



Consumer awareness regarding meat-borne zoonotic diseases

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India faces a major challenge in providing quality and safe animal products to consumers. Quality of animal products could be roughly classified by the specialists of animal production into nutritional, technological, sensory, hygienic and sanitary aspects (Valfre 1997). Food-borne diseases are a widespread and growing public health problem and every year many outbreaks are taking place both in developed and developing countries (Malik *et al.* 2010). The importance of zoonotic diseases can be assessed from the fact that 64 % (14/22) of the major etiological agents for infectious diseases identified between 1973 and 1994 are zoonotic in nature (Chomel 1998).

This study was conducted at Bareilly district to ascertain the consumers' knowledge level regarding meat and meat-borne diseases, which can spread through meat consumption. The study was conducted through collecting responses on various aspects—enquiry for license of meat shops, meat inspection, meat quality, concern about retailers health condition and cleanliness, observation of slaughter of sick animals, general awareness about zoonotic and meat-borne diseases and their symptoms and the information needed etc.—by distributing questionnaires to randomly selected consumers from Bareilly district of Uttar Pradesh. Six meat markets were selected and from each market 5 shops were randomly chosen and from each such selected shops, 3 consumers were selected randomly to make a sample size of 90 consumers.

The results indicated that majority of the respondents (96.67% and 92.22%) did not enquire for license of shop or for meat inspection by meat inspectors or veterinarians while purchasing meat. Similar findings were reported by Kumar and Kaul (2000) in their study on Bhopal slaughterhouse and consumers wherein they found that people were not aware about how and where meat was being produced. The

study further revealed that majority (63.33%) of respondents enquired regarding quality of meat before purchasing it, but different individual apply different organoleptic indicators to judge the quality of meat. The taste after cooking was the most preferred indicator by respondents (43.33%) followed by colour of meat (25.55%), flavour of meat (14.44%) and touch (3.33%). A significant proportion (33.33%) of respondents relied on visual examination of meat for assessing its quality. This indicated that at least consumers are conscious about the food safety issue to some extent. The consumers in western countries seem to be more aware on such issues (Reijnder 2004).

Meat desired from healthy animals (40%) and their hygienic processing (33.33%), washing with hot water (24.44%) or with plain water (22.22%) were major attributes of hygienic meat according to consumers. Low response (7.78%) towards washing carcasses with medicated water to improve hygiene hints that majority of respondents are less aware about the new measures available for improving meat hygiene. It was discovered that majority (97.78%) of consumers were aware that an infected animal could be a disease source to a human being. Further investigation unveils that 72.22 % consumers were aware that meat consumption could lead to diseases, whereas only 26.67 % consumers knew that meat handling could also cause a disease. In contrast to the above findings, Opare *et al.* (2000) revealed that a significant proportion of meat consumers were unaware of the consequences of eating an animal which had died due to unknown cause. This increased the vulnerability to human anthrax in an area with frequent anthrax outbreaks in livestock. Studies carried out in Nepal also revealed that due to the lack of implementation of the Meat Inspection Act and resultant absence of meat inspection, meat from sick or parasite-infected animals is serving as a source of infection to humans as well as other animals (Joshi *et al.* 2003).

Meat-borne diseases often present itself as flu like symptoms such as nausea, vomiting, diarrhoea or fever. These symptoms were frequently linked to meat consumption by consumers who knew that meat consumption could lead to certain diseases. It is further indicated that 12.3 and 9.23 %

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consumers considered headache and fever to be sometimes associated with meat consumption. Consumers were also enquired about any history of illness due to meat consumption in past 1 year. Our findings revealed that only 6.67 % of total consumers recollected any such incidence of meat-borne illnesses. Further majority (50.0%) of those consumers who remembered the incidence of meat-borne illnesses could point out only diarrhoea and vomiting as the prominent symptoms, which can be due to multiple causative agents. It was concluded that consumers' awareness varied greatly to different diseases and a strategy should be formulated to improve the public awareness towards less aware zoonotic diseases. Response of respondents during the outbreak of bird flu in Maharashtra state of India towards their meat consumption behavior was also asked. Majority (72.22%) of respondents reported that they avoided consuming poultry meat, while 22.22 % of respondents did not change their consumption behavior.

Consumers were enquired for the safety measures which they regularly practice to avoid any incidence of meat-borne diseases. It was reported by consumers that these measure were not practiced specifically to avoid meat-borne diseases but these were ingrained in their cleanliness habits while preparing foods. Our results clearly pointed out that consumers were following more than one measure to avoid incidence of meat safety and suitability lapses. Majority (46.67%) of consumers reported that they usually washed hands with soap whereas 43.33 % consumers wash hands with plain water after handling raw meat or poultry. The proportion of consumers not preparing food when sick or recovering from recent illness was 10 %, which signifies that consumers should be informed to avoid cooking/handling when sick to prevent spread of diseases.

Majority (66.67%) of consumers required information on price and freshness of meat quality (56%), slaughter method (36%), nutritional status (32%) and disease status of carcass (12%) while purchasing meat. In contrast to the consumers of our country, the meat consumers of Germany seem to be more aware about the safety issues concerning meat procurement. Becker *et al.* (1996) reported that information concerning guidelines for quality meat production was the most important distinguishing factor between purchasers and non-purchasers of quality meat. Attenborough and Mathews (2000) reported that food safety was improved by the provision of distribution of practical guidelines regarding the handling of meat and meat products at retail outlets. Recently Girma *et al.* (2012) conducted survey in Ethiopia and demonstrated that the awareness and use of inspected and packed animal products is relatively low that exposes the people to risk of food-borne pathogens. These researches recognized the importance of correct and timely information to the meat consumers to reduce the risks

of meat-borne health hazards.

SUMMARY

The results of the study revealed that consumers were less concerned about license, meat inspection and health status of retailers but had high awareness about zoonotic diseases. Although different indicators are used to ensure quality by the consumer but they can help only to rule out gross abnormality of meat and are not able to confirm the safety and suitability of meat. An awareness campaign on hygienic meat production for the butchers and retailers and knowledge regarding meat-borne zoonotic diseases and other health hazards for the consumers will surely help to improve the situation and create the demand for safe and hygienic meat.

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