all health disciplines.
- Integrate nutrition objectives into accreditation standards by SCFHS and ETEC.
- Encourage collaboration among MOH, MOE, and SFDA for educational reforms.
- Embed interprofessional nutrition modules and simulations in all curricula.
- Offer professional development for faculty in IPE and nutrition pedagogy.
- Fund applied research linking nutrition education to clinical outcomes.
- Promote public health engagement through community nutrition initiatives.

Conclusion

Nutrition is a foundational pillar of health, yet its integration across healthcare professions remains fragmented. Strengthening nutrition education through interprofessional and competency-based frameworks will equip healthcare professionals with the skills necessary to deliver effective, preventive, and holistic care.

Within Saudi Arabia's Vision 2030 context, these reforms can transform the nation's healthcare education landscape—building a workforce that values nutrition as a shared responsibility, fosters collaboration across disciplines, and advances the Kingdom's commitment to health promotion and disease prevention.

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