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Performance of an image-voice dietary assessment system in Cambodia

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Risks associated with sub-optimal dietary intake are one of the leading factors contributing to mortality and morbidity worldwide⁽¹⁾. Regular and comprehensive data on the intakes of individuals play a key role in informing the development of public health nutrition policy and programs. In low- and lower-middle-income countries (LLMICs), proxy measures of individual intake, such as food balance sheets, are often used. To-date there has been limited application of technology-assisted dietary assessment methods due to resource constraints⁽²⁾. This study reports on the relative validity of the Voice-Image Solution for Individual Dietary Assessment (VISIDA) system in a sample of Cambodian women and children. The VISIDA system is a dietary assessment system developed specifically for LLMICs. Intake data is collected in the form of image-voice food records (via a smartphone app) where images and voice recordings of food for consumption are collected prior to eating along with any leftovers at the end of the meal. The image-voice food records are then uploaded to the VISIDA web application and processed by trained analysts to produce estimates of individual nutrient intake. Mothers and one of their children (aged ≤ 5 years) from Siem Reap province, Cambodia were recruited. Intake data was collected for each participant using two dietary assessment methods over three recording periods. The mother used the VISIDA image-voice smartphone app to collect intake data on three days for herself and her child in week 1, with this repeated in week 4. In between VISIDA recording periods, intake data was collected on the mother and her child using interviewer-administered 24-hour recalls collected on three days. A linear mixed model approach was used to evaluate differences between the estimated nutrient intakes for the recording periods for mothers and children. The nutrient intakes for a total of 119 mothers and 91 children were included in the analysis. For both mothers and children, intakes for the majority of nutrients were higher from the 24-hour recalls than intakes reported using the VISIDA system. When 24-hour recall intakes were compared to each VISIDA recording period, mothers had a higher number of nutrients with differences that were statistically significantly than children. In general, the VISIDA system produced lower estimates of nutrient intakes for Cambodian mothers and children when compared to intakes from 24-hour recalls. Further evaluations of the VISIDA system in other LLMICs would provide additional insights into the performance of this method for assessing individual dietary intakes in this context.

References

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