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Towards a Sustainable Food System: the role of Dietitians-Nutritionists

Hacia un Sistema Alimentario más Sostenible: El Rol de Dietistas-Nutricionistas

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ABSTRACT

The global food system faces increasing challenges due to health crises, geopolitical tensions, and climate change, leading to food insecurity, rising prices, economic instability and increasing prevalence of non-communicable diseases. To address these challenges, a transition towards a more sustainable food system that ensures food security, public health, and environmental preservation is paramount. The article outlines the need for food system transformation, highlighting structural vulnerabilities for which Dietitians-Nutritionists (D-N) can have a pivotal role. D-N emerge as key agents in this transformation due to their capacity in promoting healthy and sustainable diets at different stages of the food system. Their work spans various sectors, including clinical practice, public health, education, food industry, and research. However, for D-N to contribute effectively, they require more competence-building opportunities and enabling environments to do so. To enhance the role of D-N in this transition, three key areas for action are identified: strengthening political will and governance, improving sustainability education in dietetic training, and fostering supportive environments for professionals. By addressing these factors, D-N can drive systemic change, advocating for equitable food policies, sustainable dietary guidelines, and increased public awareness of food system sustainability. Their active involvement is crucial to creating a resilient and fair food system that prioritizes both human and planetary health.

Keywords: Sustainable Food Systems, Dietitians, Workforce, Sustainable Diets, Spain

RESUMEN

El sistema alimentario mundial se enfrenta a desafíos crecientes derivados de las crisis sanitarias, las tensiones geopolíticas y el cambio climático, que están provocando inseguridad alimentaria, aumento de los precios, inestabilidad económica y una mayor prevalencia de enfermedades no transmisibles. Para afrontar estos desafíos, resulta fundamental avanzar hacia un sistema alimentario más sostenible que garantice la seguridad alimentaria, la salud pública y la preservación del medio ambiente. El presente artículo expone la necesidad de transformar el sistema alimentario, poniendo de relieve vulnerabilidades estructurales en las que los dietistas-nutricionistas (D-N) pueden desempeñar un papel decisivo. Los D-N emergen como agentes clave

en esta transformación debido a su capacidad para promover dietas saludables y sostenibles en las distintas etapas del sistema alimentario. Su labor abarca diversos ámbitos, entre ellos la práctica clínica, la salud pública, la educación, la industria alimentaria y la investigación. No obstante, para que los D-N puedan contribuir de manera efectiva, es necesario ampliar las oportunidades de desarrollo competencial y generar entornos facilitadores que favorezcan su actuación. Con el objetivo de fortalecer el papel de los D-N en esta transición, se identifican tres áreas prioritarias de acción: reforzar la voluntad política y la gobernanza, mejorar la formación en sostenibilidad dentro de los estudios de nutrición y dietética, y promover entornos de apoyo para los profesionales. Abordar estos factores permitirá a los D-N impulsar cambios sistémicos, promoviendo políticas alimentarias equitativas, directrices dietéticas sostenibles y una mayor sensibilización pública sobre la sostenibilidad de los sistemas alimentarios. Su participación resulta esencial para construir un sistema alimentario resiliente y justo que priorice tanto la salud humana como la salud planetaria.

Palabras clave: Sistemas alimentarios sostenibles, dietistas-nutricionistas, fuerza laboral, dietas sostenibles, España.

KEY MESSAGES

- Current food systems are highly vulnerable, and dietitians can play a significant role in strengthening their resilience but they require more capacity-building opportunities and enabling environments to apply their expertise.
- Key challenges in transforming current food systems include the interconnected decline in global nutritional status and environmental degradation; factors related to trade, governance scheme, and the prevalence of food insecurity; and the loss of food system literacy.
- Dietitians can support the green transition across various areas of expertise, including food service, community and public health nutrition, clinical practice, academia, and the food industry.

INTRODUCTION

Food systems encompass all processes and actors involved in the food chain, from production to consumption and waste management¹. These systems are dynamic and complex, influenced by factors such as sociodemographic changes, urbanization, governance, and climate change¹. One of the main premises of a sustainable food system is to ensure food security and public health while preserving economic, social, and environmental stability for current and future generations¹.

However, in recent years, the high vulnerability of the food system has become evident due to its low capacity to respond to health crises (e.g., COVID-19), geopolitical crises (e.g., the Russian invasion of Ukraine, the US tax imposition to imported goods), and climate-related crises (e.g., torrential rains)², causing severe disruptions in the population. This has resulted not only in increased difficulties in accessing healthy food due to rising prices but also in a decline in earnings for those whose incomes depend on food production.

All of this has occurred within the context of a "Global Syndemic," characterized by the triple burden of obesity, malnutrition, and the negative impact of climate change³. People's health is severely affected by an imbalanced diet and the adverse effects of high temperatures and extreme weather events, with serious repercussions on food security³.

In Spain, the situation is particularly concerning due to its socioeconomic and geographical context. While 47.5% of the population lives with overweight or obesity⁴, in 2023, a quarter of the population was at risk of poverty or social exclusion, facing difficulties in meeting basic needs such as food. The underlying causes of this situation are structural and are associated with rising unemployment rates and increasing food prices⁵. Moreover, Spain leads the European Union in terms of the negative impact of climate change on public health, with an estimated 39.9 deaths per 100,000 inhabitants⁶.

This critical context, centred on the food system that sustains us and transcends political, social, and environmental dimensions, requires radical changes and a long-term vision to ensure the population has access to healthy food from a sustainable food system. In this regard, dietitians-nutritionists (D-N) emerge as key agents in promoting healthy and sustainable eating, given their inherent role in influencing people's diets at various levels of action.

This document synthesizes the Spanish Academy of Nutrition and Dietetics position statement on Sustainable Food Systems and aims to position D-N as fundamental actors in the promotion of healthy and sustainable eating across the different stages of the food system. To do so, it addresses food system challenges, identifies reference frameworks for transformation, and delineates the role of D-N in this process of change.

1. CHALLENGES OF THE FOOD SYSTEM

The need to transform the current food system to address global challenges has been explicitly highlighted by various authors and international organizations. To achieve this, we delve into the four critical points identified by Wood et al. (2023) to develop a more resilient food system⁷. These points have been adapted to fit within the scope of the present paper and reflect the challenges that directly concern D-N. As a result, the following three key challenges underpinning the current food system have been identified, each of which is thoroughly explained in the following subsections:

- The interrelationship between the decline in global nutritional status and environmental degradation.
- Trade, governance, and food insecurity.
- The loss of food system literacy.

1.1. THE INTERRELATIONSHIP BETWEEN THE DECLINE IN GLOBAL NUTRITIONAL STATUS AND ENVIRONMENTAL DEGRADATION.

Despite the existence of a clear agenda to achieve sustainable development, key indicators of the Sustainable Development Goals (SDGs) show that efforts are insufficient to preserve planetary health, which is understood as the well-being of people and the stability of the ecosystems on which they depend⁸.

The food system plays a crucial role in achieving optimal planetary health due to its environmental impact and its fundamental role in feeding the population. On one hand, it is a net consumer of natural resources, using up to 70% of potable water and half of the planet's

habitable land⁹. Apart from this, it is also responsible for one-third of global greenhouse gas emissions (GHGe) and 80% of biodiversity loss¹⁰.

On the other hand, despite producing more food than ever before, the high productivity of post-industrial food systems has not ensured adequate nutrition for the global population. In fact, recent analysis reveals that while current food systems are supplying enough calories for everyone, they are failing in providing sufficient nutritious foods, leading to a nutrient-health gap¹¹. The outcome of this imbalance is that one-third of humanity suffers from some form of malnutrition, with contexts where overnutrition and undernutrition coexist. In Spain, 53.8% of the population was overweight or obese in 2020, particularly affecting lower-income groups¹², while up to 13.3% faced difficulties accessing healthy food¹³. This nutritional crisis has severe public health implications: malnutrition and obesity are estimated to be responsible for 50 and 160 million disability-adjusted life years (DALYs), respectively¹⁴.

The interconnection between environmental and nutritional crises exacerbates food insecurity, as climate change directly impacts food production, availability, and cost, reducing the resilience of the food system against extreme weather events. Addressing this complex reality requires a systemic and integrative approach that promotes a healthy, sustainable, and accessible diet. The transition to a resilient food system requires innovative strategies and collaboration across multiple sectors, including D-N, who play a key role in designing food policies and practices that protect both human and planetary health¹⁵.

1.2. TRADE, GOVERNANCE, AND FOOD INSECURITY.

After World War II, an industrialized and intensive agricultural production model was established to address famine-related problems caused by conflicts. Later, during the 1980s and 1990s, market liberalization led to a new governance model dominated by wealthy countries, international agencies, and private organizations, laying the foundation for today's international food trade¹⁶. While this model has enabled mass food production and the supply of food to much of the global population, its structure has created significant vulnerabilities in global food security. The increasing concentration of power in a few corporations limits the ability to respond

to crises, weakens state legitimacy, and hinders the transformation of the food system into a more equitable and sustainable one¹⁷.

This power imbalance has repercussions at multiple levels, exacerbating inequalities throughout the food chain. First, producers face restricted conditions for production and distribution, increasing their vulnerability¹⁷. Second, food insecurity worsens¹⁸, especially during times of crisis or uncertainty, due to corporate control over food supply flows. While consumers may appear to have access to a wide variety of products, their ability to maintain a healthy and sustainable diet is limited by the availability dictated by large food industries, where unhealthy food and beverage dominate the market over more nutritious options¹⁹. This corporate influence on public health is known as the "commercial determinants of health" (CDH), defined as the systems, practices, and mechanisms through which companies impact health and equity²⁰. A clear example of this is the proliferation of obesogenic environments, particularly in low-income communities, where limited access to healthy options perpetuates health inequalities.

In response to these issues, social movements and government actions have emerged to regain control over food governance and strengthen regional food sovereignty²¹. However, altering the *status quo* requires reducing power imbalances between the public and private sectors to ensure that food system decisions prioritize people's health and planetary sustainability. This involves restoring food governance legitimacy to states and civil society, recognizing both the benefits and limitations of a globalized market. To achieve this, it is crucial to promote the transparent participation of independent actors free from conflicts of interest, advocating for collective well-being and a more resilient, fair and sustainable food system.

1.3. THE LOSS OF FOOD SYSTEM LITERACY.

Technological, economic, and transportation advancements in recent human history have enabled the food system to scale up, increasing the variety of available foods and improving accessibility. However, these advancements, combined with the rise of private actors throughout the food chain, have led to a greater availability of high-energy and low-nutrient dense products, fostering a disconnect between production and consumption²². This detachment results in a lack

of awareness about the sustainability of our food choices, ultimately preventing individuals—not only consumers but also decision-makers—from understanding where their food comes from or its social and environmental impact². To bridge the gap between production and consumption, greater transparency from the food industry is needed to address global challenges such as labour conditions, environmental impact, and food literacy among the general population.

The complexity of today's food system, involving multiple actors, linkages, and governance systems, makes it particularly challenging to advocate for more sustainable food systems. For this reason, authors of the Global Food Policy Report recommend that any action aimed at transforming the food system should position healthy and sustainable eating as its primary objective¹⁵. However, the difficulty lies in defining what constitutes a Sustainable and Healthy Diet (SHD).

According to Harrison et al., many authors and organizations have attempted to define SHD, including the widely referenced 2010 FAO definition²³. While these diverse approaches are a step forward in clarifying the path forward, they also create a lack of consensus that complicates decision-making.

The promotion of plant-based diets, where the consumption of animal-based foods is moderated in favour of plant-based proteins, appears to be a common denominator in many of these definitions²⁴. However, the increasing market penetration of ultra-processed plant-based products marketed as animal-product substitutes, combined with factors such as consumer preference for convenience, could have unintended consequences. A study based on data from the UK Biobank, with over 500,000 participants, found differing health effects between "healthy" and "unhealthy" plant-based diets²⁵. Healthy diets, characterized by the predominant consumption of nutritionally dense plant-based foods, were associated with a 16% reduction in mortality risk. Conversely, "unhealthy" plant-based diets, high in refined grains and low-nutrient density foods, increased mortality risk by 23%.

As Aleksandrowicz indicates²⁶, multiple diets could serve as candidates for improving environmental impact while maintaining health benefits. However, it is essential to construct a clear, robust, and evidence-based message to prevent confusion and subjective interpretations that hinder the adoption of healthier and more sustainable eating habits.

2. REFERENCE FRAMEWORKS

To address the challenges described in the previous section, food system governance relies on various reference frameworks that outline action plans to achieve sustainable development goals.

At the global level, the Sustainable Development Goals (SDGs)²⁷ define the roadmap for eradicating poverty, protecting the planet, and ensuring prosperity for all by 2030.

At the European level, in 2020, the EU Green Deal was approved, from which the Farm to Fork Strategy²⁵ was derived. These documents highlight the need to transition the current food system into a more sustainable one to achieve climate neutrality in Europe by 2050. One of the actions stemming from this deal has been the reform of the Common Agricultural Policy (CAP), which sets production standards at the European level and provides financial aid to the primary sector²⁸. However, Green Deal and Farm to Fork Strategy approaches appear to have been abandoned by the current EU government.

Along these lines, in 2021, Spain approved the Sustainable Development Strategy, which defines the challenges, accelerating policies, and priority actions necessary to meet the 2030 Agenda²⁹. More recently, Spain approved its National Food Strategy to support the transition towards a more resilient food system³⁰. At a more local level, in 2015, the Milan Urban Food Policy Pact was established, in which cities worldwide committed to developing sustainable food systems that protect the environment, ensure inclusivity, resilience, safety, and diversity, and guarantee access to healthy and affordable food for their populations³¹. Fourteen Spanish cities signed this pact, reflecting decision-makers' willingness to change and underscoring the essential role of cities in creating healthier and more sustainable food environments.

3. WHAT ROLE DO DIETITIANS-NUTRITIONISTS PLAY IN STRENGTHENING THE FOOD SYSTEM?

According to the International Confederation of Dietetic Associations (ICDA), D-N are professionals who apply food and nutrition science to promote health, prevent, and treat diseases, aiming to optimize the well-being of individuals and groups³². However, this definition,

formulated in 2014, needs updating to reflect emerging challenges and incorporate the systemic reasoning that should now define professional practice.

In this sense, D-N, in their role of promoting health, preventing, and treating diseases, must also ensure that their professional practice does not negatively impact the environmental and social dimensions of the food system³³. This means an expanded responsibility that integrates sustainability and equity aspects into daily practice.

The scope of action for D-N is diverse, spanning clinical settings, community and public health sectors, the food industry, academia, and research. Each of these areas has a different impact on the food system, making it crucial that professional practice considers the three pillars of sustainability: health, environment, and equity. The Dietetic Associations of Canada and Australia propose ways to integrate sustainability into each of these work areas^{34,35}, summarized in the following paragraphs.

Within the Clinical Setting, D-N should integrate food system sustainability into nutritional care processes, adopting a holistic approach that considers not only patient health but also the environmental and social impact of their recommendations. This means evaluating patients while taking environmental effects into account and designing dietary plans that promote both individual health and the sustainability of the food system.

In Community and Public Health Nutrition, D-N should collaborate with government authorities and other organizations to advocate for policies that support a sustainable food system. This includes promoting structural changes that reduce inequalities in access to healthy food. It also requires working closely with communities to engage them in transforming food systems and developing long-term strategies.

In Food Services, D-N can contribute by planning menus that are both healthy and sustainable, prioritizing suppliers who meet sustainability criteria and leading initiatives to reduce food waste. This approach also involves educating food services staff on the importance of integrating sustainability into their daily practices.

In the Food Industry, D-N play a fundamental role in implementing sustainability best practices, developing programs to raise employee awareness, and establishing ethical criteria to guide relationships with suppliers.

Within Academia, sustainability in the food system should be incorporated into the education of new professionals and live long learning of D-N in a cross-cutting manner, with academic leaders promoting greater awareness of this issue among faculty members.

Finally, in the Research Field, D-N should focus on generating knowledge that supports the transition toward more sustainable food systems. This requires not only studying the complexity of the food system from different perspectives but also learning from the experiences of other countries and cultures that have already made progress in this field.

4. WHAT DO WE NEED FOR DIETITIANS-NUTRITIONISTS TO BE PART OF THE CHANGE?

At this point, the question lies in how to ensure that D-N integrate sustainability principles into their professional practice. We start from a scenario in which sustainability training represents a small proportion of D-N education³⁶. Despite this, the interest and willingness to receive training in this field have been expressed by the D-N community³⁶.

For this to happen, and by once again applying a systemic perspective, actions must go beyond merely training and empowering professionals in this area. It is necessary to promote a work environment that supports and enables the promotion of sustainability in professional practice, regardless of the area of specialization.

Specifically, we identify the following areas for action:

- **Political Will and Multi-Stakeholder Engagement in Food Sustainability**

As several authors point out, resistance to change is rooted in political dynamics and power concentration, which prevent the implementation of strategic and transformative changes³⁷. New leadership is needed, applying rights-based approaches, citizen participation, and social mobilization. The need to move beyond free-market dominance is linked to a call for an ecological and participatory political economy.

To this end, D-N play a key role in analysing, evaluating, and advising decision-making processes in food governance, such as in identifying and addressing social inequalities related to food access, recognizing and managing critical vulnerabilities of ecosystems linked to the food system, and evaluating food policies from a sustainability and equity perspective.

- **Education on Sustainable Food Systems**

The integration of this dimension into university curricula remains very limited, as confirmed by research exploring the incorporation of sustainability principles into educational standards for D-N³⁸. Moreover, when training on this subject is provided, it is often brief and too superficial to empower students to include sustainability in their professional practice³⁹.

These findings highlight the importance of designing competency-based standards and curricula that are sufficiently comprehensive to capture the complexity of food systems and sustainable nutrition. To achieve this, it is necessary to build a shared vision as a profession that promotes structural changes, as well as to provide tools that facilitate the training and empowerment of D-N.

- **Building a Supportive Environment for the Profession**

D-N must work in environments that support their role in promoting sustainable food systems. To achieve this, the following elements are key:

- Multidisciplinary collaboration, integrating perspectives from different sectors.
- Thorough updates to dietary guidelines, ensuring they incorporate sustainability principles to strengthen the role of D-N and raise public awareness on this issue.
- Government involvement, fostering regulations and policies that facilitate the transition to sustainable food practices.

Additionally, drawing from MacKenzie et al.'s conceptual framework, Table 1 details the principles that can guide the transformational change required for D-N to act in favour of individual, population, and planetary health⁴⁰.

Table 1 Guiding principles to promote planetary, population and planetary health

Guiding Principles	Key Descriptors	Description and dietetic practice examples
AGENCY	Vision	– Vision to take our place in the collective movement
	Self-belief	– Self-belief and confidence as an individual, group or community
	Confidence	– Strengths-based approaches to continual professional development, e.g. through existing resources and organisations
	Strength	– Recognise own moral and ethical responsibility
ACTION	Responsibility	– Recognise own moral and ethical responsibility
	Start Shift Translate Achieve Commit	– Initiate or drive oneself and others toward urgent action for the 2030 Agenda (SDGs) and other international commitments (e.g., toward net-zero emissions): <i>For example, applying local, seasonal, and plant-based approaches, addressing food waste in all its forms, and reducing the consumption of ultra-processed foods that are low in nutrients.</i>
ASCENSION	Build	– Build success. Overcome and manage anxiety, barriers and obstacles
	Overcome	– Challenge the status quo and wicked problems
	Manage	– Progress, e.g.
	Challenge Progress	◦ <i>Smaller to bigger</i> ◦ <i>Personal to collective</i> ◦ <i>Local to global</i> ◦ <i>Simple to challenging</i> ◦ <i>Reactive to proactive</i>
ALLIANCE & ALLYSHIP	Support	– Engage in supportive, positive and safe community relationships
	Collaborate	– Contribute to transformative, systemic change through collaboration, representation and collective problem solving
	Represent	– Encourage, acknowledge and support First Nations peoples' knowledge and leadership
	Community Citizenship	– Be a global citizen
ADVOCACY & ACTIVISM	Disrupt	– Co-design transformational planetary health solutions. Support
	Co-design	– Aboriginal and Torres Strait Islander peoples for planetary health
	Transform	– projects and work they are prioritising
	Empower	– Apply own privilege, position and capacity to act and empower others
Urgency	– Advocate for equity and stand with and for disproportionately impacted communities	
		– Disrupt and act urgently including outside of own comfort level and norms, e.g. political action, protests, demonstration and lobbying

This table is an adaptation of Table 1 from the MacKenzie and co-authors publication⁴⁰

AUTHORS' CONTRIBUTIONS

Conceptualization: JM, EC; Writing - original draft: JM, EC; Writing - review & editing: All authors; Approved final version: All authors.

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CONFLICTS OF INTEREST

MM, EB, and GR work for the Academia Española de Nutrición y Dietética, an institution that is part of various platforms aimed at influencing public policy and promoting scientific activism on sustainability-related issues. Additionally, JM, EC, MM, EB, and GR are dietitians-nutritionists, and MM serves as President of the Consejo General de Colegios Oficiales de Dietistas-Nutricionistas in Spain. These circumstances may influence their perspective on the professional role of dietitians-nutritionists and their fields of practice.

DATA AVAILABILITY

Not applicable

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