

# Multiple Pass 24-Hour Recall for Measuring Children’s Diets

## What Subsequent Passes Add in a Standard 24-Hour Recall

### Introduction

Some large-scale surveys use a multiple pass inquiry to collect 24-hour food consumption data and estimate minimum dietary diversity (MDD)<sup>1</sup> and other indicators among children 6 to 23 months of age (e.g., the United Nations Children’s Fund [UNICEF]’s Multiple Indicator Cluster Surveys and USAID’s Feed the Future zone of influence surveys). Other data collection efforts use a single pass, list-based method. The steps of the multiple pass method used to collect dietary data for children include with some variation, the following “passes,” which begin after ascertaining liquid consumption:<sup>2</sup>

1. **Open recall**—During this step, the enumerator asks the respondent, “What did [CHILD] eat yesterday?” and records all responses in food groups which are pre-programmed or noted on an electronic or paper data collection form. The enumerator asks follow up questions to record ingredients for mixed dishes named by the respondent.
2. **List-based recall**—During this step, the enumerator asks the respondent about foods in any food groups **not** reported during the open recall. For example, if the caregiver did not report foods in the vitamin A-rich group, the enumerator would refer to the locally-adapted list of foods in that food group and ask, “Did [CHILD] eat carrots, pumpkin, butternut, or sweet potatoes that are yellow or orange inside?”
3. In the final step, the enumerator asks, “Did [CHILD] eat anything else yesterday?”

The calculation of MDD and other dietary indicators then follows instructions provided in the World Health Organization and UNICEF (2021) guide.

While the multiple pass approach may ensure a comprehensive recording of intake, a simpler list-based method may be cheaper and faster to administer. Moreover, it is not clear how much additional information enumerators obtain with subsequent passes after the open recall (pass #1). The purpose of this methodological brief is to report findings from an analysis of information gained during subsequent passes from studies in Cambodia and Zambia, with specific comparisons of MDD estimation, where enumerators applied the multiple pass recall method the day following an observation of intake.

### Key Messages

Subsequent passes added dietary information that changed the MDD estimate in Zambia but not Cambodia. However, the additional information in Zambia led to over-estimating MDD. In both countries, only half or fewer of the items added during subsequent pass were accurate compared to an observation. Given the expense of implementing the multiple-pass method, teams may want to conduct a pilot test to find out if subsequent passes are necessary where they are collecting dietary data.

<sup>1</sup> Minimum Dietary Diversity for Children is defined as consuming “foods and beverages from at least five out of eight defined food groups during the previous day.” (WHO and UNICEF 2021, 35).

<sup>2</sup> WHO (World Health Organization) and UNICEF (United Nations Children’s Fund). 2021. *Indicators for Assessing Infant and Young Child Feeding Practices: Definitions and Measurement Methods*. Geneva: WHO

## Research Questions

To understand what information subsequent passes add, we sought to answer these questions:

1. Which food groups did caregivers add during subsequent passes?<sup>3</sup>
2. Was the MDD indicator estimation affected by food groups identified in subsequent passes?
3. Were new food groups added in subsequent passes accurately, compared to the observation?

## Methods

We performed this analysis with Stata v.17 (College Station, TX) using datasets from Cambodia (n=636) and Zambia (n=608), created for a study of accuracy and cost of different dietary data collection methods.<sup>4</sup> We calculated the percentage of respondents who reported that a child consumed a food group in subsequent passes not reported in the first pass and listed the food groups added during subsequent passes. We then estimated and compared MDD proportions from information obtained in the first pass and information obtained in the first plus subsequent passes using the WHO and UNICEF guide (2021) and McNemar's test for comparing proportions, respectively. Finally, we calculated the proportion of respondents who accurately reported a child consuming a food group in subsequent passes (not mentioned in the first pass) as compared to the observation.

## Results

In Cambodia, less than 1 percent of respondents added a food group during subsequent passes (figure 1). Dietary recall overestimated MDD compared to the observation (29.4 percent). However, the difference between the MDD estimations from the dietary recall first and subsequent passes was not statistically significant (36.1 percent [first] and 36.6 percent [first and subsequent]; figure 2). Compared to the observation, the addition of food groups in subsequent passes was not accurate for most of the food groups (table 1).

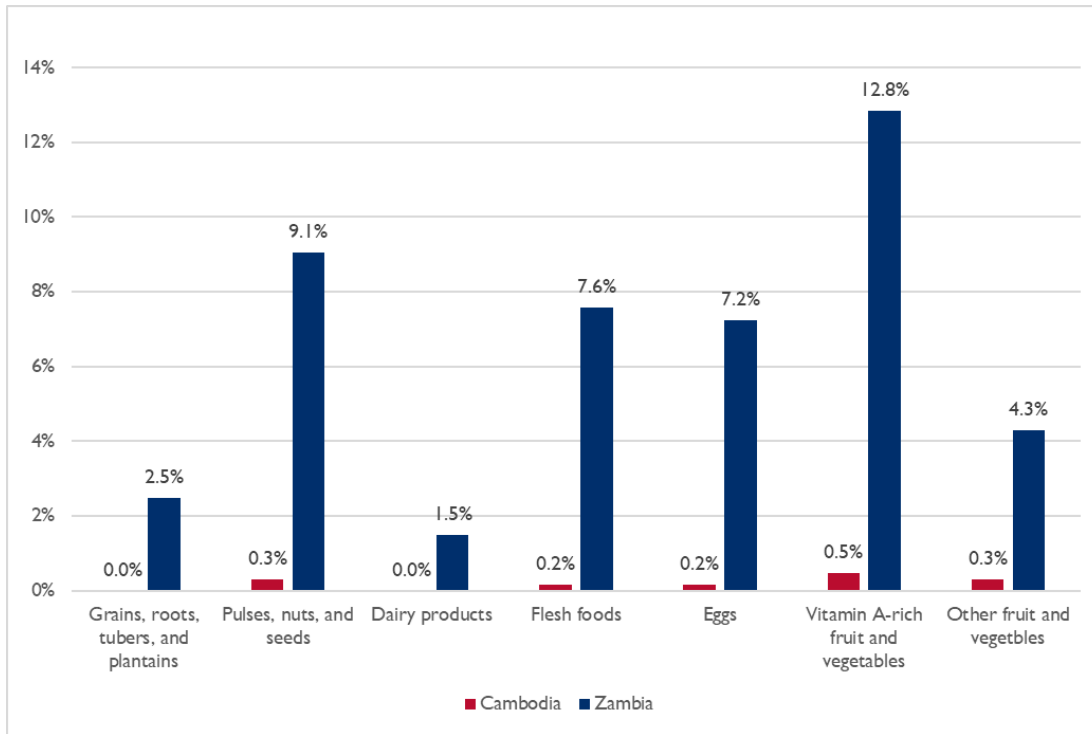
In Zambia, between 1.5 percent and 12.8 percent of respondents added food groups during subsequent passes (figure 1). While the MDD estimation from the observation is 57.4 percent, the MDD estimation from recall changed from 51.6 percent based on the first pass alone (underestimating the observed value) to 64.8 percent with responses based on both the first and subsequent passes (overestimating the observed value; figure 2). With the exception of additions in the grains, roots, and tubers and other fruits and vegetables food groups, only half or fewer of the respondents who added a food group in subsequent passes were accurate, compared to the observation (table 1).

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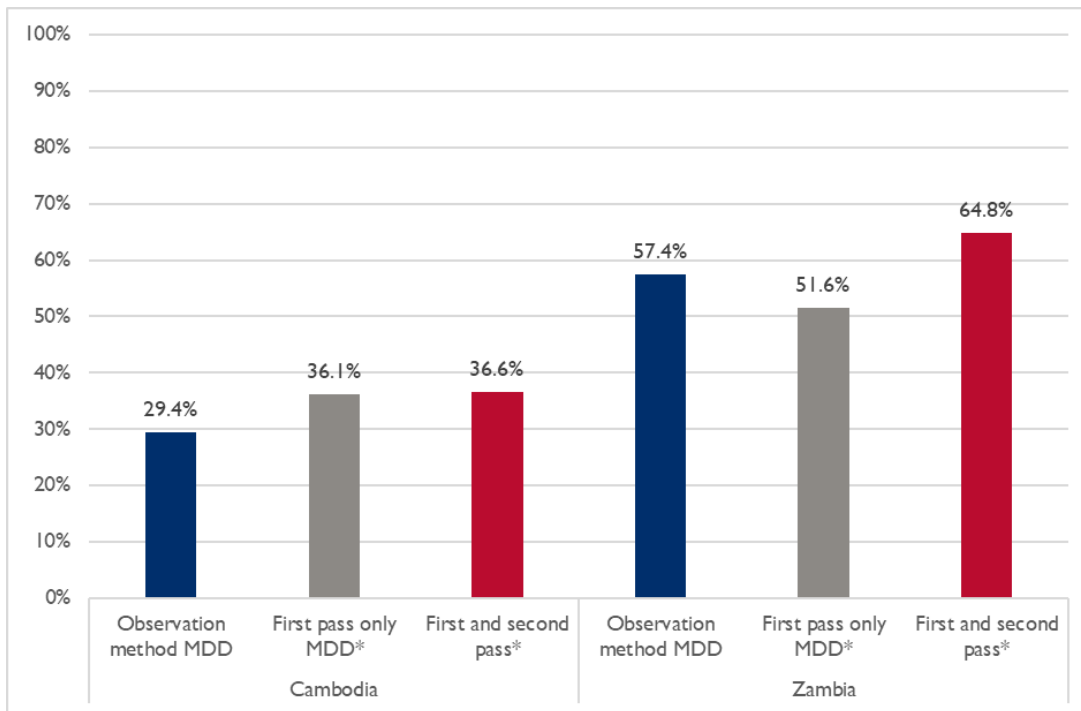
<sup>3</sup> Not including breastmilk, because enumerators ask about liquids via a list at the start of the first pass of the multiple-pass method.

<sup>4</sup> Our [recent webinar](#) includes more information.

**Figure 1. Percentage of Respondents that Reported Consuming a Food Group in Subsequent Passes That was Not Captured in the First Pass**



**Figure 2. MDD Estimations from Observation, First Pass, and First + Subsequent Passes**



\* Statistically different from the observation MDD at  $p < 0.05$ .

**Table 1. Percentage of Respondents Reporting Consumption of New Food Groups in Subsequent Passes Accurately\* (n= number of reports for that food group)**

Food Groups	Cambodia (n=8) <sup>†</sup>	Zambia (n=174) <sup>†</sup>
Grain, roots, and tubers	Not applicable (N/A)	100 (15)
Pulses, nuts, and seeds	0 (2)	56 (55)
Dairy products	N/A	56 (9)
Flesh foods	100 (1)	37 (46)
Eggs	0 (1)	39 (44)
Vitamin A-rich fruit and vegetables	33 (3)	51 (78)
Other fruit and vegetables	50 (2)	96 (26)

\*That is, as compared to the observation.

<sup>†</sup>Total number of new reports from all food group

## Conclusion

The first pass (open recall) overestimated MDD in Cambodia and underestimated it in Zambia. Subsequent passes did not add information that changed the MDD estimate in Cambodia, while changes to the estimates in Zambia led to overestimation of MDD. For both countries, most food groups added in subsequent passes were accurate in half or fewer reports compared to the observation. Given the low percentage of respondents adding new food groups in subsequent passes and the low accuracy of those additions, organizations that prefer the comprehensive approach to dietary data collection offered by the open recall in the multiple pass method may be able to proceed with just an open recall and forgo other passes to collect information. That approach could save time preparing data collection materials, training enumerators, and analyzing data, while supporting data quality with fewer data cleaning and analysis steps. However, researchers should test such an approach before adopting it. A small pilot test with analyses examining information obtained from subsequent passes, such as those presented here (without the observation), could inform efforts to efficiently collect dietary data.



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