JOURNAL OF NUTRITION RESEARCH

Vol. 1 No. 4 (2026)

DIETARY DIVERSITY AND THE AFFORDABILITY OF HEALTHY DIETS: MEASUREMENT CHALLENGES AND PUBLIC HEALTH PRIORITIES

Review Article

Rafey Konain

BS English Literature, Institute of English Studies (IES), University of the Punjab Lahore.

Email: rafeykonain965@gmail.com

Abstract

Dietary diversity is widely used as an indicator of diet quality and, in some populations, as a proxy for micronutrient adequacy. However, nutrition studies differ substantially in the food groups included, recall periods, scoring rules, and interpretation of diversity scores. At the same time, the affordability of healthy diets remains a major constraint for many households, meaning that dietary choices cannot be understood through individual knowledge alone. This narrative review examines the relationship between dietary diversity, measurement practices, food affordability, and public-health nutrition priorities. Recent literature shows that dietary diversity measures vary in both definition and method, limiting comparison between studies and weakening evidence synthesis. International guidance identifies adequacy, balance, moderation, and diversity as core principles of healthy diets, while global monitoring continues to highlight the challenge of accessing affordable, nutritious food. The review proposes a practical research framework that combines standardized dietary-diversity measurement with indicators of food affordability, food access, and household context. It recommends transparent reporting of food groups, recall periods, scoring thresholds, and validation procedures, as well as policies that improve access to varied and nutritious foods. This article is a narrative review and conceptual synthesis; it does not present new participant data or original prevalence estimates.

Keywords: *dietary diversity; diet quality; healthy diet affordability; food security; nutrition assessment; public health; dietary measurement*

1. Introduction

A healthy diet supports growth, development, and the prevention of malnutrition in its different forms. Diet quality is multidimensional: people need adequate amounts of essential nutrients, a suitable balance among food groups, moderation in components associated with health risks, dietary variety, and food that is safe to consume. The World Health Organization (WHO) identifies adequacy, balance, moderation, and diversity as core principles of a healthy diet and emphasizes the importance of minimally processed and unprocessed foods (WHO, 2026).

Dietary diversity is often measured by counting food groups or individual foods consumed over a specified period. Such scores can be useful for population monitoring, but the underlying methods are not uniform. A 2026 scoping review in Nutrition Reviews mapped 322 dietary-diversity measures across the literature and found wide variation in definitions, food group composition, and scoring approaches, with relatively few measures reported as validated (Mapping Definitions, Measures, and Methodologies, 2026). This variability complicates comparisons between studies and limits the interpretation of results.

Affordability adds another dimension. Households may understand healthy eating recommendations yet lack the income, availability, time, storage, or cooking facilities needed to follow them. The FAO, IFAD, UNICEF, WFP, and WHO report on global food security highlights the persistent cost of healthy diets and the uneven burden of food insecurity across populations (FAO et al., 2025). Nutrition research therefore needs to consider not only what people consume, but also whether diverse, nutritious food is realistically accessible.

2. Review Approach

This manuscript uses a narrative review and conceptual synthesis of recent research and authoritative guidance on dietary diversity, diet quality, and healthy-diet affordability. Relevant material was identified through targeted searches for dietary-diversity measurement, food variety, healthy diet costs, food security, and public-health nutrition. The evidence was organized into themes concerning measurement, interpretation, affordability, and policy.

This is not a prospectively registered systematic review or meta-analysis. It does not claim exhaustive coverage of all databases, use duplicate independent screening, or calculate pooled effect estimates. No original survey, dietary recall, or participant-level dataset was collected. The article should therefore be interpreted as a narrative synthesis and proposed research framework.

3. Dietary Diversity: Concept and Measurement

3.1 What dietary diversity measures

Dietary diversity generally refers to the variety of foods or food groups consumed within a defined period. Whole-diet diversity may count items or groups across the diet, whereas within-group diversity focuses on variety within a category such as fruits, vegetables, grains, or protein foods. These measures can reflect different aspects of eating patterns and should not be treated as interchangeable.

A simple count is easy to communicate and can be useful in field settings, but it may treat nutritionally dissimilar foods as equivalent. A score can increase when additional foods are consumed even if those foods are high in sodium, free sugars, or unhealthy fats. Diversity alone therefore does not establish that a diet is balanced or healthy. Measures should be interpreted alongside adequacy, moderation, food safety, and other indicators of diet quality.

3.2 Variation in definitions and scoring

The 2026 scoping review of dietary-diversity measurement found extensive heterogeneity in terminology and operational methods, including counts of food items, counts of food groups, weighted scores, and proportional measures. This makes it difficult to compare scores across studies unless investigators report exactly how the measure was constructed (Mapping Definitions, Measures, and Methodologies, 2026).

At minimum, reports should identify the target population, dietary assessment tool, recall period, food group classification, treatment of mixed dishes, scoring method, threshold for adequacy if used, and evidence of validity. Researchers should also state whether a score was designed to assess nutrient adequacy, overall diet quality, or a specific dietary pattern. These constructs overlap but are not identical.

3.3 Dietary assessment and sources of error

Twenty-four-hour dietary recalls, food-frequency questionnaires, food records, and household food-consumption measures each capture different information. A single 24-hour recall may not represent usual intake because foods consumed vary from day to day. Food-frequency questionnaires can be affected by memory, portion-size estimation, and the way foods are grouped. Household-level data may conceal unequal food distribution among members. Measurement plans should match the research question and acknowledge these limitations.

4. Affordability and Access to Healthy Diets

The affordability of a healthy diet depends on food prices, household income, transport, local availability, storage, preparation costs, and competing household expenses. A nutritious food may be available in a market yet remain inaccessible to households facing high prices or irregular income.

Price shocks can also encourage substitution toward cheaper, energy-dense products, potentially reducing dietary variety.

The State of Food Security and Nutrition in the World 2025 report examined the effect of food-price inflation on food security and the affordability of healthy diets, emphasizing that persistent price pressures can undermine access, particularly among lower-income groups (FAO et al., 2025). These pressures mean that public-health recommendations should be paired with policies that improve the availability and affordability of nutritious foods.

Affordability does not imply that all healthy foods must be expensive. Depending on local conditions, pulses, beans, seasonal vegetables, whole grains, eggs, and other culturally familiar foods may offer practical options. However, the lowest-cost choices differ by location and season. Nutrition programmes should avoid generic cost claims and instead use locally collected price data and realistic household budgets.

5. Dietary Diversity, Nutrition Adequacy, and Health

A diverse diet can increase the likelihood that a person consumes a wider range of nutrients, particularly when diversity spans nutritionally complementary food groups. Yet the relationship between diversity and health depends on what foods are included, how frequently they are consumed, portion sizes, and the broader dietary pattern. Greater variety in energy-dense, nutrient-poor foods should not automatically be interpreted as improved diet quality.

WHO guidance recommends a healthy dietary pattern based on adequacy, balance, moderation, and diversity, with an emphasis on a variety of minimally processed and unprocessed foods and reduced intake of excess salt, free sugars, and unhealthy fats (WHO, 2026). This suggests that research instruments should ideally assess both the presence of diverse food groups and indicators of the quality or moderation of intake.

Dietary diversity can be especially relevant in population monitoring when it is used for a clearly defined purpose. For example, indicators designed to assess minimum dietary diversity in a specified population should be applied according to their validated definitions and should not be transferred to unrelated populations without justification. Clear distinctions among indicators improve interpretation and prevent overgeneralization.

6. Proposed Framework for Nutrition Research

Based on the reviewed literature, this article proposes an integrated framework that assesses dietary diversity together with affordability and context. The framework is intended to guide future studies rather than serve as a validated scale.

1. Define the construct: specify whether the study measures food variety, food-group diversity, micronutrient adequacy, or overall diet quality.
2. Use transparent dietary assessment: report the recall period, food classification, treatment of mixed dishes, scoring procedure, and missing-data rules.
3. Measure affordability: collect local prices for a defined healthy food basket and relate them to household resources using a stated method.
4. Capture access and context: document food availability, seasonality, transport, cooking facilities, household composition, and relevant cultural practices.
5. Assess multiple outcomes: consider dietary diversity, food security, relevant nutrition indicators, and the balance or moderation of the overall diet.
6. Report uncertainty: discuss recall bias, sampling limitations, seasonal variation, and the limits of causal inference in cross-sectional data.

Combining these dimensions can help explain why diversity scores differ across groups and whether observed differences reflect preferences, food environments, resource constraints, or measurement choices. Studies should predefine hypotheses and avoid interpreting cross-sectional associations as proof of causation.

7. Public-Health and Policy Implications

Nutrition policies should combine education with measures that make nutritious foods more accessible. Potential actions include improving the availability of affordable fruits and vegetables, supporting diverse local food production, strengthening school and community meal programmes, improving food labelling, and using targeted social protection where appropriate. The choice of intervention should reflect local evidence, costs, feasibility, and the needs of the affected population.

Researchers and public-health agencies should use standardized, clearly described indicators when monitoring dietary diversity. Standardization does not require a single score for every purpose; rather, it requires a transparent match between the measure and the question being asked. Different populations may need different tools, but comparisons should not be made unless definitions and methods are sufficiently compatible.

Public communication should avoid blaming individuals for dietary patterns that are shaped by price and access. Practical advice is more useful when paired with realistic examples, culturally relevant foods, and recognition of financial constraints. Policymakers should also monitor whether interventions improve access equitably or disproportionately benefit households already able to purchase a varied diet.

8. Research Priorities

- Develop and validate dietary-diversity measures with explicit constructs and standardized reporting.
- Compare simple food-group counts with richer measures of dietary quality and nutrient adequacy.
- Conduct longitudinal research on the relationship between affordability, dietary diversity, and health outcomes.
- Collect repeated price and dietary data to account for seasonality and inflation.
- Improve measurement of within-household differences in food access and consumption.
- Evaluate nutrition interventions using both dietary outcomes and indicators of cost, feasibility, and equity.
- Report uncertainty, missing data, and limitations clearly to support replication and synthesis.

9. Discussion

Dietary diversity is a useful but incomplete indicator. Its value depends on clear definitions, suitable measurement, and careful interpretation. The recent mapping of dietary-diversity measures demonstrates that a seemingly straightforward concept can be operationalized in many ways, making transparent reporting essential. At the same time, international food-security reporting shows that healthy-diet affordability remains a structural concern. These two issues are connected: a low diversity score may reflect constrained access as well as individual choice.

An integrated research approach should therefore measure food consumption and the circumstances that shape it. Standardized assessment improves comparability, while local price and access data help interpret results. Nutrition guidance should continue to emphasize dietary adequacy, balance, moderation, diversity, and safety, but research and policy should also consider whether households can realistically obtain the foods recommended.

The present article has limitations. It is a narrative synthesis rather than a systematic review, and the proposed framework has not been empirically validated. Future work should test its feasibility in

different populations, compare measurement approaches, and examine whether combining dietary and affordability indicators improves policy decisions.

10. Conclusion

Dietary diversity contributes to the assessment of healthy eating, but inconsistent definitions and scoring methods limit comparison across nutrition studies. Moreover, diversity cannot be interpreted independently of overall diet quality, food safety, affordability, and access. Nutrition research should specify what its diversity measure represents, report methods transparently, and combine dietary data with information on local prices and household constraints. Public-health action should pair clear nutrition education with policies that improve access to varied, safe, and nutritious foods. The proposed framework offers a practical starting point for more interpretable, comparable, and context-sensitive nutrition research.

References

Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme, & World Health Organization. (2025). The State of Food Security and Nutrition in the World 2025: Addressing food price inflation for food security and nutrition. FAO. https://www.fao.org/publications/fao-flagship-publications/the-state-of-food-security-and-nutrition-in-the-world/en

Mapping definitions, measures, and methodologies for assessing dietary diversity in the nutrition literature: Results of a systematic scoping review. (2026). Nutrition Reviews. https://doi.org/10.1093/nutrit/nuaf310

World Health Organization. (2026, January 26). Healthy diet. https://www.who.int/news-room/fact-sheets/detail/healthy-diet

World Health Organization, United Nations Children's Fund, & Food and Agriculture Organization of the United Nations. (2025). The State of Food Security and Nutrition in the World 2025: Key findings on dietary diversity and healthy-diet affordability. https://data.unicef.org/resources/sofi-2025/