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Development of a dietary application for processing and monitoring paper-based 24 hour recalls in low-and-middle income countries.

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Introduction

Assessing population dietary intakes can be challenging.

Paper-based data collection of individuals' food consumption, using dietary assessment methods such as the multiple pass 24-hour recall (MP24HR), has been frequently use

To process these data an electronic data entry application (App) is required to reduce data entry errors, enable timely data processing and generate data to monitor the data quality, including data quality individual enumerators.

Aim

Develop a unique dietary App for processing and monitoring the quality of data collected using paper-based dietary assessment methods and test it in; Kaffrine, Senegal and Hyderabad, India.

Methods

This is part of the Action Against Stunting Hub Study (AASH). which follows a cohort of mother-infant dyads from pregnancy to 24 months post-partum in three countries.

In two countries, Senegal and India, dietary intakes are being collected from women at their second (Senegal only) and third trimesters of pregnancy and from their infants at 6, 9, 12, 18 and -24 months, using a paper-based MP24HR.

We developed a web-based dietary App to facilitate electronic entry of paper-based MP24HR to calculate individual energy and nutrient intakes, the percentage of energy and nutrients from different food groups and to monitor quality of data collection by ennumerators

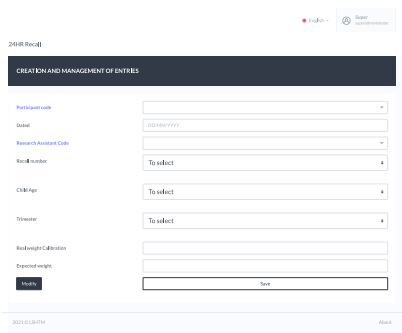
Country- specific food compostion tables (FCT), portion size conversion factors, average recipes and sources of procuring foods/ingredients can be uploaded into the App, and additional questions of interest, such as illness or unusual dietary intakes, can be added

The backend of the App is made using PHP language with Laravel framework and MySQL server.

The frontend is essentially HTML CSS based with Javascript to enhance the user experience.

Technical approaches and development

Data integrity from the storage is insured by Relational Database Management System (RDBMS).
The backend uses a reference Framework facilitating improvement and adding new features.
Every component is based on open-source software.



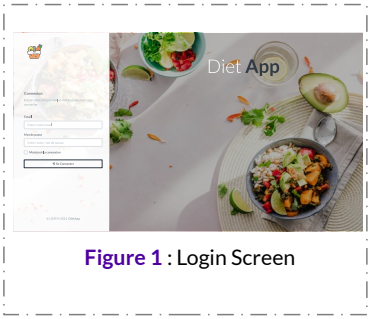


Figure 1 : Login Screen

Figure 2 : DailyRecall Creation

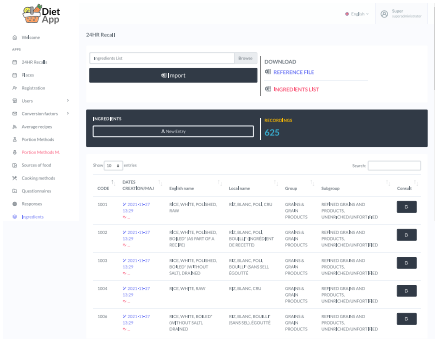


Figure 3 : FCT Management

Findings

To date, the dietary App is able to:

Translate into different languages	Calculate grams of food consumed, and intakes of energy and nutrients by day, by meal, and by food group
Utilise country specific FCTs	Alert users of missing conversion factors and average recipes that need to be enetered into the app
Standardise data entry capture	Generate and compare data for each enumerator
Capture data on average and individual recipes	Capture data on where foods/ingredients were acquired for food environment and food system research
Capture data on whether food intake was usual or not	

Conclusions

This dietary App will benefit research communities involved in the collection and analyses of paper-based dietary intake data, because it is adaptable to different country contexts, different research intersts and data are generated to monitor the quality of data collection
It will be publicly available for use for research or to inform government policies.
Such unique instruments are essential for the generation of high-quality dietary data that can play an important role in informing food, nutrition and agricultural policies and the planning of food fortification and food-based behaviour change interventions to improve dietary adequacy.

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