

Food safety awareness of children aged 11 – 16 years old in Wales

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Introduction

The Food Standards Agency (FSA) reported that 500,000 people in the UK annually succumb to foodborne illness (FSA, 2014). To reduce the risk of foodborne illness, consumers need to be informed of domestic food safety risks and risk-reducing behaviours. Although school pupils (11–16 years) may not be currently responsible for domestic food preparation, they are the food preparers of the future (Haapala & Probart, 2004). The knowledge of food safety and the behavioural practices developed at this age may carry into adulthood (Evans, 2015).

It is suggested that insufficient research relating to the food safety knowledge of children and teenagers exist, despite their future preparation responsibilities and future roles as caregivers for potentially vulnerable infants, children and elderly (Byrd-Bredbenner *et al.*, 2010).

Consequently, determination of school pupils food safety knowledge gives insight into the need for food safety education of future consumers. To date, UK data detailing the food safety knowledge of school pupils are lacking and information regarding potential sources of food safety education/information is unknown.

Purpose

The aim of the research was to determine the level of school pupil's food safety knowledge in the key areas of food safety identified by the FSA in their 4C's strategy (cooking, cleaning, chilling and cross contamination) (FSA, 2006), and explore the potential impact of food technology/home economics lessons at school upon the food safety knowledge of children.

Methods

Recruitment: The participants were secondary school pupils (aged 11–16 years old) attending careers fairs across South Wales, UK (n=722). The careers fairs (n=12) aimed at pupils selecting their GCSE (age 14-16) and A level (age 16-18) subject options were conducted between 2011 and 2017 in the South Wales region (Figure 1).

Data Collection: A short multiple choice questionnaire was utilised based on the FSA 4Cs principles (FSA, 2006). Demographic data (age, gender, school and whether they studied Food Technology/Home Economics) were captured.

Data analysis: Descriptive and inferential statistics were conducted using Microsoft Excel and IBM SPSS Statistics package 23.

Ethical Approval: Approval was obtained from the Health Care and Food, Ethics Panel at Cardiff Metropolitan University.

Acknowledgements

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References

- Byrd-Bredbenner C, *et al.*, (2010). Food Safety Knowledge and Beliefs of Middle School Children: Implications for Food Safety Educators. *Journal of Food Science Education* (9)1: 19-30.
- Evans EW, (2015). Older adults' domestic food handling and storage practices associated with risk of listeriosis. PhD Thesis. Cardiff School of Health Sciences, Cardiff Metropolitan University.
- FSA (2006) 4C's Strategy - Promoting Food Hygiene in the home with a particular focus on working with schools and promoting local initiatives. Available at: <https://www.food.gov.uk/sites/default/files/multimedia/pdfs/4cstrategydoc.pdf>
- FSA (2014) New UK food poisoning figures published. Available at: www.food.gov.uk/news-updates/news/2014/6097/foodpoisoning.
- Haapala I & Probart C (2004) Food Safety Knowledge, Perceptions, and Behaviors among Middle School Students. *Journal of Nutrition Education and Behavior*. (36)2: 71-76.

Results

From the 12 careers fairs attended (2011–2017), 722 completed questionnaires were returned, the majority of respondents were female. The majority of respondents (44%) were aged 13 years. Just over a fifth (24.2%) were 15 years old and 17.6% were 14. Respondents represented 45 secondary schools throughout the South Wales region. Less than a third (29%) reported studying Food Technology/Home Economics at school.

School pupils food safety knowledge

The highest number of correct responses related to the identification of foods likely to contain the most bacteria, over three quarters of pupils (76.6%) correctly identified frozen raw chicken (see Figure 2).

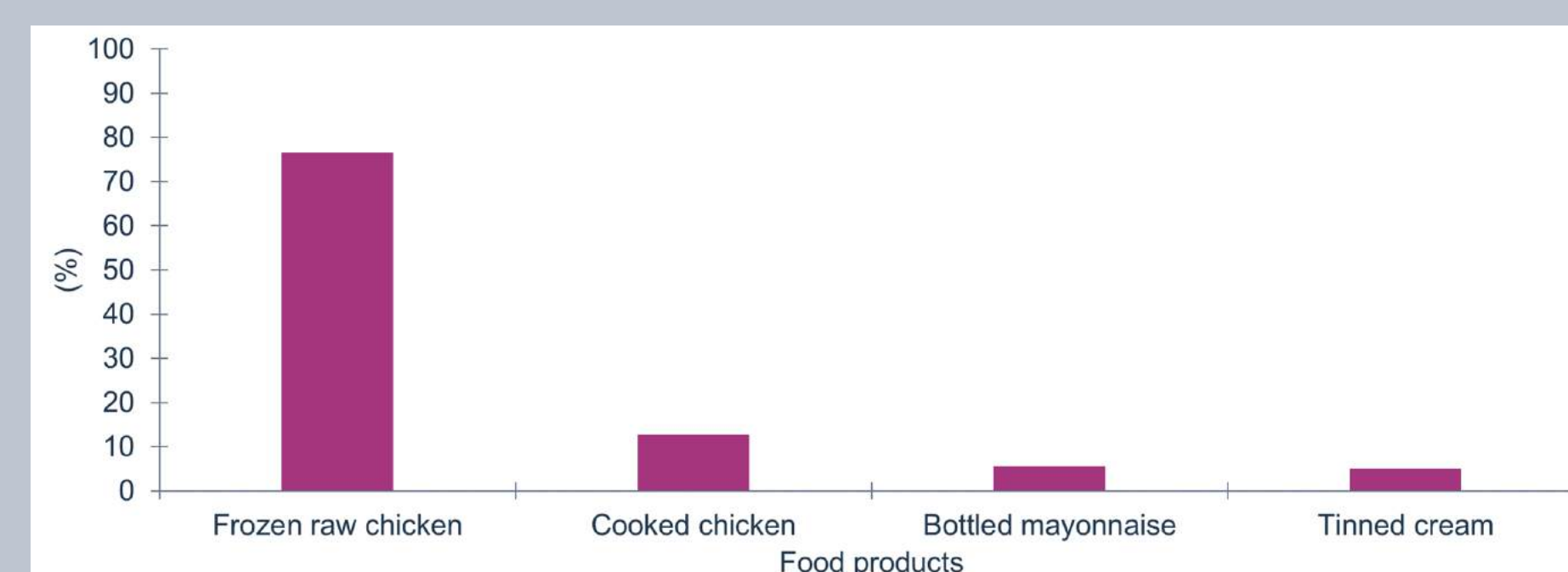


Figure 2. Food products believed to contain the most bacteria (n=722)

Seventy two percent were aware foodborne infection can result from food safety malpractices at retail, industry, and domestic settings, the home kitchen was perceived to be the most likely source.

Although the majority were correct, awareness of recommended temperatures were lacking. Just over half (55.1%) were aware the temperature for a freezer was -18°C (Figure 3) and 59.6% were aware the temperature for a refrigerator was 4°C (Figure 4).

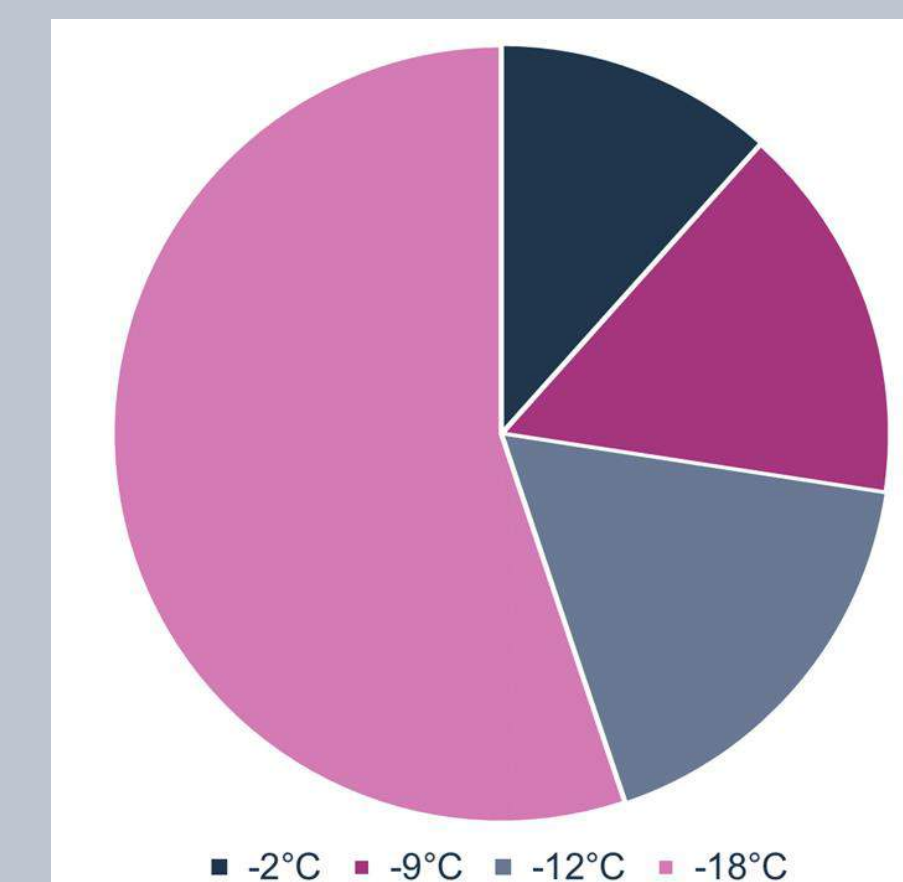


Figure 3 knowledge of recommended freezer temperature (n=722)

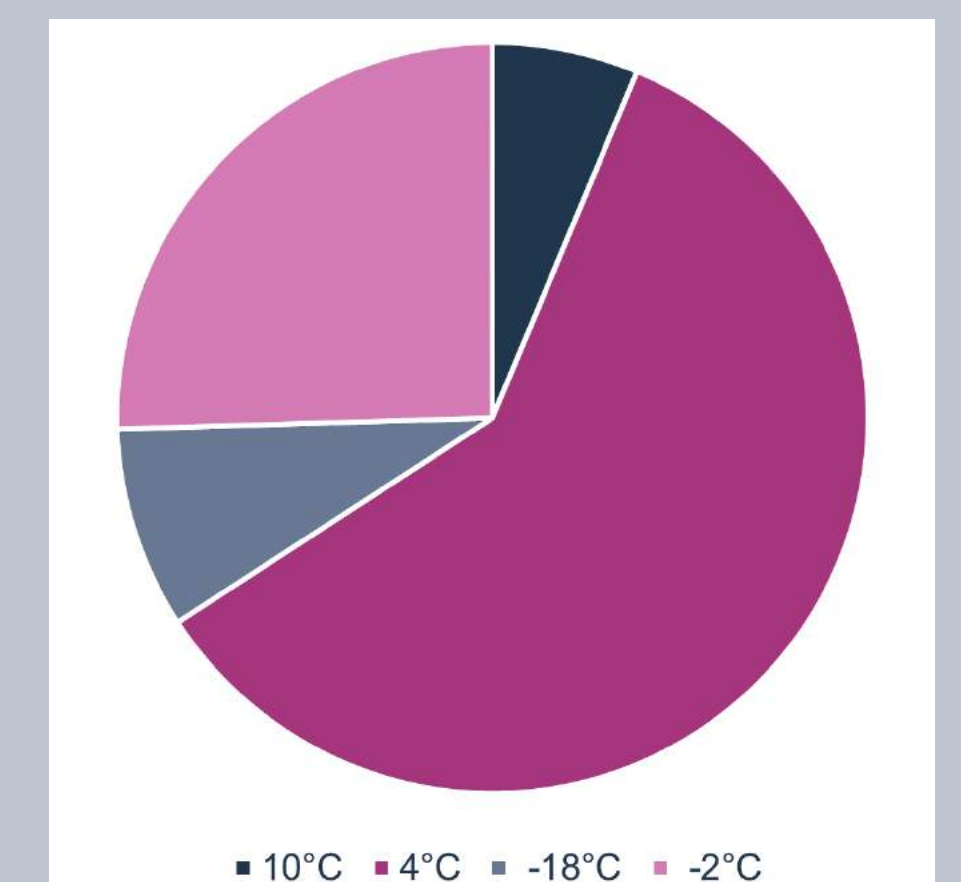


Figure 4 knowledge of recommended refrigerator temperature (n=722)

The majority of pupils (70.3%) were aware that hands should be washed at all three given scenarios, however 21.6% believed handwashing to only be necessary after handling raw meat and not before handling ready-to-eat food.

Just over half of responding pupils were aware bacteria grow at an increased rate when warm (55.7%) and that bacteria will multiply readily between 5°C and 63°C (59.1%). However more than a quarter (26.1%) believed freezing killed bacteria.

Differences in knowledge scores

The majority of school pupils correctly answered 4 of the 7 food safety questions correctly, only 14% correctly answered all questions, 17% failed to correctly answer any questions (Figure 5).

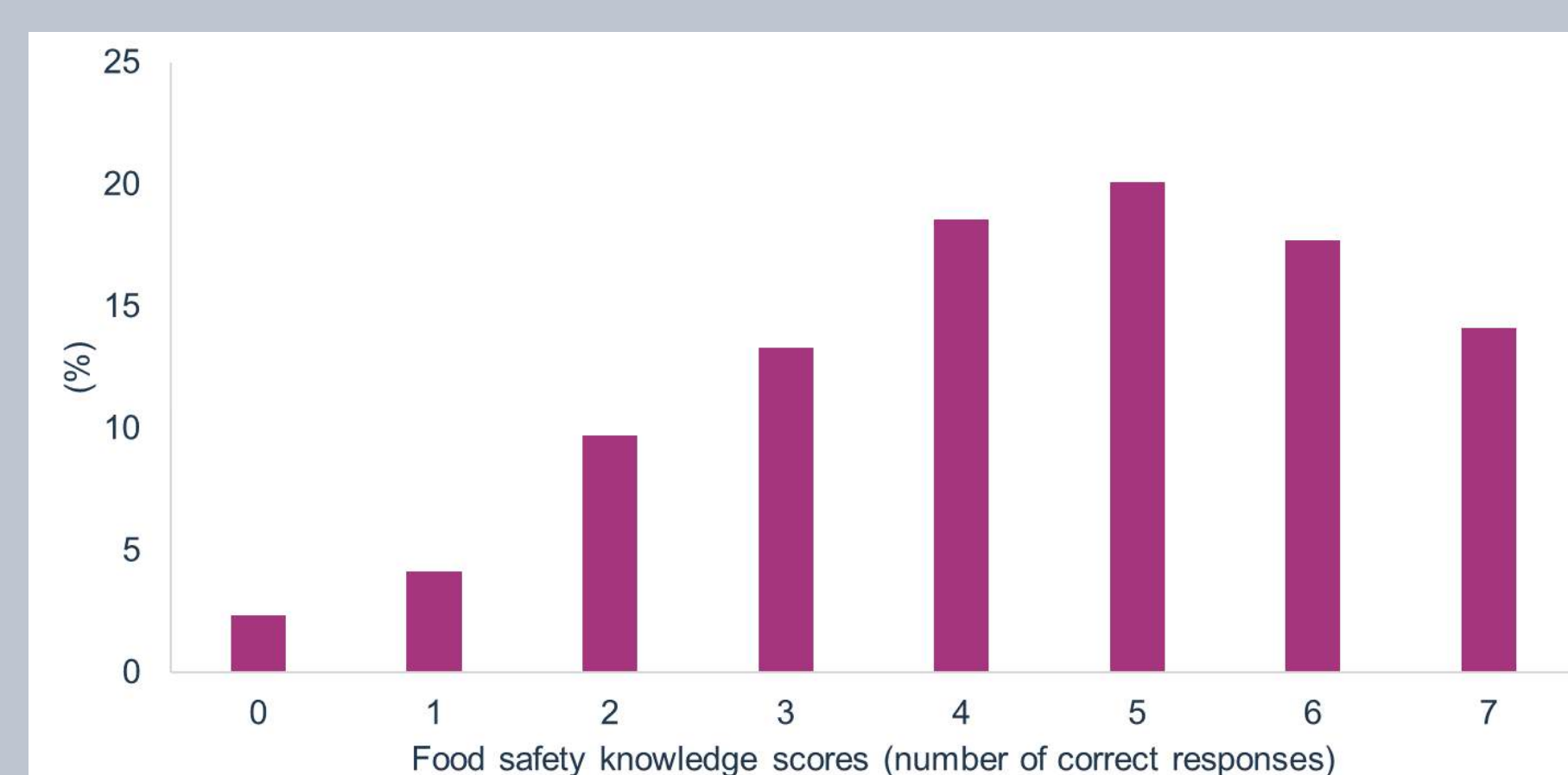


Figure 5. Food safety knowledge scores (n=722)

It was determined that the food safety knowledge scores of pupils studying Food Technology/Home Economics were not significantly different ($p>0.05$) from those that reported not studying Food Technology/Home Economics.

Overall, given that only 29% reported to study food technology/home economics and 23-40% lacked sufficient food safety knowledge, there is a need to establish where and how children currently obtain food safety information. Findings suggest there is a need for innovative food safety education programs for children.

Knowledge scores were significantly different ($p<0.001$) between girls (Md=5, n=422) and boys (Md=4, n=270) (Figure 6).

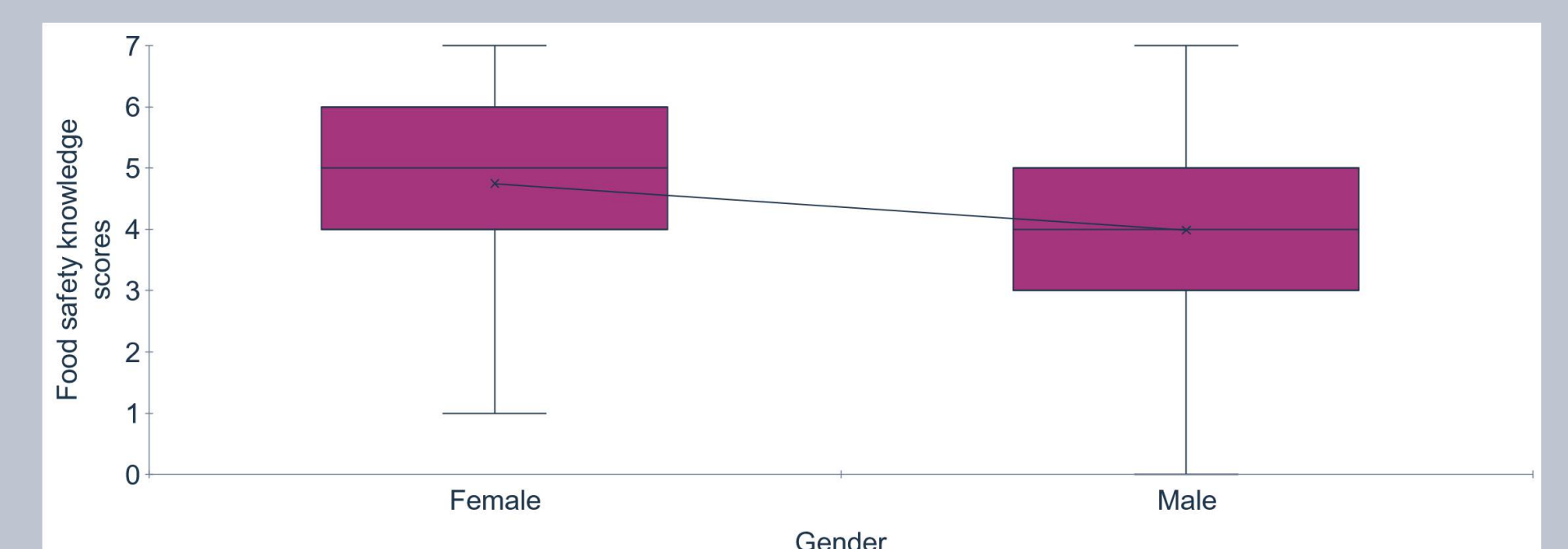


Figure 6. Food safety knowledge score differences between gender (n=692)

A significant difference was determined according to age ($p<0.001$), whereby pupils aged 15 years old obtained higher food safety knowledge scores (Md=5.0, n=175) than pupils aged 14 years old (Md=4.5, n=127) and 13 years old (Md=4.0, n=319) (Figure 7).

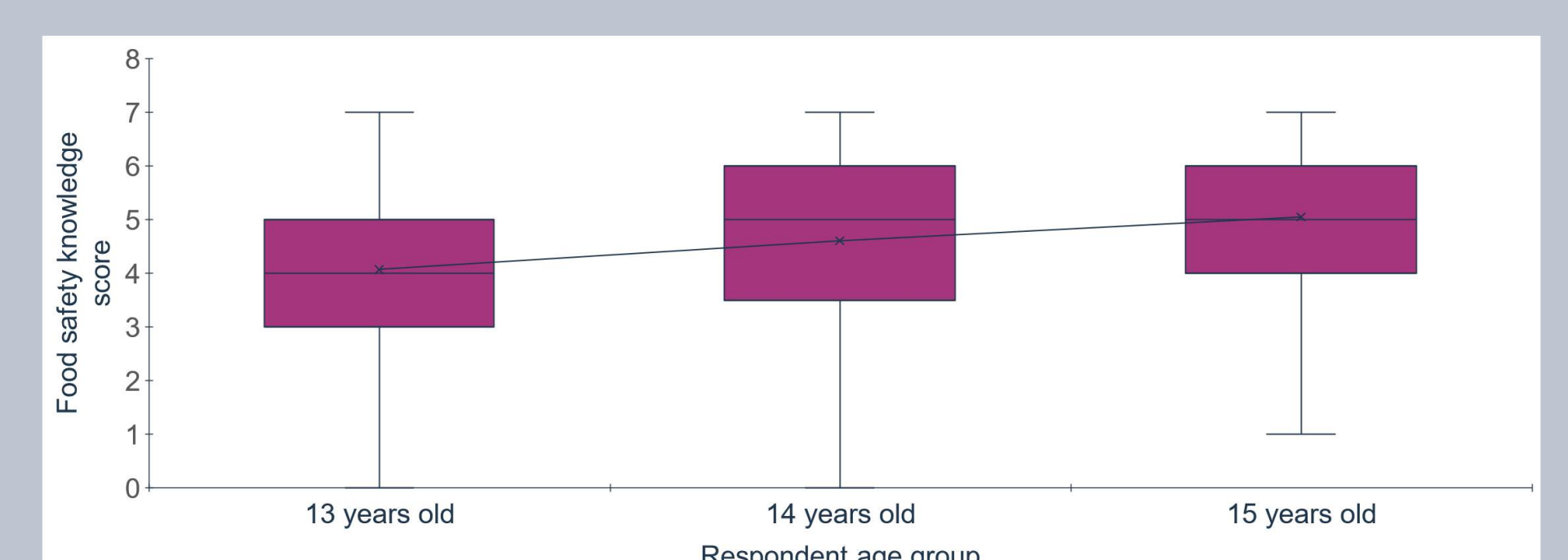


Figure 7. Food safety knowledge score differences between age groups (n=621).

Significance of study

- It is acknowledged that food safety knowledge does not equate to food safety behaviour, however knowledge may inform behavioural intentions. Findings indicate 23-40% of secondary school pupils lacked sufficient food safety knowledge and awareness of basic food safety rules in this study.
- Consequently, as the school pupils that participated in this study are the food preparers of the future, there is a need to explore the requirement of food safety education specifically targeting pupils attending secondary schools.
- To enable this, the research has identified the need to explore the provision and prevalence of food safety education in UK secondary schools.