ABSTRACT

Pathogenic Contamination Sources in Restaurant Foods in an Area with High Typhoid Fever Incidence, Makassar

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Background: Foodborne microbial contamination is an important food safety concern in areas with inadequate sanitation. Although typhoid fever is caused specifically by Salmonella enterica serovar Typhi, Salmonella spp. in ready-to-eat foods can indicate fecal contamination and inadequate hygiene.

Objective: This study assessed environmental and hygiene factors associated with Salmonella spp. contamination in restaurant foods in urban Makassar City, Indonesia, during the study period.

Methods: A quantitative analytic observational study with a cross-sectional design was conducted among 60 restaurants in the Kassi-Kassi Public Health Center area, Makassar City, selected by purposive sampling. One ready-to-eat food sample (200–250 g) was collected aseptically from each restaurant. Salmonella spp. was detected using ISO 6579-1:2017, involving pre-enrichment, selective enrichment, selective plating, and biochemical confirmation. Associations were analyzed using Chi-square or Fisher's exact tests at $p \leq 0.05$.

Results: Of 60 food samples, 33 (55.0%) were positive for Salmonella spp. Environmental physical conditions ($p = 0.002$; OR = 0.160), food processing hygiene and sanitation ($p = 0.009$; OR = 0.214), food handlers' personal hygiene ($p = 0.042$; OR = 3.600), and environmental contamination risk ($p = 0.023$; OR = 0.289) were significantly associated with Salmonella spp. contamination. Risk control measures were not significantly associated with contamination ($p = 0.405$; OR = 0.647).

Conclusion: Salmonella spp. contamination in 55.0% of samples indicates food safety vulnerabilities. The findings support integrated food safety controls through hygiene training, sanitation improvement, monitoring, and risk-based measures. The study did not investigate S. Typhi or clinical typhoid cases; therefore, the findings do not establish a causal link between restaurant foods and typhoid fever.

Keyword : Exposure Risk; Restaurant Food; Typhoid Fever Incidence