World Academy of Science, Engineering and Technology
International Journal of Nutrition and Food Engineering
Vol:11, No:8, 2017

Measuring Hazard Analysis and Critical Control Points Implementation in Riyadh Hospitals

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***Abstract*—**Daily provision of high quality food and hygiene to patients is a challenging goal of the healthcare. In Saudi Arabia, matters related to food safety and hygiene are regulated by the Ministry of Health (MOH) and the Saudi Food and Drugs Authority (SFDA). The purpose of this research is to discuss the food safety management inconsistencies and flaws, in particular the ones related to Hazard Analysis and Critical Control Points (HACCP) in Riyadh's MOH hospitals. As required by law, written HACCP regulations must be implemented, and food handlers need to receive the training accordingly. However, in Saudi hospitals, this is not a requirement, and the food handlers do not need to hold training certificates in food safety or HACCP. Nowadays, the matter of food safety and hygiene have become increasingly important since the decision makers want to align these regulations with the majority of the world and to implement HACCP fully and for this purpose, the SFDA was established.

***Keywords*—**Food safety, patients, hospitals, HACCP, Saudi Arabia.

I. Introduction

PROVIDING patients with safe meals on a daily basis is one of the challenges in the healthcare sector. According to the World Health Organization (WHO) [1], the burden of foodborne diseases resulted from 31 different causes such as pathogens, chemicals, and various toxins make as many as 600 million people including children, who fall ill after the poisonous food consumption, which is approximately 1 out of 10 people worldwide. Approximately 420 000 victims of food poisoning die, among whom are about 125 000 children below the age of 5.

In Saudi Arabia, matters related to food safety and hygiene have been the heart of the Ministry of Health (MOH) and Saudi Food and Drugs Authority (SFDA). National legislation requires food safety to be managed using a documented, HACCP based approach, and that food handlers must be appropriately trained in food safety [2]. Food handlers in Saudi Arabia are not required to provide a certificate or attend a food handling training course even in healthcare sectors. Some countries apply for HACCP without pre-requisite programs [3]. Since food safety and hygiene issues are of increasing importance for Saudi Arabian health decision makers, the SFDA has been established to apply food hygiene requirements in all food operations. Effective regulation can improve the Nation's health, shape consumer confidence and confer economic stability. All foodservice members of staff are in charge of controlling and supervising hazards during food processing. This responsibility is more acute in healthcare establishments, with hospital patients frequently suffering low immunity thresholds that increase the risk of infection from small doses of pathogens [4]. In general, food handlers should have a functional understanding of food hygiene in food preparation and should exhibit a positive approach towards the practices required to produce safe food. Food hygiene training can be used a key step to comply with these expectations to minimize foodborne illnesses. There is a debate, however, regarding the effectiveness of training of food handlers in spite of the conviction that knowledge, attitude and practice (KAP) are the major drivers of best practice in hospital catering [2]. The proactive management of foodservices staff can be an effective catalyst to establish the importance of planned training and how the training can be translated into practice. The aim of this study is to examine the causes of inadequate implementation of food safety management systems such as HACCP in Riyadh's MOH hospitals.

II. Research Methodology

In this research, the findings are based on the analysis of survey data collected through the distribution of a questionnaire to three groups of contracted catering managers. The purpose of the questionnaire was to examine the application of pre-requisite programs and food safety procedures in seven Saudi state hospitals in Riyadh so as to determine the current level of staff food hygiene awareness, their supervision procedures, and hygiene practices. Finally, the approach sought to establish the extent to which government hospitals in Riyadh respect the set standards and contracts approved by the Ministry of Health.

The sample encompassed three distinct groups of staff, but only two types of questionnaires were produced. Questionnaire A was used with the Hospital Catering Manager/Supervisor staff under a direct supervision by the MOH. These are MOH hospital-based staffs who are responsible for food safety and related issues in the Nutrition Departments of hospitals. They are either nutritionists, HACCP administrators or head supervisors. It is notable that the supervisor group shows gender imbalance: there were 47 (59%) female participants and 33 (41%) males out of 80 MOH supervisors. The survey was first approved by the General Administration of Nutrition in the Ministry of Health in Saudi Arabia.

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The respondents were initially briefed about the aims and purpose of the survey and were given an opportunity to opt out. Participants were invited to sign consent forms and to voluntarily complete the questionnaires at their convenience in anonymity. The response rate represents 65% of the total in this group.

III. Research Results

This research will be useful for monitoring the improvement in food safety in hospitals in Saudi Arabia. It is clear that there is a need to improve the implementation of HACCP in state hospitals. However, very little research has been conducted on the design and development of the training programs for state hospital staff or its impact on their performance in relation to food safety. This study will provide a baseline for a comparison of the training provision in similar hospital settings in the UK, and a baseline to monitor the progress of staff performance and changes in their attitudes and knowledge in comparison to pre-training period. These learnings will inform the design of future training provisions in the state hospitals of Riyadh and other urban state hospitals in Saudi Arabia.

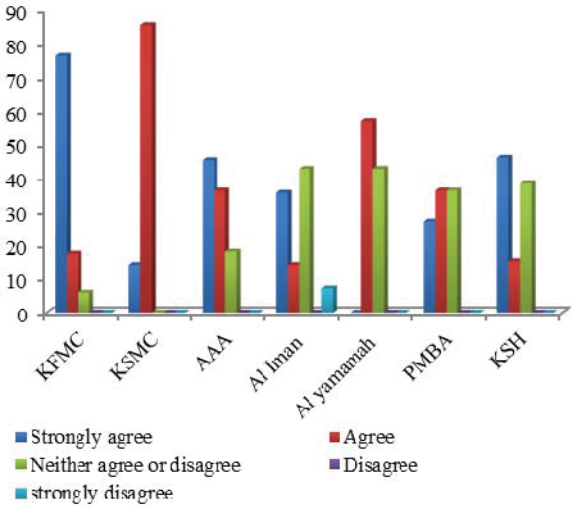

Fig. 1 Percentage survey responses to the question "Is HACCP fully implemented in your opinion at your hospital?"

When respondents were asked about the implementation of HACCP in hospitals, the answers were divided. In the largest hospital, KFMC, the overwhelming response was affirmative with the one that neither agreed nor disagreed (Fig. 1). The answers were similar in KSMC, AAA, and KSH hospitals.

At Al Iman Hospital, there was one respondent who strongly disagreed with the statement. The majority of respondents neither agreed nor disagreed. It was apparent that for the staff considered, there were some impediments to the implementation of HACCP at this hospital [5].

Regarding training in support of the application of HACCP, the answers were quite varied (Fig. 2). In the KFMC Hospital, the majority of the MOH supervisors firmly disagree with the statement that there was no training on HACCP (12 out of 17 responses in Fig. 2). Nevertheless, there was one respondent, female Bachelor of Food Science from the age group 24-29 who agreed with this statement. In PMBA, Al Yamamah, and Al Iman hospitals, the answers varied with a large number of undecided answers suggesting that the respondents were not confident when providing the answers or they did not want to reveal the real situation. Nevertheless, the findings suggest that there is a need for the further investigation of the type of training offered and possible modes of improvement. The nature of the training programs could affect knowledge and attitudes to application [6].

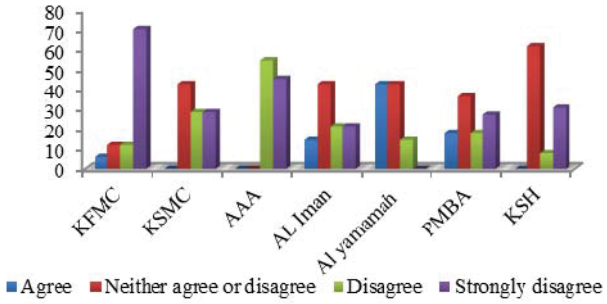

Fig. 2 Percentage survey responses "There has been no training. HACCP at your hospital"

Regarding the awareness of the corrective measures for food safety in hospital kitchens, the respondents' answers were divided (Fig. 3). In five out of seven hospitals, the majority of the answers were indicative of an awareness of the correct measures. In the Al Iman and Al Yamamah hospitals (Fig. 3), the answers openly disclose that a lack of knowledge is prevalent (Al Iman: 11 out of 14; Al Yamamah: 5 out of 7). This suggests that the issues of when and how corrective actions are undertaken in relation to the operation of hospital kitchens need to be given greater prominence in new food safety training packages. On the other hand, food handlers may raise the risk of contamination of thy contact with contaminated food [7].

Regarding the attention given to the issues of food safety raised in the surveyed hospitals, the majority of the respondents either disagreed or strongly disagreed with the statement that they were ignored (Fig. 4). Nevertheless, in four hospitals, 5% to 30% of the respondents agreed or even strongly agreed with this statement. In particular, this was the case for Al Iman Hospital, where 12% of MOH supervisors agreed and strongly agreed, that the issues being raised were ignored when food safety was in question (Fig. 4). It is interesting that, in three hospitals, the majority of answers were undecided (neither agree nor disagree). Even in KFMC Hospital with the largest number of the strongly disagreed (63%) respondents, there remained doubts for a few respondents.

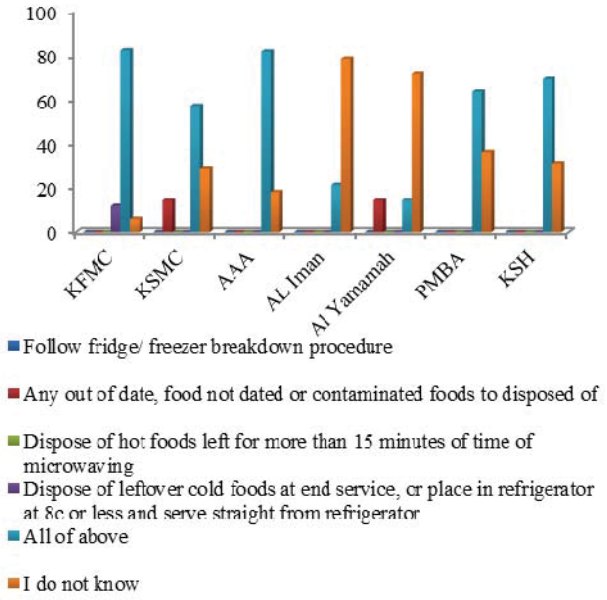

Fig. 3 Percentage survey responses "Are you aware of any corrective actions for ensuring food safety in your kitchen?"

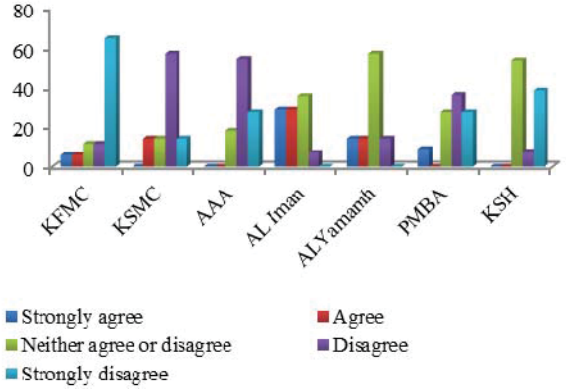

Fig. 4 Percentage survey responses "When issues about food safety are raised they are ignored"

These results indicate that there is some inconsistency in addressing the issues of food safety raised in the surveyed hospitals. It is therefore necessary to consider a systematic way of monitoring food safety reporting with appropriate action plans and follow-up activities [8], [9]. On the other hand, failure to implement the HACCP system is due to the lack of trained staff and the lack of encouragement [10].

When asked about compulsory training for all food handlers (Fig. 5), in all the surveyed hospitals the majority of the respondents strongly agreed that it should be implemented. However, it is interesting, that one MOH supervisor in 7 hospitals strongly disagreed with this statement. It would be worthwhile investigating the reasons for this kind of view.

The answers related to the contribution to hospital planning were divided (Fig. 6). whereas in KFMC Hospital 12 out of 17 MOH supervisors answered positively, in KSH 10 out of 13 MOH supervisors answered negatively. Negative responses were prevalent in PMBA, Al Yamamah and KSMC, whereas MOH supervisors contribute to hospital planning in AAA and Al Iman hospitals. There is a need for consistency in this respect, in particular knowing that quality of planning is enhanced when working in teams consisting of different professionals.

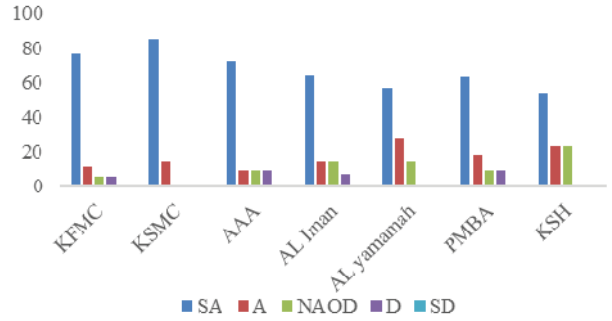

Fig. 5 Percentage survey responses Food safety training should be compulsory for all food hand handlers. SD: Strongly disagree; NAOD: Neither agree or disagree; SA: Strongly agree; D: Disagree; A: Agree

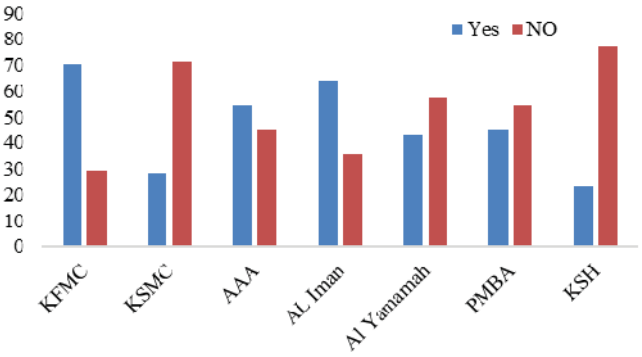

Fig. 6 Percentage survey responses to the question "Do you contribute to hospital planning"

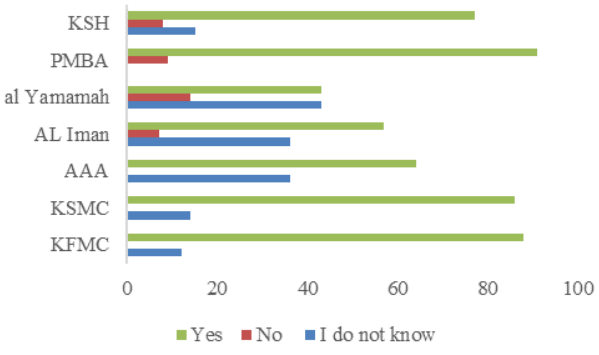

Fig. 7 Percentage survey responses Dose your hospital organised monitoring/checks to ensure safety of the food served to patient?

When asked to comment on the hospital organisation of monitoring and checks to ensure safety of the food served to patients (Fig. 7), the majority of answers were positive.

However, in each hospital there were some other answers present, in particular disclosure of lack of knowledge (1-5 answers per hospital). In 4 hospitals, there was 1 person who thought that their hospital does not organise monitoring of food safety. Altogether there were 17 MOH supervisors who were not aware of their hospitals' checking activities to ensure the safety of the food offered to the patients. This is a large number that imposes a great risk for food safety, which means that the Ministry of Health needs to invest into an enhanced training on food safety in hospitals.

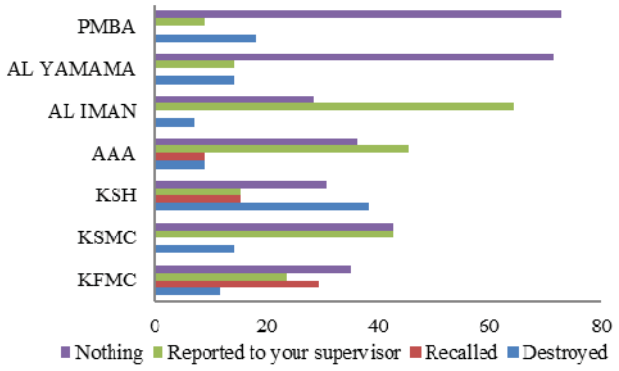

Fig. 8 Percentage survey responses to the question "what happened if the tested samples were positive"

The MOH supervisors provided varied answers when asked about the procedures after the samples tested positive (Fig. 8). Possible answers were nothing, reported to your supervisor, the samples were destroyed or food was recalled. It is very alarming that 34 MOH supervisors responded that they did not do anything after the food samples tested positive. This requires not only the enhanced training, but other regulatory measures taken by hospitals as this presents the highest risk to food safety identified in the seven hospitals in Riyadh.

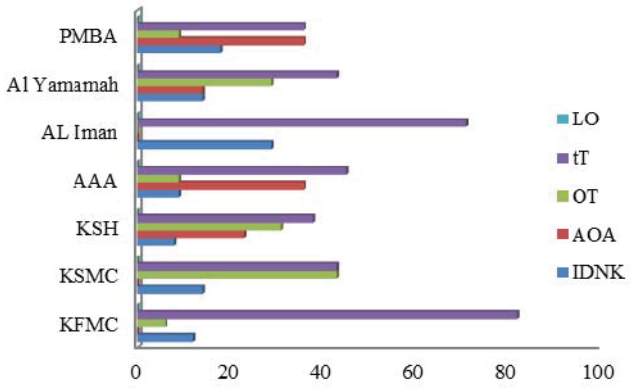

Fig. 9 Percentage survey responses to the question 'what encourages increased growth of bacteria? LO: Light and Oxygen; tT: Time and temperature; OT: Oxygen and temperature; AOA: All of above; IDNK: I do not know

Regarding what encourages increase growth of bacteria; approximately 51% provided the correct answer time and temperature (Fig. 9).

IV. Conclusion

The risk of foodborne disease outbreaks in hospital settings can be minimised through the active implementation of food safety policies in hospitals and effective staff training.

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