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INTERNATIONAL CONFERENCE ON PREDICTIVE MODELLING IN FOOD



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O43.- SOURCE ATTRIBUTION OF SPORADIC SALMONELLOSIS BY A META-ANALYSIS OF CASE-CONTROL STUDIES

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INTRODUCTION AND OBJETIVES

A case-control study is a powerful approach among epidemiologists to investigate the causal effect of exposure and enteric illness. The objective of this work was to synthesise the associations between risk factors and sporadic salmonellosis by combining results from relevant case-control studies. For the study-specific exposures to be harmonised within a meta-analysis study, a categorisation scheme was developed that hierarchically grouped risk factors into travel, host-specific factors and pathways of exposure.

MATERIAL AND METHODS

Literature search to identify suitable scientific articles was conducted using Science Direct, PubMed, Scielo, ISI Web of Science and Scopus. Primary studies that passed the screening for relevance were marked as having potential for bias if they failed to meet at least one of the methodological quality assessment criteria. From each case-control study, the odds-ratio (OR) measures of association between exposures and disease were extracted, as well as codified study characteristics. Random-effects meta-analyses models were adjusted to appropriate data partitions to estimate overall ORs for every risk factor.

RESULTS

A total of 69 relevant primary studies provided 1310 ORs that were categorised for meta-analysis, of which 207 were marked as potentially biased. The most important risk factors for salmonellosis in the children population are: contact with farm animals (overall OR=5.98; 95% CI: 2.79 – 12.8); person-to-person transmission (OR=4.00; 95% CI: 1.81 – 8.81); drink water (OR=3.25; 95% CI: 1.67 – 6.32); pork meat (OR=3.19; 95% CI: 1.95 – 5.24); contact with pets (OR=3.16; 95% CI: 1.95 – 5.24), milk powder in infants (OR=2.30; 95% CI: 1.68 – 5.15); eggs (OR=1.63; 95% CI: 1.19 – 2.24) and chicken meat (OR=1.44; 95% CI: 1.06 – 1.95). In the mixed population, international travel is the most important risk factor (OR=5.83; 95% CI: 2.33 – 14.61). Within the food vehicles, key determinants of disease are composite food from ethnic establishments (OR=3.72; 95% CI: 2.29 – 6.03); red meats other than beef (OR=2.54; 95% CI: 1.70 – 3.82); pork meat (OR= 2.33; 95% CI: 1.75 – 3.04); eggs (OR=2.26; 95% CI: 1.27 – 4.05) and BBQ meats (OR= 2.06; 95% CI: 0.93 – 4.58). It was also possible to estimate that people who eat undercooked pork or poultry have, on average, ~3.8 (95% CI: 2.15 – 6.18) or ~2.7 (95% CI: 1.25 – 5.10) times the odds of becoming infected than those who simply eat pork or poultry. Eating undercooked eggs increases the odds of infection by 1.25 (95% CI: 1.05 – 1.47) while eating raw eggs by a higher factor of 1.88 (95% CI: 1.28 – 2.67).

CONCLUSIONS

Eating food prepared in establishments was identified as an important risk factor by itself. Foodstuffs that comparatively have the weakest associations with salmonellosis were: fruits, nuts, roots, dairy fats, processed fish, vegetable products, cheese, milk and fish. These results can be used to support risk management decisions in identifying and prioritising areas for interventions.