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Title : ASSESSMENT OF FOOD SAFETY KNOWLEDGE, ATTITUDES, PRACTICES,
AND TRAINING OF FOODHANDLERS IN THE CONTEXT OF HACCP
GUIDELINES IN MALAYSIAN PUBLIC UNIVERSITIES

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This study aimed to assess the knowledge, attitudes, and practices (KAP) of food handlers in relation to food safety. Data collection was conducted using questionnaires that were completed by food handlers working in foodservice in public universities. Data were also collected by direct observation of food handlers performing their routines, the foodservice premises, and detection of pathogens in randomly selected food samples. Questionnaires were completed by 260 food handlers, and 130 food handlers were observed. Eleven public universities located across Malaysia were involved. Thirty-three premises were observed, and 127 randomly selected food samples were collected for pathogen detection. Rasch model analysis was used for validation, odds ratios were determined, and multivariate analysis of variance was performed to determine the relationships between the variables. The majority of the food handlers had not received any formal food safety training; therefore, they did not have a high level of general food safety knowledge, and corresponding behavioural practices were lacking. The majority of the food handlers who had completed training had higher knowledge scores than those who had not, but this was not statistically significant. Food handlers with or without training demonstrated knowledge of risks of foodborne illnesses, time and temperature abuse, improper hand washing as well as cleaning practices. Overall, food

handlers' attitudes toward food safety were positive regardless of food safety training. Lower attitudes scores for food safety and personal hygiene were found among the food handlers in the foodservice industry. The following unsafe practices were observed: inadequate hand washing, misuse of gloves, inaccurate use of thermometers, incorrect holding and storage of food, poor personal hygiene, and improper cleaning and sanitizing of work surfaces. A further finding that should be of great concern to law-enforcing bodies, such as the Ministry of Health, is that pathogens, such as *Escherichia coli O157:H7*, *E. coli O157*, and *Vibrio cholerae*, were detected in food samples. Recommendations are made to improve the KAP of food handlers. Greater emphasis should also be placed on increasing food handlers' personal sense of responsibility for food safety, increasing their food safety knowledge, and improving their food safety practices. Further studies are also needed to better understand how training affects food handlers' KAP. Recognizing the need for training programs that are accessible and relevant to institutional managers and food handlers, this research seeks to determine what prevents foodservice managers from allowing employees to participate in food safety training.