

## THE EVALUATION OF KNOWLEDGE AND BEHAVIOR IN HYGIENE SANITATION OF FOOD HANDLERS AT AJI SANTOSO INTERNATIONAL FOOTBALL ACADEMY

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### Abstract

The quality of food service is influenced by the knowledge of hygiene and sanitation (NHS) and the hygiene and sanitation behavior (PHS) of food handlers. NHS and PHS are essential for controlling the risk factors of contamination. This research aims to assess the NHS and PHS of food handlers at Aji Santoso International Football Academy (ASIFA). This was a descriptive study with a cross-sectional design, utilizing the total population sampling method. The sample size was seven individuals. The data were analyzed descriptively. The characteristics of the samples included individuals within the productive age range of 15–64 years, with 57% male and 43% female. Educational backgrounds were 72% high school, 14% elementary school, and 14% higher education. The work experience of the samples indicated that 43% had worked for 5 years. The results showed that the good value of NHS did not align with PHS values, as evidenced by 100% of food handlers having inadequate PHS values. Therefore, training to improve both NHS and PHS among food handlers at ASIFA was deemed necessary.

**Keywords:** ASIFA, Behavior, Hygiene, Knowledge, Sanitation

### Introduction

Aji Santoso International Football Academy (ASIFA) is a renowned football school with highly skilled and certified coaching staff in Malang, Indonesia<sup>(1)</sup>. The energy needs of football players are >4,500 kcal, which is 1.5–2 times higher than that of individuals of the same age and nutrition status. The carbohydrate requirement is 6-10 g/kg/day<sup>(2-5)</sup>. Inadequate nutritional intake can lead to decreased performance, reduced bone density, hormonal imbalances, and negative psychological effects<sup>(6)</sup>. To become a professional football athlete, one must go through the football school determined by the Indonesian Football Association, starting from the age of 11<sup>(7)</sup>.

Good cooperation is required among management, coaches, doctors, and nutrition experts to generate high-quality athletes. It is also supported by proper and nutritious food, complemented by well-measured training to achieve optimal stamina<sup>(8)</sup>. Therefore, to ensure healthy and standard food and beverages, supervision of hygiene and sanitation is necessary, especially among food handlers<sup>(9)</sup>.

The food handlers significantly influence the quality of food; therefore, it is essential to be concerned about their knowledge and behavior regarding hygiene and sanitation. Hygiene and sanitation control the risk factors of food contamination, whether originating from food ingredients, individuals, places, or equipment. The hygiene of food handlers affects food cleanliness, as they can also contribute to poor sanitation if their hygiene and sanitation behavior are inadequate. Hence, food handlers must practice good hygiene to produce high-quality food<sup>(10, 11)</sup>.

The knowledge of food hygiene does not follow good hygiene practices. The knowledge of food handling does not directly influence the hygiene behavior of food handlers. This suggests that there are

other influential factors in the hygiene behavior of food handlers, such as the habits of food handlers who may not prioritize hygiene in food processing, the lack of personal protective equipment for food handlers, limited experience due to a lack of training and socialization in food processing hygiene, and a lack of awareness about food processing hygiene <sup>(12)</sup>.

The study aimed to determine the level of knowledge of hygiene and sanitation regarding the hygiene and sanitation behavior of food handlers at Aji Santoso International Football Academy (ASIFA).

## Method

The research was descriptive with a cross-sectional research design. It was conducted in December 2019 at the Food Management Room of ASIFA, located at Lapangan Mojolangu, Griyashanta Complex Block J, Mojolangu, Lowokwaru District, Malang City, East Java, Indonesia. The population consisted of all the food handlers at ASIFA. The sampling technique used was total population sampling, and it included seven food handlers. The inclusion criteria were: 1) willing to be a research participant; 2) in good health; 3) solely employed as a food handler at ASIFA. The exclusion criteria were: not a permanent employee of ASIFA.

The variables used included independent variables: the level of hygiene and sanitation knowledge of food handlers; dependent variables: the behavior of food handlers; and operational definition variables: the level of hygiene and sanitation knowledge, representing the ability to understand hygiene and sanitation among food handlers. The behavior of food handlers encompassed the activities or actions undertaken by them in implementing hygiene and sanitation during the food production process. The measurement scale for the variables was ordinal, with measurement criteria: the level of knowledge of hygiene and sanitation (good > 80%, moderate 60–80%, insufficient < 60%), and hygiene and sanitation behavior of food handlers (good > 80%, moderate 60–80%, insufficient < 60%)<sup>(6)</sup>.

The tools used in this study were questionnaires to assess the level of hygiene and sanitation knowledge of food handlers and observation forms (checklists) to assess the hygiene and sanitation behavior of food handlers.

The data on the level of hygiene and sanitation knowledge of food handlers were obtained by completing a questionnaire, where the correct answers were assigned a score of 1, and incorrect answers were given a score of 0. The sum of correct answers was then divided by the expectation score (the maximum score achievable if all answers were correct).

$$\text{Total value of knowledge level} = \frac{(\text{Answer Score})}{(\text{Expectation Score})} \times 100\% \quad \dots \dots \dots (1)$$

Thus, the percentage value was obtained, then it was categorized according to the predetermined criteria.

The data on the hygiene and sanitation behavior of food handlers were obtained by observing or monitoring the behavior of food handlers during food production activities. It was observed for 10 days using an observation form with a guided checklist. The checklist was filled out to record the activities performed during food production. Each activity that should be carried out was given a score of 1 if implemented, and if the expected behavior was not followed, a score of 0 was assigned. The correct answers for each day were summed, then averaged over the 10-day observation period, and compared with the expected score to assess the percentage of behavior.

$$\text{Total Behavior of Food Handler} = \frac{(\text{Answer Score})}{(\text{Expectation Score})} \times 100\% \dots \dots \dots (2)$$

The obtained values were categorized to determine the food handler behavior categories. The data was analyzed descriptively in the form of tables and figures.

The ethical clearance was obtained from the Research Ethics Committee of Politeknik Kesehatan Kemenkes Malang, with Reference Number 521/KEPK-POLKESMA/2019."

**Results**

**Sample Characteristics**

Based on Table 1, the distribution of food handlers age were in the productive age range. According to the criteria of the Ministry of Health of the Republic of Indonesia, the productive age is defined as between 15 and 64 years <sup>(13)</sup>. Therefore, all food handlers at ASIFA were still categorized as productive individuals.

**Table 1 The characteristics of food handlers**

Age (year)	Gender	Working experience (year)	Education
23	Male	2	Collage
27	Male	3	High school
28	Female	5	High school
38	Male	3	High school
45	Male	4	High school
46	Female	5	High school
50	Female	5	Elementary school

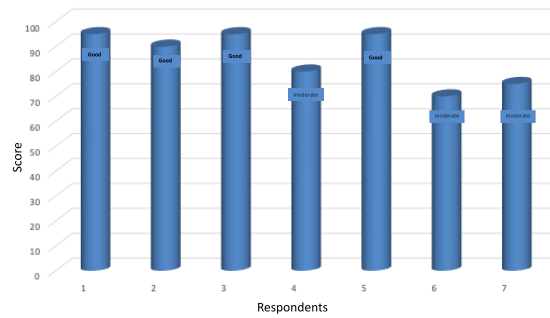
The majority of food handlers at ASIFA were males (57%) and females (43%). The educational level was high school (72%), followed by elementary school (14%) and higher education (14%). The number, type, and qualifications of food handlers depended on the menu processed, specialized equipment used, processing procedures, and the number of consumers served<sup>(14)</sup>.

The food service at ASIFA catered to approximately 110 students, applying a centralized distribution system with a multi-level kitchen layout and prioritizing male food handlers. The consumers served were healthy prospective football athlete students, and the food was common, not requiring special skills, such as specialized cooking. Therefore, the management considered the educational qualifications of employees to be sufficient with a high school degree.

The most common work experience among food handlers was 5 years (43%), the longest work experience for the current period. 29% had worked for 3 years, 14% had 4 years of experience, and another 14% had only 2 years of work experience. Longer work experience is needed for a broader work experience. The longer the work experience of employees, the more experience they acquire <sup>(13)</sup>.

**Knowledge Level of Food Handler**

Knowledge is the result of human understanding that simply answers the question of "what" <sup>(10)</sup>. The results of the knowledge level analysis of food handlers could be seen in Figure 1."



**Figure 1 The sanitation hygiene knowledge score of food handlers**

57% of food handlers had a good level of knowledge of hygiene and sanitation, and the remaining 43% had a moderate level and none of the food handlers had insufficient knowledge.

### **Behavior of Food Handler**

The hygiene and sanitation behavior of food handlers fell into the insufficient category, < 60%. From the observation results, it was evident that the behavior of food handlers did not align with recommended practices. For example, they were talking while processing and serving food, not wearing a mask during these activities, eating and drinking, and chatting in the workspace. Additionally, they did not wear proper working shoes or closed footwear, continued to wear a watch during production, and distributed food in an open condition.

## **Discussion**

### **Knowledge Level and Behavior of Food Handlers**

The knowledge level of food handlers was good (57%), but the behavior of all food handlers was insufficient (100%). This finding was consistent with previous research indicating that there was not significant influence between the level of hygiene knowledge of food handlers and their hygiene behavior. Many factors, including the lack of hygiene and sanitation training, could influence behavior. Thus, even if the knowledge level was good, the behavior may still be lacking<sup>(14)</sup>. Hygiene and sanitation among food handlers need to be emphasized because they could prevent food spoilage and the occurrence of diseases<sup>(15)</sup>.

Based on previous research, training or coaching in hygiene and sanitation in schools in Indonesia could increase awareness of adopting hygienic behavior<sup>(16,17)</sup>. Therefore, it was hoped that in the future, hygiene and sanitation coaching activities would be conducted to improve and maintain the hygiene behavior of food handlers. Regarding the work experience of food handlers, the majority (43%) had worked for 5 years. Long work experience did not affect the knowledge level of food handlers. It was proven that even food handlers with only 2 years of experience had good knowledge of hygiene and sanitation. This aligned with previous research indicating that age did not have a significant relationship with the knowledge of food handlers<sup>(18)</sup>

## **Conclusion**

A good NHS (knowledge of hygiene and sanitation) did not influence the PHS (hygiene and sanitation behavior) of food handlers because there were many factors influencing the behavior of food handlers.

## Research Suggestions and Benefits

The advantage of this research was that no one had conducted a study on the knowledge of hygiene and sanitation for food in football schools, so the research findings could be a basis for improving the quality of food service in football schools, ensuring the quality of food provided to students who might be football athletes. The limitation of this research was the small sample size due to constraints in the number of personnel serving as food handlers and the study being conducted at one location, thus it was not generalizable. The benefits of this research could provide insights and recommendations for the management of football schools to focus more on the supervision of food handlers. Further research was recommended to explore the number of personnel and customer satisfaction regarding the food services provided by ASIFA.

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