

Food Safety Knowledge and Self-Reported Practices of Parents with Young Children

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Introduction

Children are especially vulnerable to foodborne illnesses and are affected more severely due to:

- immature immune systems (reduced ability to fight infection),
- lower body weights (smaller doses of pathogens causing more pronounced effects than in an adult), and,
- reduced stomach acid production (limiting the amount of pathogen denaturation during the digestion process).

Consequently, children are disproportionately affected (PEW, 2009). Subsequently, children are associated with increased incidence of foodborne illness, indeed incidence of many pathogens is highest among children aged <4 years (CDC, 2009).

Given the association of the domestic kitchen with sporadic foodborne illness, accounting for around 20% of cases (Redmond and Griffith, 2009), implementation of safe food handling/storage practices are essential when preparing food for young children.

Although numerous consumer food safety studies have been conducted involving the general population, data detailing the food safety knowledge and self-reported practices of parents are currently lacking.

Furthermore, with over two billion people reported to be users of social media sites (Statista, 2017), there has been an increase in the popularity of social networking sites and forums for parents and online parenting-communities. For example, 'Mumsnet' is a website for UK parents, it hosts discussion forums where users share advice and information on parenting and other related topics.

Given the potential for the sharing of advice and information, there is a need to determine the potential use of such platforms by parents to share and obtain information relating to food-safety for children such as during preparation of powdered infant formula (PIF), weaning and solid food preparation phases.

Purpose

The purpose of the study was to determine the food safety knowledge and self-reported practices of parents and identify trusted sources of food safety information.

Additionally, the study aimed to explore the use of online parenting communities in relation to food-safety information

Methods

Self-complete questionnaire: An online self-complete questionnaire, distributed using social media was completed by parents of children (aged <5years) ($n=78$).

Netnography study: Discussion threads relating to food safety ($n=20$) and all relating comments ($n=489$) from the UK based parental social media site 'Mumsnet' were reviewed and analysed with a netnographic approach to explore peer-to-peer sharing of food safety advice or promotion of food safety malpractices.

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

References

- Centers for Disease Control and Prevention (2009). Preliminary FoodNet Data on the Incidence of Infection with Pathogens Transmitted Commonly Through Food - 10 States, 2008. *Morbidity and Mortality Weekly Report*, 58(13): p333-337.
- PEW. (2009). *Children and Foodborne Illness*. [Accessed 13 November 2017]. Available from: <http://www.pewtrusts.org/~media/assets/2009/11/12/childrenandfoodborne.pdf?la=en>
- Mumsnet (2017) *Mumsnet about us*. [Accessed 13 November 2017]. Available from: <https://www.mumsnet.com/info/about-us>
- Redmond, E. C., and Griffith C.J. 2009. The importance of hygiene in the domestic kitchen: Implications for preparation and storage of food and infant formula. *Perspectives in Public Health*. 129(2): p69-70.
- Statista. 2017. *Number of monthly active Facebook users worldwide*. [Accessed 14 November 2017]. Available at: <https://www.statista.com/statistics/264810/number-of-monthly>
- Wilson, I. G. (1996) Occurrence of *Listeria* species in prepacked retail sandwiches. *Epidemiol. Infect.*, 117(1): p89-93.
- WHO, & FAO. (2007). Safe preparation, storage and handling of powdered infant formula Guidelines. [Accessed 14 November 2017]. Available at: http://www.who.int/foodsafety/publications/micro/pif_guidelines.pdf

Results

A total of 78 parents/guardians of children aged below the age of five, based in the UK completed the online questionnaire. The majority (95%) were females. Only 9% were aged 18 – 25 years, 55% were aged 26 – 33 years and 35% were over the age of 34.

Food safety knowledge and self-reported practices

Powdered infant formula:

PIF is not sterile, even when manufactured to meet hygiene standards it can contain pathogens. Reconstituted PIF provides ideal conditions for growth of pathogens. It should be held for no more than two hours at room temperature and no more than 24 hours in a refrigerator ($\leq 5^{\circ}\text{C}$) (WHO & FAO, 2007).

- Only 56% were aware PIF is not sterile.
- 84% reported they would store reconstituted PIF at room temperature for up to two hours before disposing of it.
- 99% reported refrigerated storage of PIF would not exceed 24 hours.

Refrigeration temperatures:

Although parents indicated awareness of recommended refrigeration temperatures, self-reported practices suggest formula may be stored at potentially unsafe temperature in the home:

- 79% were aware that their refrigerator should operate at a temperature between $0 - 5^{\circ}\text{C}$.
- 59% reported that they did not know the current temperature of their refrigerator.
- 71% reported they never use a thermometer to check the operating temperature of their refrigerator.

Use-by date:

The use-by date, is determined based upon pathogen growth parameters, to ensure food remains safe for consumers (Wilson, 1996).

- 66% were aware that the use by date indicated the last date the product was safe for consumption.
- Only 35% reported 'always' following use-by dates.
- 91% were 'more likely' of adhering to use-by dates if the food was intended for a child and not themselves.

Trusted sources of food safety information and use of online parenting-communities

The most trusted sources for food safety information were medical professionals. Midwives were the most trusted (95%), along with general practitioners (89%) and health visitors (70%). Findings indicate online parenting-communities may be used to obtain food safety information:

- 95% reported accessing online parenting-communities.
- <60% reported using online parenting-communities to obtain information.
- <32% believed information acquired from such sources to be trustworthy.
- 48% reported that social-media influenced their everyday opinions and practices.

The majority (73%) reported that if they saw a comment advising a food-safety malpractice in an online parenting-community, they were likely of correcting the information. Furthermore, 92% stated they would be more likely of correcting the advice if it was given to a friend. However, fewer (74%) stated they would correct the advice if it came from a friend.

Inclusion of food safety information in online parenting-communities

Examples of food safety questions posted on forums:



Figure 1. Forum question regarding food safety during pregnancy.



Figure 2. Forum question regarding safe of reheating left over cooked food.



Figure 3. Forum question regarding safe storage of reconstituted PIF.

The netnography study reviewed and analysed publicly accessible comments ($n=489$), made in response to food safety related forum threads ($n=20$) on Mumsnet.

Findings indicated that such forums are utilised by parents to obtain information by posting food safety questions or concerns (Figure 1, Figure 2 and Figure 3).

The forums provide open and free discussion, however disagreements and differences in opinion are seen, particularly in relation to topics that can be controversial, such as preparation of PIF. Indeed, in response to a question regarding safe storage of reconstituted PIF (, some responses were emotional (Figure 4).

Although a number of responses to the forum thread provided correct information, some were providing vague or only partly-correct information (Figure 5). Only a small proportion of comments refer to reliable sources of food safety information such as citing information provided from the National Health Service (NHS) (Figure 6) and referred to the need to follow such guidance (Figure 7), others responded by giving correct food safety information supported by a link to the Food Standards Agency (FSA) guidance (Figure 8), others referred to Unicef guidelines and advice given verbally by healthcare professionals such as Health Visitors.

However, the majority of comments made in responses to the forum thread provided information based up on personal experience and may not be in-line with food safety recommendations. Many comments that suggested food safety malpractices, often indicated they were aware that they were not adhering with guidelines and defended their actions by stating the method they follow had never resulted in their children being ill, this seemed to reinforce the acceptability of potential food safety malpractices in the peer-to-peer information exchange (Figure 9).

Completion of the netnography study has identified the need to explore the potential of positively utilising parental social media platforms to effectively communicate the importance of domestic food safety to parents when preparing food for young children.

Significance of study

- Although parents are knowledgeable of some key aspects of domestic food-safety when preparing food to be consumed by young children, gaps exist and food-safety malpractices are reportedly implemented.
- The potential role of online parenting-communities in obtaining food-related information has been established.
- Completion of the study has determined the need for research to investigate the communication of food-safety malpractices among peers on parental social media platforms and explore the potential for such platforms to promote food-safety.