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Analysis of Occupational Safety and Health for Food Handlers at Megarezky Health Polytechnic Food Court

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ABSTRACT

Occupational Safety and Health (OSH) is a vital component in all work environments, particularly in the food and beverage sector. Effective OSH implementation not only protects workers from accidents and occupational illnesses but also ensures the safety and quality of food products served to consumers. This study aims to analyze the implementation of OSH among food handlers at the Food Court of Megarezky Health Polytechnic. A descriptive qualitative method was used, employing HIRARC (Hazard Identification, Risk Assessment, and Risk Control) and thematic analysis. The HIRARC approach helped identify, evaluate, and control potential hazards in the workplace. Meanwhile, thematic analysis explored food handlers' perceptions and experiences regarding OSH practices. The study involved all 10 food handlers through in-depth interviews using open-ended question guidelines. Findings revealed a total of 13 hazards: 6 categorized as high risk and 7 as medium risk. From the thematic analysis, several themes emerged: Workplace Accidents, Worker Health, OSH Awareness, Waste Management, Fire Response, Fatigue, and Work Stress. These themes highlight the multidimensional aspects of OSH practices and challenges faced by workers. In conclusion, while 13 risks were identified (6 high, 7 medium), the study underscores the urgent need to enhance OSH awareness, improve regulatory compliance, and strengthen risk mitigation efforts. It recommends continuous education, routine training, and adequate OSH infrastructure. Strengthening these aspects can foster a safer and healthier working environment, enhancing both employee well-being and service quality in the food court setting.

Keywords : *OSH; Food Handler; Foodcourt; Risk; Hazard*

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INTRODUCTION

Occupational Safety and Health (OSH) is a crucial aspect in every work environment, particularly in the food and beverage sector. Workers in this sector are highly vulnerable to various risks such as burns, cross-contamination, and occupational diseases, all of which can directly impact consumer health and the reputation of food services.(1) Food handlers have an important responsibility to ensure that the food served is safe and fit for consumption, making the implementation of OSH not only a means of protecting workers but also a form of product quality control.(2,3)Several studies have shown that workers in the food service sector experience a high prevalence of workplace accidents, especially cuts, burns, and musculoskeletal disorders caused by poor working posture.(4) This situation is exacerbated by a lack of training and limited protective facilities in the workplace. Therefore, it is essential for food service providers, such as food courts in educational institutions, to ensure that food handlers fully understand and apply OSH principles.

Proper OSH implementation not only protects workers from the risks of accidents and illnesses but also guarantees the quality and safety of products served to consumers.(5) In Indonesia, the food and beverage sector including food courts has experienced rapid growth in line with increasing public demand for ready-to-eat meals.(6) However, this growth also presents challenges, especially in terms of enforcing adequate OSH standards. Food poisoning hazards may arise if food production processes are not carried out properly. The importance of OSH-compliant behavior by food handlers is critical, as their work involves selecting raw materials, processing ingredients, and preparing ready-to-serve food for customers.(2,7)

Beyond food production processes, activities in the canteen also involve hazards and risks. For instance, fire hazards may occur due to the limited space in most canteens where tasks such as cooking, washing, and operating electrical appliances like water dispensers, blenders, refrigerators, rice cookers, and others are performed in close proximity. Attention

to this hazard identification focuses on the positioning of each item, which is often cramped and closely arranged.(8,9) One study highlighted canteen hazards such as gas leaks and fire, finger cuts, slips, falling kitchen equipment, and contact with heat sources.(10) Another study involving 93 kitchen employees who participated in surveys and interviews revealed that all had experienced kitchen accidents. Burns were the most common type of accident (62.7%), followed by slips (49.4%), cuts (48.2%), and musculoskeletal disorders (15.7%). Accidents involving knives were reported by 44.2%, large kettle rotation 22.1%, deep fryers 18.2%, gas lines 15.6%, ovens 13.0%, and boilers 11.7%.(1)

The Food Court at Megarezky Health Polytechnic is one of the places that provides various food options for students and visitors. Here, food handlers play a vital role in ensuring that the food served is not only tasty but also safe for consumption. However, food handlers often do not receive adequate training in OSH practices, which can increase the risk of workplace accidents and health problems. Effective OSH implementation in food courts involves not only physical aspects such as the use of personal protective equipment (PPE) and good sanitation but also managerial aspects, including training and raising awareness about the importance of OSH among food handlers. Previous research has shown that improved knowledge and awareness of OSH can reduce the risk of accidents and increase work productivity.(5)

Most existing studies on OSH implementation in the food sector are still focused on large-scale industries such as restaurants, hotels, and food processing factories.(11,12) Research related to food handlers in educational health institution environments, particularly in campus food court contexts, remains very limited. Furthermore, integrative approaches that combine risk identification methods such as HIRARC with thematic analysis based on worker perceptions are rarely used in tandem. Therefore, this study aims to fill that gap by comprehensively analyzing OSH implementation among food handlers at

the Food Court of Megarezky Health Polytechnic, using both the HIRARC approach and thematic analysis..

METHODE

This study employs a qualitative approach with a descriptive method to illustrate the implementation of Occupational Safety and Health (OSH) in the food court environment of Megarezky Health Polytechnic. This approach was chosen to gain an in-depth understanding of the experiences, perceptions, and practices of food handlers regarding OSH implementation in the workplace. Data collection was conducted in two stages. First, a risk analysis was carried out using the HIRARC (Hazard Identification, Risk Assessment, and Risk Control) approach to identify, assess, and control potential hazards in the work environment. Each identified hazard was assessed based on two parameters: likelihood of occurrence and severity of impact, each scored from 1 to 5. These scores were multiplied to obtain a risk rating, which was categorized into high risk (RR > 9), medium risk (RR 4–9), and low risk (RR < 4). These results were used to formulate appropriate risk control measures.

Second, to explore OSH implementation from the workers' perspectives, thematic analysis was employed using qualitative data collected through interviews guided by open-ended questions. These interviews were conducted directly with 10 food handlers, representing the total population in the food court. The interview guide consisted of nine open-ended questions designed to explore respondents' perceptions, experiences, and understanding of OSH aspects such as workplace accidents, environmental cleanliness, use of personal protective equipment (PPE), and work-related stress. The interviews were manually recorded, in accordance with respondent consent.

The interview data were analyzed using thematic analysis. This process was carried out manually through three main stages. First, the researcher conducted open coding of

respondents' answers by highlighting key quotes or phrases indicating OSH issues. Second, these coded data were grouped into initial categories (axial coding) based on similarity of meaning or context. Third, the categories were merged to form major themes that represent general perceptions and experiences of the respondents. The researcher also conducted constant comparison with raw data to ensure thematic validity. The final result produced seven main themes: Workplace Accidents, Worker Health, OSH Awareness, Waste Management, Fire Response, Fatigue, and Work Stress.

RESULTS

Analysis Using the HIRARC Method (*Hazard Identification, Risk Assessment, and Risk Control*)

Conducting a HIRARC analysis for Occupational Safety and Health (OSH) to ensure a risk-free workflow. The Occupational Health and Safety Management System (OHSMS) is based on a risk management system that consists of hazard identification, risk assessment, and control measures. Below are the results of the hazard identification and risk assessment for the hazards present in the Megarezky Health Polytechnic food court:

Table 1
HIRARC Risk Management at the Megarezky Health Polytechnic Food Court

Hazard	Risk Rating			Control
	Likelihood	*Severity*	*Risk Rating*	
Cross Contamination (raw/cooked)	3	4	**12**	- Separate tools and surfaces for raw and cooked food. - Learn hygiene protocols.
Slippery Floor	3	3	**9**	- Clean wet floors immediately. - Place warning signs/Safety Signs for slippery floors.

Improper food temperature storage	2	4	**8**	- Ensure that the cooling equipment is functioning. - Check the temperature regularly.
Sharp Instrument Use	2	3	**6**	- Store sharp tools in a safe place. - Provide training on the use of tools.
Allergen Contamination	2	5	**10**	- Label allergen-risk foods. - Use dedicated equipment for allergenic foods.
Electrical Short Circuit	2	4	**8**	- Check cables and outlets regularly. - Use equipment with safety certification.
Improper waste management	3	3	**9**	- Dispose of waste separately and on a scheduled basis. - Cover trash bins.
Poor sanitation	3	4	**12**	- Conduct regular cleaning. - Provide sanitation training to food handlers.
Narrow sales area	2	3	**6**	- Rearrange the layout to provide adequate space. - Ensure that evacuation routes are clear.
Untidy arrangement of goods	2	3	**6**	- Implement an organized storage system. - Conduct regular inspections to maintain tidiness.
Food handlers do not maintain personal hygiene	3	4	**12**	- Always wash hands before and after handling food.

				- Provide training on personal hygiene.
Not using Personal Protective Equipment	3	4	**12**	Use aprons and head coverings.
Cables scattered	2	4	**8**	- Organize cables neatly and use cable protectors. - Conduct regular inspections for safety.

Source: Primary Data, 2024

Based on Table 1, it shows that the results of the hazard identification and risk assessment for Occupational Health and Safety (OSH) management in the Megarezky Health Polytechnic food court identified 13 hazards, with 6 (six) classified as high risk and 7 (seven) classified as medium risk.

ANALYSIS WITH THEMATIC METHOD

This approach was conducted by interviewing 10 respondents who are food handlers at the Megarezky Health Polytechnic food court. Based on the analyzed data, the following themes can be identified:

Work Accidents: Many respondents reported having experienced work accidents, with the most common type of accident being cuts from knives. This indicates the need for improved safety training and the use of personal protective equipment. This is consistent with the results of the respondents' interviews;

"*Yes, I often experience work accidents. Usually, I get cut by knives on my hands*." (I, 30 years old)

"*The work accidents I usually experience are cuts from knives and burns from hot pans*." (S, 33 years old)

Worker Health: Most respondents do not go to work when they are sick, indicating an awareness of the importance of health. However, some still choose to work even when they are not feeling well. This is consistent with the results of the respondents' interviews:

"*If I'm sick, I don't go to work unless it's just a minor illness.*" (A, 39 years old)

"*I still go to work because there are other members who need my help*." (R, 29 years old)

Awareness of OSH: The majority of respondents are unaware of any clear Occupational Safety and Health (OSH) regulations in their workplace. This indicates a need for socialization and training regarding safety and health practices. This is consistent with the results of the respondents' interviews:

"*As far as I know, there are no OSH regulations from the campus management; the only thing is where to dispose of the trash*." (A, 30 years old)

"*In my 11 years of selling here, there have never been any rules about workplace safety, which is why there are no fire extinguishers installed here, making it dangerous in case of a fire."* (AI, 47 years old)

Waste Management: All respondents stated that there are trash bins in the cafeteria, indicating an awareness of the importance of cleanliness. This is consistent with the results of the respondents' interviews:

"*The trash is disposed of near the dormitory. The cleaning service usually helps to take it out in the morning, so it's always clean before we start selling*." (R, 36 years old)

Fire Prevention: Although most respondents know how to handle fire emergencies, some are still unaware. This indicates a need for further training. Additionally, there are no fire extinguishers or clear evacuation routes in the food court area. This is consistent with the results of the respondents' interviews:

"*Once while cooking, the flame from the stove flared up. I quickly poured water on it and turned off the gas, and the fire went out.*" (A, 39 years old)

"*I don't know how to put out a fire. I would definitely panic if I had to extinguish it. Thankfully, there has never been a fire here.*" (I, 30 years old)

Fatigue and Work Stress: Many respondents reported experiencing fatigue and work-related stress, which can affect their performance and health. This indicates a need for greater attention to the mental well-being of workers. This is consistent with the results of the respondents' interviews:

"*I definitely feel tired when there are many customers, especially during the lunch rush at around 12 o'clock; it gets really busy.*" (AP, 30 years old)

"*When there are a lot of customers, I definitely feel tired, especially when there are customers who are in a hurry and want their orders quickly; that usually causes stress.*" (H, 21 years old).

DISCUSSION

The findings of this study underscore the importance of applying risk management principles in the workplace, particularly in the food industry. Based on the HIRARC approach and thematic analysis, various OSH-related aspects identified reaffirm the relevance of occupational safety theory, industrial hygiene, and work stress management in supporting worker well-being and food safety. This study revealed a lack of dissemination regarding OSH policies, which hampers the creation of a strong safety culture. High workloads, especially during peak hours, increase the risk of fatigue and stress, potentially affecting performance and increasing the incidence of workplace accidents. Inadequate sanitation and waste management practices, as well as the lack of fire protection facilities, can be considered unsafe conditions that heighten the risk of accidents and emergencies. Nurhayati and Purnomo's (2023) study on OSH risk analysis in the seafood industry also

identified 40 hazards, with one categorized as low risk, 31 as medium risk, and eight as high risk.(13)

The concept of risk management in OSH emphasizes hazard identification, risk assessment, and control to prevent accidents and occupational diseases.(14,15) The risk control hierarchy theory from the National Institute for Occupational Safety and Health (NIOSH) outlines five levels of control: elimination, substitution, engineering controls, administrative controls, and the use of personal protective equipment (PPE).(16,17) In the food court environment, applying this strategy is crucial for reducing the identified hazards. Furthermore, Reason's Swiss Cheese Model suggests that workplace accidents occur due to layered failures within the safety system.(18) Each protective layer contains holes, and if all the holes align, accidents become inevitable. Therefore, a systems approach in OSH risk management must ensure that each control measure is effective and mutually reinforcing.

The results of this study indicate that food handlers at the Megarezky Health Polytechnic food court face various occupational risks, ranging from cuts and burns to fatigue and stress due to high workloads. These findings highlight the importance of a comprehensive risk management approach in food-related work environments, including within educational institutions. In the context of this study, the lack of formal training, absence of fire extinguishers (APAR), and lack of evacuation routes point to existing "holes" in the OSH system, as described in Reason's Swiss Cheese Model, which remain unaddressed. When these holes align, accidents become unavoidable. Respondents' statements about not knowing how to extinguish fires and the frequent occurrence of cuts while working reflect weak administrative and behavioral control layers.

Furthermore, the risk analysis using the HIRARC approach showed that most identified hazards fall into the medium to high-risk categories. When examined through the NIOSH risk control hierarchy, current control measures remain at the lowest level—namely, the use of PPE and informal education. There have been no efforts to eliminate hazards,

substitute safer tools, or implement engineering controls such as ergonomic kitchen layouts. This indicates that the control system is not yet systematically structured. A study by Fazrin et al. (2023) in a barista work environment showed that implementing SOPs, replacing work tools, and consistent PPE use significantly reduced occupational risks.(4) In other words, educational canteens have not yet adopted higher-level control strategies in the hierarchy.

Beyond physical aspects, psychosocial dimensions such as fatigue and work stress also emerged as important findings. This aligns with Park et al. (2017), who reported that kitchen sector workers frequently experience fatigue and musculoskeletal disorders due to high workloads, particularly during peak hours.(1) Additionally, OSH risk management research on baristas at Kula Coffee House Meruya identified nine risks, including muscle pain, low back pain (LBP), eye irritation, dizziness and headaches, explosions, burns, scalds, hot water spills, slips, and falls with LBP as the highest risk. Handling such issues should not only focus on rest but also on schedule arrangement and managerial roles that support balanced workloads.

In terms of OSH awareness, it was found that most workers were unaware of any safety regulations or policies from campus management. This condition reflects the absence of a strong safety culture. The Total Safety Culture program could serve as a long-term approach to build such a culture by integrating management commitment, worker involvement, and internal monitoring systems.

Research Limitations

This study has several limitations that should be considered when interpreting the results. First, the data were obtained from a limited number of respondents (10 individuals) from a single food court location within a health education institution, so generalizing the findings to the broader food service sector should be done with caution. Second, qualitative data

collection was conducted through interviews without audio recording, which may have reduced the depth of data due to the limitations of manual note-taking. Future research is recommended to combine in-depth interviews, field observations, and quantitative approaches to enrich the data and strengthen the validity of the findings.

CONCLUSION AND RECOMMENDATIONS

Based on the above study, it can be concluded that the risk identification and assessment or OSH risk management at the Food Court of Megarezky Health Polytechnic identified 13 hazards, with 6 (six) classified as high risk and 7 (seven) as medium risk. The study recommends increasing awareness, compliance with regulations, and the implementation of risk mitigation strategies among food handlers at the Food Court of Megarezky Health Polytechnic. Strengthening OSH education, training, and infrastructure can help create a safer and healthier work environment, ultimately enhancing worker well-being and the quality of services provided.

Implications and Contributions

Practically, the findings of this study provide a foundation for food court managers and educational institutions to develop a more structured OSH management system based on the risk control hierarchy approach. Regular education, SOP development, provision of emergency facilities, and training in PPE usage are initial steps that can be implemented immediately to reduce occupational risks. The finding that most risks are still at the administrative and behavioral levels indicates the need for policy and technical-level interventions.

Scientifically, this study contributes to filling the gap in OSH research in the non-industrial food service sector, particularly in the context of health campus environments, through an integrative approach combining HIRARC risk analysis and thematic analysis.

This approach enriches the scientific perspective in understanding the relationship between worker perceptions, workplace environmental risks, and theory-based safety frameworks.

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