

The CANTEEN study: Evaluation of the current free school meal policy in UK secondary schools

Submission date 16/10/2023	Recruitment status No longer recruiting	<input checked="" type="checkbox"/> Prospectively registered <input checked="" type="checkbox"/> Protocol
Registration date 24/10/2023	Overall study status Completed	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 16/06/2025	Condition category Nutritional, Metabolic, Endocrine	<input type="checkbox"/> Individual participant data <input checked="" type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Not having enough money to buy food is known as food insecurity and is common in UK children. Free school meals (FSM) are offered to children based on household income. Although all schools offer FSM, about 1 in 5 pupils do not take up their meal. There are also differences between schools in how many pupils take up FSM. It is not understood what influences whether pupils take up their FSM in different schools, how FSMs are related to the quality of the food children eat and whether schools with higher uptake of FSM have pupils with better diets than pupils in schools with lower uptake of FSM. Understanding these things will help us to improve the policy of offering FSM to look after the most nutritionally vulnerable children in society. The CANTEEN study aims to look at how differences in FSM uptake in schools relate to the food children eat, the quality of this food, and their food insecurity. The study will also investigate how expensive different levels of FSM uptake would be. It will then examine whether schools with higher FSM uptake have different ways of offering FSM compared to lower FSM uptake schools and whether this understanding can be used to support schools to change FSM provision. Finally, the study will explore whether changing who qualifies for FSM impacts the food eaten and food insecurity.

Who can participate

Pupils aged 11-12 and 14-15 years old will be recruited from secondary schools in Northern Ireland and the Midlands, UK, (school years 7 and 10 in the Midlands and years 8 and 11 in Northern Ireland; n=1440), and their parents and school staff.

What does the study involve?

Data collection will include pupils completing an online diet survey, gathering information on FSM/food costs, observing the school canteen, and reviewing school documents on FSM, school food and wider school issues. Staff members (e.g. headteacher, catering manager, business manager), school governors and parents will complete a questionnaire to explore their views and experiences of FSM. More detailed information, including discussions with key school staff, parents and pupils, will be collected in 6-8 of these schools. These data will look at how attending a school with different levels of FSM uptake is associated with the food pupils eat, both at school and outside of school. The analysis will also work out whether the benefits of offering FSM outweigh the costs. The questionnaires, interviews, and focus groups will explore

key issues producing a high FSM uptake and whether this information could be used to help other schools optimise how FSM are delivered.

What are the possible benefits and risks of participating?

The results will assess the impact of the means-tested FSM policy in secondary schools on diet quality and food insecurity. This information will be used to inform regional Departments for Education and Health to enable further development of national policy relating to school food and FSM provision. In turn, this may help to shape the health of future secondary school pupils.

Schools will receive a monetary reward (£500) to participate and £5 for every completed parent questionnaire. Schools that participate in the case study will receive an extra £500. Pupils and parents will also receive vouchers worth £5 and £15, respectively, as a 'thank you' for taking part in the study. Schools will be provided with a report summarising findings on school systems to support the optimisation of FSM provision and pupil views of school food. The process of collecting the views of pupils, parents, staff, business managers and governors will also provide an additional method for the school to ensure their voices on school food provision and education are heard.

There are no anticipated risks to those taking part in this study.

Where is the study run from?

Queen's University Belfast (UK)

When is the study starting and how long is it expected to run for?

January 2023 to June 2025

Who is funding the study?

National Institute for Health and Care Research (NIHR) (UK)

Who is the main contact?

1. Professor Jayne V Woodside, j.woodside@qub.ac.uk

2. CANTEEN study team, canteenstudy@qub.ac.uk

Study website

<https://www.qub.ac.uk/research-centres/CentreforPublicHealth/Research/PublicHealthNutrition/CANTEENStudy/>

Contact information

Type(s)

Scientific, Principal Investigator

Contact name

Prof Jayne Woodside

ORCID ID

<https://orcid.org/0000-0002-5691-4659>

Contact details

Centre for Public Health

School of Medicine, Dentistry and Biomedical Sciences

Queen's University Belfast
Institute of Clinical Science A (First Floor)
Grosvenor Road
Queen's University Belfast
United Kingdom
BT12 6BJ
+44 (0)2890978940
j.woodside@qub.ac.uk

Type(s)

Public

Contact name

Dr CANTEEN Study Team

Contact details

Queen's University Belfast
Queen's University Belfast
United Kingdom
BT12 6BJ
None provided
canteenstudy@qub.ac.uk

Additional identifiers

EudraCT/CTIS number

Nil known

IRAS number**ClinicalTrials.gov number**

Nil known

Secondary identifying numbers

Nil known

Study information

Scientific Title

The CANTEEN study: Free school meals, diet quality and food insecurity in secondary school pupils: a mixed methods study

Acronym

CANTEEN study

Study objectives

Food insecurity is common in children; 19% of UK children aged <15 years old live in moderate-severely food insecure households, and food insecurity is consistently linked with poor health outcomes. Free school meal (FSM) provision is a government-implemented means-tested strategy intended to improve food insecurity and nutrition and reduce dietary inequalities. FSM

eligibility is increasing, with concerns that food-insecure children are not always eligible for FSM based on current criteria. FSM uptake is also variable, with 20% of eligible secondary pupils not taking FSM.

Little research has examined the impact of the current means-tested FSM policy on food intake, diet quality and food insecurity, particularly at the secondary school level. Evidence of the effectiveness of the current FSM policy is essential to support the status quo, but also to inform recently proposed changes (e.g. change in eligibility criteria or universal provision). In addition, little is known about what influences whether FSM-eligible children take these up.

This study aims to evaluate the effectiveness and cost-effectiveness of the current means-tested FSM policy in UK secondary schools on diet and food insecurity outcomes, understand what factors affect uptake, and generate a robust evidence base for proposed policy change to be tested.

Ethics approval required

Ethics approval required

Ethics approval(s)

Approved 06/10/2023, Faculty of Medicine, Health and Life Sciences Research Ethics Committee, Queen's University Belfast (University Road, Belfast, BT7 1NN, United Kingdom; None provided; facultyrecmhs@qub.ac.uk), ref: MHLS 23_55

Study design

Observational mixed-methods study

Primary study design

Observational

Secondary study design

Cross sectional study

Study setting(s)

School

Study type(s)

Prevention

Participant information sheet

See trial outputs table

Health condition(s) or problem(s) studied

Diet quality in secondary schoolchildren

Interventions

This observational research consists of two stages. In the first stage, a variety of pupil- and parent-level outcomes will be collected alongside school-level data and factors from 32 schools in Northern Ireland and England.

An observational study will be undertaken (n=32 secondary schools; n=1440 pupils from two sites in Years 7 and 10 (England) and Years 8 and 11 (Northern Ireland)) utilising the variation in the proportion of eligible pupils taking up FSM. Pupil- (dietary intake using INTAKE24, school

food choices, FSM eligibility and uptake, food insecurity) and parent-level outcomes (FSM eligibility and uptake, food insecurity and school food views and experiences) will be collected alongside school-level data and factors.

Multi-level modelling will be used to evaluate the association between school-level FSM uptake and fruit and vegetable (FV) intake, overall diet quality, and food insecurity in all pupils, irrespective of FSM status, also exploring aggregated attendance and educational attainment data. An exploratory comparison of FSM eligible pupils who take FSM versus FSM eligible pupils who do not take FSM will also be undertaken to assess the effect of FSM uptake at an individual level on FV intake, diet quality, and food insecurity. Economic analysis of FSM uptake will be conducted using a cost-utility approach. Proposed policy changes to extend FSM eligibility and uptake will be modelled to explore effects on FV intake, overall diet quality and food insecurity. In the second stage, a representative subset of the recruited schools (n=6-8) will participate in an in-depth qualitative evaluation conducted with school staff, parents (interviews) and pupils (focus groups), alongside school food policy and environment data collection to assess barriers and facilitators and characterise schools with different levels of FSM uptake.

Intervention Type

Other

Primary outcome measure

Fruit and vegetable (FV) intake (n portions) measured using INTAKE24, an online self-completion 24-hour dietary recall tool that is based on the multiple pass method over 24 h. A minimum of one and a maximum of two (non-consecutive) dietary recalls on school days will be undertaken for each pupil participant, with a mean value taken when two recalls are completed.

Secondary outcome measures

A range of other dietary measures (in addition to the primary outcome) will also be assessed through the INTAKE24 tool, administered as described above:

1. Overall diet quality measured using the validated Diet Quality Index for Adolescents (DQI-A) (24 h), which comprises three components (diet quality, diversity and equilibrium)
2. Fruit and vegetable (FV) intake at school
3. Meeting the FV 5-a-day recommendation
4. Intake of total energy (kcal), dietary fibre, free sugars, and other key micro- and macronutrients. Nutrients will be measured as micro/mg/grams and also expressed as a percentage of energy intake for food consumed both at school and over 24 h.
5. Food insecurity data will be collected from parents using an 18-item household food security module and pupils using a 9-item Child Food Security Survey Module (both USDA)
6. Pupil quality of life measured using a Child Health Utility 9D questionnaire
7. School attendance and educational attainment data will be collected at a school level and used as an aggregated outcome.

Other data will be collected to allow understanding of both the overall school and the school food environment and context and to address study aims, including analysis of cost-effectiveness and understanding factors that influence school uptake.

These data will include:

1. Pupil free school meal (FSM) eligibility and uptake, usual school lunch consumption, other pupil characteristics and money spent on food outside of school measured using pupil and school surveys
2. Child FSM eligibility, child's usual food choices, FSM perceptions, usual home food practices and expenditure measured using a parent survey
3. Economic analysis: A cost-utility analysis of FSM participation will be undertaken using cost

data collected from schools measured using questionnaires and interviews and pupil completion of the Child Health Utility 9D (Paediatric Quality of Life) questionnaire.

4. Barriers and facilitators to FSM uptake and school food systems measured using qualitative focus group discussions with pupils, parents and school staff.

Other data will be collected to inform both stages of the study, including the case studies and typology development: the school eating environment will be observed and observation checklists completed; key school documents and policies (including school promotion of FSMs, FSM eligibility, FSM uptake, school meal data and food offered, school meal uptake, registration processes for FSMs, school food policies, other relevant school policies and relevant inspection reports) will be explored; FSM implementation and wider contextual/school food system influences (school leadership, school/parent engagement, pupil consultation mechanisms) will be measured using school staff/governor/caterer questionnaires.

Overall study start date

01/01/2023

Completion date

30/06/2025

Eligibility

Key inclusion criteria

All pupils from the recruited schools and selected classes (i.e. years 7 and 10 in England and years 8 and 11 in Northern Ireland) will be eligible to participate. Their parents and relevant school stakeholders from eligible schools will also be eligible to participate.

Participant type(s)

Healthy volunteer

Age group

Child

Lower age limit

11 Years

Upper age limit

15 Years

Sex

Both

Target number of participants

We aim to recruit n=32 secondary schools, i.e. n=1440 pupils from two sites in Years 7 and 10 (from the Midlands) and Years 8 and 11 (from Northern Ireland). We also aim to recruit one parent/legal guardian for each participating pupil. From each school, we will also collect data from school staff/ governor/business manager/caterers. In a subset of the recruited schools (n=6-8) focus groups will be conducted with pupils (x3 groups of 8 pupils per school) and interviews will be conducted with parents (n=8 per school) and key school staff (n=4 per school).

Total final enrolment

1668

Key exclusion criteria

1. Secure and pupil referral units
2. SEN schools
3. Non-English language speaking schools

Date of first enrolment

01/11/2023

Date of final enrolment

31/03/2025

Locations**Countries of recruitment**

England

Northern Ireland

United Kingdom

Study participating centre**Centre for Public Health**

Institute of Clinical Science
Grosvenor Road
Queen's University Belfast
Belfast
United Kingdom
BT12 6BJ

Study participating centre**Institute of Applied Health Research**

Murray Learning Centre
University of Birmingham
Edgbaston
Birmingham
United Kingdom
B15 2TT

Sponsor information

Organisation

Queen's University Belfast

Sponsor details

University Road
Belfast
Northern Ireland
United Kingdom
BT7 1NN
+44 (0)28 9024 5133
researchgovernance@qub.ac.uk

Sponsor type

University/education

Website

<https://qub.ac.uk>

ROR

<https://ror.org/00hswnk62>

Funder(s)**Funder type**

Government

Funder Name

National Institute for Health and Care Research

Alternative Name(s)

National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type

Government organisation

Funding Body Subtype

National government

Location

United Kingdom

Results and Publications

Publication and dissemination plan

Findings will be of value at the national level (to inform government school food policy); school level (to enable effective implementation); and the public level (to support a wider understanding of school food policy).

The study team will produce the following outputs:

- 1. A refined logic model
- 2. Open access publications and conference presentations on the study findings.
- 3. NIHR interim reports
- 4. Full study report published in the National Institute for Health Research Journal Library (<https://www.journalslibrary.nihr.ac.uk>)
- 5. Policy briefings for governments, public health bodies and those responsible for school food policy development
- 6. Research summaries for non-academic audiences including the media
- 7. Presentations at meetings held by key network organisations; workshop summaries
- 8. Individual school reports will be produced for each participating school summarising findings on their current school food systems, including the FSM provision and uptake, and sharing pupils’ views of school food

Intention to publish date

01/12/2025

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study are available upon reasonable request from the corresponding author, Professor Jayne V Woodside, j.woodside@qub.ac.uk. After the publication of the main findings of the study, the Chief Investigators will consider external requests to gain access to anonymised data. The dataset will be preserved and available for this purpose for a minimum of 10 years following the end of the study. Those requesting data will be asked to provide a brief research proposal including the objectives, timelines, intellectual property rights, and expected outputs, and a Data Sharing Agreement between Queen’s University Belfast and the requestor will be drawn up. Requestors will be required to acknowledge the research team and funders as a minimum and consider co-authorship of any publications arising from the data. Permission for anonymised data to be shared for the purpose of future academic research will be sought from all participants via the informed consent form.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	version 3.0	26/09/2023	18/10/2023	No	Yes
Participant information sheet	version 3.0	26/09/2023	18/10/2023	No	Yes
Participant information sheet	version 3.0	26/09/2023	18/10/2023	No	Yes
Participant information sheet	version 3.0	26/09/2023	18/10/2023	No	Yes
Participant information sheet	version 3.0	26/09/2023	18/10/2023	No	Yes
Protocol file	version 3.0	26/09/2023	18/10/2023	No	No
	version 9.0				

Protocol file		11/11/2024	11/03/2025	No	No
Protocol file	version 11.0	03/03/2025	16/06/2025	No	No