

Daily eating windows amongst UK adults and their relationship with metabolic health

Insights from the National Diet and Nutrition Survey

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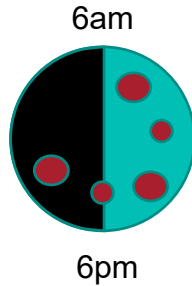
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Background

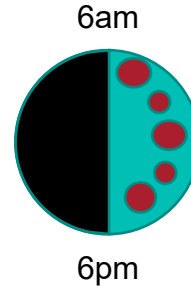
Time-Restricted Eating (TRE)

- *When* we eat is important.
- TRE: Limit food intake to ≤ 12 hours a day.

Normal diet



TRE



 = meal/snack

- Animal studies: Strong evidence of metabolic benefits.

Background

Daily Eating Windows

- DEW = time between first eating/drinking in morning and finishing eating/drinking in evening.
- Most people eat for period >12 hours a day.
- But small number of studies & little research on metabolic health.
- True potential of TRE to improve metabolic health of UK adults unclear.

Aims

Overall:

- Evaluate the potential use of time-restricted eating as a dietary intervention to improve the metabolic health of UK adults.

More specifically:

- Use a large representative sample of UK adults to:
 1. Identify length of DEW people eat within.
 2. Identify the sociodemographics and health behaviours of those with a longer DEW.
 3. Explore whether there is a relationship between metabolic health and length of DEW.
 4. Formulate recommendations as to whether TRE could be used to improve the health of UK adults and, if so, what DEW could be feasible.

Method

UK National Diet and Nutrition Survey Rolling Program (NDNS RP)

- Continuous cross-sectional survey of representative sample of UK population.
- Data collection:

Stage 1: Interviewer Visits

- Face-to-face computer assisted personal interview (CAPI)
- Height & weight measured
- Self-completion physical activity questionnaire
- Four-day food diary



Stage 2: Nurse Visits

- Fasting blood sample
- Waist/hip measured
- Blood pressure

Method

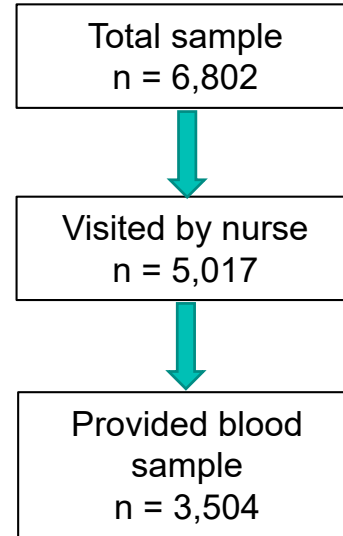
Sample food diary

Day: Thurs		Date: 31st March		
Time	Where? With Whom? TV on? At table?	Food/Drink description & preparation	Brand Name	Portion size or quantity <u>eaten</u>
How to describe what you had and how much you had can be found on pages 23-29				
6am to 9am				
6.30 am	Kitchen Alone No TV Not at table	Filter coffee, decaffeinated milk (fresh, semi-skimmed) Sugar white	Douwe Egberts Silverspoon	Mug A little 1 level tsp
7.30 am	Kitchen Partner TV on At table	Filter coffee with milk and sugar Cornflakes Milk (fresh, semi-skimmed) Toast, granary medium sliced Light spread Marmalade	As above Tesco's own Hovis Flora Hartleys	As above 1b drowned 1 slice med spread 1 heaped tsp
9am to 12 noon				
10.15 am	Office desk Alone No TV Not at table	Instant coffee, not decaffeinated Milk (fresh, whole) Sugar brown	Unknown brand	Mug A little 1 level tsp
11 am	Office desk Alone No TV Not at table	Digestive biscuit – chocolate coated on one side	McVities	2

Method

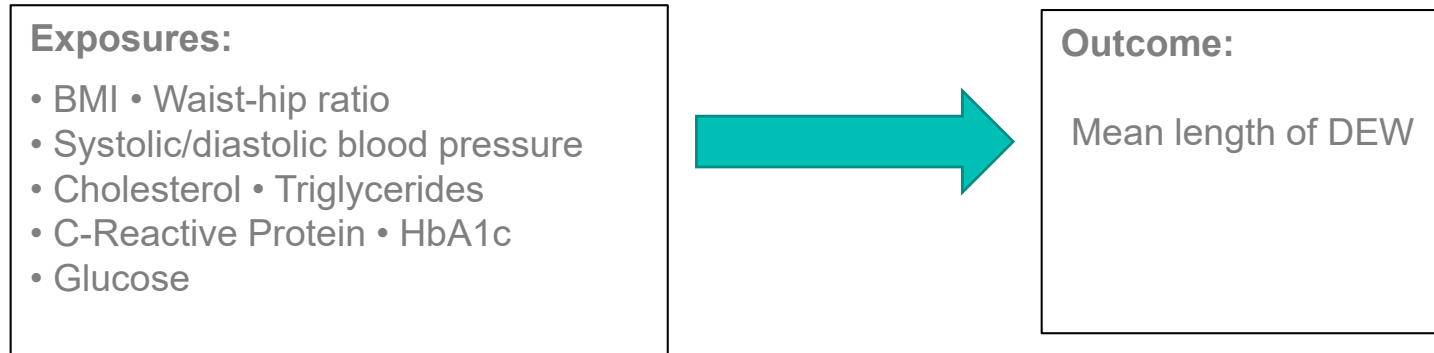
Study inclusion criteria:

- Participants in any year of NDNS RP Years 1-9 (2008/09–16/17).
- Aged ≥ 19 , with 3 or 4 food diary days.



Method

Variables of interest:



Exposures/Confounders: Sociodemographic & health behaviour variables.

Method

Data handling

- NDNS data are fully anonymized & weighted for selection/non-response bias.

Statistical analysis

- Simple linear regression: Sociodemographics and health behaviours →
Length of DEW.
- Multiple linear regression: metabolic health (adjusting for confounders) →
Length of DEW.

Results

- Mean DEW: 13 hours and 33 minutes.
- 78% had a DEW >12 hours.
- Associated with a longer DEW:



Results

Multiple Linear Regression

After adjusting for confounders:

- BMI, waist-hip ratio and LDL cholesterol negatively associated with length of DEW.
- HDL cholesterol and CRP positively associated with length of DEW.

Metabolic health marker	Unstandardized Association	Standardized B	95% CI	P value
BMI	One kg/m ² higher associated with a 1-minute shorter DEW	-0.04	-1.84, -0.01	0.047
Waist/hip ratio	One unit higher associated with a 93-minute shorter DEW	-0.06	-179.32, -6.35	0.035
LDL cholesterol	One mmol/L higher associated with a 6-minute shorter DEW	-0.05	-12.03, -0.91	0.023
HDL cholesterol	One mmol/L higher associated with a 17-minute longer DEW	0.06	4.24, 29.18	0.009
C-reactive protein (CRP)	One mg/L higher associated with a 2-minute longer DEW	0.06	0.58, 2.81	0.003

Strengths & Limitations

Strengths

- Large, nationally representative sample.
- Wide variety of variables available in NDNS.

Limitations

- Under-reporting in food diaries.
- Only one time point recorded for each eating occasion.
- Cross-sectional design.
- Having DEW as outcome made it difficult to interpret whether results clinically meaningful.

Implications

- TRE could be a feasible intervention for UK adults.
- Distinct sociodemographics & health behaviours associated with longer DEW.
- But inconsistent associations between metabolic health and DEW length, and effect sizes were too small to be meaningful.
- Not possible to recommend TRE to improve metabolic health of UK adults.

Future research:

- Longitudinal data
- Timing of DEW (early vs late)
- Objectives measures of food timing.

Thank you for listening!