

Public awareness and perception to bio/food terrorism in Trinidad, West Indies

Badrie, Neela ^{1*}, Ashby-² Mitchell, Kimberly, ², Best, Shelly-Ann ², Bridglal, Sharlene ² and Maharaj, Delicia

¹Department of Food Production and ² Department of Agricultural Economics and Extension, Faculty of Science and Agriculture, University of the West Indies, St. Augustine, republic of Trinidad and Tobago, West Indies

* Corresponding author: Dr. Neela Badrie e-mail: nbadrie@yahoo.com or badrie@carib-link.net

Abstract

This first study conducted in Trinidad, West Indies examined the public awareness and perception to bio/foodterrorism. Structured questionnaires (116) solicited information on demographics, awareness, sources of information, perceived threat and counterterrorism. The study found that 81.0% of respondents had heard at least one term, either 'bioterrorism' or 'foodterrorism' or 'agroterrorism'. The main source of information was television (68.1%). The majority (57.2%) of respondents felt that Trinidad and Tobago (T &T) was 'unlikely' to be at risk for a bio/foodterrorism attack, while 17.2% felt that it was 'very likely'. Most (87.9%) felt t T&T had no counterterrorism programs. Only 13.8% of respondents felt that there was adequate governmental analytical testing of imported foods. The need was high to sensitize the public on bio/food terrorism (94.0%) and to inform the public on the findings of analysis on food products by T&T Food and Drugs Division (94.0%). Gender and level of education were not ($P>0.05$) influential factors on categorical data. The implications of the study are given.

Key words: Public, Perception, Awareness, Bio/foodterrorism, Counterterrorism, Food Safety, Trinidad, West Indies

Introduction

Bioterrorism is basically biological warfare which is the intentional use of etiologic agents such as viruses, bacteria, fungi, genetically altered organisms or toxins derived from living organisms to instill fear or create chaos and massive casualties or produce death or disease in humans or plants (Stern, 1999; Gwerder *et al.*, 2001). Since the tragic events of September 11th, 2001 in the USA, there has been growing public awareness of the threat of bioterrorism. The need to enhance food security has been reinforced in all countries, including Trinidad and Tobago. In a study on consumer awareness and perception to food safety hazards in Trinidad, West Indies, there was no ($P<0.05$) distinct food safety hazard which was most feared, whether biological/microbiological (39.3%), chemical (29.7%), bioterrorism (20.1%) and other (10.9%) such as genetically modified foods (Badrie *et al.*, 2005). In the same study, most consumers ($p<0.01$; 83.2%) felt that food safety was a very important issue at home, while 6.4% felt it was not.

The issue of bioterrorism has brought to the light the need to be more vigilant about the supply chain both domestically and globally (FDA, 2002). Newer concepts of evaluation are pertinent to the identification of tampering more evident to all food supply chain interests, including those of the consumer. Surujlal and Badrie (2003) found that if a food were found to be contaminated, most (69%) failed to report the problem to the relevant authorities, although the issue was considered serious. Hence, the objectives of this first study were to examine the public perception and awareness to bio/foodterrorism in Trinidad, West Indies.

Methodology

Questionnaire

Questionnaires were administered to 130 randomly selected willing members of the public (57.8% males; 42.2% females) aged 18 or over in the regions of St. Augustine (East), capital Port-of-Spain (North) and San Fernando (South), Trinidad, West Indies. The return rate was 90% (116 completely filled questionnaires). The questionnaires were given to respondents on a face-to-face basis at work places, homes, streets, malls and at the University. The educational levels (number of years of schooling) were primary (2.6%; 1-5 yrs), secondary (38.8%; 6-10 yrs) and tertiary (58.6%; 11-13 yrs). The survey was conducted between October 18th and November, 19th, 2004. The structured questionnaire comprised of two questions on demographics of respondents and 10 questions on categories of awareness, sources of information, perceived threat and counterterrorism. A definition of food terrorism was provided to respondents as '*Use of microorganisms or toxins to kill or sicken people, animals or plants intentionally*' was provided to the respondents. The questionnaire was pre-tested by 10 randomly selected willing members of the public for clarity, sequencing and time taken to fill the questionnaire.. Each questionnaire took approximately 5-7 minutes. to complete.

Data analysis

Minitab Statistical Software, version 12.2 for Windows (Minitab, 1998, Enterprise State College, PA 16801-3008) and percentages of responses were computed. The relationships of gender (male versus female) and educational level (secondary and tertiary) on categorical data responses were analyzed by χ^2 square testing at $P<0.05$ level of significance.

Results and Discussion

Awareness of term

When respondents were asked whether they had heard of the September 11th, 2001 terrorism attack, USA, all indicated ‘yes’ (yes or no options). The majority of the respondents (81.0%) had heard of at least one term either ‘bioterrorism’ or ‘agroterrorism’ or ‘food terrorism’, while

19% reported that it was the first time through the questionnaire.

Source of information

Table 1 shows that for those respondents who had heard of at least one term (81.0% of all respondents), the many sources for information on food/bioterrorism (from listed options) were television (68.1%), internet (44.0%) and radio (23.3%).

Table 1- Sources of information on bioterrorism, agroterrorism and food terrorism

<i>Source</i>	<i>Number of respondents</i>	<i>% of respondents, who heard of a term, n=94</i>	<i>% of all respondents in survey, n=116</i>
Television	79	84.0	68.1
Internet	55	54.2	44.0
Radio	27	28.7	23.3
Magazine	26	27.7	22.4
Journals	15	16.0	15.0
Other	13	13.8	13.0

When respondents were asked whether they felt that T & T Chemistry Food and Drugs Division of the Ministry of Health actively informed the public of the findings of analytical tests conducted on food products (Table 2), most (94.0%) indicated ‘no’. Also, most (94.0%)

respondents in the sample agreed that the information from this governmental agency could be used to sensitize and increase awareness to bio/food terrorism threats and other unintentional food safety threats.

Table 2 -Perception to bio/food terrorism and counterterrorism

<i>Questionnaire</i>	<i>% N</i>
Do you think that T & T Governmental agencies have adequate analytical testing procedures for imported foods prior to being released on the local market?	Yes-13.8 No-25 Not certain-61.2
Do you think that the T & T Chemistry Food and Drugs Division, Ministry of Health actively informs the public about the findings on tests conducted on food products?	Yes-6 No-94
Do you think that T & T has programs for counterterrorism (preventive and reactive procedures) ?	Yes-10 No-90

T & T – Trinidad and Tobago

Perceived threats and counterterrorism

When respondents were asked whether they believed that they have been the victims of bio/foodterrorism at some point in their life time e.g food product tampering, quite a number of respondents (31.9%) indicated ‘yes’. This level of response may have been not being able to differentiate between deliberate and unintentional bio/food terrorism threats. Fig 1 shows that over half (57.8%) of the respondents felt that T & T was not unlikely to be at risk for a bio/foodterrorism attack. Most (87.9%) felt that T & T

had no proper counterterrorism programs. When respondents were asked whether T&T Chemistry Food and Drugs Division, Ministry of Health has adequate analytical testing procedures for imported foods, 61.2% were ‘uncertain’ (Table 2). Table 2 shows the majority (94%) of respondents felt that this Governmental Division did not actively inform the public on analytical findings on food products. In a prior study conducted in Trinidad, West Indies, respondents were undetermined (P>0.05) in their trust for Trinidad’s food safety authorities for ensuring safe foods (Badrie *et al.*, 2005). The main reasons given for the

lack of confidence were inadequate attention to food safety measures, lack of implementation and monitoring of food safety systems and outdated food safety standards. In 1984, there was a deliberate contamination of self-service food with a biological agent that afflicted at least 751 people with foodborne illness. A religious cult, the Bhagwan Shree Rajneesh infected salad bars in an Oregon town, USA with *Salmonella* Typhimurium hoping to reduce voter turnout in a local election so a candidate favorable to the cult would be elected (Török *et al.*, 1997; Riviere, 2001).

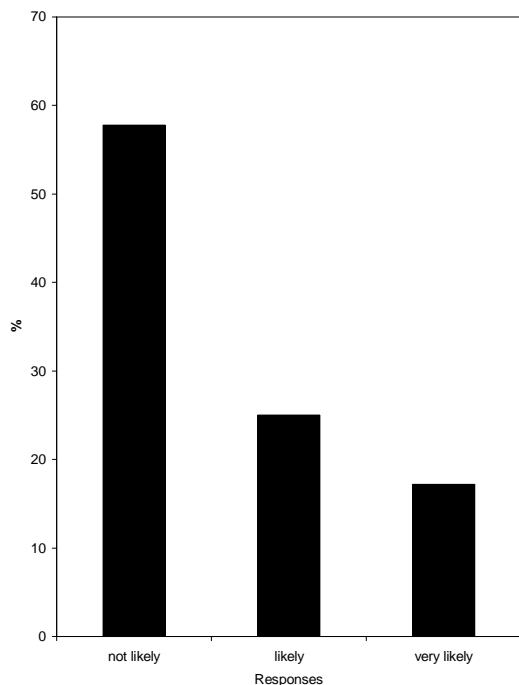


Fig 1 Belief as whether T & T was vulnerable to a bioterrorism attack

Implications of the study

Most respondents had heard of at least one term, either ‘bioterrorism’ or ‘agroterrorism’ or ‘food terrorism’. However, they will liked to be informed on the findings on food analysis conducted on imported foods and agreed that the public should be sensitized on bio/foodterrorism issues. Television, internet and radio could serve as media sources for dissemination of information Some (57.2%) did not believe that T & T was at risk for a food/bioterrorism attack.

There was a lack of confidence in T & T agencies in having proper counterterrorism procedures. The lack of confidence in the public may reflect the requirement for effective prevention programs, new surveillance systems and faster foodborne illness outbreak response capabilities. To enhance food security and food safety, T& T food laws will need to be updated.

References

Badrie, N., Gobin, A., Dookeran, S. and Duncan, R. (2005 in press). Consumer awareness and perception to food safety hazards in Trinidad, West Indies. *Food Control* (UK). Available on line 2nd March, 2005. <http://www.sciencedirect.com/science>.

FDA (2002). Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL107-188). Center for Food Safety and Applied Nutrition, College U.S. Food and Drug Administration, College Park, MD,. July 17, 2002.

Gwerder, L.J., Beaton, R., Daniell, W. (2001). Bioterrorism. Implications for the occupational and environmental health nurse. *Journal of the American Association of Occupational Health Nurses*. 49 (11): 512-518.

Riviere, J. (2002). Food Security and the World of Bioterrorism-Chemical Food Safety. Iowa State press, Iowa, pp. 83-89.

Stern, J. (1999). Definitions. In: *The Ultimate Terrorists*, J. Stern (ed.). Harvard University Press, Cambridge, Mass, pp. 20.

Surujlal, M and Badrie, N. (2003). Household consumer food safety in Trinidad, West Indies. *Internet Journal of Food Safety*. Vol 3: 8-14. <http://www.foodhaccp.com/internetjournal/ijfsv3-3pdf>. Accessed November 10, 2004.

Török, T.J., Tauxe, R.V., Wise, R.P., Livengood, J.R., Sokolow, R., Mauvais, S., Birkness, K.A., Skeels, M.R., Horan, J.M., Foster, L.R. (1997). A large community outbreak of salmonellosis caused by intentional contamination of restaurant salad bars. *JAMA*. 278 (5); 389-395.