

Factors influencing food safety and nutrition in children's co-curricular food-preparation classes.

Zoe Benbow, Ruth Fairchild and Elizabeth C.Redmond*

ZERO2FIVE Food and Drink Research Unit, Cardiff School of Sport and Health Sciences, Cardiff Metropolitan University, Cardiff, United Kingdom.

*Corresponding author: redmond@cardiff.met.ac.uk

Introduction

Optimum dietary nutrition and food safety are of paramount importance for children's health/wellbeing to enable growth and immune-system development and prevention of foodborne illness. Research suggests food-related habits, including hygiene behaviours, established from a young age have a tendency to be carried into adulthood². Within the UK, half of the reported foodborne illness cases occur in children¹ and the rise of foodborne illness prevalence among children aged <5years² affirms the importance for children's food-safety education. Changes in the national-curriculum has resulted in limited nutritional education of children³ and the rise of childhood obesity⁴ affirms the importance of the need to introduce and educate young children about optimal dietary habits.

In recent years there has been an increase co-curricular food-preparation classes (CCFPCs) for infants/junior children. Such classes may provide a valuable opportunity to convey healthy eating messages to children and educate about positive nutrition and safe food-handling/hygiene behaviours. To date, little is known about nutrition and food-safety inclusion in such groups.

Aim

This study aims to analyse the nutritional content of the products prepared in co-curricular food-preparation classes and adequacy of food safety practices and related interventions delivered.

Methods

In-depth interviews:

- Qualitative in-depth telephone interviews with food-preparation class leaders and parents (n=5) were undertaken using a pre-developed structured interview schedule
- The interview schedule facilitated: determination of inclusion of food-safety in CCFPCs, reported/perceived adequacy of food-safety and nutritional information delivery, determination of class priorities/purpose and recipe/method choice.
- Qualitative data was analysed using NVivo (Version 11.43, 2018) qualitative analysis software.

Recipe Analysis

- A nutritional analysis of cooking class recipes (n=30) was undertaken using the Nutriment Dietary Analysis Program (Dark Green Media Limited, 2016) to determine product fat, saturates, sugar and salt content.
- Data was compared with GDAs for 4-6year olds⁵ according to FSA guidelines for meal/snacks⁶. The FSA traffic light coding⁷ was utilised to categorise nutritional content⁷.
- A quantitative analysis of ingredient frequency within children's class recipes (n=45) was undertaken to determine food type occurrence and opportunities for cross contamination and/or food safety education during preparation.

This study has received ethical approval from the Cardiff Metropolitan University Healthcare and Food Ethics Panel (Reference 9595).

Results

Parents and class leaders perspectives on CCFPCs aims, food safety and nutrition

All class leaders reported the importance of teaching food safety/nutrition (Figure 1). However, parents' perceived food safety was not adequately addressed and some class facilities were not suited to accommodate safe food production; in addition limited nutritional information was provided (Figure 2).

Figure 1. CCFPC leaders perspectives about class aims, food safety and nutrition.

Class Leader perspectives about....		
....class aims, purpose and prioritiesfood safety and information delivery nutrition, healthy eating and information delivery
<ul style="list-style-type: none">Incorporates new foods that children may not have the opportunity to try at home.Foods cooked to each theme every month.Aims to teach children to eat the foods that their parents eat.Attempts to involve the national curriculum.Encourages children to try new foods.Introduces children to cooking skills that they may not be taught at home due to busy lifestyles.	<ul style="list-style-type: none">Handwashing was reported to be important and a 'major point' highlighted at the beginning and throughout the classes.Classes important for teaching children how to cook high risk foods.Food selection – some reported to prepare vegetarian dishes to 'reduce use of high risk ingredients' others selectively used high-risk foods.Children given a hygiene checklist at the class start and use of hygiene quizzes to engage children and learn about food safety.Food is not cooked on site.Selective on the foods and times that prepared products can be taken home.Verbal instructions reportedly given to store prepared foods in a fridge straight away or throw away.	<ul style="list-style-type: none">Attempts to make foods nutritious but children are taught that eating non-nutritious foods in moderation is ok.Tries to help fussy eaters try new foods.Encourages trying new foods at the end of each class.Encourages healthy eating.Tries to avoid refined sugars and keeps salt to a minimum.Teaches children where food comes from by growing it themselves.Tailors the recipes towards nutrition.Educates children about food groups

Figure 2. Parents perspectives about CCFPC aims, food safety and nutrition.

"We attended the class as a social experience and to try cooking new food products."

"In another premise the class leader prepared a bowl of hot soapy water with a soap pump in the kitchen (with stool) for everyone one to wash their hands (no rinsing) and everyone used the same fabric hand towel"

"The class leader said to everyone to wash hands at the start and end of cooking session but very little, if any, other food safety information was said."

"Prepared foods were usually hot when leaving the class and my drive was at least 30 mins – 1 hour. Sometimes stopping on the way home."

"The only nutritional message I remember was the leader saying that vegetables were good for them [children]" Parent Y.

CCFPC recipe nutritional analysis and practice/ingredient frequency

- Overall, 95 different ingredients were used in 30 CCFPC recipes analyse; 60% CCFPC recipes included raw egg, 22% fruit / vegetables and 18% ready-to-eat foods; few included raw meat/raw chicken.
- Frequency of food safety behaviours required during food preparation methods of CCFPC recipes are found in Figure 3. Ten different key food safety behaviours were identified, four were associated with handwashing practices.
- Selected recipes presented considerable opportunities for delivery of food safety information to children and parents attending CCFPCs.
- Nutritional analysis of recipes indicated 42-62% of fat, saturates and sugar in recipes were 'high' according to FSA traffic light front of pack coding guidelines⁷ and thus, not nutritionally appropriate for young children (4-6years).
- The number of recipes high in fat, saturates and sugar were more common for snacks than main meals.

Figure 3. Frequency of food preparation methods (n=30 recipes).

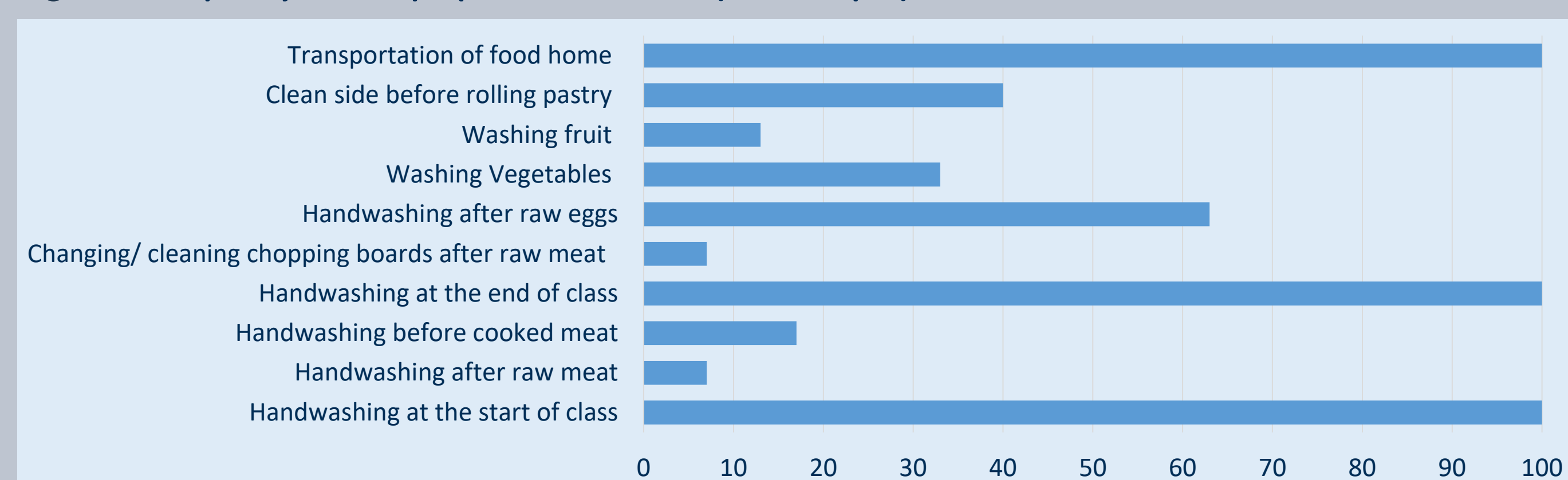
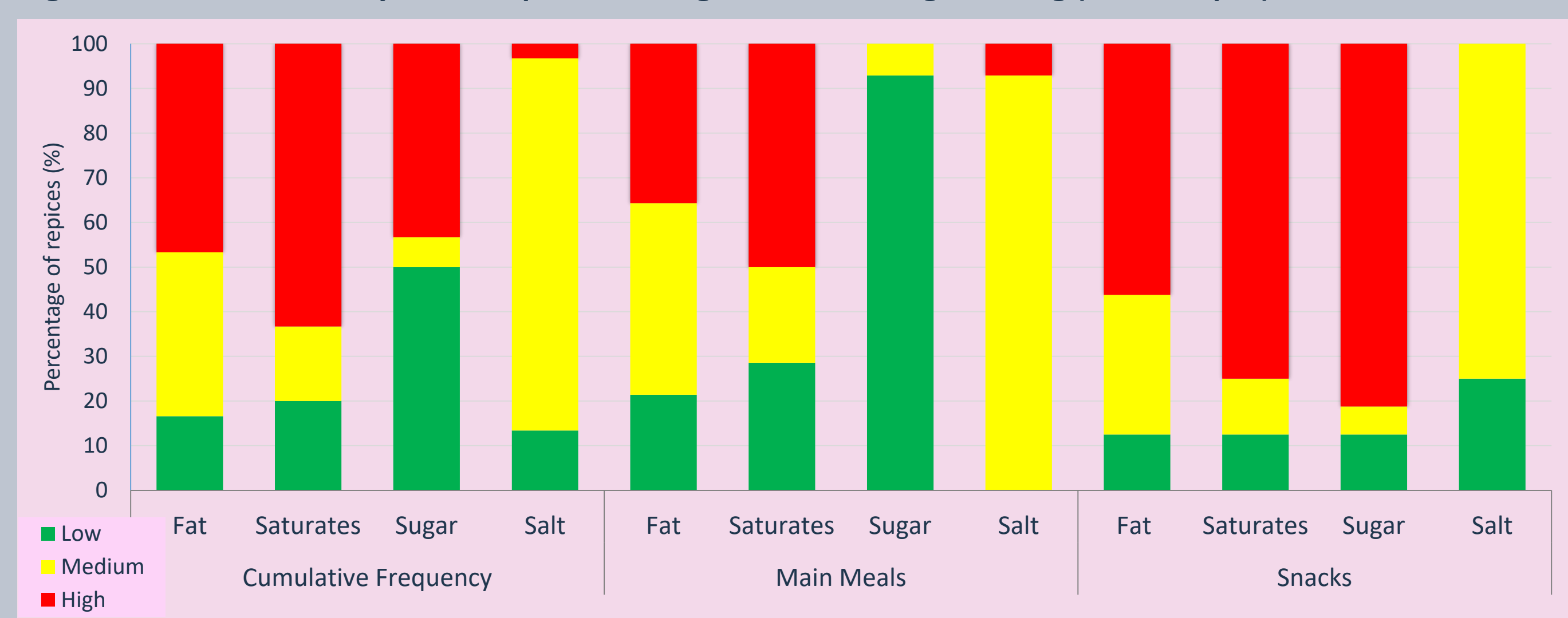


Figure 4. Nutritional analysis of recipes according to FSA traffic light coding (n=30 recipes).



Conclusions

- CCFPCs may provide a valuable opportunity to convey information about safe food-handling/storage and optimum nutrition to children with the aim of fostering positive food consumption behaviours from a young age.
- Findings indicate a disparity between intention to do so and current practice thus highlights a missed opportunity to increase awareness of healthy food-related habits and safe food-handling/hygiene practices with young children in a practical setting.
- Tailored and age-appropriate information development and food-safety support regarding food-preparation class recipe selection and food-safety practice is required to improve and optimise this co-curricular educational opportunity.

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Cardiff Metropolitan University

Prifysgol Metropolitan Caerdydd

Food Industry Centre Cardiff Metropolitan University
ZERO2FIVE Food & Drink Research Unit
Uned Ymchwil Bwyd a Diod
Canolfan Ddiwydiant Bwyd Prifysgol Metropolitan Caerdydd

