Critical review of methods for risk ranking of food related hazards, based on risks for human health

This study aimed to critically review methods for ranking risks related to food safety and dietary hazards on the basis of their anticipated human health impacts. A literature review was performed to identify and characterize methods for risk ranking from the fields of food, environmental science and socio-economic sciences. The review used a predefined search protocol, and covered the bibliographic databases Scopus, CAB Abstracts, Web of Sciences, and PubMed over the period 1993-2013. All references deemed relevant, on the basis of predefined evaluation criteria, were included in the review, and the risk ranking method characterized. The methods were then clustered based on their characteristics into eleven method categories. These categories included: risk assessment, comparative risk assessment, risk ratio method, scoring method, cost of illness, health adjusted life years, multi-criteria decision analysis, risk matrix, flow charts/decision trees, stated preference techniques and expert synthesis. Method categories were described by their characteristics, weaknesses and strengths, data resources, and fields of applications. It was concluded there is no single best method for risk ranking. The method to be used should be selected on the basis of risk manager/assessor requirements, data availability, and the characteristics of the method. Recommendations for future use and application are provided.

General information
Publication status: Published
Organisations: National Food Institute, Research group for Risk Benefit, Division of Risk Assessment and Nutrition, Wageningen University & Research, Newcastle University, Food and Environmental Research Agency
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Pages: 178-193
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Critical Reviews in Food Science and Nutrition
Volume: 58
Issue number: 2
ISSN (Print): 1040-8398
Ratings:
BFI (2018): BFI-level 2
Scopus rating (2018): CiteScore 6.44 SJR 1.709 SNIP 2.222
Web of Science (2018): Indexed yes
Original language: English
Keywords: Risk prioritization, Risk ranking, Food safety, Nutritional hazards, Health impact
Electronic versions:
DOIs:
10.1080/10408398.2016.1141165
Source: Findit
Source ID: 2291897402
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review