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# Frequency of Omissions and Intrusions, and Use of Standard Recipes during a validation of a Computer Assisted 24-hour Dietary Recalls against a Pen and Paper approach Using a Benchmark Weighed Food Record in Burkina Faso

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INTERNATIONAL DIETARY DATA EXPANSION PROJECT
INDDEX

## Background

- A validation study was undertaken in Burkina Faso to compare the accuracy of two modes of administration of a multi-pass 24-hour individual dietary recall (24HR), a pen-and-paper-based (PAPI) and a tablet-based (computer-assisted, or CAPI) method, using weighed food record (WFR) as a benchmark.
- The tablet-based 24HR, called INDDEX24 mobile application, is one of the components of the INDDEX24 Dietary Assessment Platform developed by the International Dietary Data Expansion (INDDEX) Project to streamline data collection and facilitate data processing.
- During this validation study, sources of divergence between the WFR and each 24HR mode were explored, including the number of times that items in the WFR were omitted from the 24HR (omissions), and the number of times that items appeared in the 24HR but not in the WFR (intrusions).

## Methods

- Subjects were 231 rural women aged 18-49 years.
- First day, an enumerator visited the household for the WFR and recorded all food consumed from early morning until after the evening meal, at home and away.
  - All foods prepared at home were weighed before and after cooking; amount taken by the respondent was weighed; leftovers subtracted. Individual food items were recorded as such.
  - For mixed dishes, the enumerator weighed all ingredients prior to cooking, the finished dish, and the amount consumed by the respondent, assuming equal distribution of ingredients.
- Next day after WFR, a multiple pass 24HR was conducted by a different enumerator to record all foods consumed the previous day.
  - Mixed dishes were recorded in two ways: either using a standard recipe or as a non-standard recipe by collecting detailed recipe information including the quantity of each ingredient, the final dish, and amount consumed.
- Portion size estimation aids (PSEAs) used were proxy foods (sorghum, water), life-sized photographs, food models in play-doh, standard size unit, and actual food weight.
- In the analysis, every item – individual food items and mixed dishes – in the WFR was matched to the corresponding item in the 24HR.
  - Items that appeared in the WFR but not the 24HR were considered omissions. Items in the 24HR that did not appear in the WFR were considered intrusions.

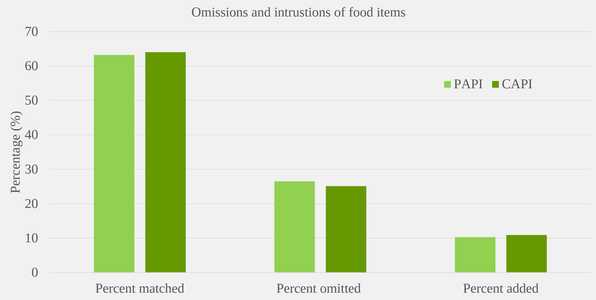


**Figure 1: Percentage of omission and intrusion of food items by 24HR mode**

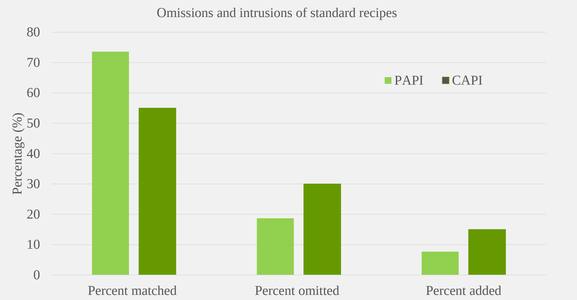


**Figure 2: Percentage of omission and intrusion of standard recipes by 24HR mode**

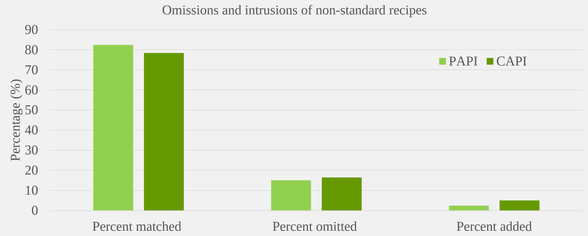


**Figure 3: Percentage of omission and intrusion of non-standard recipes by 24HR mode**

## Results

- In both modes, omissions outnumbered intrusions. About 1/4 of foods in the WFR were omitted from the 24HR: 26.5% (PAPI); 25.1% (CAPI).
- The most frequently omitted food items were similar for both PAPI and CAPI, and were composed of boiled or roasted fresh corn, fresh or boiled wild eggplant, vegetable oil used as addition in mixed dishes, and spices/salt used as addition. About 10% of foods in both 24HR did not match the WFR.
- For NSRs, omissions and intrusions were less frequent: 15.1% (PAPI) and 16.5% (CAPI) omissions; 2.5% (PAPI) and 5.1% (CAPI) intrusions. The frequently omitted non-standard recipes were the thick cereal flour porridge, thick cereal flour porridge mixed with water, and vegetable sauces, and these were omitted in both 24HR modes.
- SRs were recorded less frequently than individual foods or NSRs. PAPI, 400 foods, 404 NSRs, 91 SRs; CAPI, 386 foods, 411 NSRs, 100 SRs. SRs were more frequently omitted in CAPI (30%) than PAPI (18.7%); and added: CAPI (15.0%); PAPI (7.7%). Four types of mixed dishes in the standard recipes for PAPI were omitted: boiled beans mixed with cereals, jollof rice, thick cereal flour porridge, and vegetable or peanut sauces. In addition to the four mixed dishes omitted in PAPI, omitted dishes in CAPI included couscous made with cereal flour and leafy vegetables.

## Conclusions

- Respondents to both 24HR modes were more likely to forget items than recall them erroneously.
- Both omitted and incorrectly added items included not only minor items (salt, spices, cooking oil) but also major foods (fish, vegetables) and main-meal mixed dishes.
- SRs are intended to reduce respondent burden but were infrequently used with more omissions and intrusions than NSRs, suggesting the need for additional research to investigate the use of SRs.

To learn more about the INDDEX Project and the INDDEX24 dietary assessment platform, please visit our website: https://inddex.nutrition.tufts.edu/ or contact us with any questions at INDDEX@tufts.edu.

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