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Traditional Food Practices and Nutritional Well-being among Low-Income Communities: Challenges, Opportunities and the Way Forward

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Abstract

Traditional food practices are embedded in the ecological, cultural, economic and social organisation of communities and can influence both food access and dietary quality. Among low-income households, locally available cereals, millets, pulses, leafy vegetables, fruits, roots, tubers, nuts, seeds and fermented foods may provide relatively accessible sources of energy and nutrients. Yet the nutritional value of a traditional food system cannot be inferred from its cultural status alone. Poverty, seasonal scarcity, repetitive staple-based diets, food taboos, gendered food allocation, inadequate sanitation, changing livelihoods and the growing availability of highly processed foods may limit the extent to which traditional knowledge translates into nutritional well-being. This narrative review synthesizes evidence on the relationship between traditional food practices, dietary diversity, nutritional adequacy and sustainable food systems, with particular attention to low-income and indigenous or local food contexts. The review uses published peer-reviewed literature and authoritative reports and explicitly distinguishes documented evidence from conceptual interpretation. Recent literature supports the nutritional potential of indigenous foods and millets, while also highlighting anti-nutritional factors, food-safety considerations, market barriers and the need for appropriate processing. Dietary diversity is treated as a central pathway linking food biodiversity to nutrient adequacy, but it is not considered a sufficient condition for good nutrition in the absence of equitable access, health services and safe environments. The paper proposes a nutrition-sensitive framework in which beneficial traditional practices are documented, scientifically assessed and strengthened, while potentially harmful restrictions are addressed through culturally respectful nutrition education. The central argument is therefore not to preserve tradition uncritically, but to build an evidence-informed bridge between traditional knowledge and contemporary nutrition science. Such an approach can support affordable diets, local food biodiversity, cultural continuity and resilient food systems without romanticising traditional diets or overlooking structural causes of malnutrition

Key-words - traditional food practices; nutritional well-being; low-income communities; dietary diversity; indigenous foods; millets; food security; food biodiversity; nutrition education; sustainable diets.

Introduction

Food practices are more than mechanisms for obtaining calories. They encompass the selection, cultivation, gathering, purchasing, processing, preparation, preservation, distribution and consumption of food and are shaped by ecological conditions, livelihoods, cultural memory, social institutions and household resources. Traditional food systems are therefore best understood as dynamic systems of knowledge and practice rather than as fixed collections of recipes. FAO and related scholarship have documented how indigenous and local food systems can connect biodiversity, cultural identity, food acquisition and nutrition, while also stressing the importance of documenting these systems before

knowledge is lost (FAO & CINE, 2009; Kapoor et al., 2022).

The relevance of these systems is particularly strong in low-income settings. Households with constrained purchasing power may depend on foods that are inexpensive, seasonal, locally produced, gathered or exchanged within social networks. In India, traditional dietary patterns have historically included cereals and millets, pulses, vegetables, fruits, oilseeds, animal-source foods and region-specific wild or semi-cultivated foods. The nutritional contribution of such foods, however, depends on the total dietary pattern, quantities consumed, processing methods, frequency of consumption and the individual's physiological needs. Contemporary evidence on indigenous foods in India

shows considerable diversity in nutrient composition, while also documenting anti-nutritional factors and variability in mineral bio-availability (Kapoor et al., 2022).

At the same time, food environments are changing. Urbanisation, migration, shifts in employment, market dependence, aggressive food marketing and the greater availability of packaged foods can alter what households purchase and prepare. Evidence from systematic reviews associates higher consumption of ultra-processed foods with less favourable health outcomes, although the strength and direction of individual associations vary by outcome and study design (Pagliai et al., 2021; Barbaresco et al., 2025). For low-income populations, the issue is especially complex because price, convenience, shelf life and taste can make commercially processed foods attractive even when household food security remains fragile.

The appropriate response is therefore neither a wholesale rejection of traditional practices nor their uncritical preservation. The more defensible position is nutrition-sensitive preservation: identify practices with demonstrated or plausible nutritional, ecological and cultural value; assess their safety and adequacy; modify practices that restrict nutrient intake; and create enabling conditions for communities to retain control over their food knowledge and resources. This paper develops that position through a narrative synthesis of the available literature.

Aim and Objectives

The overall aim is to critically examine how traditional food practices can contribute to, or constrain, nutritional well-being among low-income communities and to identify evidence-informed pathways for strengthening beneficial practices.

- To conceptualise traditional food practices as dynamic food-system knowledge rather than static cultural customs.
- To examine the nutritional potential of millets, pulses, leafy vegetables, indigenous fruits, roots, tubers, nuts, seeds and fermented foods.
- To analyse barriers including poverty, dietary monotony, food taboos, gender inequality, food-safety risks, climate change and changing food environments.
- To examine the relationship between food biodiversity and dietary diversity without assuming that biodiversity automatically produces nutritional adequacy.
- To propose a culturally sensitive framework linking traditional knowledge, dietary diversity, nutrition education, local food systems and supportive policy.
- To identify research gaps that should guide future community-level studies.

Methodology

This paper is a narrative literature review rather than a systematic review, meta-analysis or primary field study. The supplied manuscript was critically edited for conceptual consistency, evidentiary caution, structure and citation quality. Additional literature was identified through targeted searches of peer-reviewed and authoritative sources addressing traditional and indigenous food systems, dietary diversity, millets, fermented foods, micronutrient adequacy, food

insecurity and changing food environments. Priority was given to peer-reviewed articles with identifiable DOI records and to reports from recognised international organisations where peer-reviewed evidence was not the appropriate source.

The synthesis followed four stages: (1) identification of concepts and claims in the supplied manuscript; (2) verification and updating of major claims against relevant literature; (3) thematic synthesis around food biodiversity, dietary diversity, nutrition, culture, poverty, food environments and sustainability; and (4) editorial restructuring and rewriting to reduce unsupported generalisations. References were standardised broadly to APA 7th style. Because no primary dataset was supplied, the revised manuscript does not report prevalence estimates, sample sizes, effect sizes or statistical comparisons as if they were generated by the authors.

The review has important limitations. The narrative design does not provide the reproducibility or formal risk-of-bias assessment of a systematic review. Evidence from indigenous and low-income populations is also geographically heterogeneous, so findings should not automatically be generalised across communities. Finally, some claims concerning cultural beliefs and food taboos are context-specific and require community-level ethnographic or dietary research before intervention design.

Conceptualising Traditional Food Practices

Traditional food practices include culturally transmitted ways of producing, obtaining, preparing, preserving, sharing and consuming foods. They may involve cultivation of traditional crops, gathering of wild foods, use of seasonal produce, fermentation, sprouting and germination, drying, roasting, stone or hand processing, composite recipes, food sharing, and culturally defined rules concerning food and health. Importantly, the term “traditional” does not imply that a practice is ancient, unchanged or nutritionally optimal. Food systems evolve in response to markets, migration, technology, climate variability and public policy.

The knowledge embedded in traditional practices can include practical observations about seasonality, storage, palatability, digestibility and food combinations. FAO's documentation of indigenous food systems emphasises the interrelationship between food, culture, biodiversity and environment (FAO & CINE, 2009). In India, the literature similarly demonstrates substantial diversity in indigenous foods and associated knowledge (Kapoor et al., 2022). A useful research approach is therefore to document practices without assuming their benefits, followed by nutritional, food-safety and social assessment.

Poverty, Food Access and Nutritional Well-being

Low income affects nutritional well-being through several pathways: it reduces purchasing power, increases sensitivity to food-price changes, limits access to diverse foods and can increase reliance on inexpensive, filling staples. Food insecurity may coexist with diets that are energy sufficient but micronutrient poor. This is one reason why dietary quality and diversity deserve attention alongside total food quantity.

Dietary diversity is a useful proxy-related concept because consuming foods from multiple groups generally increases the opportunity to obtain a wider

range of nutrients. However, diversity indicators are not interchangeable with nutrient adequacy in every context; their validity depends on population, age group, indicator and dietary measurement method (Verger et al., 2021). A recent review among women of reproductive age in low- and middle-income countries further demonstrates the importance of dietary diversity for micronutrient adequacy while showing substantial contextual variation (Islam et al., 2023).

Nutritional well-being is therefore multidimensional. It depends not only on food availability but also on diet quality, safe water, sanitation, health services, care practices, nutrition knowledge, disease burden and intra-household distribution. Traditional foods can strengthen some of these dimensions, but they cannot substitute for health and social infrastructure.

Nutritional Potential of Traditional Foods

Millets and Traditional Cereals

Millets are relevant to this discussion because of their long history in food cultures, adaptability to relatively harsh agro-ecological conditions and diversity of culinary uses. Recent reviews describe millets as sources of dietary fibre, protein, minerals and bioactive compounds and discuss their potential contribution to food and nutritional security (Kumar et al., 2024; Sadh et al., 2024). Processing matters: decortication, parboiling, germination and fermentation can change nutrient availability and functional characteristics (Kaushik et al., 2021).

The manuscript's earlier formulation that millets are simply "nutritionally superior" has therefore been moderated. A more defensible interpretation is that millets can be valuable components of diverse diets, especially where locally adapted varieties are affordable and culturally accepted. Their benefits should be evaluated within complete diets rather than treated as a stand-alone solution to malnutrition.

Pulses and Legumes

Pulses contribute plant protein and other nutrients and have long been incorporated into cereal-based meals in many South Asian food traditions. Dishes such as dal and khichdi illustrate the culinary integration of cereals and legumes. Their nutritional role depends on portion size, dietary context, preparation and the availability of complementary foods.

Green Leafy Vegetables

Seasonal leafy vegetables can increase dietary variety and provide micronutrients and phytochemicals. Their contribution can nevertheless be limited by irregular availability, household preferences, cooking losses, portion size and the presence of compounds that affect mineral absorption. Documentation of local leafy foods should therefore include preparation methods, not merely species lists.

Indigenous Fruits, Roots, Tubers, Nuts and Seeds

Wild, semi-cultivated and locally managed foods can expand the food basket, particularly in communities with access to forests, commons or diverse smallholder production. The Indian indigenous-food literature reports wide variation in nutrient profiles and antinutrient content, reinforcing the need for food-specific rather than generic claims (Kapoor et al., 2022). Nuts and seeds may contribute energy, protein and fats,

but affordability and seasonality can determine actual household consumption.

Fermented Foods

Fermentation is an important preservation and culinary practice. Depending on the substrate and process, fermentation can modify flavour, texture, digestibility and the bioavailability of some nutrients or phytochemicals. Recent evidence reviews suggest potential health benefits of fermented foods but also emphasise heterogeneity among products and the need for stronger clinical evidence (Diez-Ozaeta & Juaristi-Astiazaran, 2022; Sadh et al., 2024). Thus, "fermented" should not be treated as synonymous with "healthy"; hygiene, salt, sugar, storage conditions and product-specific characteristics remain relevant.

Food Beliefs, Taboos and Intra-household Distribution

Food beliefs can protect cultural identity and sometimes support desirable practices such as seasonal eating, use of locally available foods or avoidance of unsafe products. They can also restrict nutrient-rich foods during pregnancy, illness, menstruation or childhood. Such restrictions are highly context-specific and should not be attributed to all traditional communities.

The nutritional significance of a belief depends on what is excluded, for whom, for how long and whether a nutritionally equivalent substitute is available. Nutrition education is more likely to be acceptable when it begins with community knowledge, identifies the nutritional function of restricted foods and negotiates feasible alternatives rather than dismissing beliefs as irrational.

Intra-household distribution is another important pathway. Food availability at household level does not necessarily mean equal access to food among members. Gender, age, work expectations and social norms can influence meal timing and portion size. These social dimensions should be considered alongside food composition when assessing nutritional well-being.

Changing Food Environments and Nutrition Transition

Traditional diets are not disappearing uniformly, nor are all changes necessarily harmful. Households may adopt new foods that increase variety, convenience or nutrient intake. The concern arises when diverse, nutrient-rich foods are displaced by monotonous diets or products that are energy dense but relatively poor in essential nutrients. Systematic reviews have identified associations between ultra-processed food consumption and several adverse health outcomes, while also noting methodological limitations and the complexity of dietary patterns (Pagliai et al., 2021; Barbaresko et al., 2025).

For low-income households, the food environment is shaped by price, availability, time, advertising, transport, cooking facilities and social acceptability. Consequently, nutrition-sensitive interventions should not simply tell households to "return to traditional foods." They should improve the affordability and convenience of nutritious local foods and strengthen the skills, infrastructure and markets needed to use them safely.

Traditional Food Practices and Dietary Diversity

Food biodiversity can provide a biological foundation for dietary diversity, but the pathway is not automatic. A community may possess many edible species yet

consume only a few because of seasonality, labour demands, preferences, market pressures, gendered access or lack of knowledge. Conversely, a relatively small number of foods can form a nutritionally adequate diet when they are combined appropriately and supported by fortified or supplemental foods where needed.

The strongest conceptual link is therefore: food biodiversity → availability and access → dietary use → dietary diversity → potential nutrient adequacy. Each link can be interrupted by poverty, social inequality, ecological change or food-safety constraints. This distinction is important because it prevents the romanticisation of biodiversity and keeps the focus on actual consumption and nutritional outcomes.

Sustainable Nutrition and Local Food Systems

Sustainable diets require simultaneous attention to nutritional adequacy, affordability, cultural acceptability and environmental consequences. Indigenous and local food systems may contribute to these aims through seasonal production, local resource use, crop diversity and knowledge of ecological conditions. Recent scholarship on indigenous food systems in India similarly highlights both their potential and the persistence of nutritional vulnerability in some biodiverse settings (Singh et al., 2021; Marak et al., 2026).

Sustainability should nevertheless be assessed rather than assumed. Wild-food harvesting may become unsustainable if demand increases; commercialisation can raise prices for local consumers; and climate change can alter the availability of traditional crops. Sustainable nutrition therefore requires community participation, ecological monitoring and attention to who benefits from the commercial promotion of traditional foods.

Major Challenges

Challenge	Nutritional implication	Priority response
Poverty and food insecurity	Limited purchasing power can reduce consistency and variety of nutritious food consumption.	Affordable local food baskets; social protection; local procurement.
Loss of traditional knowledge	Migration and generational change can weaken knowledge of local foods and preparation.	Community documentation; intergenerational learning; school activities.
Nutrition transition	Traditional foods may be displaced by convenient, highly processed products.	Improve access, affordability and convenience of nutritious local foods.
Food taboos	Restrictions may reduce access to nutrient-rich foods for particular groups.	Culturally respectful counselling and nutritionally appropriate substitutes.
Gender inequality	Women and girls may have less control over food and household resources.	Women's nutrition education, agency and decision-making support.
Food safety	Improper fermentation, storage or preparation may	Hygiene training, safe processing and context-specific risk

	introduce hazards.	assessment.
Climate change	Temperature, rainfall and ecological shifts can alter traditional crops and wild foods.	Agrobiodiversity conservation, climate-resilient crops and local seed systems.
Commercialisation	High-value marketing can make traditional foods less affordable to originating communities.	Community ownership, fair value chains and benefit sharing.
Evidence gaps	Many local foods lack standardised nutrient, safety and consumption data.	Participatory research, food composition studies and longitudinal evaluation.

Table 1. Major challenges and evidence-informed response areas. This is a conceptual synthesis, not a quantitative ranking.

Opportunities for Improving Nutritional Well-being

- Nutrition education should begin with foods and recipes that communities already recognise and can realistically obtain.
- Local food biodiversity should be documented together with seasonality, edible portions, preparation methods and consumption frequency.
- Women and adolescents should be supported as active decision-makers and knowledge holders, while avoiding the assumption that women alone are responsible for household nutrition.
- Community programmes can pilot low-cost recipes using locally available ingredients and evaluate acceptability as well as nutrient contribution.
- Schools can support intergenerational transmission of food knowledge through gardens, food-literacy activities and culturally appropriate nutrition education.
- Public programmes can consider locally nutritious foods for procurement or community feeding when safety, affordability, acceptability and nutritional value are established.
- Traditional processing practices should be scientifically evaluated for nutrient retention, bioavailability, antinutritional factors and food safety.

Proposed Tradition–Nutrition–Sustainability Framework

The framework below refines the original manuscript's five-stage model by adding enabling conditions. The central pathway is not linear in real life; feedback from markets, climate, policy and household resources can strengthen or weaken each stage.

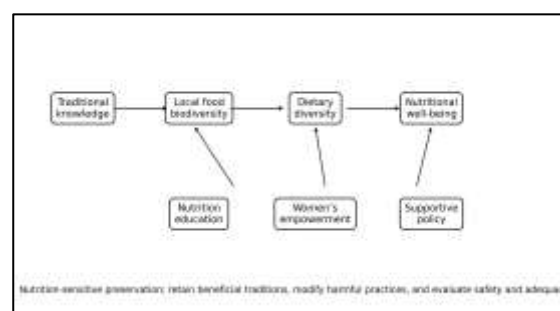


Figure 1. conceptual pathway showing how traditional food knowledge can contribute to nutritional well-being when it is supported by dietary diversification, nutrition education, women's empowerment, and supportive policy.

The main horizontal pathway is:

Traditional Knowledge → Local Food Biodiversity → Dietary Diversity → Nutritional Well-being

- **Traditional Knowledge**
This is the starting point. Communities possess knowledge transmitted across generations about locally available foods, seasonal food resources, traditional crops, recipes, preparation techniques, preservation methods, and food-use practices.
- **Local Food Biodiversity**
Traditional knowledge can help communities identify and utilise a wide range of local foods—such as traditional cereals, millets, pulses, vegetables, fruits, seeds, roots and other indigenous food resources. Greater use of locally available food resources can support food diversity.
- **Dietary Diversity**
When different local food groups are incorporated into the diet, dependence on a single staple food can be reduced. A more diverse diet has greater potential to provide a wider range of nutrients.
- **Nutritional Well-being**
Dietary diversity is ultimately linked to improved nutritional adequacy and overall diet quality. The diagram therefore presents nutritional well-being as the **ultimate outcome**, rather than assuming that traditional food practices automatically produce good nutrition.

Role of the three supporting factors

The three boxes underneath the main pathway show that the process needs additional support:

- **Nutrition education → Local food biodiversity**
Nutrition education can help communities recognise nutritionally valuable traditional foods and learn appropriate preparation and consumption practices.
- **Women's empowerment → Dietary diversity**
Women frequently have important roles in food selection, preparation and household feeding. Greater knowledge, decision-making capacity and access to resources can support more diverse household diets.
- **Supportive policy → Nutritional well-being**
Policies concerning food security, local agriculture, community nutrition programmes, traditional crops and social protection can create an enabling environment in which beneficial traditional food practices contribute to better nutrition.

“Nutrition-sensitive preservation: retain beneficial traditions, modify harmful practices, and evaluate safety and adequacy.”The paper is **not arguing that every traditional food practice should be preserved simply because it is traditional**. Some practices may be beneficial, while others—such as restrictive food taboos, inadequate dietary diversity or unsafe preparation practices—may require modification.

Therefore, the proposed approach is to:

Preserve what is beneficial + modify what is harmful + scientifically assess nutritional adequacy and food safety.

Evidence-to-Action Matrix

Resource/practice	Potential contribution	Caution	Programme implication
Traditional practice/resource	Potential contribution	Caution/condition	Action for programmes
Millets and minor millets	Dietary diversity; fibre and micronutrients; climate-resilient production	Nutrient profile varies; processing affects bioavailability and acceptability	Promote diverse preparations and appropriate processing rather than a single-food approach.
Pulses	Plant protein and dietary diversity	Affordability, preparation time and portion size affect use	Combine with cereals and vegetables in familiar dishes.
Seasonal leafy vegetables	Micronutrients and dietary variety	Availability and cooking practices vary	Document seasonal calendars and safe preparation.
Indigenous/wild foods	Biodiversity and potential nutrient contribution	Species-specific safety and antinutrient issues	Undertake food-specific nutritional and safety assessment.
Fermented foods	Preservation; possible changes in digestibility/bioavailability	Product-specific evidence; hygiene and salt/sugar levels	Validate process and safety before promotion.
Traditional recipes	Cultural acceptability and continuity	Some recipes may be nutrient-poor or energy-dense	Adapt recipes while preserving familiar taste and identity.
Food knowledge	Supports seasonal selection and preparation	Knowledge may be lost or unevenly distributed	Use participatory documentation and intergenerational learning.

Role of Nutrition Education

Nutrition education should function as a bridge between community knowledge and contemporary evidence. A culturally responsive approach does not require agreement with every traditional belief; it requires respectful engagement, clear explanation of nutritional consequences and feasible alternatives. The educator should ask what a practice is intended to achieve, identify its nutritional implications, and then co-design safer or more nutrient-adequate options where necessary.

- Identify locally available foods and their seasonal patterns.
- Distinguish culturally valued practices from practices that create avoidable nutritional risk.
- Promote dietary diversity rather than dependence on a single staple.
- Demonstrate affordable, time-efficient recipes using familiar ingredients.
- Teach safe storage, hygiene, fermentation and food preparation.

- Address pregnancy, lactation, infant and young-child feeding with evidence-based guidance that respects cultural context.
- Include men, women, adolescents, older people and community food leaders where appropriate.
- Evaluate whether education changes actual food access and consumption rather than measuring knowledge alone.

Policy Implications

The evidence supports a policy approach that treats traditional and indigenous foods as components of living food systems rather than merely as cultural artefacts. Policy should support documentation of local food biodiversity, research on nutritional composition and safety, smallholder production, local markets and appropriate public procurement. However, policies should avoid imposing a uniform “traditional diet” model on diverse communities.

A second priority is protection of community knowledge. When traditional foods are commercialised, intellectual and cultural ownership, benefit sharing and affordability should be considered. Commercial success should not result in the displacement of the very communities whose knowledge and resources created the food tradition.

Finally, traditional foods should complement rather than replace broader nutrition and social policies. Food access, maternal and child health, sanitation, education, social protection and gender equity remain necessary components of nutritional well-being.

Research Gap and Future Research Agenda

The existing literature provides strong conceptual support for the nutritional and cultural importance of traditional food systems, but several gaps limit policy translation.

- Community-level consumption data: Many studies document food species or recipes without measuring how frequently, in what quantities, and by whom foods are consumed.
- Longitudinal evidence: More prospective studies are needed to determine whether strengthening traditional food practices produces sustained improvements in diet quality or nutritional status.
- Food-specific nutrient and bioavailability data: Indigenous foods require standardised compositional analysis, including effects of traditional processing.
- Safety evidence: Fermented, wild and minimally processed foods require context-specific microbiological and toxicological assessment.
- Gender and intra-household pathways: Research should connect food allocation, decision-making and actual nutrient intake rather than treating households as homogeneous units.
- Food-environment research: More evidence is needed on how price, marketing, convenience and availability influence the replacement of traditional foods.
- Climate resilience: Research should identify which traditional crops and wild foods remain viable under changing rainfall and temperature regimes.
- Participatory methods: Communities should be involved in defining research questions, interpreting findings and determining how traditional knowledge is documented and shared.

- Implementation science: Studies should test which combinations of nutrition education, local production, markets, school programmes and social protection are effective and scalable.

Recommendations

- Document nutritious traditional foods at community and regional levels, including local names, seasonality and preparation methods.
- Assess nutrient composition, bioavailability and food safety before making strong health claims.
- Promote dietary diversity rather than dependence on any single traditional staple.
- Use culturally sensitive nutrition education to address food restrictions that create avoidable nutritional deficits.
- Strengthen women's and girls' access to nutrition knowledge, resources and decision-making while engaging the wider household.
- Support local cultivation, conservation and sustainable harvesting of nutritious food species.
- Use schools and community institutions as sites for intergenerational food and nutrition learning.
- Where evidence supports it, incorporate safe and acceptable traditional foods into nutrition and food-security programmes.
- Develop fair value chains so commercialisation does not reduce local access or transfer benefits away from source communities.
- Build multidisciplinary research programmes linking nutrition, food science, agriculture, anthropology, public health and environmental science.

Conclusion

Traditional food practices occupy an important intersection between nutrition, culture, livelihoods, biodiversity and sustainability. For low-income communities, local foods can provide accessible sources of nutrients and preserve culturally meaningful knowledge. Evidence from India and other settings supports the nutritional potential of millets, pulses, leafy vegetables, indigenous foods and selected fermented products, but it also shows why food-specific assessment is essential. Nutritional value varies with species, preparation, quantity, frequency of consumption and the wider diet.

The central lesson is that traditional does not automatically mean healthy, just as modern does not automatically mean unhealthy. The appropriate strategy is nutrition-sensitive preservation: retain and strengthen beneficial practices, modify practices that create avoidable nutritional risks, and address structural constraints such as poverty, food insecurity, unequal household distribution and unsafe food environments. Dietary diversity should be treated as a practical pathway rather than an abstract ideal, and local biodiversity should be connected to actual access and consumption.

Future progress will depend on collaboration among communities, nutrition professionals, agricultural researchers, food scientists, public-health practitioners and policy makers. When traditional knowledge is documented ethically, evaluated rigorously and integrated respectfully with contemporary nutrition science, it can contribute to affordable, culturally appropriate and more resilient food systems without

romanticising the past or overlooking the social determinants of nutritional well-being.

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