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"*The test of our progress is not whether we add more to the abundance of those who have much; it is whether we provide enough for those who have too little*"
Franklin D. Roosevelt 1937

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Understanding the Role of Printed Media in the Social Amplification of Food Risk During the New Millennium

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1. Introduction

Since the mid 1980s, most Western European countries have faced various food safety incidents (e.g., BSE, dioxin contamination) that had led to increasing public unease about health and safety of modern methods of food production (Knowles *et al.*, 2007). Some of these food safety incidents have had an international impact (e.g., BSE, dioxin contamination and avian influenza epidemic), while others have been contained within national boundaries, as it was the case of the nitrofuran residues in Portuguese poultry during 2002-2003 (Vaz and Nunes, 2007). As a result, food scares about a particular food create adversely short-effects on preferences and consumption of that food that can more widely affect the overall effectiveness and efficiency of the food supply chain (Latouche *et al.*, 1998; Verbeke and Viaene, 1999; Verbeke, 2001; Verbeke and Van Kenhove, 2002; Roosen *et al.*, 2003; Llyond *et al.*, 2006; Angulo and Gil, 2007).

In fact, it is well established that experts and lay people tend to perceived food risks differently (Slovic, 1987; Hansen *et al.*, 2003; de Boer *et al.*, 2005; Jensen *et al.*, 2005, van Kleef *et al.*, 2006). Scientists define risk in narrow quantitative terms: they would consider the nature of harm that would occur (the hazard), the probability of that will occur (the risk) and the number of people who may be affected (the exposure). The statistical treatment of risk derives an expected average value for a risky situation based on the sum of the products of possible outcomes and their respective relative probabilities of occurrence. On the contrary, consumers operate with a much broader concept of risk, incorporating sensitivity to a wide range of hazard characteristics which form the basis of consumer concerns (Jensen *et al.*, 2005; de Boer *et al.*, 2005; McCarthy *et al.*, 2006).

According to the psychometric paradigm, the risk is subjectively defined by individuals who may be influenced by a wide array of psychological, social, institutional and cultural factors (Slovic, 1993). This approach indicate that every hazard has a specific unique pattern of social and psychologically determined characteristics (denominated “risk characteristics”) that are related to the perceptions of risk (Fischhoff *et al.*, 1978; Slovic, 1987, 1993). Those include the degree to which exposure to hazard is voluntary, controllable, known to science, known to those exposed, familiar, dreaded, certain to be fatal, catastrophic and immediately manifested (Slovic *et al.*, 1987). They tend to be highly correlated and can be represented by three main factors: “dread”, “unknown” and “the number of people exposed” to the hazard or “extent” (Fischhoff *et al.*, 1978; 1981; Slovic, 1987).

An important determinant of risk perception is information about the risk. The risk events will be largely irrelevant or localized in their impact unless people observe and communicate them to others (Kasperson *et al.*, 2003). According to Frewer *et al.* (1993/1994) the media are among the most important factors affecting the way risk communication is transmitted and

perceived. Where there is no direct personal experience, information about hazards, individuals look for simplifying summaries from trusted sources: the news and informal personal n*et*works (Kasperson *et al*., 2003). In fact, for most members of the general public, the mass media, particularly via newspaper and television coverage, are a primary source of information about risk-related matters. For instance, out of the list of 14 different sources on healthy eating, "TV/radio programmes" (43.8 %) was the second information source selected by Portuguese consumers, and "newspaper articles" followed on seventh position (Moura *et al.*, 2008).
Although media are identified as important in the growing field of risk theory there has been a lack of detailed analysis of their role in the communication process (Eldridge and Reilly, 2003).

2. Media coverage of food hazards

At the very least it is obvious that media coverage of risk is selective: not all risks can be in the news all of the time. Ideally, the media plays the role of intermediary, facilitating communication among various societal stakeholders and providing counter viewpoints from different sides of a debate. Likewise, it can be viewed as a vehicle for informing the public on scientific nuances and complexities of the food safety system. However, journalists and press editors adjust the story frame to their ideology, professional and knowledge limitations, as well as to time and space constraints (Horning, 1992). Writing about science and technology can thus emphasize scientific facts, their socio-political implications, environmental risks, human health concerns. Likewise, through framing, media highlight certain points of view and marginalize or ignore others, defining occurrences and explaining how they are to be understood (Horning, 1993). That is why Kasperson *et al.* (1988) identified mass media as one of various "amplifications stations" that receive, interpret and pass on risk signals, transforming the original risk signal. To this extent, it is natural to hypothesise that some specific media biases could be in place and establish relationships between the coverage and the content of newspapers and the citizens' perceptions regarding food hazards (Frewer *et al.*, 1993/94; Frewer *et al.*, 2002; Kehagia and Chrysochou, 2007; Marks *et al.*, 2003; Vilella-Vila and Costa-Font, 2008).
Individual stories will attract attention when major organizations or governments come into conflict over the extent of the hazard or simply when there is disagreement between various actors in the risk debate (Frewer *et al.*, 2002; Frewer *et al.*; 1993/1994). As danger is seen as dramatic, it is implicit that focused hazard reporting will occur in the media. However, risk is a concept based on predicting the future that conflicts with the basic news principle: the "day event" emphasis. Many potential hazards will not be reported as risk stories unless or until they are manifested in some way. The lack of coverage on BSE from 1991 to 1995 in the United Kingdom is partly explained by the fact that certain hazards are seen very distant (Eldridge and Reilly, 2003). On the other hand, scientific uncertainty ("virtual risk") is less newsworthy than certainty (definitive findings) and moderate opinions are less attractive than "extreme" points of views. In the same way, hazards that consumers feel that they cannot protect themselves, as in the case of genetically modified foods, where traceability of ingredients, and labelling practices are not clear for consumers, may be amplified. In this case, the hazard itself is perceived to be under societal, rather than individual, control (Frewer, 2003). However, the effects of the media tend to be temporary and limited in magnitude. According to Kalaitzandonakes *et al.* (2004) in a case based on a continuous media coverage there is no media effect; in contrast, while in a case of acute and brief media coverage the media effect is substantial. Additionally, the specific media impact may depend on the specific dynamics of the press media in a specific society.

The aim of this exploratory study is to characterize the nature of the reporting of food-related hazards in cover news from the major daily Portuguese newspaper.

3. Methodology

The selection of food-related news on potential hazards was based on the analysis of cover contents from the national edition of the most selled Portuguese daily newspaper: *Jornal de Notícias* – JN. For ease of reporting, hazards are categorised into four types: chemical (e.g., nitrofuran in poultry or arsenic in tap water), biological (e.g., animal disease-related, such as Bovine Spongiform Encephalopathy – BSE - via new variant Creutzfeldt-Jakob disease, microbiological food contamination by *Salmonella*, *Listeria*, *E. coli* or avian flu), technological (e.g., GMOs), and related to dietary behaviour/lifestyle hazards (e.g., excessive intake of alcohol, sugar, salt or fat, or a sedentary life).

The present study refers to front covers of newspapers published from January 1, 2000, to December, 31, 2006, with a total of 2,557 consulted newspapers covers.

3. Results and discussion

Covers of newspapers under analysis yielded 200 cover news headlines on food related hazard, representing 7.8 % of printed covers. Annual frequencies of such news, during the seven year period are distributed without sharp variations. However, food hazards news drew more attention during the years of 2001 and 2003, representing 10.7 % and 9.6 %, respectively, of the total annual newspaper covers (see figure 1).

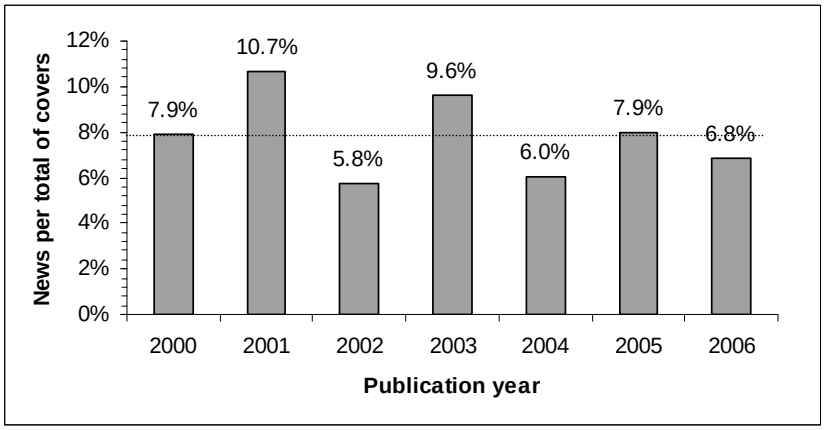

***Figure 1** Annual frequency of food hazards related cover news at JN newspaper, from 2000 to 2006.*

Globally, the vast majority of the selected news was related to biological hazards, followed by lifestyle hazards (see figure 2). Circulation of technological hazards at cover level may be considered as inexistent, with one single cover news throughout the entire period (2000-2006). Cover news headlines reported different hazards separately and rarely in conjunction with other hazards.

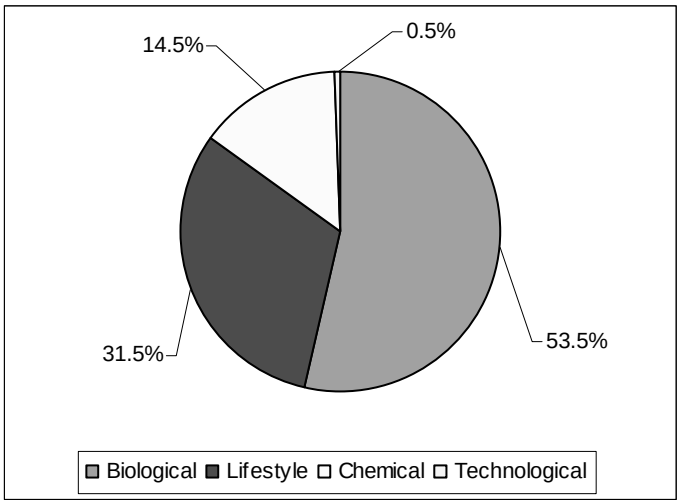

Figure 2 *Grouping of food hazards related cover news published at JN, by hazard type during the whole study period (2000-2006).*

Considering time variance among food hazard types, on a year basis, it was observed that the most read Portuguese newspaper tended to express in their covers biological hazards more broadly along the study period. The same applies for lifestyle hazards: continuous coverage during 2000-2006 period, although with less intensity (see figure 3).

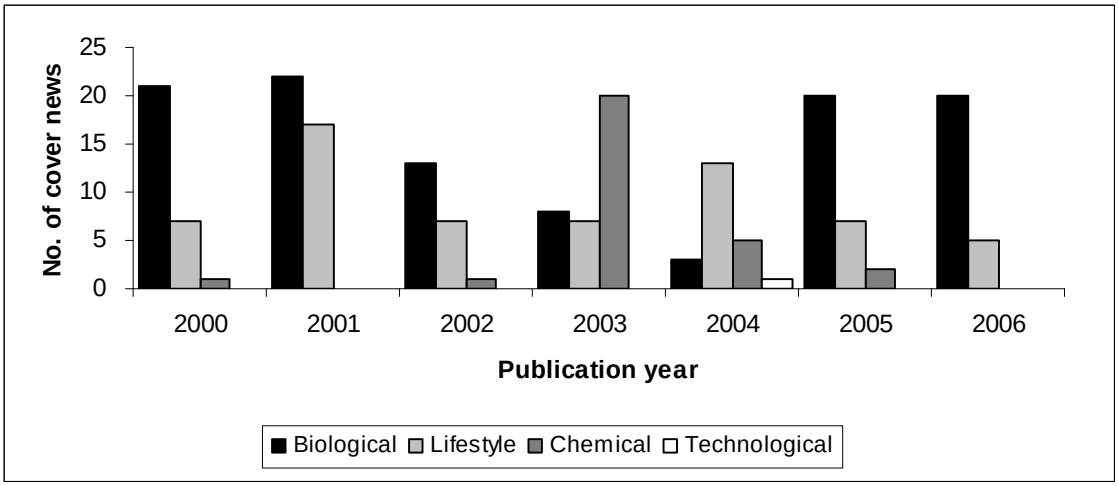

Figure 3 *Yearly distribution of cover news published in JN on different food hazard types during 2000-2006.*

Additionally, one may observe that the 2001, 2003 and 2005 peaks in the frequency of cover news were closely associated with specific hazards (see figure 4): BSE in Portugal during 2001 (from December 2000 to March 2001); nitrofurans in Portuguese poultry at 2003 (February to May), and avian flu at 2005 (November 2005 to March 2006). More specifically, these were clearly related to different food crisis. Similar relations were found in the U.S. (Singer and Endreny, 1993) and in Greece (Kehagia and Chrysochou, 2007) for different food crisis.

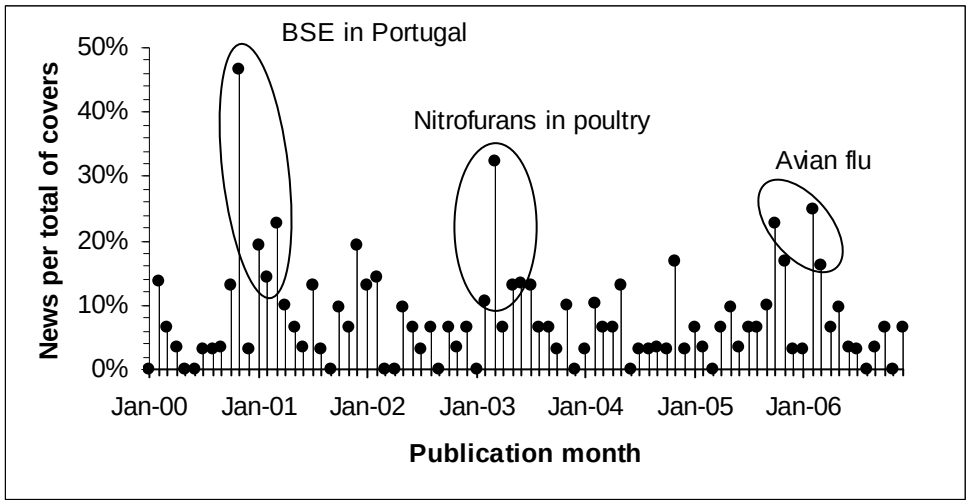

Figure 4 *Monthly frequency of food hazards related cover news at JN during 2000-2006*

Moreover, it was interesting to note that in an almost "chronic" manner, hazards such as excessive eating, drinking of alcohol and contaminated tap water were reported throughout the entire period with a total of 22 (11.0 %), 19 (9.5 %) and 16 (8.0 %) cover news, respectively, and a maximum monthly frequency of 2 cover news. An important factor regarding the first hazard is that the prevalence of overweight and obesity in Portugal has been increasing, with values of 44 % for men and 46 % for women (Carmo ***et al.***, 2000). In addition, the prevalence level of overweight and obesity in children and young people is one of the highest in Europe (Lobstein ***et al.***, 2004 found figures similar for other countries of the southern Europe), considering that around one-third of Portuguese young children are overweight or obese (Padez ***et al.***, 2004). Moreover, although the level of alcohol consumption is failing in Portugal since mid to late 1980s, according to WHO (2002) the 12.5 litres of pure alcohol per person in 2001 exceeded in more than 15 % the EU-25 average alcohol consumption (10.8 litres of pure alcohol per person). These are clear society concerns.

5. Conclusions and further research

This exploratory analysis shows that different food hazards are differentiated in the way they are reported in cover news from the most selled newspaper in Portugal, with biological and lifestyle hazards presenting a more extensive coverage, while technological hazards, such as GMOs have little or no coverage.

From the present analysis it is clear that food hazards are under constant attention of the media, nevertheless, one may identify two major patterns on their coverage. One directly related with food crisis, such as BSE in cows, nitrofurans in poultry or the avian flu, all having a direct impact on consumer behaviour with a marked decreased on the consumption of foods related to the hazard under scrutiny. A second, showing lower frequencies but with periodic coverage, in an almost "chronic" fashion, mainly related to lifestyle hazards such as eating disorders and excessive alcohol consumption, having a direct impact on consumer attitudes towards food and being perceived as some of the most dreaded hazards (Moura ***et al.***, 2009).

Reported results are part of an ongoing project regarding printed media coverage of food hazards. These preliminary results, focusing on the headline contents of cover news are of great interest, but of limited scope. Further information will be unveiled with the results from the analysis of the full article contents.

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