

A higher education snapshot of nutrition degree programs in Iraq: implications for public health and nutrition practice

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Abstract

Purpose – Burdened by undernutrition, micronutrient deficiencies and overweight and obesity as a consequence of both internal conflict and the global nutrition transition, Iraq is in need of adequate public health nutrition education to mitigate nutrition-related outcomes and risks. To address nutrition-related health outcomes, trained nutrition professionals are warranted. This paper examines current nutrition-affiliated programs offered across post-secondary institutions in Iraq.

Design/methodology/approach – An electronic review of universities and colleges' websites, department webpages and academic programs' homepages and resources of all the private and public universities in Iraq was conducted to find programs related to nutrition, nutrition sciences and dietetics.

Findings – All identified programs belonged to the governmental sector, were administered and financed by the Iraqi Government and were under the purview of the Iraqi Ministry of Higher Education. The review highlighted a predominant focus on food sciences in agricultural departments rather than public health or clinical nutrition. Advanced education in topics such as human metabolism, medical nutrition therapy and public health nutrition are required to adequately address over- and undernutrition in Iraq.

Originality/value – The current state of public health and nutrition-related postsecondary education in Iraq warrants an increased emphasis on clinical and public health nutrition education. Despite a commendable focus on food science studies, the country's ongoing challenges with obesity, nutrition-related noncommunicable diseases and conflict-associated food insecurity signal an urgent need for balancing this focus with grounding in postsecondary training in public health nutrition.

Keywords Nutrition, Iraq, Higher education, Public health

Introduction

The Republic of Iraq is a predominantly Arabic-speaking country located in the Fertile Crescent of the Middle East (World Population Review, 2023). Based on a current United Nations (UN) consensus, Iraq has a current population of over 45 million while its capital city, Baghdad has a population of approximately 7 million (World Population Review, 2023; United Nations Population Fund, 2023). Decades of war and the ongoing internal conflict coupled with the COVID-19 pandemic continues to aggravate an already exhausted and highly volatile

public health infrastructure as well as negatively impacting nutrition-related health outcomes in the country (Lami et al., 2021; Mikhael and Al-Jumaili, 2020; Acharya et al., 2020; Ramadi and Atun, 2019; San Ahmed and Holloway, 2017; Haidar et al., 2017; Horton, 2014; Rawaf et al., 2014; Levy and Sidel, 2013; Gibson et al., 2012; Picotte and Campbell, 2010; Dodge, 2010; Basu, 2004; Harding and Libal, 2019). The burden of child malnutrition and food insecurity has been on the rise since the economic downfall associated with the 1980s Iran–Iraq war, the First Gulf War for the liberation of Kuwait and the multilateral UN sanctions regime during the 1990s (Muhialdin et al., 2021; Woertz, 2017, 2019; San Ahmed and Holloway, 2017; Gibson et al., 2012; Doocy et al., 2011). Malnutrition, a burgeoning global health problem, is defined as low or excess consumption of diet that can result in undernutrition, obesity and other diet-based noncommunicable diseases such as cardiovascular diseases, type 2 diabetes mellitus, or certain cancers (Sabeeh et al., 2022; Leppaniemi et al., 2023). Malnutrition in children makes them susceptible to infectious diseases thus increasing mortality rates and hindering their physical, mental and intellectual development (Peng et al., 2020; Haidar et al., 2017; Chalabi, 2013; Ghazi et al., 2013). The obesity epidemic in Iraq can be attributed to decreased physical activity levels, sedentary lifestyles, significant dietary changes and excess consumption of processed or unhealthy foods (Mansour et al., 2012). Malnutrition-related pathologies became apparent in the early nineties with signs of stunting and wasting among young children and adults in Iraq (Sabeeh et al., 2022). The percentage of underweight children below 5 years of age dropped from 25.8% in 1994 to 10.7% in 2002. Among these, approximately 13.2% were underweight in 2000 with 4.3% acute wasting and 13.0% chronic stunting (Chalabi, 2013). An estimated 5.8% of Iraqi children under the age of five are underweight and one in four suffered from stunted physical and intellectual development due to chronic undernutrition (Al-Ansari et al., 2021; Fateh et al., 2022; Ghazi et al., 2013; Hasanain et al., 2012). Based on the 2012 World Food Program (WFP) data, the nutritional needs of Iraq require the minimum dietary energy requirement (MDER) of 1727 calories per day/person (World Food Programme, 2018a; World Food Programme, 2018b). In the year 2011, approximately 5.7% of the Iraqi population lived under the required MDER (Mansour et al., 2012; Al-Ansari et al., 2021). Lafta and Kadhim (2005) conducted a cross-sectional study in random schools located within five districts of the Babil governorate (n = 8300) and reported a prevalence of 6% (n = 499) overweight students and prevalence of 1.3% (n = 111) obese students. The authors concluded that there was a strong association between childhood obesity prevalence and overweight and age, rural or urban residency, birth rank, appropriate breastfeeding rates during infancy, diet consumption and level of physical activity (Lafta and Kadhim, 2005).

The US invasion of Iraq in 2003 resulted in the collapse of the Iraqi healthcare system, public health infrastructure and healthcare professional training programs. In conjunction with civil and political conflict, weakened healthcare systems, the COVID-19 pandemic and a lack of health promotion programs, there have been increases in food insecurity, nutrition-related disease

burden, urbanization and substantial population growth (Amde et al., 2014; Al Hilfi et al., 2013; Moazzem Hossain et al., 2022). Burdened by undernutrition, micronutrient deficiencies and overweight and obesity as a consequence of both emergency situations and nutrition transition, Iraq is in need of adequately educated and prepared nutrition professionals, trained to mitigate malnutrition risks and other nutrition-related comorbidities (Woertz, 2019; Woertz, 2017; Hwalla et al., 2016; Al-Ani et al., 2020; Jasim et al., 2018; Joury et al., 2016; Mansour et al., 2012, United Nations Department of Economic and Social Affairs Sustainable Development, 2024). The UN's Sustainable Development Goals (SDG's) highlight the importance of proper nutrition, combatting hunger, access to clean water and maternal and child health as critical areas for action in addressing public health and nutrition-related disease burden (Kimokoti and Millen, 2016). Accordingly, building faculty skills and updating the curricula for health-worker preservice training within the Ministry of Higher Education (Al Hilfi et al., 2013), as well as providing educational opportunities for dietitians and public health nutritionists is required to address these areas of health care practice (Slawson et al., 2013; Kimokoti and Millen, 2016; Aggarwal et al., 2018). Human Resources for Health (HRH) plays a key role in providing universal and equitable healthcare coverage without which progress is stunted. It is established beyond doubt that strong health systems require adequate, well-distributed, appropriately trained, motivated, well supported and managed human resources (HR) (Amde et al., 2014). Contemporarily, it is critical to train qualified nutritionists, dietitians and health professionals in affiliated postsecondary educational institutions that aim to enhance nutrition and public health knowledge and skillsets; appropriately trained professionals in these areas can implement clinical and community intervention plans and advocate for policies supportive of health promotion to prevent disease onset and improve health outcomes (Mansour et al., 2022a; Mansour et al., 2022b; Bakri et al., 2020, United Nations Department of Economic and Social Affairs Sustainable Development, 2024).

This paper highlights the necessity of establishing partnerships between government and educational institutions to increase access to advanced nutrition education programs at affiliated Iraq universities or colleges for health professionals. Equally important is the educational training of nutrition professionals in creating culturally competent nutrition-based health information or interventions acceptable to Iraq residents. Therefore, the purpose of this paper is to review the nutrition-affiliated programs at postsecondary institutions and to evaluate access to the specialized knowledge and skills necessary to counter malnutrition in Iraq.

Methods

The Iraqi Ministry of Higher Education website publishes an inclusive list of colleges, universities and other higher education institutions (Iraqi Ministry of Higher Education and Scientific Research, 2023). To identify all the nutrition degree programs offered, study researchers performed an electronic review of universities and colleges' websites, department webpages and academic programs' homepages and resources of all the private and public universities in Iraq. Languages used for the electronic review included Arabic, French and English. The search was conducted between May and June 2023. Nutrition degree programs that are offered in various universities and colleges in Iraq and which require at least four years of completion were included. Community colleges and vocational schools were excluded from the review. Search terms and phrases of university departments and programs included: Nutrition, Clinical Nutrition, Medical Nutrition Therapy, Food Studies, Nutrition and Food Sciences, Program, Department, bachelor, Masters, PhD program, Doctoral studies. The obtained

information was organized according to whether the institution is private or public. The programs and degrees awarded were tabulated and mapped (Table 1; Figure 1).

Results

A total of 131 universities and colleges were identified across Iraq, including the Northern Kurdistan region, in both the private and public sectors. All identified programs, as displayed in Table 1, belonged to the governmental sector, administered and financed by the Iraqi Eight institutions were found to offer degree programs in Food Science or Food Science and Technology. Generally, all these universities offered Bachelor's degrees in these fields, with five of them also providing Master's programs and two offering Doctorate programs. The University of Baghdad, University of Basra, University of Kufa, Tikrit University and Al Qasim Green University all offered both Bachelor's and Master's degrees, with the University of Basra and Tikrit University additionally offering Doctorate degrees. The University of Mosul, University of Anbar and University of Duhok, however, only provided Bachelor's degrees.

This review of higher education and nutrition-related programs highlighted a clear focus on food sciences in agricultural departments rather than public health nutrition, human nutrition, or clinical nutrition. An exception to this was Al Qasim Green University, which had a more specialized focus with separate departments for Food Science and Technology and Food Health and Nutrition. This dual concentration could suggest a holistic approach towards the study of food systems, encompassing both the scientific and health aspects of the discipline.

Discussion

The information reviewed in this study provides insights into the current state of higher education in food sciences and nutrition in Iraq. Despite a focus on food sciences, our findings suggest that there is a need for an increased emphasis on and opportunities to specialize in public health nutrition and clinical nutrition. This is particularly true in light of recent statistics indicating ongoing nutrition challenges in the country (Global Nutrition Report, 2022, Slawson et al., 2013; Kimokoti and Millen, 2016; Aggarwal et al., 2018).

Understanding and applying nutrition knowledge to all aspects of health care is pivotal and requires training for health care professions to effectively assess dietary intake and provide appropriate guidance and treatment as well as address challenges facing public health nutrition (Slawson et al., 2013; Hwalla et al., 2016; DiMaria-Ghalili et al., 2014). With obesity rates and the increasing prevalence of cardiovascular diseases and diabetes requiring interprofessional nutrition education, the current emphasis of food science programs in Iraqi universities over nutrition raises significant concerns. To adequately prepare graduates to address the pressing nutritional challenges facing the country, and for those professionals to become integrated into the healthcare team, there appears to be a need for a more balanced approach to educating qualified public health and nutrition practitioners (Briggs Early and Stanley, 2018; Jortberg and Fleming, 2014; Beckingsale et al., 2016; Howatson et al., 2015; Bednarczuk and Czekajło-Kozłowska, 2019; Williams et al., 2019).

Iraq has made some progress in maternal, infant and young child nutrition targets, with a noted reduction in anemia among women and an improvement in exclusive breastfeeding rates for infants. There's also a progress towards child malnutrition targets, with stunting and wasting rates below the regional averages (Sabeeh et al., 2022). However, the country grapples with a high prevalence of obesity and diabetes among adults, with rates surpassing regional averages (Global Nutrition Report, 2022). Additionally, with the decades-long and current on-going

internal conflict and violence facing Iraq since the USA withdrawal, the need for emergency-preparedness-trained public health nutrition practitioners is warranted to address challenges of food insecurity and other nutrition-related challenges associated with conflict, violence and health (Acharya et al., 2020; Woertz, 2017, 2019; Harding and Libal, 2019; San Ahmed and Holloway, 2017).

Despite progress in some areas, diet-related noncommunicable diseases pose significant challenges. Free-sugar consumption levels, which have been linked to conditions such as obesity and diabetes, decreased dramatically during the United Nations sanctions and started to increase afterward (Joury et al., 2016). Adolescents are not immune to these nutrition issues; a study by Musaiger et al. (2014) showed widespread unhealthy dietary practices. The observations highlight the need for targeted interventions that address both undernutrition and diet-related noncommunicable diseases risk behaviors.

Educational programs and policies are also crucial public health interventions. Education is a fundamental social determinant of health and is among the 17 SDGs (Unterhalter, 2019). Basic educational expertise and skills are critical components of health (Hahn and Truman, 2015). Hence, programs that close gaps in educational outcomes between different populations are needed to promote health equity. This stresses the potential impact of enhancing nutrition education in Iraq's higher education institutions.

Despite progress in some areas, the issues of food security and diet-related noncommunicable diseases pose significant challenges. Iraq's ongoing conflict, political instability and oil-based economy have negatively impacted its food security status (Woertz, 2017).

In comparison to its regional neighbors, Iraq's higher education sector demonstrates varying degrees of emphasis on nutrition and food science studies. Specifically, Iraq houses eight institutions offering programs in Food Science or Food Science and Technology. This outperforms Palestine, with only five universities offering such programs (Mansour et al., 2022b) and Yemen, where only two institutions offer similar curricula (Mansour et al., 2022a). However, Iraq lags behind Jordan, which demonstrates a strong commitment to this field of study, with fifteen universities providing nutrition-related programs (Bakri et al., 2020). These contrasts highlight the diverse academic landscapes across the Middle East and the distinct national priorities in the field of nutrition and food science.

Comparing Iraq's nutritional status to other regional countries such as Palestine, Jordan and Yemen offer valuable perspectives for the nation's continued progress. Iraq, akin to Palestine, is grappling with public health and nutritional challenges due to dietary habits and economic and political instability. Interestingly, Palestine has more universities and colleges offering nutrition education programs (Mansour et al., 2022b), implying that the number of such programs doesn't necessarily translate to improved nutritional outcomes. Both countries, thus, need to emphasize not only the quantity but also the quality, effectiveness and accessibility of these programs. The comparison to Jordan presents an intriguing scenario. Jordan demonstrates substantial progress in its nutrition education programs, despite challenges stemming from regional conflicts, an influx of refugees and urbanization affecting its dietary practices (Bakri et al., 2020). It is therefore worth learning from the Jordanian experience while accounting for the unique sociopolitical environment in Iraq.

In comparison to Egypt, similar to Iraq's, Egypt's higher education faces challenges in offering comprehensive nutrition education. The nutrition training often embedded within various disciplines and curricula, such as human ecology, home economics and public health promotion (Aboul-Enein and Bowser, 2015). However, efforts are being made in Egypt to address these

gaps. For instance, the National Nutrition Institute in Egypt is striving to bridge the educational and professional gap in health curricula regarding nutrition training among nurses, physicians and other health professions (Aboul-Enein and Bowser, 2015). These efforts reflect the importance of not only increasing the number of programs but also improving their quality and relevance to meet the country's unique health and nutrition needs. This case may also provide valuable insights for Iraq, demonstrating the need for similar strategic efforts to enhance nutrition education and training to address its own nutrition-related health challenges. Drawing insights from these regional comparisons, it becomes clear that Iraq's approach towards public health nutrition should be multi-pronged, focusing on improved nutrition education, better recognition and integration of dietitians and tailored nutrition interventions (Williams et al., 2019; Bednarczuk and Czekajło-Kozłowska, 2019; Howatson et al., 2015; Beckingsale et al., 2016; Jortberg and Fleming, 2014; Briggs Early and Stanley, 2018). Such a comprehensive approach would likely serve to address the complex landscape of public health nutrition in Iraq more effectively.

Conclusion

In conclusion, the state of public health-related education in Iraq demands increased emphasis on postsecondary nutrition education. Despite a commendable focus on food science studies, the country's ongoing challenges with obesity and diabetes signal an urgent need for balancing this focus with a stronger grounding in nutrition (Global Nutrition Report, 2022; DiMaria-Ghalili et al., 2014).

To address the complex nutritional challenges effectively, Iraq needs a multi-pronged strategy that involves partnership with higher education institutions with neighboring Arab countries with more robust nutrition and public health training programs (Nuwayhid et al., 2021). This should encompass enhancing nutrition education, integrating nutrition professionals within the healthcare system, novel approaches to address conflict and violence-related nutrition health outcomes and implementing culturally tailored nutrition interventions. Such a comprehensive approach could significantly improve overall public health outcomes in Iraq as well as improving quality education SDG 4.

Limitations

It is worth noting that during this review of colleges and universities conducted across Iraq, some weblinks and sites were labeled undeterminable or inaccessible since little-to-no information was given on the nature of degrees offered. Further, information on availability of distance-based or virtual education was also a challenge to decipher in these institutions. Lastly, due to website inaccessibility or link errors, some institutions were not included for further review.

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Figure 1. Approximate location of universities offering nutrition-affiliated degree programs in Iraq

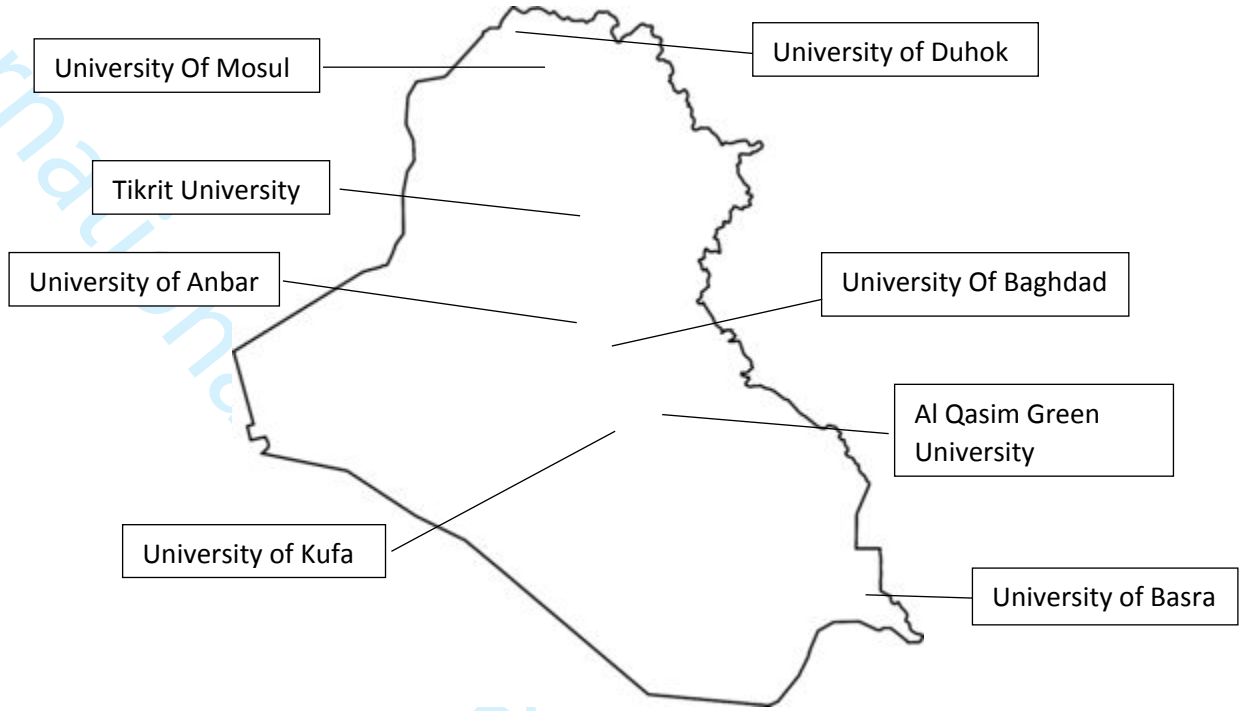


Table 1. List of nutrition-affiliated programs offered in selected universities in Iraq

University name	College/Department	Location	Private/Public	Program name	Degree(s) awarded
University Of Baghdad	College of Agricultural engineering sciences	Baghdad	Public	Food Science; Food Industry	Bachelor's and Master's
University of Basra	College of Agriculture	Basra	Public	Food Science	Bachelor's; Master's; Doctorate
University of Mosul	College of Agriculture and Forests	Mosul	Public	Food Science	Bachelor's
University of Kufa	Faculty of Agriculture	Kufa	Public	Food science	Bachelor's and Master's
Tikrit University	Faculty of Agriculture	Tikrit	Public	Food science	Bachelor's; Master's; Doctorate
University of Anbar	Faculty of Agriculture	Ramadi	Public	Food science	Bachelor's
Al Qasim Green University	College of food science: - Department of Food Science and Technology - Department of Food health and Nutrition	Al Qasim	Public	- Food Science and Technology - Food health and Nutrition	Bachelor's and Master's*
University of Duhok	College of agricultural engineering sciences	Duhok	Public	Food Science and technology	Bachelor's

* Only Dairy Science and Technology offered at Master's level