

THE GLOBAL DIET QUALITY SCORE TOOLKIT

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About Intake

Intake is a Center for Dietary Assessment that aims to strengthen policies and programs to improve nutritional status by increasing the availability, quality, comparability, and use of reliable dietary data and metrics. We hope that the availability of valid, concise, effective diet-related metrics, along with Intake technology tools to support high-quality dietary data collection, can play an important role in helping actors to develop evidence-based nutrition and agriculture policies and programs to ensure healthy diets for all.

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INTRODUCTION

Today, our global food system is under tremendous pressure with the ongoing and cumulative impacts of the COVID-19 pandemic, the climate crisis, and the Ukraine crisis. We are at a turning point where system-wide failures need to be challenged and solutions need to be scaled.

Robust and up-to-date dietary data at the population level equip decision makers and program implementers to innovate, design, and implement responsible policies and programs for public health, the economy, and environmental sustainability. So often, regular data on diet quality, alongside data disaggregated by gender and population group, are not available, yet we must understand what people eat to assess, monitor, and evaluate progress towards achieving healthy and sustainable diets.

The Global Diet Quality Score (GDQS) and the GDQS app were created in response to the urgent need for responsible action to improve our global food and health systems. At *Intake*, we have created this GDQS Toolkit to aid decision makers, government workers, innovators, researchers, and anyone working in public policy to better understand the importance of dietary data, and to determine if the GDQS metric and the GDQS app suit the data needs in their context.





The GDQS Toolkit is composed of the following components:

DIET QUALITY SITUATION OVERVIEW – GDQS TOOLKIT RESOURCE #1

Why do we need to assess and track healthy diets to inform global- and country-level actions? Why are dietary data essential to health, economic development, and the environment? Read our high-level introduction to the GDQS metric and the GDQS app.

EVERYTHING YOU NEED TO KNOW – GDQS TOOLKIT RESOURCE #2

What is the design and intended use of the GDQS metric and the GDQS app? Find out how the GDQS tools were designed.

QUICK GLANCE: DIET QUALITY METRIC COMPARISON – GDQS TOOLKIT RESOURCE #3

An “at a glance” comparison of diet quality metrics. Visit our summary to see what benefits the GDQS and other diet quality metrics can offer.

GUIDED QUESTIONS: IS THE GDQS RIGHT FOR YOU? – GDQS TOOLKIT RESOURCE #4

Use guided questions to help determine if the GDQS metric and the GDQS app are well-suited to your data collection context and specific dietary data needs. Discover if the GDQS is right for you.

POLICY BRIEF WITH ADVOCACY TALKING POINTS – GDQS TOOLKIT RESOURCE #5

A brief for advocates, donors, researchers, program designers and implementers, and those working in public policy. Talking points for further GDQS advocacy are included.

LINKS TO LEARN MORE – GDQS TOOLKIT RESOURCE #6

A quick reference sheet with contact information and links to background documents. Read up on the GDQS metric and the GDQS app.

DIET QUALITY SITUATION OVERVIEW

Diet quality and why we should prioritize it now

What we eat is central to some of the world’s most pressing challenges and opportunities. Healthy diets contribute to individual well-being, economic growth, and planetary health and are at the heart of our global food system – a food system that has been built on many inequities and is facing continual and increased pressure in the face of COVID-19, climate change, and the Ukraine crisis.

This resource provides information on the **Global Diet Quality Score (GDQS)** and how policy makers, program designers, researchers, and others can use the GDQS when addressing domestic and international priorities.





Need for urgent action on diet quality amidst a global food system and climate crisis

Healthy diets improve health outcomes.

Healthy diets have the potential to save one in five lives each year.¹ At the same time, dietary changes can positively impact the environment by reducing greenhouse gas emissions – a third of which currently come from food systems – and by reducing the mounting pressure on water and land use.^{2,3}

Yet, we know surprisingly little about actual diets, especially those of people in low- and middle-income countries, which makes it difficult to change diets in ways that will positively benefit the health of people, the economy, and the planet. More and better data on what people eat are essential for designing evidence-based food and nutrition policies and programs across multiple sectors, including health, agriculture, trade, education, and social protection.

Today, malnutrition in all its forms affects one in three people.⁴ Globally, one in five children (<5 years old) are stunted due to poor nutrition, about 40% of adults are overweight or obese, and almost 30% of girls and women of reproductive age (15-49 years old) are living with anemia. At the same time, the global incidence of non-communicable diseases (NCDs) is increasing at an alarming rate.⁵ Cumulatively, poor nutrition has catastrophic impacts on economic growth, resulting in losses of approximately 11% of Gross National Product annually.⁶ Low- and middle-income countries are especially impacted by these multiple burdens of malnutrition.

1 [Healthy eating saves lives | Institute for Health Metrics and Evaluation \(2019\)](#)
2 [Global Nutrition Report \(2021\)](#)
3 [Crippa et al. \(2021\). Food systems are responsible for a third of global anthropogenic GHG emissions](#)
4 [Nutrition – A World in Crisis: Committee on World Food Security \(2017\)](#)
5 [Global Nutrition Report \(2021\)](#)
6 [Global Nutrition Report \(2014\)](#)

Diets, while not the singular cause of malnutrition, are a significant contributor to malnutrition in all its forms. Globally, poor diets are associated with a large and growing health burden and are estimated to be responsible for one quarter (26%) of all avoidable deaths among adults.⁷ Unlike other interventions that require repeated investments and are often not sustainable, investments in nutrition can be considered a “gift that keeps giving”: Not only the initial individual benefits, but so do subsequent generations.⁸

Diets can be shaped to significantly reduce greenhouse gas emissions and slow the climate crisis, helping governments and businesses meet climate targets.

The food we eat significantly impacts the environment and global planetary health through various pathways, including environmental pollution and heavy resource use. Recent estimates indicate that global food demand, including food loss and waste, contributes about 35% of all global greenhouse gas emissions. These environmental impacts have increased by up to 14% in less than a decade.^{10, 11}

To develop policies and programs to promote diets that are good for health, the economy, and the environment, we must understand what people eat. This requires increased dietary data collection and the use of appropriate metrics to assess, monitor, and evaluate progress towards achieving healthy and sustainable diets.

Diet quality is an equity issue; in almost all contexts globally, income and gender are among the key determinants of an individual’s ability to access a healthy diet. Girls and women have been the hardest hit by COVID-19, facing increasing levels of malnutrition as a result.⁹ They often eat last and less due to social norms, and across the world girls and women continue to be negatively affected by the impacts of climate change and the Ukraine crisis on food systems.

World leaders are facing many interrelated challenges today in the face of COVID-19, world conflict, and the climate crisis, such as rising fuel and commodity prices, significant hikes in the cost of living, the need to incentivize business growth, the growing health demands of populations, persistent inequities across gender and other socio-economic dimensions, and many more challenges undercut by the food system, such as higher rates of poverty and illness.

Measuring diet quality has the potential to catalyze evidence-based policies that can be used to spearhead economic and social action and create policy environments that work within environmental pledges and standards, such as net-zero targets. Diet quality is relevant for 11 Sustainable Development Goals (SDGs), all of which require progress in diet quality to meet globally agreed targets.¹²

7 [Global Nutrition Report \(2021\)](#)
8 [Ramakrishnan \(2020\). Impact of Nutrition on the Next Generation: The INCAP Longitudinal Study](#)
9 [Standing Together for Nutrition Consortium \(2021\)](#)
10 [Global Nutrition Report \(2021\)](#)
11 [Crippa et al. \(2021\). Food systems are responsible for a third of global anthropogenic GHG emissions](#)
12 [Global Panel on Agriculture, Food Security, and Nutrition policy brief on SDGs \(2017\)](#)





The Global Diet Quality Score

The first diet quality metric validated for global use and designed to reflect overall diet quality.^{13, 14}

The GDQS was developed to respond to the absence of robust, universally applicable methods for measuring diet quality. To date, both the lack of dietary data required to assess food consumption at the population level and the need for globally appropriate metrics to measure diet quality have hindered our knowledge on diet quality, ultimately slowing innovations towards healthier, sustainable diets.

While other metrics exist that reflect nutrient adequacy or the dietary risk factors associated with NCD, the GDQS incorporates both dimensions in its design and scoring method (foods that are healthy and foods that are unhealthy both contribute to the overall GDQS score).

This unique design of the metric provides the necessary framework to effectively assess, monitor, and evaluate population-level progress in achieving healthy diets. The GDQS scoring method includes categorical information about the quantities of healthy and unhealthy food groups consumed, which is critical to obtaining a better understanding of whether a diet poses risks for nutrient inadequacy or NCDs.

The GDQS offers policy makers, program designers, researchers, and others a method to understand what people eat, especially in a context where diets everywhere are changing rapidly with the increased consumption of highly processed, energy-dense



foods. An easy-to-use app has also been developed to facilitate the collection of GDQS data in population-based surveys. The GDQS app provides a novel, low-resource data collection method to enable the collection of high-quality dietary data at a large scale and on a routine basis.

In comparison, traditional approaches for collecting dietary data (e.g. quantitative 24-hour dietary recalls) are time- and resource-intensive¹⁵ and difficult to carry out on a large scale on a regular or frequent basis. The GDQS app was developed to enable the frequent collection of dietary data in large-scale population-based surveys, overcoming the lack of data altogether in some cases and making it possible to design national-level policies and programs to address real-time needs.

¹³ Miller et al. (2020). Defining diet quality: a synthesis of dietary quality metrics and their validity for the double burden of malnutrition.
¹⁴ The GDQS was released in 2021 after Miller et al. (2020) were unable to identify a single diet quality metric that addressed the double burden of malnutrition.
¹⁵ Coates et al. (2017). Overcoming Dietary Assessment Challenges in Low-Income Countries: Technological Solutions Proposed by the International Dietary Data Expansion (INDDEx) Project



HOW TO USE THE GLOBAL DIET QUALITY SCORE



GDQS data can be used for a variety of purposes, including:

- › Population-level assessment of diet quality
- › Tracking of population-level changes in diets across time
- › Within and cross-country comparison of diet quality
- › Assessment of change relative to targets at the population level, including tracking what specific population groups, such as women and girls, are eating
- › Tracking of population-level changes in response to programmatic and policy interventions



Policy makers, decision makers, business leaders, program designers, researchers, and others can use GDQS data to help generate wider impacts, such as:

- › Positive policy change across sectors, including but not limited to health, agriculture, social protection, education, and trade
- › Advocacy and policy related to food safety, food marketing, and front-of-label packaging
- › Policy and program change to target and reach girls and women, who are being disproportionately affected by inequities in food systems
- › Communication and advocacy to improve diet-related policies
- › Effective and targeted behavior change communications to improve healthy behaviors
- › Improved public-private partnerships, using real-time data to improve food value chains

The innovative yet simple construction of the GDQS metric along with the globally relevant design of the free-to-use GDQS app provide a practical, inexpensive, and easy way to measure diet quality globally. It is now possible for countries at both national and sub-national levels to assess, track, and monitor diet quality on a routine basis to facilitate responsible, sustainable, and health-giving policy and programmatic change.

The GDQS app is intended for use in population-based surveys and can be installed on any Android device. The tool is free to use, and technical support for the use of the app is currently available at no cost from *Intake*. When the GDQS app is used for data collection, the tabulation of the GDQS metric is automated, allowing for the population-level analysis of the data almost immediately.

EVERYTHING YOU NEED TO KNOW ABOUT THE GLOBAL DIET QUALITY SCORE

Why must diets be measured amidst other international and domestic priorities?

Today, our global food system is being challenged more than ever, and underlying structural inequities are being magnified by COVID-19, the climate crisis, and the Ukraine conflict. Diets that are good for health have a net benefit for the economy and environmental sustainability.

Designing policies and programs to build greater resilience in our food system while responding to ever-increasing pressures on health and social protection systems requires information on what people eat. Only then can we assess, monitor, and evaluate progress towards achieving healthy and sustainable diets, which in turn has the potential to catalyze progress across other domains of social and economic development.

The Global Diet Quality Score (GDQS) was designed with this in mind.





What is the Global Diet Quality Score?

The GDQS is the first diet quality metric that has been validated for global use that was designed to reflect overall diet quality.^{16, 17} The GDQS measures what people eat at the population level. An app has been developed to facilitate the collection of GDQS data in population-based surveys. The GDQS app is free and easy to use and provides an overall score of diet quality that has a standard meaning and allows for comparison across contexts.

What is different about the Global Diet Quality Score?

- › The GDQS is a diet quality metric appropriate for global use that provides the necessary information for effectively assessing, monitoring, and evaluating population-level progress towards achieving healthy diets.

- › The GDQS metric incorporates both nutrient adequacy and the risk factors associated with non-communicable diseases (NCDs) in its design and scoring method. This means that both foods that are healthy and foods that are unhealthy contribute to the overall GDQS score.
- › An app is available to collect data on the GDQS. The GDQS app was designed with ease of use in mind and with the objective of significantly streamlining traditional methods for collecting and analyzing dietary data.

16 Miller et al., Defining diet quality: a synthesis of dietary quality metrics and their validity for the double burden of malnutrition, 2020
 17 The GDQS was released in 2021 after Miller et al. (2020) were unable to identify a single diet quality metric that addressed the double burden of malnutrition.

What data components comprise the Global Diet Quality Score?

The GDQS is an entirely food-based metric consisting of 25 food groups: 16 healthy food groups, 7 unhealthy food groups, and 2 food groups (red meat, high-fat dairy) that are unhealthy when consumed in excessive amounts.

For 24 of the GDQS food groups, three ranges of quantity of consumption are defined (in grams/day) and used in scoring the metric: low, medium, and high. For one food group (high-fat dairy), four ranges of quantity of consumption are used: low, medium, high, and very high.

The scoring of each food group is based on whether the epidemiological evidence suggests that its consumption conveys benefits for or risks to overall health.

What data standards is the Global Diet Quality Score based on and how was it validated?

The development of the GDQS was informed by the global body of epidemiological evidence concerning what constitutes a healthy diet, and it has been validated to be sensitive to both nutrient adequacy and NCD risk outcomes related to diet.¹⁸

18 Bromage et al. (2021). Development and Validation of a Novel Food-Based Global Diet Quality Score (GDQS)
 19 Data from China, Ethiopia, Ghana, India, Kenya, Malawi, Mali, Mexico, Nigeria, Rwanda, Senegal, Tanzania, Uganda, and USA were used for the validation work.
 20 Bromage et al. (2021). Development and Validation of a Novel Food-Based Global Diet Quality Score (GDQS)
 21 Open recall allows for the identification of all foods and beverages consumed by the respondent as well as the analysis of the full diet, whereas recalls that rely on food groups or sentinel foods provide less information and do not allow for inference about what specific foods and beverages were consumed.

The GDQS was validated by carrying out secondary data analyses using data on non-pregnant, non-lactating women of reproductive age (15-49 years) from a total of 14 low-, middle-, and high-income settings across diverse regions of the world.^{19, 20} As part of this validation work, the strength of association of the GDQS was evaluated against nutrient adequacy related outcomes: energy-adjusted nutrient intakes, overall nutrient adequacy, and micronutrient biomarker data. The NCD outcomes of focus included metabolic syndrome, weight change, waist circumference change, and incident type II diabetes.

Validation of the GDQS for children 2-14 years of age is currently underway. In addition, GDQS-Meal and GDQS-Menu metrics are under development for use in institutional feeding settings.

How can I collect Global Diet Quality Score data?

Data for the GDQS can be collected using the GDQS app, a technology-assisted data collection tool that can be installed on any Android device. The GDQS app was developed to:

- › Provide a low-cost, streamlined method for collecting routine, population-level data on diets.
- › Use an open recall to collect data about all foods and beverages the respondent consumed during the reference period of 24 hours.²¹
- › Automatically classify all foods and beverages reported into the corresponding GDQS food group.



When using the GDQS app for data collection, information about the amounts of each food group consumed is obtained through a visual estimation method, which is easy for people to use (3D cubes of a specified size allow the respondent to estimate the amount consumed for each food group, which is then classified automatically by the GDQS app into the correct category of low, medium, or high consumption,²² depending on the size of the cube that was selected and the food group for which the consumption amount was estimated).

Collecting data with the GDQS app takes an average of 10-20 minutes per respondent, depending on the complexity and diversity of the diet. The tool is free to use, and technical support for use of the app is currently available at no cost from [Intake](#).

Alternatively, when time and resources allow, quantitative 24-hour dietary recall and comprehensive food frequency data can also be used to tabulate the GDQS.

Is the GDQS app easily adaptable for use in varied contexts?

The free-to-use GDQS app is designed for use in any country or context. The app comes with a global food database supplied by [Intake](#), which currently includes more than 5,500 items. Any food items that are reported during the data collection that are not found in the global food database can be added during the interview process. In addition, leading up to data collection, any foods identified as missing can be added to the food database and classified into the appropriate GDQS food group for use in that specific study. The GDQS app can be used in any language and is currently available in and is currently available in Bengali, English, French, Hausa, Hindi, Nepali, Spanish, Thai, and Yoruba.

How is the Global Diet Quality Score tabulated?

The GDQS metric is tabulated based on the quantity of consumption reported as consumed for each food group during the 24-hour reference period. The points associated with the healthy GDQS food groups increase for each higher quantity of consumption category. The points associated with the unhealthy GDQS food groups decrease for each higher quantity of consumption category. For the two food groups that are unhealthy in excessive consumption (red meat, high-fat dairy), the points associated with the GDQS food group increase up to a certain threshold of quantity of consumption, after which the points decrease.

The overall GDQS is a sum of the points across all 25 GDQS food groups, with the possible score ranging from 0 to 49. Population-based cutoffs have been identified for the GDQS to allow for reporting the percentage of the population at high risk (GDQS < 15), moderate risk (GDQS ≥15 and <23), and low risk (GDQS ≥ 23) of poor diet quality outcomes based on the information collected during the 24-hour reference period (see Table 1 for details on scoring and food groups).

Tabulation of the GDQS metric is automatic when using the GDQS app for data collection. If using other data sources (e.g. existing dietary data from an earlier survey), the foods and beverages reported as consumed need to be coded into the appropriate GDQS food groups and then tabulated based on the gram amount of each food group consumed.

Do I need advanced technical skills to tabulate the Global Diet Quality Score metric?

One of the benefits of the GDQS, like other simple diet-related metrics (e.g. the Minimum Dietary Diversity for Women (MDD-W)), is that it is entirely food-based and does not require a food composition table for analysis. This means that the calculation of the GDQS metric is greatly streamlined compared to other diet quality metrics that require more complex data (e.g. Alternate Healthy Eating Index (AHEI)), thus allowing for the expedient use of this multifaceted metric. Moreover, when the GDQS app is used for data collection, the tabulation of the metric is fully automated.

How can Global Diet Quality Score data be analyzed?

When the GDQS app is used for data collection, data on the actual foods and beverages consumed are collected and retained and are available for use in a variety of ways, providing important and useful information to guide programmatic and policy efforts to improve diet quality.

Two potential sub-metrics that can be tabulated from the GDQS are the GDQS+ and the GDQS-:

- › The GDQS+ is the total score across the 16 healthy GDQS food groups.
- › The GDQS- is the total score across the 7 unhealthy GDQS food groups plus 2 additional food groups that are unhealthy when consumed in excess (red meat, high-fat dairy).

The GDQS+ and GDQS- provide more targeted information about the relative contribution of healthy and unhealthy food group consumption to overall diet quality in a particular setting, while the overall GDQS metric provides an aggregate score of diet quality for a population and can be used to report the percentage of people at low and high risk of poor diet quality outcomes.

Because the GDQS app collects detailed information on actual foods consumed these data can be used for a variety of other purposes with no additional adaptation work to the survey context, or extra work on the part of the enumerator or respondent. For example, it is possible to analyze the consumption of specific food items (e.g. different refined grain products) or food groups (e.g. whole grains or red meat) to track trends over time and across different demographic groups. In addition, data from the GDQS app can be used to tabulate a variety of other food group classifications (e.g. FAO/WHO GIFT food groups) and metrics (e.g. MDD-W).



How can I advocate for the adoption of the Global Diet Quality Score

The GDQS offers potential benefits to organizations and government bodies working across the domains of food, social protection, economic, behavioral economics, and health policy.

Compared to other currently available diet quality metrics, the GDQS is unique for several reasons:

- › The GDQS is unique in its construction in that the design and scoring of the metric have been validated to be sensitive to both nutrient adequacy and the risk factors associated with NCDs.
- › Detailed information on specific foods and beverages – not just food groups – is collected through the GDQS app, representing important information for policy and program design.
- › GDQS data can be analyzed to report the percentage of the population consuming each GDQS food group (and the level of consumption) during the reference 24-hour period.
- › A global database of 5,500 foods and beverages comes pre-loaded on the free GDQS app, with each food and beverage pre-coded to the correct GDQS food group.
- › Tabulation of the GDQS is automated when using the GDQS app.
- › The GDQS app is free and ready for global use.
- › *Intake* is currently available to provide no-cost technical support for use of the GDQS app for data collection.

Please also see GDQS Toolkit Resource #1, which provides useful information to help build the case for how the GDQS meets the need for country- and global-level data on diet quality.

I want to calculate the Global Diet Quality Score and/or use the GDQS app. What should I do next?

The GDQS app is free to use and ready for global use. *Intake* is currently available to provide no-cost technical support for the use of the GDQS for data collection. For more details, please contact us at GDQS@FHISolutions.org

If you already have existing quantitative dietary data (e.g. 24-hour dietary recall) or plan to collect it soon, these data can be used to tabulate the GDQS. To facilitate this process, upon request, *Intake* can provide a database of global foods that have been assigned to the correct GDQS food groups, designed to facilitate GDQS tabulation. For more details, please contact us at GDQS@FHISolutions.org



TABLE 1: GDQS Scoring and Food Groups

Inclusion in Metric	Scoring Classification	Food Group	Categories of Consumed Amounts (g/day)				Points Assigned			
			Low	Middle	High	Very High	Low	Middle	High	Very High
GDQS+	Healthy	Citrus fruits	<24	24–69	>69		0	1	2	
		Deep orange fruits	<25	25–123	>123		0	1	2	
		Other fruits	<27	27–107	>107		0	1	2	
		Dark green leafy vegetables	<13	13–37	>37		0	2	4	
		Cruciferous vegetables	<13	13–36	>36		0	0.25	0.5	
		Deep orange vegetables	<9	9–45	>45		0	0.25	0.5	
		Other vegetables	<23	23–114	>114		0	0.25	0.5	
		Legumes	<9	9–42	>42		0	2	4	
		Deep orange tubers	<12	12–63	>63		0	0.25	0.5	
		Nuts and seeds	<7	7–13	>13		0	2	4	
		Whole grains	<8	8–13	>13		0	1	2	
		Liquid oils	<2	2–7.5	>7.5		0	1	2	
		Fish and shellfish	<14	14–71	>71		0	1	2	
Poultry and game meat	<16	16–44	>44		0	1	2			
Low-fat dairy	<33	33–132	>132		0	1	2			
Eggs	<6	6–32	>32		0	1	2			
GDQS–	Unhealthy in excessive amounts	High-fat dairy ^[1] (in milk equivalents)	<35	35–142	>142–734	>734	0	1	2	0
		Red meat	<9	9–46	>46		0	1	0	
	Unhealthy	Processed meat	<9	9–30	>30		2	1	0	
		Refined grains and baked goods	<7	7–33	>33		2	1	0	
		Sweets and ice cream	<13	13–37	>37		2	1	0	
		Sugar-sweetened beverages	<57	57–180	>180		2	1	0	
		Juice	<36	36–144	>144		2	1	0	
		White roots and tubers	<27	27–107	>107		2	1	0	
Purchased deep-fried foods	<9	9–45	>45		2	1	0			

Notes:

[1] Hard cheese should be converted to milk equivalents using a conversion factor of 6.1 when calculating total consumption of high-fat dairy for the purpose of assigning a GDQS consumption category.



QUICK GLANCE: DIET QUALITY METRIC COMPARISON

Without strong metrics of diet quality, it is difficult to design and implement programs and policies that respond to the climate crisis and the global epidemic of poor nutrition. Today, an array of diet quality metrics are available for use, yet there are important differences to consider when choosing a metric for a particular context. Key considerations include the time and resource requirements for data collection and metric tabulation, the validity of the metric for use in the given context, and the type of information and level of detail the metric provides about the diet consumed.

This resource provides summary information for six diet quality metrics:

- 1 Global Diet Quality Score (GDQS)
- 2 Global Dietary Recommendation (GDR) Score
- 3 Minimum Dietary Diversity – Women (MDD-W)
- 4 Nova-Ultra-Processed Food (UPF) Score
- 5 Alternate Healthy Eating Index 2010 (AHEI-2010)
- 6 Percent of Energy from Ultra-Processed Food (UPF).

The tables in this resource provide a “quick glance” view for the comparison of the metrics.

The six diet quality metrics of focus vary in complexity, as well as in relation to the type of data collected and the type of outcomes that can be tabulated (Figure 1).

Figure 1.

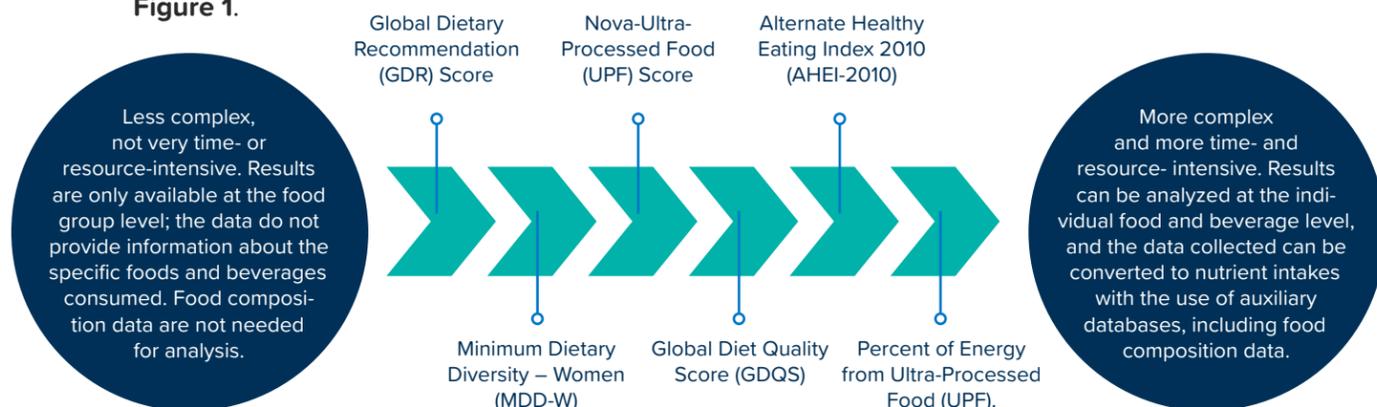




Table 2 provides an overview of the different aspects of each metric (e.g. what it measures, time/cost burden for data collection and tabulation). **Table 3** highlights differences that relate to more technical aspects of each metric (e.g. how data are collected, how data are tabulated). **Table 4** compares the different ways that data can be used and interpreted for each metric (e.g. validated to be sensitive to nutrient adequacy and/or diet-related non-communicable disease (NCD) risk outcomes).

Table 2: Overview of different diet quality metrics

Metric	What does it measure?	Type of data required to tabulate	Preparatory time before data collection ^[1]	Cost and time of data collection (H/M/L)	Time required to collect data per respondent	Respondent burden (H/M/L)	Data entry required?	Time to process and tabulate metric ^[8]	Population groups in validation studies	Validated for use in low-, middle-, and high-income countries
Global Diet Quality Score (GDQS) ^[2]	Consumption of food groups that contribute to nutrient adequacy and NCD risk reduction across a variety of global dietary patterns	Non-quantitative 24-hour recall of food and beverage consumption and quantitative food group recall ^[3]	2-3 months	M	~10-20 minutes	M	⊗	<1 day	Non-pregnant, non-lactating women (15-49 years old) in 14 low-, middle-, and high-income countries ^[9]	⊙
Global Dietary Recommendations (GDR) Score ^[4]	Alignment with the WHO global recommendations for healthy diets	Non-quantitative 24-hour food group consumption based on sentinel food and beverage recall	1-2 months	L	~5 minutes	L	⊙	<1 day	Men and women (15+ years old) in Brazil and USA ^[10]	⊗
Minimum Dietary Diversity - Women (MDD-W) ^[5]	Proxy for the micronutrient adequacy of women's diets	Non-quantitative 24-hour food group consumption recall	1-2 months	L	~5 minutes	L	⊙	<1 day	Non-pregnant women (15-49 years old) in 6 low- and middle-income countries ^[11]	⊗
Nova-UPF Score ^[6]	Number of sub-groups of ultra-processed foods consumed as a proxy for the dietary share of ultra-processed foods	Non-quantitative 24-hour ultra-processed food group consumption recall	1-2 months	L	~2-3 minutes	L	⊗	<1 day	Men and women (18+ years old) in Brazil ^[12]	⊗
Percent of Energy from Ultra-Processed Food (UPF) ^[7]	Percent of energy from ultra-processed food based on evidence that intakes high in UPF are associated with poor-quality diets and health risks	Quantitative 24-hour dietary recall survey	>6 months	H	~30-45 minutes	H	⊙	>6 months	Most demographic groups (excluding infants and toddlers) in 12 middle- and high-income countries ^[13]	⊗
Alternate Healthy Eating Index (AHEI) (2010) ^[7]	Consumption of foods and nutrients associated with decreased risk of NCDs	Quantitative 24-hour dietary recall or semi-quantitative food frequency	>6 months	H	~30-45 minutes	H	⊙	>6 months	Adults in 6 middle- and high-income countries ^[14]	⊗

Notes:

This table reflects information available as of 1 April 2022

[1] Includes translation of the food and beverage list, adaptation, and training of data collectors

[2] Assuming the GDQS app is used for data collection

[3] With the GDQS app, respondents provide an open recall of all foods and beverages consumed in the previous 24 hours and then quantify food and beverage consumption by food group using an innovative method to estimate the consumption amount

[4] Assuming the Diet Quality Questionnaire (DQQ) is used for data collection

[5] Assuming a list-based method with closed-ended questions or a sentinel food and beverage approach is used for data collection

[6] Assuming the Nova-UPF screener electronic questionnaire is used for data collection

[7] Assuming a traditional pen-and-paper quantitative 24-hour dietary recall is used for data collection; if a mobile app system such as INDDX24 is used, the time for data entry is zero and the time required for data cleaning and data processing is greatly reduced

[8] Not including the time required for deriving any necessary sampling weights for analysis of the survey according to sample design

[9] China, Ethiopia, Ghana, India, Kenya, Malawi, Mali, Mexico, Nigeria, Rwanda, Senegal, Tanzania, Uganda, and the USA (Bromage et al., 2021)

[10] Based on Herforth et al. (2020)

[11] Bangladesh, Burkina Faso, Mali, Mozambique, the Philippines, and Uganda (Arimond et al., 2010, Women's Dietary Diversity Project (WDDP) Study Group, 2017)

[12] Based on Costa and Monteiro (2021)

[13] Australia, Belgium, Brazil, Canada, Chile, Colombia, France, Mexico, Norway Taiwan, UK, and USA (based on a review of studies using food consumption data and showing statistically significant results, as reported in the reviews by Askari et al., 2020, Monteiro et al., 2019, and Pagliai et al., 2020)

[14] China, France, Iran, Singapore, the UK, and the USA (based on a review of studies with statistically significant results, as reported in the systematic review by MorzeJ et al., 2020, Schwingshackl et al., 2015, and Schwingshackl et al., 2018)



Table 3: Comparison of metric attributes

Metric	Open recall used to capture information on full diet ^[1]	App for data collection	Validated for use in low-, middle-, and/or high-income countries	Provides a quantitative measure of intake	24-hour recall period	Phone survey friendly	Ease of tabulation (L/M/H)	Food composition data and conversion factors required to tabulate metric
Global Diet Quality Score (GDQS) ^[2]	✓	✓	LICs, MICs, HICs	✓	✓	✗	L	✗
Global Dietary Recommendations (GDR) Score ^[3]	✗	✗	MIC, HIC	✗	✓	✓	L	✗
Minimum Dietary Diversity - Women (MDD-W) ^[4]	✗	✗	LICs, MICs	✗	✓	✓	L	✗
Nova-UPF Score ^[5]	✗	✓	MIC	✗	✓	✓	L	✗
Percent of Energy from Ultra-Processed Food (%UPF) ^[6]	✓	✓ ^[7]	MICs, HICs	✓	✓	✗	H	✓
Alternate Healthy Eating Index (AHEI) (2010) ^[6]	✓	✓ ^[7]	MIC, HICs	✓	✓	✗	H	✓

Notes:

This table reflects information available as of 1 April 2022

[1] Open recall allows for the identification of all foods and beverages consumed by the respondent as well as the analysis of the full diet, whereas recalls that rely on food groups or sentinel foods provide less information and do not allow for inference about what specific foods and beverages were consumed

[2] Assuming the GDQS app is used for data collection

[3] Assuming the Diet Quality Questionnaire (DQQ) is used for data collection

[4] Assuming a list-based method with closed-ended questions or a sentinel food and beverage approach is used for data collection

[5] Assuming the Nova-UPF screener electronic questionnaire is used for data collection

[6] Assuming a quantitative 24-hour dietary recall is used for data collection

[7] If using quantitative 24-hour dietary recall data for calculating these metrics, the INDDX24 Dietary Assessment Platform – designed for use in LMICs, but also appropriate for use in HICs – is available to provide a technology-assisted data collection tool and an automated system for data processing

Table 4: Data use and interpretation considerations across metrics

Metric	Clear cut-offs for ease of interpretation	Designed to be sensitive to nutrient adequacy outcomes	Designed to be sensitive to diet-related NCD risk outcomes	Designed to be sensitive to both nutrient adequacy and diet-related NCD risk	Provides data for the full list of foods and beverages consumed (i.e. not limited to providing only data on the food groups consumed)
Global Diet Quality Score (GDQS)	✓	✓	✓	✓	✓
Global Dietary Recommendations (GDR) Score ^[1]	✓ ^[2]	✗	✓	✗	✗
Minimum Dietary Diversity - Women (MDD-W) ^[3]	✓	✓	✗	✗	✗
NOVA-UPF Score	✗	✗	✓	✗	✗
Percent of energy from ultra-processed food (%UPF)	✗	✓	✓	✓	✓
Alternate Healthy Eating Index (AHEI) (2010) ^[4]	✗	✗	✓	✗	✓

Notes:

This table reflects information available as of 1 April 2022

[1] Assuming the Diet Quality Questionnaire (DQQ) is used for data collection

[2] Dichotomous scores exist but require further validation in additional country datasets before assuming global validity (Herforth et al., 2020)

[3] Assuming a list-based method with closed-ended questions or a sentinel food approach is used for data collection

[4] Assuming quantitative 24-hour dietary recall is used



GUIDED QUESTIONS: IS THE GLOBAL DIET QUALITY SCORE RIGHT FOR YOU?

To develop policies and programs that promote diets that positively impact public health and the economy and foster environmental sustainability, we must understand what people eat. This requires collecting timely information on the food people eat at the population level to assess, monitor, and evaluate progress towards achieving healthy and sustainable diets. The Global Diet Quality Score (GDQS) metric and GDQS app were designed to help achieve these goals.

The GDQS app allows for easier and more frequent collection of dietary data in comparison to traditional dietary data collection approaches and at a significantly lower cost. GDQS data collected through the app provide information about both healthy and unhealthy food consumption, as well as a summary measure of diet quality that is sensitive to both nutrient adequacy-related outcomes and the risk factors



associated with non-communicable diseases (NCDs), such as metabolic syndrome, weight change, waist circumference change, and incident type II diabetes.

THE GDQS METRIC AND GDQS APP COULD BE RIGHT FOR YOU IF YOU:

- Are looking for innovative ways to advance food systems, gender equity, and economic, health, and/or social protection policies, but are missing data on diet quality.
- Are interested in progressing innovations, policies, and projects in relation to nutrition and NCDs, but are held back by an absence of data on diet quality.
- Are interested in measuring diets in relation to policies or interventions in other sectors (e.g. agriculture, food security and food systems, the environment, social protection, education, etc.).
- Want to collect dietary data more frequently (e.g. annually, rather than every 5-10 years, as is often the case with large-scale quantitative dietary surveys).
- Want to measure both the healthy and unhealthy components of diets.
- Are looking for a low-burden dietary data collection approach where the interview takes only 10-20 minutes.
- Want a tool that automatically tabulates the results and does not require any post-fieldwork data entry, thus reducing the time required between data collection and results.
- Are interested in performing population-level assessments of diet quality, tracking population-level changes over time, conducting within and cross-country comparisons of diet quality, and tracking population-level changes in response to programmatic and policy interventions, amongst other uses.
- Are interested in rigorous innovation and advancing the field of dietary assessment.



DO YOU WANT TO USE A DIET QUALITY METRIC THAT IS REFLECTIVE OF BOTH NUTRIENT ADEQUACY AND DIET-RELATED NCD RISK?

✓ Yes, it is important that I can measure diet quality, as well as both healthy and unhealthy food consumption. The GDQS incorporates both nutrient adequacy and risk factors associated with NCDs in its design and scoring method. In other words, healthy and unhealthy foods both contribute to the overall GDQS score. This unique design of the metric provides the framework that is needed to effectively assess, monitor, and evaluate population-level progress in achieving healthy diets.

The GDQS metric provides an aggregate score of diet quality for a population and can be used to report the percentage of people at low and high risk of poor diet quality outcomes. GDQS data also allow you to tabulate two sub-metrics, namely the GDQS+ and GDQS-, which provide more targeted information about the relative contribution of healthy and unhealthy food group consumption to overall diet quality in a particular setting. Data collected with the GDQS data can also be used to tabulate the Minimum Dietary Diversity for Women score (MDD-W), Global Dietary Recommendations (GDR), and Nova-Ultra-Processed Food (UPF) score.

✗ No, I am only interested in measuring one aspect of diet quality (i.e. nutrient adequacy or risk factors associated with NCDs). The GDQS could still be a relevant choice as it is possible to tabulate the GDQS+ and GDQS-, which provide more focused information on healthy versus unhealthy foods. Alternatively, you might consider using the MDD-W, which was designed as a proxy metric for nutrient adequacy, or the GDR, which provides a measure of alignment with WHO recommendations for healthy diets.

DO YOU WANT TO ANALYZE DATA AT THE FOOD AND FOOD GROUP LEVEL OR AT THE NUTRIENT LEVEL?

✓ Yes, I am interested in analyzing data at the food and food group level in the target population. If you are interested in analyzing data on diets at the food or food group level and want to understand more about the types of foods people eat at the population level, then the GDQS is a great choice.

✗ No, I want to analyze the intake of specific nutrients (e.g. iron, zinc) that are likely to be under/over consumed in the target population. If you want precise quantitative information on macro- and micronutrients consumed, then it will be necessary to collect a full quantitative dietary survey using a 24-hour dietary recall, quantitative food frequency questionnaire, or weighed food record. These types of dietary data will also require the use of a food composition table and appropriate conversion factors to convert the foods consumed into their nutrient equivalents.

ARE YOU LOOKING FOR A DATA COLLECTION TOOL THAT COULD BE DEPLOYED IN THE NEXT THREE MONTHS?

✓ Yes, I have about three months before the survey. The GDQS app may be a good option for you, as about two to three months of preparatory time is advised. This time is primarily used to prepare the translations of the names of foods and beverages in the global food database. Where translation is not needed, the amount of preparatory time is significantly reduced. The app comes with a global food database of more than 5,500 foods ready to use and pre-coded with all foods and beverages matched to their appropriate GDQS food group.

✗ No, I want something that I can use immediately. In this case, you could consider using the Nova-UPF screener to tabulate the Nova-UPF score, the Diet Quality Questionnaire (DQQ) to tabulate the GDR score, or the MDD-W model questionnaire to tabulate the MDD-W, if these tools have already been adapted and translated for use in your survey context. However, unlike the GDQS, these metrics do not provide a unified picture of diet quality as validated against nutrient adequacy and risk factors related to NCD outcomes.



ARE YOU INTERESTED IN COLLECTING YOUR DATA ON A TABLET USING AN EXISTING APP?

✓ Yes, I want to collect the data using an app on a tablet. The GDQS may be a good option for you. The GDQS app is free to use, and technical support for use of the app is currently available at no cost from [Intake](#). The GDQS requires in-person interviews to facilitate the accurate estimation of quantities consumed at the food group level. When the GDQS app is used for data collection, there is no need for data entry and tabulation of the GDQS metric is automated, enabling the population-level analysis of the data collected almost immediately.

✗ No, due to COVID or other concerns I cannot conduct interviews in person. The Nova-UPF screener (to tabulate the Nova-UPF score), the Diet Quality Questionnaire (DQQ) (to tabulate the GDR score), or the MDD-W questionnaire (to tabulate the MDD-W) might be better options for you, depending on your survey objectives, as these tools are more suitable for administration via phone.



ARE YOU INTERESTED IN ROUTINE ASSESSMENT AND TRACKING TRENDS AND CHANGES IN DIET QUALITY?

- Yes, I want to collect information annually on diet quality in the target population.** Using the GDQS app to collect data on the GDQS is a good option to consider given the low cost and the comprehensive nature of the dietary data collected. We particularly encourage governments who are currently conducting nationally representative quantitative 24-hour dietary recall surveys every 5-10 years to consider collecting the GDQS in between survey rounds. These data will ensure that you have more timely information that allows for better-designed policies and programs that can respond to changes in consumer choices, the food environment, and the greater food system.
- No, I just need a one-time cross-sectional measurement of diet quality in the target population.** Using the GDQS app to collect data for the GDQS metric is still a great option to consider given that the app is free and easy to use for data collection, does not require a high time burden from the respondent, and provides a comprehensive, multi-dimensional assessment of diet quality at the population level.

ARE YOU INTERESTED IN COLLECTING DATA ON DIETS BUT HAVE LIMITED TECHNICAL TRAINING AND/OR RESOURCES TO CONDUCT A FULL QUANTITATIVE 24-HOUR DIETARY RECALL?

- Yes, that sounds like me.** If you have limited resources and/or experience with quantitative dietary recall and are interested in measuring diet quality, then the GDQS app and associated metric may be a good fit for you.
- No, my situation is different; I have adequate resources and technical knowledge.** It sounds like a quantitative dietary survey, such as a 24-hour dietary recall, might be worth considering. Check out the [INDDEX24 Dietary Assessment Platform](#) and please contact INDDEX24@FHISolutions.org for more details.

ARE YOU INTERESTED IN ANALYZING EXISTING QUANTITATIVE DIETARY DATA TO TABULATE THE GDQS?

- Yes, I have quantitative dietary data from previous surveys that I would like to use to tabulate the GDQS.** Since you already have the quantitative dietary data, you are in a good position to tabulate the GDQS. [Intake](#) can provide guidance on this process, as well as access to a global food database that has been pre-coded with the GDQS food group classifications to aid in the tabulation.
- No, I do not have existing quantitative dietary data.** If you do not already have quantitative dietary data available, you could consider collecting primary data using the GDQS app, which has been designed to streamline the data collection and tabulation process. The GDQS app is free and ready for global use. [Intake](#) is currently available to provide no-cost technical support for use of the GDQS in data collection. For more details, please contact us at GDQS@FHISolutions.org.



ARE YOU STILL UNSURE OF THE BENEFITS OF USING THE GDQS?

- Yes, I am still unsure whether the GDQS is right for me.** Check out the Diet Quality Comparison Tables (GDQS Toolkit Resource #3) to see the differences between the various diet quality metrics and the comparative advantages of the GDQS. To receive access to a demo version of the GDQS app to explore it further, please contact us at GDQS@FHISolutions.org.
- No, the GDQS is exactly what I was looking for to measure diet quality.** The GDQS app is free and ready for global use. [Intake](#) is currently available to provide no-cost technical support for use of the GDQS for data collection. For more details, please contact us at GDQS@FHISolutions.org.



THE GLOBAL DIET QUALITY SCORE: POLICY AND ADVOCACY BRIEF

This brief is for advocates, donors, researchers, program designers and implementers, and those working in public policy across health, nutrition, food, climate, and social and economic policy. It will equip you with information about the Global Diet Quality Score (GDQS) – the first metric validated for global use and designed to reflect overall diet quality.

Why do we need to measure diets?

Today, healthy diets have the potential to save one in five lives each year,²³ as well as to positively impact the environment by reducing greenhouse gas emissions. By 2022, the environmental impacts from food systems have increased by up to 14% in less than a decade.^{24, 25}

Since our global food system has been built on many inequities, it is facing continual and increased pressure in the face of COVID-19, climate change, and the Ukraine crisis. What this means for policy makers is a complex set of challenges, such as rising costs of living, food supply shortages, increased stresses on health care, high inflation rates, and turbulent markets.

Without data on diet quality, governments, donors, the private sector, investors, and civil society will find it harder to set regulations and policies and encourage behavior change towards more nutritious and sustainable diets. Doing so, in turn, will have a knock-on effect on health, resilience, and macroeconomic stability in the years to come.

At present, the lack of the dietary data required to assess food consumption at the population level and the need for globally appropriate metrics to measure diet quality have slowed interventions and innovations, hampering resource allocation towards healthier, sustainable diets. Understanding the actual foods that individuals eat and being armed with timely dietary data are imperative for targeted and properly costed policy making around the world.

The Global Diet Quality Score

The GDQS metric is a response to the absence of robust, universally applicable methods for measuring diet quality. A free and easy-to-use app facilitates the collection of GDQS data in population-based surveys.

The GDQS app provides a novel, low-resource data collection method to enable the collection of high-quality dietary data at a large scale and on a routine basis. With the GDQS app, data on individual food and beverages consumed, as well as categorical information about the quantities of healthy and unhealthy food groups consumed, can be collected easily across different population groups.

GDQS data can be used to set targets, assess and monitor diet quality in a population, and inform program and policy design, e.g. by understanding what percentage of the population is eating green leafy vegetables or whole grains, and of those, who is consuming a low or high amount of the food group.



23 Healthy eating saves lives | Institute for Health Metrics and Evaluation (2019)

24 Global Nutrition Report (2021)

25 Crippa et al. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions



TALKING POINTS FOR ADVOCATES

- › What we eat is central to some of the world's greatest health, environmental, social, and climate challenges.
 - › Poor diets are estimated to be responsible for one-quarter (26%) of all (avoidable) deaths among adults.²⁶
 - › Recent estimates indicate that global food demand, including food loss and waste, contributes about 35% of all global greenhouse gas emissions.^{27, 28} These environmental impacts have increased by up to 14% in less than a decade.
- › The GDQS offers policy makers, program designers, researchers, and others a method to understand what people eat, especially in contexts where diets are changing rapidly, with the increased consumption of highly processed, energy-dense foods.
- › The GDQS metric is unique because it provides a framework to effectively assess, monitor, and evaluate population-level progress in achieving healthy diets.
- › GDQS data can be collected with the free and easy-to-use GDQS app, designed to enable the collection of dietary data in a novel and low-resource manner.
- › Data collected with the GDQS app can be used for a variety of purposes, including:
 - › To help inform targeting and locally specific decisions for action when data are collected at a decentralized level.
 - › To provide evidence for the design of multisectoral policies and programs across health, agriculture, social protection, education, and trade, amongst others.
 - › To develop better policies related to food safety, food marketing, and front-of-label packaging.
 - › To target policies and programs more effectively at girls and women, as well as harder-to-reach populations, who are being disproportionately affected by inequities in food systems.
 - › To improve public-private partnerships, using real-time data to improve food value chains.
- › Ultimately, the increased collection of diet quality data with the free and easy-to-use GDQS app is an important step towards responsible leadership across sectors.



26 Global Nutrition Report (2021)

27 Global Nutrition Report (2021)

28 Crippa et al. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions

LINKS TO LEARN MORE

Allies and advocates of the Global Diet Quality Score (GDQS), as well as potential users of the GDQS metric and GDQS app, are invited to get in touch to learn more.

GDQS RESOURCES:

The Global Diet Quality Score (GDQS) Launch Event

Journal of Nutrition Supplement: The Global Diet Quality Score (GDQS): A New Method to Collect and Analyze Population-Based Data on Diet Quality

Developing and Validating a Food-Based Diet Quality Score

The Global Diet Quality Score (GDQS) Data Collection Options and Tabulation Guidelines

RESOURCES IN THE GDQS TOOLKIT:

Diet Quality Situation Overview – GDQS Toolkit Resource #1

Everything You Need to Know – GDQS Toolkit Resource #2

Quick Glance: Diet Quality Metric Comparison – GDQS Toolkit Resource #3

Guided Questions: Is the GDQS Right for You? – GDQS Toolkit Resource #4

Policy Brief with Advocacy Talking Points – GDQS Toolkit Resource #5

Links to Learn More – GDQS Toolkit Resource #6

CONTACT US:

Learn more and request access to the GDQS app: GDQS@FHISolutions.org

Learn more about the work at *Intake*: <http://intake.org>

FOLLOW US





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Diet Quality Situation Overview -- GDQS Toolkit Resource #1

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Everything You Need to Know – GDQS Toolkit Resource #2

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Quick Glance: Diet Quality Metric Comparison – GDQS Toolkit Resource #3

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