



Review

Knowledge, attitudes and practices of food handlers in food safety: An integrative review



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ABSTRACT

This study presents an overview of the relationship between knowledge, attitudes and practices (KAP) of food handlers with training in food safety, in addition to proposing reflections on the training of food handlers, considering its responsibility for food safety and health of consumers. The review was based on the integrative method. The descriptors used were: (food handler), (knowledge, attitudes and practice) and (training). Six databases were searched, 253 articles were consulted and 36 original articles were included. Fifty per cent of the articles pointed that there was no proper translation of knowledge into attitudes/practices or attitudes into practices after training. Knowledge, attitudes and practices of food handlers are important for identifying how efficient training in food safety is allowing prioritize actions in planning training. The evaluation of KAP is the first step to understand the food handler's point of view. After this evaluation other diagnostic strategies become necessary to enhance this understanding.

1. Introduction

According to the WHO (2015), every year approximately 600 million people become ill after consuming contaminated food. Among these victims, an estimated 420,000 die, including 125,000 children under the age of 5 years. However, cases of Foodborne Diseases (FBD) often are underreported, generally due to non-identification of symptoms or no symptoms compared with pathogenic microorganisms (Scallan & Angulo, 2007) or due some diseases have temporary symptoms, so people do not seek health care (MacDougall et al., 2008). Food safety is a critical component of sustainable development, and problems that occur in one country may put others at risk, because the food globalization process has shown a significant impact on the food safety (Scott, 2003). This globalization process has focused on production, distribution, and marketing on a large scale and seeks to meet the needs of the expanding global population. An asymmetry of information in the globalization of food, however, can lead to market failures characterized by the presence of biological, chemical and physical hazards.

To make credible and sustainable legal and policy decisions, the decision-making process must be based on strong evidence. Considering the growing complexity of the food safety field, innovative approaches are required to improve prioritization, accounting for the overall available knowledge and the need to integrate new scientific developments quickly (WHO, 2013).

Inappropriate handling practices can cause food contamination and FBD consequently, impairing the health of the consumer (Greig, Todd, Bartleson, & Michaels, 2007; Howes, McEwan, Griffiths, & Harris, 1996).

Thus, a generally used tool to ensure the hygienic-sanitary quality is the application of the model Knowledge, Attitudes and Practices (KAP) (Bas, Ersun, & Kivanç, 2006; Da Cunha, Stedefeldt, & De Rosso, 2014a; Ko, 2013). The premise of the KAP model is that the food handler, provided with knowledge, are able to improve their food safety practices voluntarily. So, training, the most widely used strategy to improve food safety (Medeiros, Cavalli, Salay, & Proença, 2011), may be effective. On the other hand, some authors disagree, arguing that training,

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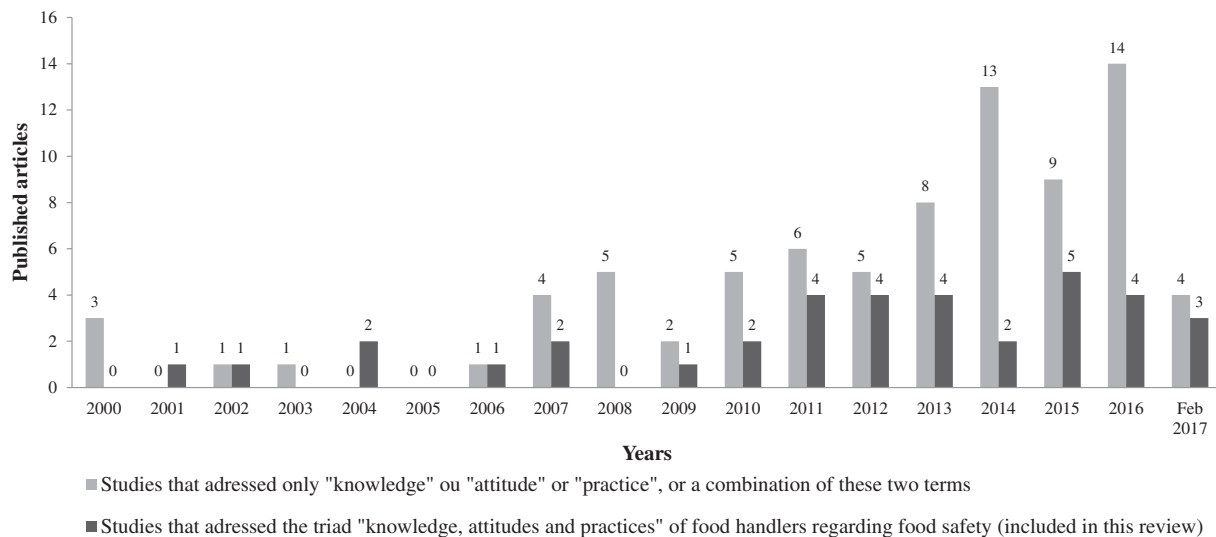


Fig. 1. Overview of publication's number on knowledge, attitudes and practices of food handlers in food safety, published each year between the years 2000 and February 2017.

and thus knowledge alone, are not sufficient to improve practices (Da Cunha et al., 2014a; Park, Kwak, & Chang, 2010; Rennie, 1994).

Current evidence for the effectiveness of food hygiene training is limited/scarcely. Review studies can help to make relationship between training and food safety KAP clearer, these relationship can be used to establish effective food safety strategies diagnosis and can foster the revision of laws regarding food handling.

In the last decade, several studies were conducted in order to assess KAP of food handlers in different sectors so as to understand their behaviors and relate them to the causes of FBD (Angelillo, Viggiani, Rizzo, & Bianco, 2000; Ansari-Lari, Soodbakhsh, & Lakzadeh, 2010; Bas et al., 2006; McIntyre, Vallaster, Wilcott, Henderson, & Kosatsky, 2013; Soares, Almeida, Cerqueira, Carvalho, & Nunes, 2012).

This study presents an overview of the relationship of food safety knowledge, attitudes and practices of food handlers with training in food safety. Based on this information, it offers reflections on the training of food handlers, considering its responsibility for food safety and the consumer health.

2. Methodology

The conduct of the review and the process of identification, selection and classification of articles were based on the method of integrative literature review. This method comprises the review, criticism and synthesis of representative topics of literature aiming a new structure and perspective of the subject studied (Torraco, 2005).

The search of the articles was conducted in the bases of ScienceDirect, Medline and Lilacs databases, and the Web of Knowledge platform that includes the foundations of Web of Science, Derwent Innovations Index and Scielo Citation Index database. The search was limited to full text articles written in English, Portuguese and Spanish (domain language of the authors), published since 2000. It was used the following descriptors, using the Boolean terms: (food handler), (knowledge, attitudes and practices) and (training).

Only studies that addressed the triad "knowledge, attitudes and practices" of food handlers regarding food safety were included in this review. Were included either studies that authors assessed a training strategy or compared trained food handlers from untrained ones. The studies that addressed only "knowledge" or "attitudes" or "practice", or a combination of two these terms were included only to account the number of articles published in the area and not for the integrative review. The criteria for exclusion of the articles were: not specifically KAP approach in food safety, not KAP approach to food handlers, only approach of knowledge or attitudes or practices.

After the search, the articles were selected for the title, abstract and final step to include was the reading of the articles in full. Were consulted 253 articles and 36 original articles were selected fulfilling the inclusion and exclusion criteria. Last search was carried out on February 2017.

3. Results and discussion

3.1. Knowledge, attitudes and practices in food safety: emerging themes

Of the 36 included studies, 8 (22.2%) were conducted in Malaysia, 5 (13.9%) in Brazil, 3 (8.3%) in Vietnam, 2 (5.5%) in Iran, 2 (5.5%) in Italy, 2 (5.5%) in Turkey, 2 (5.5%) in India and 1 (2.8%) on each of those countries: USA, Haiti, China, Canada, Taiwan, Egypt, Spain, Thailand, Saudi Arabia, Netherlands, Ghana and Lebanon. Majority of KAP surveys were conducted in developing countries.

Food safety behavior is an important aspect for food business management and public policy stakeholders, regardless of the country's economic status, since most foodborne outbreaks occurs due inadequate food handling (FDA, 2009; Todd, Greig, Bartleson, & Michaels, 2007). Notably, there is increasing government involvement in controlling and regulating the sector to ensure food quality and reduce FBD. The different level of government involvement in food safety regulation reflects the practices developed locally and consequently the studies conducted in those countries (Martinez, Fearn, Caswell, & Henson, 2007). There is no precise explanation on why most studies on food safety KAP studies were conducted primarily in developing countries. Possibly, in countries where food safety regulation is more mature (i.e. Canada, USA, countries from European Union), many of them with mandatory application of the HACCP system, the interest is greater in the application of management systems than food handlers' behavior. Fig. 1 shows the number of articles published each year and separated in articles that addressed only "knowledge" or "attitudes" or "practice" or a combination of two these terms and articles that addressed the triad "knowledge, attitudes and practices" of food handlers regarding food safety that are included in the inclusion criteria of this review.

It is observed in Fig. 1 that the study of KAP of food handlers on food safety is an emerging research topic. From 36 studies included, 18 were published between 2013 and 2017. This growing interest of the scientific community corroborates two main hypotheses: 1) the behavior of food handlers relates directly to the FBD due to inadequate practices in: hand, equipment and utensils hygiene; maintenance of temperature of food ready for consumption; cooking temperature; and thawing (Chan & Chan, 2008). Such improper practices indicate that

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