The contribution of breakfast to diet quality for children and young people

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Information courtesy of Helena Gibson-Moore
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Review > Nutr Bull. 2023 Dec;48(4):458-481. doi: 10.1111/nbu.12652.

No food for thought–How important is breakfast to the health, educational attainment and wellbeing of school-aged children and young people?

Helena Gibson-Moore [1], Ayela Spiro [1], Sara Stanner [1]

magic breakfast
fuel for learning

- **Objective**: explore the impact of breakfast consumption and skipping breakfast on nutrient intakes in children aged 4-18 yrs and their effect on weight and cardiometabolic health.
- **Rationale**: Students commonly skip breakfast and arrive at school hungry, despite better health outcomes being associated with breakfast consumption, including better diet quality and weight status. Poor nutritional intake during childhood can impact health in the short- and long-term.
- Outcomes – breakfast consumption and…

Health outcomes:
- overweight and obesity
- reduced risk of undernutrition
- other risk markers of ill health

Academic and behaviour outcomes:
- school attendance
- lack of physical activity
- increased snacking
- poorer overall food choices
- other risky behaviours (e.g. smoking)

The need for change

Globally, over 340 million children and adolescents aged 5-19 were overweight or obese in 2016 (WHO 2022)

Around 1 in 10 children in Reception

21.3% overweight (incl. obesity)

More than 1 in 5 children in Year 6

around 6% severely obese
36.6% overweight (incl. obesity)

Source: National Child Measurement Programme 2022 to 2023

Health impacts of childhood obesity

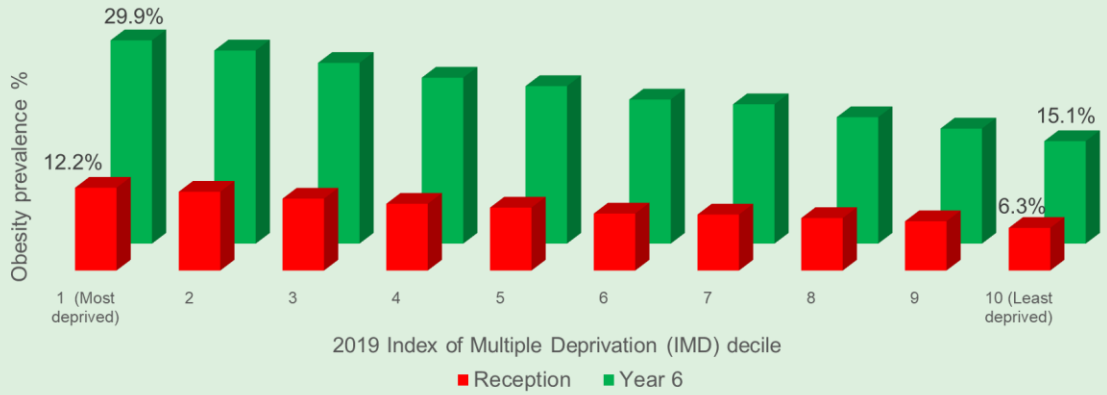
Overweight or obese in childhood is linked with short- and long-term negative health outcomes on both mental and physical wellbeing.

Children living with obesity are more likely to:

- Experience depression, stigmatism, bullying, low self-esteem, anxiety and difficulty sleeping
- Be ill and absent from school due to illness
- Require more medical care than children of a healthy weight
- Have high cholesterol, high blood pressure, pre-diabetes, bone & joint problems and breathing difficulties
- Become an adult living with obesity and the risks associated

Obesity prevalence and inequality

Obesity prevalence is highest amongst the most deprived groups in society



 OHID https://www.gov.uk/government/publications/childhood-obesity-applying-all-our-health/childhood-obesity-applying-all-our-health

Children are not meeting macronutrient requirements

	Current recommendations	Average daily intakes	
		4-10 years	11-18 years
Saturated fat (% E)	< 10%	13.1%	12.6%
Free sugars (% E)	< 5%	12.1%	12.3%
Salt (Max g/day)	< 3-5g: 4-10 y < 6g: 11-18 y	3.9g: 4-6 y 5.3g: 7-10 y	7.0g
Fibre (g/day)	20g: 4-10 y 25-30g: 11-18 y	14.3g	16.0g
Oily fish (g/day)	140g per week	14g/week	21g/week
Fruit and veg	5 portions (80gs each) a day		Achieved by 12%

E – total energy intake

PHE & FSA (2020); PHE & FSA (2017)

Common contributors of free sugars at breakfast include **sweetened breakfast cereals, sugar preserves** and **sweet spreads, morning goods**
(Gaal et al. 2018)

BNF analysed breakfasts* from families in England and found high levels of free sugars and low amounts of fibre in many of them (PHE 2017)*

Children are not meeting micronutrient requirements

	% with intakes below LRNI* Girls 11-18 years	% with intakes below LRNI* Boys 11-18 years
Vitamin A	18	18
Riboflavin	22	13
Folate	10	9
Iron	49	11
Calcium	16	14
Magnesium	47	33
Potassium	37	22
Iodine	28	19
Selenium	41	24
Zinc	16	20

NDNS: results from years 9 to 11 (2016 to 2017 and 2018 to 2019)

21% of boys and 17% of girls in the 11-18 yr old age groups have low blood levels of vitamin D

Evidence of anaemia in girls (low blood levels of iron)

Low blood levels of some vitamins (e.g. folate)

*LRNI: Lower reference nutrient intake

Dietary inequalities

UK children aged 4-18 years
with increasing income

- Total amount of fruit and veg (g)
- No. of 5 A DAY portions*
- % achieving 5 A DAY*
- % consuming oily fish
- Micronutrients: vitamin A, zinc

*(reported in 11-18 yrs only)

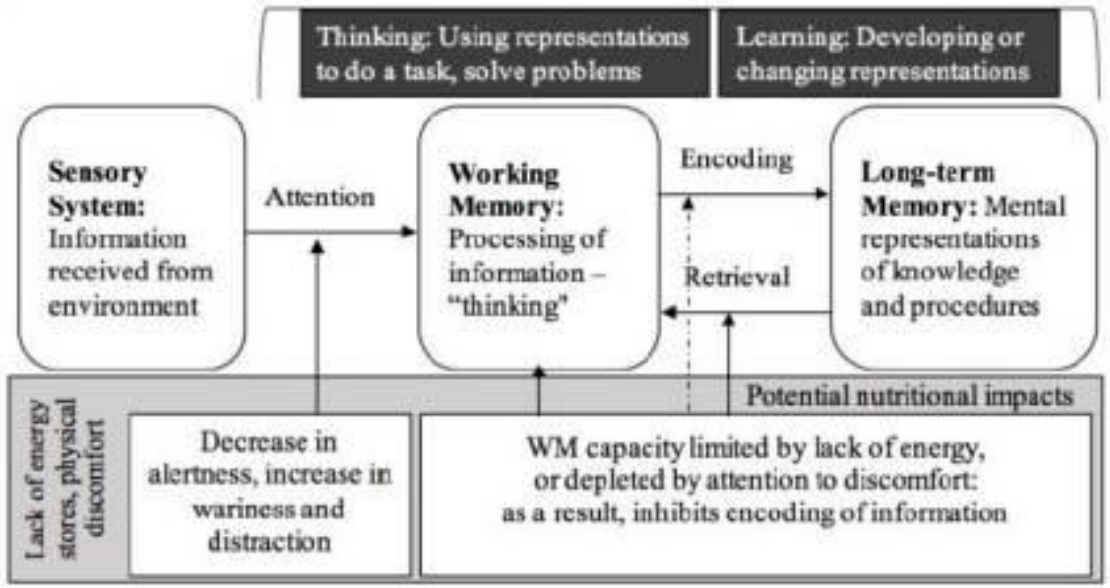
Food or nutrient	Average change per £10,000 income (per day)	
	4-10 years	11-18 years
Total fruit and veg	13 g	13 g
5 A DAY portions	-	0.2 portions
% achieving 5 A DAY	-	3%
% consuming oily fish	3%	3%
Vitamin A (RNI 400-700 µg/day)	6 µg	7 µg
Zinc mg/day (RNI 5-9.5 mg/day)	0.2 mg	0.1 mg

What about children's **hunger?**

- 38% of teachers in state schools said there was an increase in the number of children coming to school hungry
- Marked differences in the most deprived and most affluent schools (defined by FSM quartile):
  - children seen coming to school hungry (56% vs 22%)
  - families asking to be referred to a foodbank (27% vs 8%)[1]

Hunger is associated with:

- Poorer cognition and learning
- Mental health concerns (in young person, maternal and family)
- Behavioural issues
- Higher risk of chronic disease



[1] (Sutton Trust 2022) survey of 6200 teachers in England.
[2]Jirout et al. (2019)

Research suggests breakfast is an opportunity to improve diets

A drink at breakfast can encourage hydration – dehydration can cause tiredness and lack of concentration (NHS 2023) – milk and water are good choices.

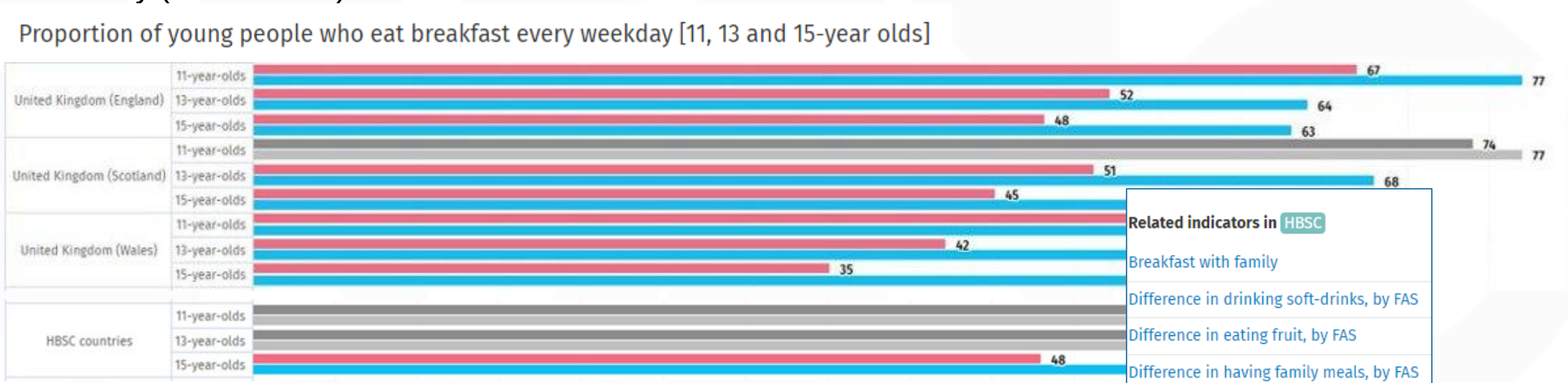
Nutrient concern with Ca, Fe, F&V and fibre – breakfast can make an important contribution

Healthy breakfast consumption may be one approach in helping to improve diet quality in children and young people

Nutrients	Breakfast food sources
Iron	Wholemeal bread, fortified BF cereals, dried fruit
Calcium	Bread, milk and dairy products, fortified alternatives
Fibre	F&V, wholegrains (porridge), wholemeal bread, fortified breakfast cereals
Protein	Nut butters, eggs, dairy products
Carbohydrates	Starchy foods (bread, cereals)
Vitamin B	Dairy products, fortified BF cereals

The research so far:

The World Health Organisations's Health Behaviour in School-aged Children Study 2017/18 Survey (HBSC 2020)



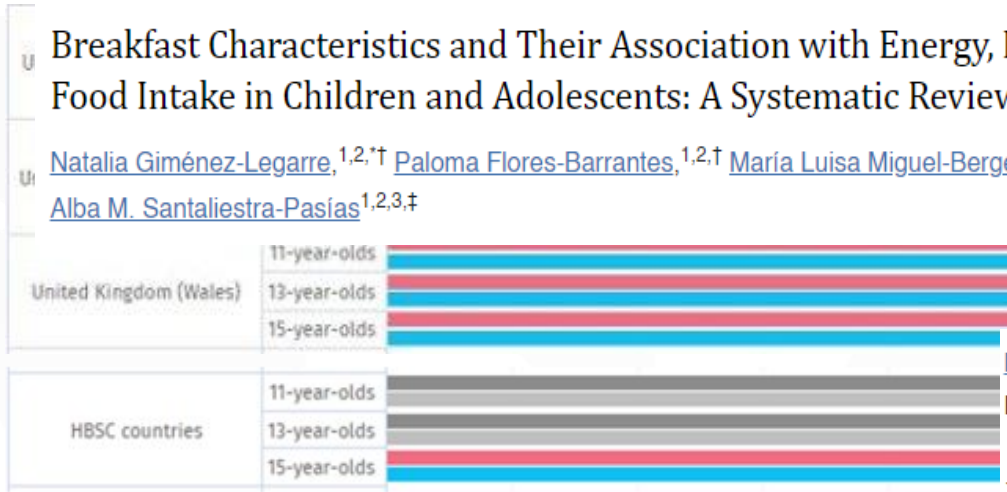
The research so far:

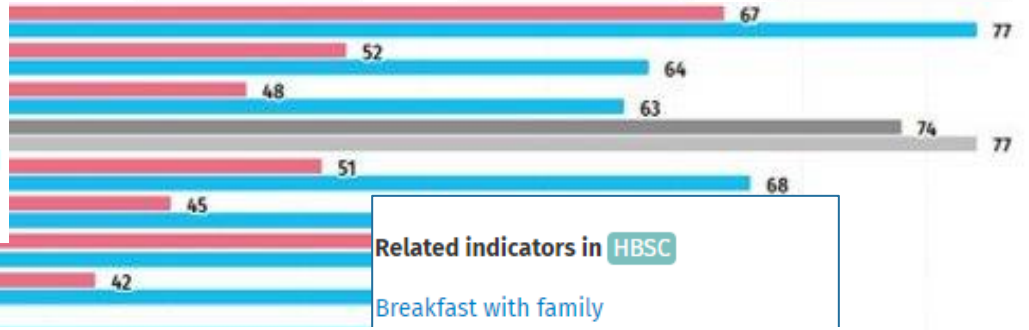
The World Health Organisations's Health Behaviour in School-aged Children Study 2017/18

Nutrients. 2020 Aug; 12(8): 2460.
Published online 2020 Aug 15. doi: 10.3390/nu12082460
PMCID: PMC74688
PMID: 328242

Breakfast Characteristics and Their Association with Energy, Macronutrients, and Food Intake in Children and Adolescents: A Systematic Review and Meta-Analysis

Natalia Giménez-Legarre,[1,2,*†] Paloma Flores-Barrantes,[1,2,†] María Luisa Miguel-Berges,[1,2] Luis A. Moreno,[1,2,3,‡] and Alba M. Santaliestra-Pasías[1,2,3,‡]





Related indicators in HBSC

Breakfast with family

Nutrients. 2020 Oct; 12(10): 3201.
Published online 2020 Oct 20. doi: 10.3390/nu12103201
PMCID: PMC75
PMID: 330

Breakfast Characteristics and Its Association with Daily Micronutrients Intake in Children and Adolescents–A Systematic Review and Meta-Analysis

Natalia Giménez-Legarre,[1,2,3,*†] María L. Miguel-Berges,[1,2,3,†] Paloma Flores-Barrantes,[1,2,3] Alba M. Santaliestra-Pasías,[1,2,3,4,‡] and Luis A. Moreno[1,2,3,4,‡]

Eating sweets

Eating vegetables

Having family meals

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Nutrients. 2020 Aug; 12(8): 2460.
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Breakfast Characteristic
Food Intake in Children

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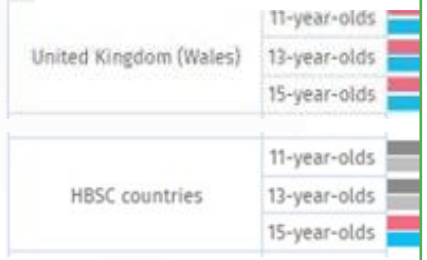
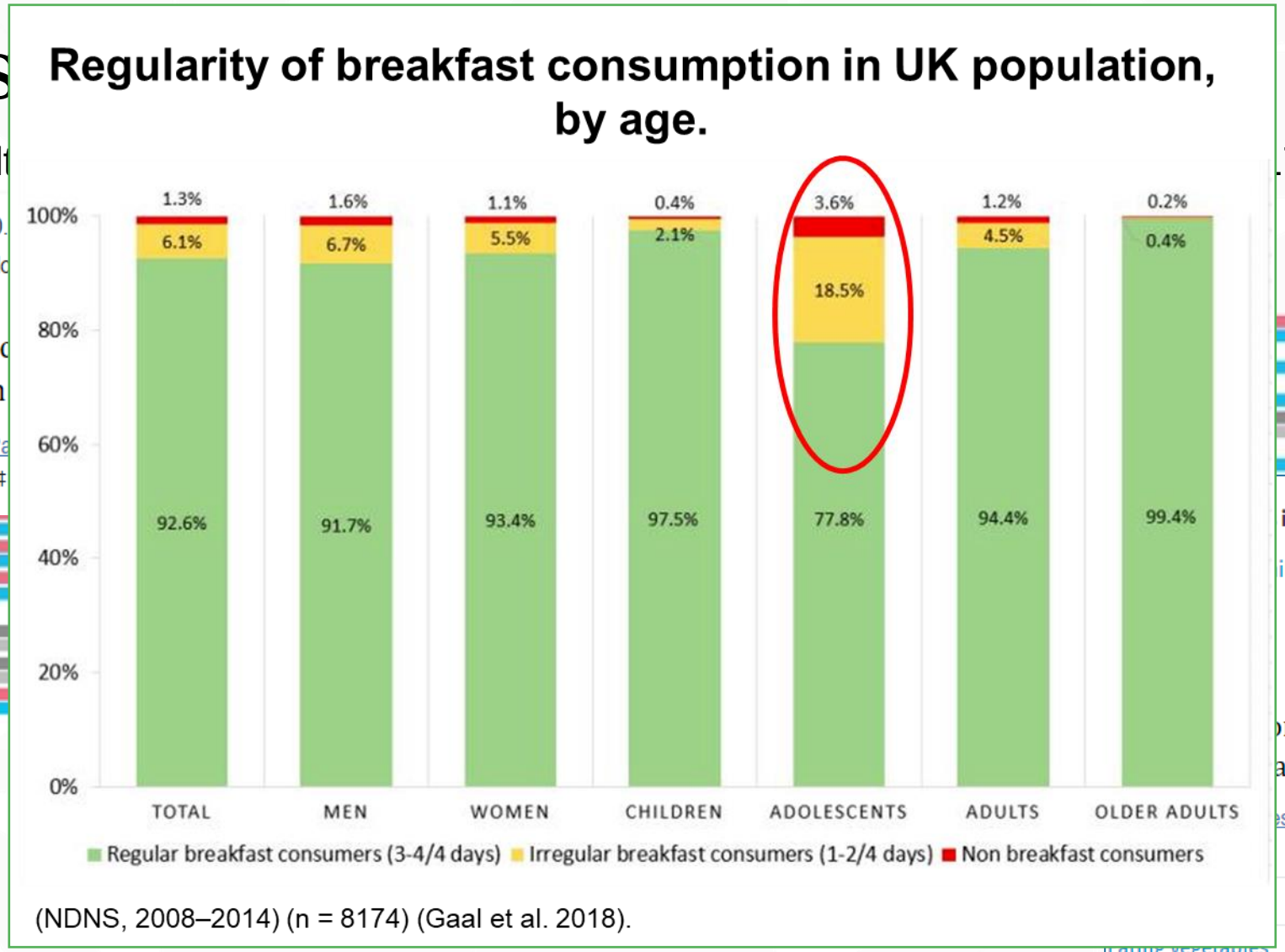
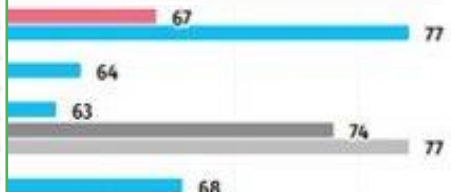
Alba M. Santaliestra-Pasías[1,2,3,‡]





(NDNS, 2008–2014) (n = 8174) (Gaal et al. 2018).



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es,[1,2,3]

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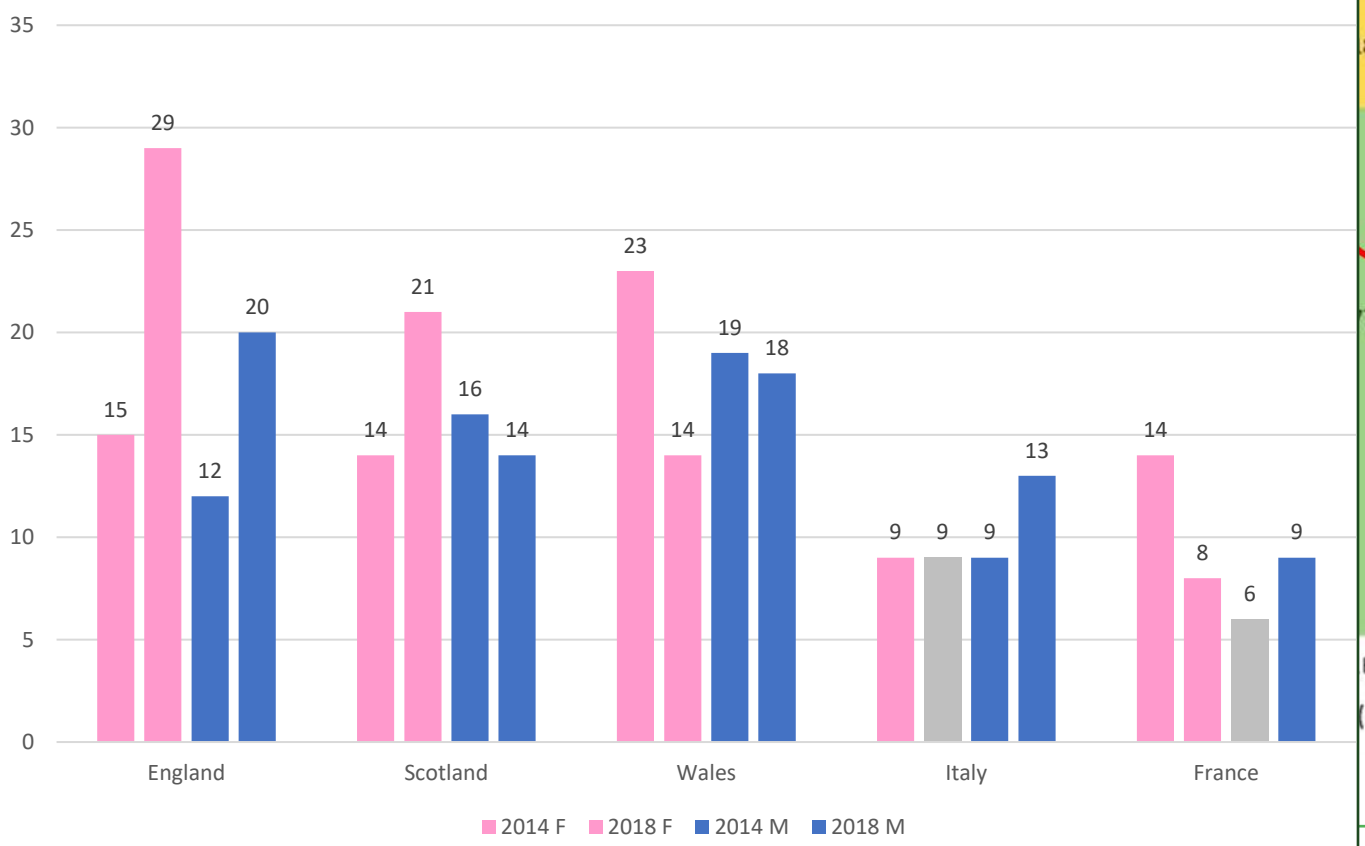
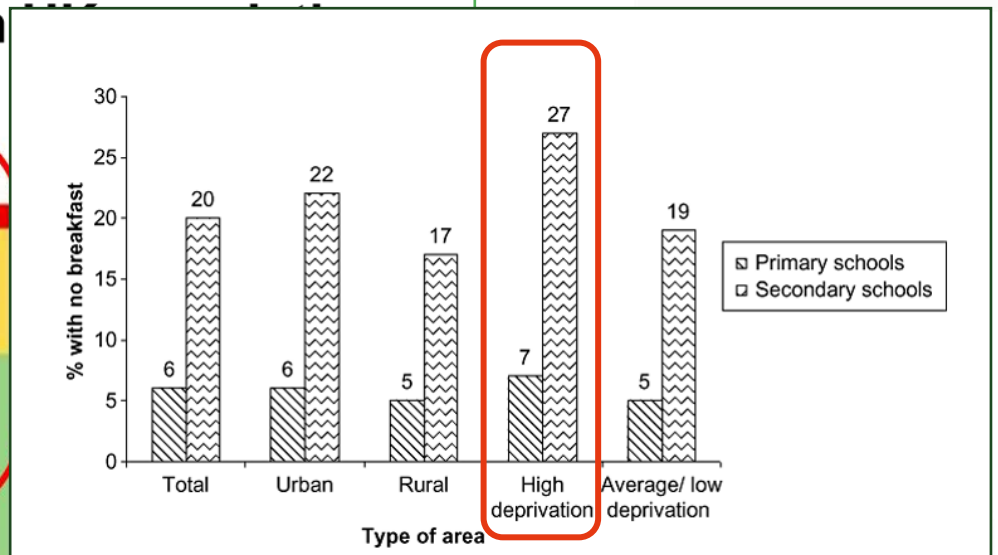
Regularity of breakfast consumption in

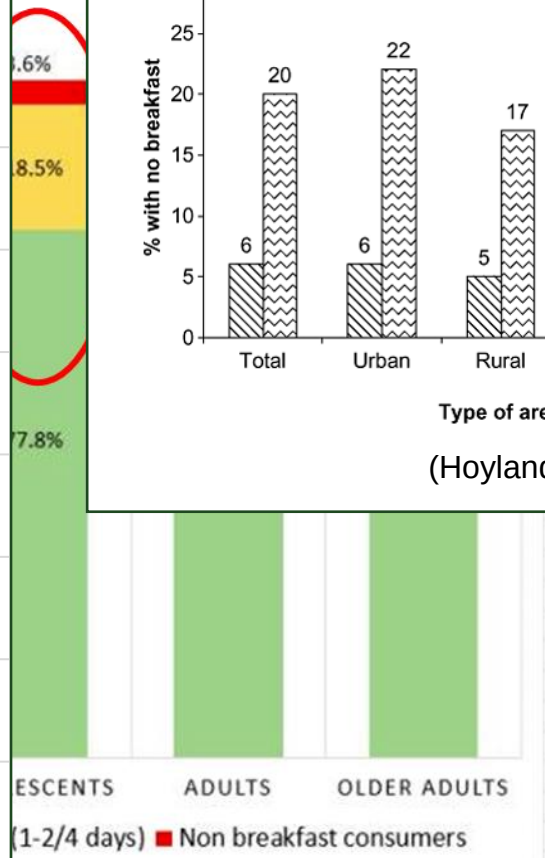
Percentage point difference in prevalence of eating breakfast every weekday, between low and high family affluence groups in 2018
[11-, 13- and 15-year-olds] (HBSC 2020)



WHO Europe Health Behaviour in School-aged Children Study 2017/18 Survey (HBSC 2020)



(Hoyland et al. 2012)



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Having family meals

Findings

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- Children and young people who regularly eat breakfast are more likely to have better **nutrient intakes, dietary patterns, dietary quality, weight status, and school related outcomes,** than those who eat breakfast infrequently or those who skip breakfast.
- Eating nutrient dense breakfast foods can be important providers of essential nutrients
- Children who skip breakfast continuously may find it more difficult to get key nutrients to support healthy growth, development and cognitive and mental health function
- Breakfast can alleviate hunger and evidence suggests there may be small improvements to short-term learning.

However, more research is needed to investigate the effects on long-term learning educational attainment and health outcomes, and the impacts of different types of breakfasts and breakfasts foods in relation to other foods consumed throughout the day.

What does this mean in reality?

- Breakfast consumption could improve nutritional intakes in the most vulnerable children and young people and help to address inequalities in education outcomes, at least in the short term.
- Many schools offer breakfast clubs to support positive breakfast habits, improve nutritional intakes and increase attendance, provide social interaction and offer support for parents.
- More inclusive and non-stigmatising breakfast club models can increase participation and reach the most vulnerable groups.

We need more data on breakfast clubs to demonstrate their role in health and educational outcomes in the UK, particularly in the long term.

What should schools do?

We encourage all schools to consider including a healthy breakfast provision as part of a whole school approach to healthy eating.

Limitations and further research

- there is no universally agreed definition of breakfast
- reporting of how frequently breakfast is consumed differs
- breakfast consumption at school is not differentiated with at home
- Further research is needed:
    - long-term outcome studies
    - research in different ethnicities
    - deeper understanding underlying mechanisms and pathways that explain the relationship between food insecurity and obesity

(Adolphus et al. 2015; Adolphus et al. 2017; Gibney et al. 2018; O'Neil et al. 2014)

Read more...

Read the BNF summary: [Breakfast skipping means children may not be getting all the nutrients they need, warns new report. - British Nutrition Foundation]

Read the full report here!

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