GDQS App Beta-Testing Program

Background

The Global Diet Quality Score (GDQS) is a new metric of diet quality that has been developed and validated through a research initiative launched by *Intake* – Center for Dietary Assessment at FHI Solutions, with funding from the Bill & Melinda Gates Foundation. The research initiative was led by the Harvard University T.H. Chan School of Public Health, Department of Nutrition and carried out in collaboration with the National Public Health Institute (INSP) of Mexico.

The GDQS has been shown through secondary analysis of data sets from a set of low- middle-, and high-income countries across different regions of the world to be sensitive to predicting outcomes related to both undernutrition (e.g., nutrient adequacy) and overnutrition (e.g., non-communicable disease risk). No other validated population-based metrics are currently available for global use, which are sensitive to both undernutrition and overnutrition diet-related issues; and can be collected at relatively low-cost and without use of a food composition table for analysis.[1]

What is the GDQS

The GDQS is a simple, population-based metric of diet quality that is based on an open-ended 24-hour recall of all foods and beverages consumed by the respondent. The scoring of the GDQS is based on 25 different food groups (16 healthy food groups; 7 unhealthy food groups; 2 unhealthy food groups when consumed in excessive amounts). Three to four quantity of consumption categories have been defined per GDQS food group, which are used in scoring the GDQS.

How GDQS Data Can Be Used

The GDQS has been validated among non-pregnant, non-lactating women 15-49 years. GDQS data collected through a population-based survey can be used for assessment, target, setting, program/policy design, assessing change over time, program/policy monitoring and evaluation; and cross-country comparison.

Collecting Data for the GDQS – The GDQS App

To provide a simple tool to collect data on the GDQS when quantitative 24-hour dietary recall data cannot be collected, *Intake* has developed a technology assisted data collection application—"the GDQS app". The GDQS app can be installed on Android tablets and phones for data collection.

When carrying out an enumerator administered population-based survey, the GDQS app is used in conjunction with a set of 10 plastic cubes of specific, pre-determined dimensions determined to be appropriate for collecting quantity of consumption data needed to tabulate the GDQS. The 10 hollow plastic cubes are used as visual aids to assist the respondent with estimating the total quantity (i.e., volume) consumed at the food group level during the 24-hour period of reference for the interview.

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[1] Miller V, Webb P, Micha R, Mozaffarian D, on behalf of the Global Dietary Database. Defining diet quality: a synthesis of dietary quality metrics and their validity for the double burden of malnutrition. *Lancet Planet Health* 2020; 4: e352–70.

The prototype for the GDQS app was completed in January 2021, with *Intake* staff engaging in a 2-month period of beta-testing of the app shortly thereafter. Based on *Intake's* beta-testing experience, data collection with the GDQS app is currently estimated to require an average of about 10 minutes per respondent, with the time required for data collection highly dependent on the complexity of the diet of the respondent.

Since beginning work to beta-test the GDQS app, a series of refinements to the build of the app have already been made, based on the feedback received. To further refine and improve the GDQS app, we are now hoping to engage a broader set of stakeholders in beta-testing the app. To do this, we are initiating a global GDQS app beta-testing program and invite interested global stakeholders to participate.

GDQS App Beta-Testing Program

Intake's global GDQS app beta-testing program has been established to provide a means of receiving broad, global feedback on the function and ease of use of the app. The overall aim of the beta-testing is to identify any problems in programming logic and function of the app that should be fixed before further use. We also intend to use the opportunity to receive input on the foods and mixed dishes that are not currently included in the GDQS database, to allow the database to be as complete as possible and relevant to the diets of populations globally. We hope to engage stakeholders from across a range of high-, middle-, and low-income countries to participate in the program.

What Does Participation in the GDQS App Beta-Testing Program Entail

Beta-testing of the GDQS app involves installing a test version of the GDQS app on an Android phone or Android tablet. During beta-testing, the set of 10 plastic cubes for estimating the volume of food consumed will not be available to users. Instead, a set of photos of those 10 plastic cubes will be provided for beta testers to use while testing the app.

Any interested person can participate in the beta-testing program. There are no specific qualifications that must be met in terms of education level, or experience with dietary data collection to participate. However, the GDQS app for the purpose of beta-testing is available only in English. Individuals are welcome to participate in the program no matter their dietary practices, or any specific dietary restrictions practiced. Although the GDQS was validated for use among women 15-49 years, for the purpose of beta-testing, both men and women can participate in beta-testing. There is no upper bound for age eligibility to be a GDQS app beta-tester.

Participation in the GDQS app beta-testing program is completely voluntary. Beta-testers will not be compensated for any time spent beta-testing the GDQS and are free to withdraw from the program at any time. Beta-testers must use their own device for testing.

We request that each beta tester participate in the beta testing program for a period of at least one week. During this period, we encourage beta testers to try to use the GDQS app every day (or, as often as is feasibly possible) to report on the foods/beverages s/he consumed in the past 24-hours. In doing so, we ask beta-testers to record the following during each use:

- Any difficulties experienced in moving through the app in ease or clarity of function
- Any bugs or problems in the display of the app screens or pop-up instruction screens
- Any problems with programming logic encountered
- Any foods or beverages reported as consumed that were not included in the GDQS database and had to be entered as a "new food"
- Any mixed dishes reported as consumed that were not included in the GDQS database
- Any probing questions about a food consumed that were not clear in meaning or difficult to answer
- Any suggestions for improvement to make the app easier to use or more clear

Collecting information about other individual's intake is not part of this beta-testing. For collecting information

from individuals other than oneself, we would require additional protocols and a more formal IRB approval and consent process to be followed.

Prior to starting the beta-testing period, *Intake* will provide a virtual demonstration of how the GDQS app is meant to work, to orient beta-testers to the GDQS app, and how it is meant to function. During the virtual demonstration meeting, *Intake* will also provide more detailed guidance on what type of feedback we are seeking from beta-testers, and how best beta-testers can report feedback on the GDQS app to *Intake.* We currently envision using a feedback form, similar to that shown in Annex 1; and request that consolidated feedback be provided by beta-testers on the last planned day of beta-testing by the participant (if the testing period will be 1 week or shorter); or alternatively, on the 1st and/or the 15th of the month in which the beta-tester participated in the program.

NB: The information recorded in the GDQS app by the beta-tester is not sent to a server, as would be the case when carrying out a population-based survey. The information recorded in the GDQS app by the beta-tester will also not be seen by *Intake*. We have disabled these functions for the purpose of beta-testing. For the purpose of beta-testing, the information recorded in the GDQS app is only on the beta-tester's device. The information will remain on the beta-tester's device until the tester decides to delete the information. The beta-tester retains full control of the data records he/she entered. The only information that *Intake* will see is the feedback provided by the beta-tester to *Intake*, by submitting a separate feedback form.

How to Participate in the GDQS App Beta-Testing Program

For an overview of the timeline and steps we envision for taking the GDQS app from development to public release, refer to Figure 1. *Intake's* GDQS app beta-testing program is currently envisaged to run from March 15, 2021 to May 15, 2021. To express your interest to volunteer as a beta-tester, or to ask questions about the program, please send an email to: feedback@intake.org. We will follow up with all who express interest to participate in the beta-testing program in the second week of March to share a set of date/time options for prospective beta-testers to participate in a 1-hour orientation session.

We see the engagement of global stakeholders in beta-testing the GDQS app as an important step in helping the app to be as useful as possible for collecting robust data on diet quality globally. We thank you in advance for your consideration to participate.

Figure 1. Timeline for Future Steps Related to the GDQS App

MARCH–APRIL	MAY–AUGUST	SEPTEMBER–NOVEMBER	DECEMBER
Beta testing	Pre-testing	Limited release	Public release

FOR MORE INFORMATION

For more information about the GDQS, we invite you to watch the recording of the GDQS Launch Event, available here; or to watch the GDQS Stakeholder Meeting recording, available here. Future publications of GDQS work include a set of manuscripts, which are currently in preparation for submission to the Journal of Nutrition for inclusion in a GDQS-focused Supplement. A detailed technical report of the GDQS work is also planned for publication by *Intake* in the fourth quarter of 2021. In addition, during the month of March 2021, an overview brief of the GDQS will be published on the *Intake* website, to provide GDQS tabulation guidance.

Annex 1. Example Feedback Form for Beta-Testers to Submit Feedback on GDQS App

Problems in Programming Logic and/or Navigation							
Step 1	**Step 2**	**Step 3**	**Step 4**	**Step 5**	**Step 6**	**Step 7**	**Overarching/Cross-Cutting Feedback Related to Program Logic and Navigation/Ease of Use**

Missing Foods in Database

Missing Mixed Dishes in Database

Problematic/Confusing Probes to Request Details on Foods Consumed		
Food	**Current Probe**	**Suggestion for Improvement**

Problematic Classification of Food into Food Group Category	
Food	**Current Food Group Assigned**