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Allergy between the ears?

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Abstract

Estimates of the true prevalence of food allergies tend to be around 2-3% in adults, whereas the perceptions of food allergies by the public tend to be much higher. There are many potential reasons for these differences, including the tendency by the public to include all forms of intolerances and adverse food reactions rather than just true allergies. But even taking this into account, the prevalence of food intolerances is higher than that measured in controlled studies. While there has been relatively little work on how the public thinks about allergies, there has been more extensive work on perceptions of other risks. Here one of the reasons for differences between lay and expert estimates of risk lies in the public considering many other characteristics in addition to the probability of harm. These characteristics include how voluntary the risk is and the degree of control. One of the key concepts to emerge from this literature is the 'availability heuristic', which predicts that information which is repeated frequently will be cognitively available and therefore appear to be more likely to members of the public. The issue of food allergies is now much more in the public eye than in the past, because of both coverage in the media and the labelling of foods. The more frequent discussion of various food allergies would therefore be more likely to make the public see food allergies as more common. There is a need to understand how the public thinks about food allergies, and although the literature on general risk perception can offer pointers in this area, it is no substitute for research directly addressing public perceptions of allergies, intolerances and adverse reactions to foods.
Keywords: attitudes; consumer; food choice; risk perception; media; labelling

Introduction

The issue of food allergies is contentious. There are concerns among the public about food allergies and controversy about whether perceived allergies are related to real allergies or are all in the mind. At the same time there appear to be increases in a number of allergies over time; the Royal College of Physicians (2003) reported a large increase in food allergies, with for example peanut allergy trebling over the last four years in the UK.

Food allergy can be defined as a specific form of adverse reaction that is mediated by an immunological response (Tariq et al. 1996). Food intolerance is a less defined and more heterogeneous concept than food allergy. A food intolerance can be defined as a reproducible, adverse reaction to a specific food or ingredient which is not psychologically based. Part of the confusion in the literature on the prevalence of real

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and perceived allergies relates to differences in what are considered to be allergies by different groups.

Many of the discrepancies in the literature are likely to be due to differences in definitions of allergies and intolerances used in different studies. Whereas this presents problems for the assessment of the prevalence of actual allergies, it presents even greater problems when investigating perceived allergies. Many of the discrepancies in the literature between allergies measured by experts and those perceived by the public are likely to be due to the differences in how ordinary people think about allergies and the clinical definition of allergies.

Frequency of allergies, intolerances and perceived allergies

The true prevalence of food allergies is difficult to calculate but it is generally recognized that the use of double-blind placebo-controlled food challenges provides the best estimates. Using this method, Altman and Chiaramonte (1996) found incidences of 2-3% in adults, with similar figures reported by other authors (Bell et al. 1993; Young et al. 1994). In children, estimates vary from 0.3 to 7.5% (Buckley and Metcalfe 1982; Kardinaal 1991), and Chandra (1992) found food allergy in 1.4% of infants. There are variations in allergies with age and much of the research in this area has concentrated on children of various ages. A UK study found adverse reactions to cow's milk within the first year of life to be 2.5% (Hide and Guyer 1983) while Host and Halken (1990) found in a Danish sample that by the age of three nearly all children had grown out of their milk allergy.

However, the perceptions of food allergies by the public tend to be much higher than these controlled measures (Altman and Chiaramonte 1996). Woods et al. (1998) found 17% of young adults reported respiratory symptoms resulting from food intolerance or allergy. Altman and Chiaramonte (1997) found 13.9-16.6% of American families reported having family members with food allergies and those reporting allergies within the family reported 1.17 members of the family suffering in this way.

Finnish parents reported 19% of their children being allergic to foods at 1 year, 22% at 2 years and 27% at 3 years, but only 8% at 6 years old (Kajosaari 1982). Bock (1987) followed children between birth and 3 years and found that, although 8% had confirmed negative reactions to particular foods, their parents reported 28% had symptoms, with the large majority of these occurring during the first year. Sugrue (1991) found perceived food allergies to be 8% in Dublin families, whereas Kilgallen and Gibney (1996) found 12.5% of children aged 0-4 years were perceived to have food allergies by their parents. In the same study, neither parental age, education and socio-economic class nor infant feeding practices were found to affect the level of perceived allergies. Eggesbo et al. (1999) found that 35% of parents in Norway reported adverse reactions in 0-2 year-old infants. These same authors suggest that one of the potential consequences of the high perception of allergies in children is that this might lead parents to restrict unnecessarily the diets of their children, and this could have detrimental effects (Eggesbo et al. 1999).

While there are variations between the studies in terms both of actual allergies and of the numbers of people perceiving allergies, the overriding difference is that prevalence of perceived allergies is consistently higher than that measured in controlled studies. The differences between studies in actual incidence are likely to be because of the different populations studied (in particular in different countries and different ages), different measures used and the different definitions of allergies,

intolerances and adverse reactions used in the different studies. However, of more interest is the difference between the actual and perceived levels.

There are many potential reasons for the differences between perceived and measured food allergies. The first is that ordinary people tend to use the word allergy more broadly than do scientists working in this field and therefore, even when questions are worded in terms of allergies, it is likely that people will include all adverse reactions and not distinguish those involving immune function from other forms of intolerances or adverse reactions. However, even when this is taken into account, perceived incidences are higher than actual measured intolerances. In order to understand why this might be, it is necessary to consider how people think about issues such as risk and illness.

One of the possible explanations is that maybe there are certain types of people who are likely to report food allergies or intolerances when they do not in fact exist. Pearson (1985) studied people who attended a food-allergy clinic and found that those whose perceived intolerance was not borne out by medical tests had a higher prevalence of psychiatric disorder. This led to suggestions that symptoms are attributed to particular foods for psychosomatic reasons. Thus anxieties about the food or other issues could cause pathophysiological changes which are then mistaken for immunological reactions, and in some cases people attribute symptoms which are quite different from true allergic reactions. This might follow reading books on the subject or discussing it with other people. There is little work testing this type of observation in other samples, but there is some evidence from a community sample that those without clinical symptoms of allergy are more likely to display psychiatric symptoms (Peveler et al. 1996). Knibb et al. (1999) found that women who perceived themselves to be food-intolerant showed a higher percentage of psychiatric caseness than those who did not, but that this percentage was no higher than in reference samples drawn from health service and university staff. While there might be a slightly higher incidence of psychiatric symptoms in those reporting unverified allergies this cannot account for the prevalence of perceived allergies being so much higher than the actual measured prevalence.

Another possible reason for the lower incidence of real allergies and intolerances is that once people believe that they are intolerant to certain foods or ingredients they will then tend to avoid those foods. However, in the meantime they may no longer be intolerant. Bock (1987), for example, showed in infants in the first three years of life that even real intolerances were short-lived. While it is of scientific interest to challenge those intolerances, it is less likely that parents would ordinarily do this, since if a child has had adverse reactions to foods in the past the most likely course of action is for the parent not to feed that food to the child again. Following this conservative course of action will lead to an overestimation of the prevalence of allergies and intolerances.

Risk perception

While there has been relatively little work on how the public thinks about allergies there has been more extensive work on perception of other risks. Consideration of this type of research might help our understanding of perceived allergies and intolerances.

Risk perception is the term generally applied to the attitudes to risks held by members of the public or non-experts. It is differentiated from risk assessment or risk management which are carried out by those with more expertise. Much is made in the literature of differences between perceived risks and the risks assessed by experts, and

this is put forward as one of the chief causes of problems with communication on risk issues involving experts, policy makers and the public. People are thought by some to be over-sensitive to risks (see Fischhoff 1989) and to be disproportionately concerned about small and major risks (Kasperson et al. 1988).

Hazards relating to foods may take a number of forms, such as microbiological contamination, nutritional deficiencies, environmental contamination, natural toxicants, pesticide residues and food additives. However, it has been argued that different groups of people disagree over the relative seriousness of these hazards (Hall 1971). Scientists and the public, in particular, apparently have quite divergent perspectives. Hall (1971) suggested that the priority of actual hazards, as indicated by a member of the FDA (Food and Drug Administration), was:

1) microbiological
2) nutritional
3) environmental contaminant
4) natural toxicant
5) pesticide residue
6) food additive

On the other hand, he suggested that the order of priority among a group which he calls “fringe hysteria” was:

1) food additive
2) pesticide residue
3) environmental contaminant
4) nutritional
5) microbiological
6) natural toxicant

Despite the extensive citation in the food literature of this assertion, the assessments do not appear to be based upon any empirical research. The ‘actual’ priorities are taken from remarks made at an agriculture conference by Wodicka (1971) and the priorities provided by the ‘fringe hysteria’ group are taken from “public statements not well founded in demonstrable fact, and which tend, and often intend, to inflame rather than inform” (Hall 1971, p. 457). The ‘fringe hysteria’ group does not consist of a group of the general public but of “laymen” and (sometimes) “scientists unable to resist the temptation to expound flamboyantly outside their competence” (p. 457). Hall points out that this group does not refer to the “public at large” but there is the widespread view that the public is ill-informed and also irrational where risks are concerned (cf. Fischhoff, Watson and Hope 1984).

An initial question when trying to understand risk perception is to ask how people think about different types of risks and what types of characteristics of different hazards are important. The psychometric approach developed by Slovic and colleagues (Fischhoff et al. 1978) has indicated that a number of concerns, such as whether the risk is perceived as involuntary, as controllable, whether it will affect large numbers of people or is seen to be unnatural, are likely to be important determinants of public responses, and partly explain the differences between lay and expert beliefs about risks (Flynn, Slovic and Mertz 1993). Factor analysis of responses to a range of hazards yields factors of severity, unknown risks and numbers affected both for hazards in general and specifically for food risk issues (Sparks and Shepherd 1994). Clearly risk communication is likely to be more effective if it

addresses the real concerns of the public regarding a particular hazard, not just those concerns which are believed to be important by experts.

A second issue raised by the risk-perception literature is optimistic bias or unreality optimism. This phenomenon can be illustrated by asking a question such as "Compared to other men/women my age, my chances of getting food poisoning in the future are …", with responses on a scale running from "much below average" to "much above average", with a mid-point of "average for men/women my age". Weinstein (1989) has demonstrated that there is a consistent group trend to mark personal risk as below average. However, if the sample of people is representative of the appropriate population (i.e. they are not a special group such as clinicians comparing themselves to the general population), then the mean response over the sample should be near the centre of the response scale. Optimistic bias has been reported for a wide variety of hazards including a number of food-related hazards (Frewer, Shepherd and Sparks 1994; Sparks et al. 1995).

Greater optimistic bias is found for lifestyle hazards, e.g. fat intake, alcohol, than for technological hazards, e.g. pesticides, genetic modification. One of the key differences between lifestyle risks and more technological ones is the degree to which the individual feels that they have personal control over lifestyle hazards. This personal control is important to the image of the self and therefore the person may see these types of risks as being more important for others than for the self. This could be of particular importance in relation to allergies since the degree of personal control exercised over the diet is likely to be important for the person. Diet is one of the areas where people can take personal control and therefore, if they are ill, attributing the symptoms to diet might be a useful strategy for increasing feelings of control.

The reasons for optimistic bias are not entirely clear, although a number of suggestions have been made. It has been argued that optimistic bias is related to the need by an individual to feel that he or she has control over a situation (McKenna 1993). Such a feeling of control will reduce perceived risk and this effect has been called an 'illusion of control'. Clearly some hazards are easier for the individual to control than are others, and thus it might be predicted that those hazards where personal control is higher will also be more likely to exhibit optimistic bias.

Optimistic bias is clearly of importance if we are interested in how people think about risks and how their views on risks influence their behaviour. A number of explanations have been put forward for such a bias. People may choose inappropriate groups with whom to compare their personal risks; if asked about the risk of drugs they may compare the risks to themselves with those to drug addicts rather than comparing themselves with the 'average person'. There may also be a need to deny risks in order to avoid anxiety, or people may not consider the likely actions taken by other people to avoid risks thereby attaching too much weight to their own risk-avoiding behaviours (Weinstein 1984). The reasons for optimistic bias are only just beginning to be understood. There are many questions still to be answered including the effect of this bias on behaviour, and its full implications for risk perception and risk communication require further elucidation.

The media and risk perception

The issue of food allergies is now much more in the public eye than it was in the past. This is because of coverage in the media but also because of improved labelling of foods. This increased exposure might make the public more aware of the issue but might also lead them to overestimate its prevalence.

One of the key concepts to emerge from the literature on risk perception is the 'availability heuristic' (Tversky and Kahneman 1973). According to this idea, if information is frequently repeated it will be more available and therefore people will overestimate its likelihood. The idea that people are only able (and/or willing) to deal with limited amounts of information is a common theme in the literature; the availability bias suggests that information that is cognitively available is going to have a greater role in decisions than is less readily available information. This is neither surprising, nor indicative of irrationality, yet it does point to the crucial role of the saliency of particular pieces of information and the potential for bias in decision making.

There is evidence, for example, that ordinary people overestimate the frequency of death from rare events and underestimate the frequency of death from common events (Lichtenstein et al. 1978) even though people are able to rank hazards in terms of fatalities fairly well. It has been suggested that this judgmental bias of overestimation of fatalities from rare events can be attributed to the ease with which those events come to mind (Tversky and Kahneman 1973). Moreover, it is also apparent that media coverage of fatalities from different hazards is disproportionate in much the same way (Combs and Slovic 1979).

It should also be remembered that members of the public obtain most of their risk information from the media. Even where information originates from scientists, government etc. it is likely that it will be conveyed to people via the media. Certain media sources have been shown to be among the most trusted sources of information about food-related risks; especially quality newspapers and television news broadcasts are highly trusted, in comparison with government and industry, for example (Frewer et al. 1996).

There has been much debate as to whether the media set the agenda for public debate or simply reflect wider public concerns about risk. Different types of hazard are associated with very different types of risk reporting. A content analysis which examined risk reporting of different food hazards in the British quality press was conducted over a period of one year, from February 1992 to January 1993 (Frewer, Raats and Shepherd 1993/4). The risk information associated with a range of different food hazards (food additives, biotechnology and genetic engineering, chemical and pesticide residues, food irradiation, microbiological food contamination, and natural toxins) in these newspapers was identified and was rated in terms of various characteristics. It was found that the quantity of risk information associated with different hazards varied, as well as the qualitative content of the coverage. Microbiological hazards were associated with quantitative, statistical information related to the numbers of cases, etc. On the other hand, potential risks associated with biotechnology were presented in terms of values and were associated with statements about the risk being unknown, and to conflict between the different 'actors' in the risk debate. Food additives were associated with very little risk information in the media even though there is a great deal known about risks in the scientific literature. Instead, additives were presented as a risk, with no qualifying risk or safety information, thus implying that they should be avoided by the public.

One of the key areas in risk communication is that of who is trusted and why. Trusted sources such as consumer organizations and medical doctors are perceived to be both knowledgeable and concerned with public welfare. On the other hand, distrusted sources such as the government are perceived to distort information, to have been proven wrong in the past, and to provide biased information. Trust is also associated with moderate accountability. Industry is perceived to be over-accountable,

whereas the tabloid press is perceived to have too little accountability and to sensationalize risk information (Frewer et al. 1996). In order to have effective communication on the risks associated with allergies it is necessary to use sources of information which the public trust.

Labelling

When people have allergies to foods or ingredients they will take steps to avoid those foods or ingredients. This is more difficult than might at first seem. If we lived in a relatively undeveloped food environment then people would have a great deal of knowledge of where foods came from and what they contained. However, we live in a complex food environment where not only is there an extremely large array of foods available in supermarkets, but many of these foods have been processed and might contain many ingredients. If for example someone has a peanut allergy then they would be expected to avoid peanuts or products clearly made from peanuts, e.g. peanut butter. However, products which have no association with peanuts might be produced using peanut oil or be produced on the same line in a factory handling peanuts. Alternatively the food may be sold unpackaged in a retail environment where it is not possible to guarantee that it will not have come into contact with nuts.

Labelling is used to convey information on potentially allergenic ingredients in foods. However, there are complications in this for severe allergies. Whereas in most cases people are happy with foods being labelled with ingredients and very small amounts of adventitious contamination are not seen as problematic, in cases where very small amounts might cause severe problems it is in the interests of the manufacturers and retailers to adopt defensive labelling such as “may contain…” or “produced in the same factory as …”. This can be helpful to consumers who are alerted by the possibilities of contamination, but if taken too far can then be counterproductive since if all foods are labelled “may contain …” then this information ceases to be useful.

Another possible consequence of the labelling of allergens is that people (including those who do not have allergies or intolerances) become much more familiar with the concept of allergies, and following the availability heuristic this is likely to be seen as a much more common risk that it truly is.

Conclusions

There is a need to understand how the public thinks about food allergies. This is particularly true where attempts are made to communicate information concerning allergies to the general public. Considerations of the public as irrational do not help the communication process but rather a first step is to understand the factors underlying public considerations of allergies. While there are insights from the literature on other types of risk perception it is also necessary to carry out research specifically addressing perceptions of allergies, intolerances and adverse reactions from foods.

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