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Supermarket Transaction Records In Dietary Evaluation – the STRIDE study: validation against self-reported dietary intake.

Victoria Jenneson¹, Darren C Greenwood¹, Graham P Clarke¹, Timothy Rains², Bethan Tempest², Becky Shute², Michelle Morris¹

1. University of Leeds (UK),
2. Sainsbury's Plc (UK)

Background and objectives: Harnessing new technologies is recommended to deliver scalable objective methods for population dietary assessment. Supermarket transaction data offers great potential to explore small-area dietary patterns and has many advantages over survey methods. However, this data is rarely validated. The STRIDE (Supermarket Transaction Records In Dietary Evaluation) validation study compares dietary estimates from supermarket transactions with self-reported intake from an online Food Frequency Questionnaire (FFQ).

Methods: Working with a large UK supermarket retailer, loyalty card customers were recruited to one of four waves (accounting for seasonal dietary variation). Participants consented to sharing their transaction records for one year during the study, and one year prior. They additionally completed an online FFQ. The Bland-Altman method was used to calculate the agreement and limits of agreement between transactions and intake for daily energy, sugar, total fat, saturated fat, protein and sodium (absolute and energyadjusted). Household composition is accounted for in individual purchase estimates.

Results: 1,788 participants from four UK regions consented to the study. 686 participants who completed the FFQ and made purchases during the same period, were included for analysis. Participants were mostly female (72%), with a mean age of 56 years (SD 13). Agreement varied by magnitude and thus a regression equation is presented for estimating intake from purchases. Agreement for absolute measures was poor overall, but was higher for single-person households and households who reported a higher proportion of their total food purchases coming from the retailer. Agreement was stronger for energyadjusted nutrient estimates, particularly for fat. On average purchase records under-estimated the proportion of total energy intake from fat by just 2%.

Conclusions: The STRIDE study found household purchase records from a single retailer to be a poor proxy for individual level absolute nutrient intakes. However, close agreement on average for energy-adjusted estimates suggests that purchases are a good indicator of dietary composition. This points to the utility of supermarket transaction records for population dietary assessment, ecological studies, and identifying intervention targets based on dietary patterns. Supermarket transaction data therefore have broad applicability for contributing to the design and monitoring of national and local-level policy interventions.

Conflict of Interest Disclosure: This work was supported by an in-kind data contribution and staff time (for tasks relating to study set-up and data extraction) from a UK supermarket retailer.

Keywords: Dietary assessment, Validation, Transactions, Methods, Population