

APPLICATION OF FOOD HYGIENE AND SANITATION PRINCIPLES ON FOOD HANDLERS AT THEMADANG CAMPUS CANTEEN

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ABSTRACT

A food handler must know information related to hygiene, sanitation, and food nutrition and maintain food health and hygiene so that consumers can avoid the dangers of food or drink that does not meet health requirements. Until now, there are no guidelines that stipulate regulations regarding the provision of safe and hygienic food and beverages in canteens. The design used in this research is qualitative research with a case study method. The sampling method used was the purposive sampling technique. The research data were obtained from 1 key informant, five primary informants, and four supporting informants who had met the inclusion and exclusion criteria. The data analysis method used is content analysis. The results of this study are the application of food hygiene and sanitation principles has been carried out by food handlers. Still, there are some discrepancies between the theory and applicable rules. This study concludes that applying the principles of hygiene and sanitation carried out by food handlers in the Madang Campus canteen is not by the appropriate theories and rules.

Keywords: Hygiene and Sanitation, Food Handlers, Campus Canteen

1. INTRODUCTION

Food is one of the basic needs that must be met by every human being for survival, in addition to clothing and housing. The food consumed every day needs to be monitored from 2 aspects: quantity and quality. These two aspects determine the nutritional content and food safety which influence health. How to fulfill the food needs of every human being can be done independently or through services from other parties, such as cafeterias, canteens, shops, restaurants, food houses, or food courts. Food handlers are people who directly handle food, whether packaged or not, hold food utensils, or who make direct contact with food surfaces. Food handlers are required to know important information related to food hygiene, sanitation, and nutrition and

maintain food health and hygiene so that consumers are avoided from the dangers of food or beverages that do not meet health requirements.¹ Foodborne illness or food poisoning is a disease often caused by consuming food contaminated with bacterial toxins, parasites, viruses, or other chemicals.²

One of the countries known to have the safest food supply globally, namely the United States, estimates around 48 million foodborne illness cases every year. This estimate is equivalent to 1 in 6 Americans getting sick from eating contaminated food, resulting in approximately 128,000 hospitalizations and 3,000 deaths.³ Meanwhile, data from the World Health Organization (WHO) in 2020 also shows that around 7.69% (600 million people) of the total world population (7.8 billion) experience foodborne disease and about 7.5% (420 thousand deaths) of the total

population. Global deaths (56 million cases) each year are caused by foodborne illnesses. This is almost equivalent to 31.3% of the annual death rate caused by traffic accidents (1.35 million cases) worldwide.⁴

In addition, based on data on the incidence of food poisoning in Indonesia from the Directorate of Environmental Health and PHEOC in 2017, there were 163 cases of food poisoning with 7,132 patients with a Case Fatality Rate (CFR) of 0.1%. Most food poisoning outbreaks occurred in 5 provinces on the island of Java, namely West Java, Central Java, East Java, Bali, and NTB.⁵ Meanwhile, data from the Palembang City Health Office in 2014 recorded 3 cases of food poisoning with a total of 111 sufferers.⁶

2. METHOD

The type of research design used is descriptive qualitative research with a case study method. The time and place of the study were carried out from August-December 2021 at the Madang campus, Faculty of Medicine, Sriwijaya University. They were collecting data in this study using the interview method so that researchers needed a tool as an instrument. The instruments used are mobile phones and iPad as recorders, pencils, pens, and paper. The recorder was used to record sound when collecting data, while pencil, pen, and paper were used to record important things from the questions and answers during the interview.

The population in this study were all food handlers in the canteen of Madang Campus, Faculty of Medicine, Sriwijaya University. The sampling method used is purposive sampling. Research informants came from 1 key informant, 5 main informants, and 4 supporting informants. The key informant came from the Palembang City Health Office. The main informants came from

food handlers in the canteen. Supporting informants came from expert nutritionist Vice Dean II and two consumers.

The researcher conducted data analysis using the content analysis method. The first step of data processing is the codification process. Researchers transcribed the recordings obtained from the interviews. Next, the researcher will perform data reduction and compilation so that unnecessary data will not be included in the analysis. The second step is the presentation of the data and the researcher presents the data in the form of a matrix. To ensure no data errors, the researcher will re-check the data codification process and data presentation. The last step is concluding.

3. RESULT

Madang Campus is one of 3 places used to take the Unsri Faculty of Medicine education in the Palembang City area. About 15 to 16 food handlers are selling in the canteen with 1 building located at the back of the campus. The source of clean water comes from PDAM and the fuel used for cooking is LPG gas. The main informants of this study were 5 food handlers. The key informants of this research are the Health Office of Palembang City and the supporting informants are the Deputy Dean II, nutrition expert, and 2 consumers. The application of hygiene and sanitation principles to food handlers in the Madang campus canteen is illustrated through the following aspects: selection of food ingredients, food storage, food processing, food presentation, personal hygiene, and sanitation facilities and equipment. Based on interviews with all informants, each food handler will buy food ingredients in traditional markets. If items are urgently needed to be used immediately, they will be purchased at the supermarket. There is 1

informant who buys special spices from abroad due to large amounts of herbs for the family business.

Food handlers carry out direct inspections of food ingredients at purchase or when food is delivered to the house. Food ingredients to be purchased are checked for quality, which is selected of good quality. According to informants, good meat, chicken, and fish are purchased when they are still alive or freshly cut by traders. They are red and not bluish in color. The selected vegetables are seen in terms of texture, not rotten and not wilted. These selected packaged food ingredients are seen whether the packaging is open or not and the expiration date is seen. Before using flour, we will look again at the color and aroma, even though it has not passed the expiration date.

Almost all food handlers, after buying groceries, usually will be immediately washed and processed on the same day. However, foodstuffs that are not used directly after being purchased or foods that are easily damaged need to be stored at home will be washed first and then stored in the refrigerator. Dry foodstuffs such as sugar and salt will be held in jars and stored on shelves. Food ingredients that will be stored in the fridge are separated by type. The dry food ingredients in each food handler are generally stored in cabinets, shelves, and display cases—dry storage stores food ingredients such as sugar, salt, spices, pepper, rice, and flour. Dry food ingredients that are durable and do not run out immediately will be transferred to jars, for example, sugar and salt. These dry foodstuffs will be placed on a shelf and the placement of the rack is far from the wall and floor.

In addition to using dry storage, food handlers also use refrigerators and freezers to store foodstuffs that are not used immediately or perishable foodstuffs such

as vegetables and coconut milk stored in the fridge. In contrast, the chicken is stored in the freezer. 2 food handlers have their refrigerator in their respective homes, and the fridge is combined with daily use. Meanwhile, two other food handlers left food in the fridge belonging to the food handler who sold drinks in the canteen.

Food items stored in the refrigerator or freezer will be wrapped in plastic or using newspapers first. One of the informants set a schedule every three days to clean the fridge and freezer. While the other three informants did not set a routine cleaning schedule, the refrigerator would only be cleaned if the refrigerator looked dirty.

Food processing for each food handler begins with the preparation of food ingredients. Before being processed and cooked, raw food ingredients such as vegetables, meat, chicken, and fish are washed under running water. Especially for frozen food, after being removed from the freezer, it will be soaked in water and left until the ice melts, and then it is processed.

The stages of cooking carried out by each food handler are adjusted to the food being sold. The steps taken by one of the informants are frying the side dishes first, and the dishes with soup or coconut milk are cooked last. According to one of the informants, the initial step was to stir-fry the spices, add hard vegetables, and finally add leaf-shaped vegetables. Of the five informants, two informants reheated the food, namely fried rice and martabak sauce. Cooking oil used by food handlers is always replaced when almost turning brown. The process for tasting food carried out by two informants was using a spoon or tongs, which were directly transferred to their hands. While the other two informants, tasting food is by using a spoon or spoon which is poured into another spoon specifically to taste the food. However, one

of the five informants immediately used his finger directly pointed into his mouth to taste the food. In almost all food handlers, the treatment applied to cooked food is directly served on plates for consumers or placed in plastic basketcontainers to be sold to consumers.

Meanwhile, according to one informant, after the food is cooked, it is immediately put into each serving container according to the type of food. The container is left slightly open to release hot steam. The handling of food serving containers for consumers carried out by each food handler is to be cleaned first with a special cloth for plates and cutlery. According to one of the informants, the handling of soupy food or food that goes stale quickly is at the cooking stage; food with soup or coconut milk is cooked last, while what is done by one other informant is by heating the sauce every 1 hour.

Based on the results of interviews with all informants, the condition of the hands, fingers, and nails of food handlers is often checked and cleaned, and if they look long, they will be cut. All food handlers continue to work if they experience minor health problems such as cough, flu, and fever. Food handlers will take a break from selling if they experience severe illness. All food handlers do not use rings while handling food. The way food handlers wipe sweat is to use a special cloth or small towel, and some use a tissue. The clothes that food handlers wear when they come from home are the same as their clothes when they work. Of the five informants, four informants use aprons made of cotton. However, according to 2 informants, it is not necessary to use an apron every time to manage food. Meanwhile, one of the other informants did not use an apron while handling food. In addition, out of 5 informants, there is only one informant who uses plastic gloves while managing food.

The method used by food handlers in handling cooked food is to use an intermediate tool; some use tongs, strainers, spoons, or spoons for soupy food. Conditions that require food handlers to wash their hands with soap are immediately before coming into contact with food and when they feel their hands are dirty or greasy after a lot of cooking. After washing your hands, the way food handlers dry their hands is to use a washcloth or tissue. The utensils used by food handlers for cooking are made of stainless steel. The materials used are plastic, aluminum, stainless, and steel. The cutting boards used by food handlers are made of wood and plastic. Food handlers keep the equipment clean is to clean all the equipment used after selling. All food handlers use special dishwashing soap to clean both cooking utensils and consumer eating utensils. After all the cooking utensils and cutlery are washed and rinsed, the food handlers do next to let all the utensils drip off; after that, they are dried with a particular rag for cooking utensils and a special rag for cutlery. When all cooking utensils and cutlery are dry, they will be stored in the display case. All food handlers have their trash can facilities. The trash cans are lined with plastic bags. After each sale, food handlers will collect other waste into plastic bags, tie them up and throw them in the trash. All food handlers do not set a cleaning schedule for food-handling areas. Some food handlers will clean the food handling area every time they come in the morning before selling and after they finish selling. In addition, if the food handler feels that the handling table is dirty, the table will be wiped or cleaned and brushed.

4. DISCUSSION

Based on the results of in-depth interviews with five main informants, it is known that selecting food ingredients carried out by each food handler begins with the purchase of food ingredients in traditional markets by the food handlers themselves. The selection of food ingredients is carried out directly by food handlers so that it is easier to check the quality of the purchased food ingredients. In addition, some food handlers already have subscriptions to grocery sellers, so if the food ingredients provided are of poor quality, the food handlers can return them to the seller. The condition of the food ingredients in the form of meat, fish, or chicken that are selected is still alive or has just been cut by the traders. This explanation is in line with the nutrition expert who stated that for chicken meat to be purchased, it must be in alive condition. For beef, it is necessary to ensure whether the meat is old or mixed and for fish, the situation must be fresh. The state of the food ingredients in the form of selected vegetables is seen in terms of texture, color, not wilting, and not rotting. This statement is in line with consumer statements which state that the food ingredients used are good.

The condition of the selected packaged food ingredients is seen from the packaging, whether it is open or not, and the expiration date is seen. This explanation follows what is stated in Permenkes No. 1096/MENKES/PER/VI/2011 concerning Catering Service Sanitation Hygiene, namely the condition of packaged food not being broken or damaged and bloated.⁷ The main informant's statement also follows the key informant's comment, which states not to use unique packaged and canned food ingredients if the package is open, dented, bloated, or corroded. The main informant's

statement follows the information from a nutrition expert who stated that both packaged and canned food ingredients must be looked for intact and seen by the expiration date; there should be no dents, rust, or openness. Before using flour, food handlers will see if there is a color change in addition to the expiration date, such as wheat flour. This statement follows Permenkes No. 1096/MENKES/PER/VI/2011 concerning Food Service Sanitation Hygiene, namely flour that is used in good condition, does not change color, is not stained, and is not moldy.⁷

Based on the in-depth interviews with each food handler, three types of food storage are used: dry storage, refrigerator storage, and freezer storage. All key informants mentioned that dry food ingredients transferred to jars were stored on shelves. This explanation is in line with the key informant who stated that for storage of dry foodstuffs, a stand needs to be made, and there should also be a control card for recording the entry and exit of goods. This statement also follows what nutrition experts explain, namely that food ingredients that are put in container boxes are stored on shelves and should not be placed on the floor.

Perishable foodstuffs such as vegetables are stored in the refrigerator section, and foodstuffs such as meat and chicken are stored in the freezer section. This explanation is in line with that explained by nutrition experts. If the food ingredients used are still leftover or are not used directly, they must be stored in the refrigerator and adjusted to the type of food stored. Vegetables are stored in the chiller section, while animal side dishes are stored at freezer temperature.

Dry foodstuffs stored in jars are arranged on shelves. The placement of the frames has a distance of 10 cm from the wall

and 15 cm from the floor. The explanation is following Permenkes No. 1096/ MENKES/ PER/ VI/ 2011 concerning Food Service Sanitation Hygiene, namely the distance between food ingredients and the floor is 15 cm. The distance between food ingredients and the wall is 5 cm.⁷

Based on the results of in-depth interviews with each food handler, it is known that the stages of food processing start from the preparation of raw food ingredients, processing or cooking until they become cooked food. According to all the informants, the food ingredients to be used are washed under running water first. This explanation follows the key informant who explained that before processing food, it must be washed thoroughly depending on the type of food material. The main informant's statement is also following what the nutrition expert explained, that vegetables must be washed before being cooked before being cut to maintain their nutritional value. If the food handler knows that the food ingredients used, either vegetables or fruit, use formalin, then the food handler is obliged to wash it with soap at a glance. Still, back to the procedure for selecting food ingredients, the food handler should choose food ingredients that are free from formalin and pesticides so that how to wash vegetables and fruit is enough under running water.

Of the four informants, the way to taste the food is to use another spoon that is different from the spoon used to pick up food and the spoon pointed into the mouth. This explanation follows what nutrition expert explain that to taste food, one should not use a spoon that is meant directly at the mouth, but use another spoon to taste the food. This statement also follows Permenkes No. 1096/MENKES/ PER/ VI/ 2011 concerning Food Service Sanitation Hygiene. To taste food, one must use a special spoon that is constantly washed.

However, one other informant used his fingers directly to taste the food; this statement did not follow the nutrition expert's information and Minister of Health Regulation No. 1096/ MENKES/ PER/ VI/ 2011 concerning Food Service Sanitation Hygiene.⁷

The cooking step carried out by one of the informants was sautéing the spices, then continued with hard vegetables, and the last thing to add was leaf-shaped vegetables. This explanation is in line with the statement from a nutrition expert who explained that when food processing must be adjusted according to recipe standards, the first is to stir-fry the spices, then continue with hard food ingredients such as carrots and potatoes, and finally add leafy vegetables to keep the taste fresh. According to one informant, the handling of dishes with soup or coconut milk is to be cooked last, so they don't go stale quickly. This explanation follows Permenkes No. 1096/ MENKES/ PER/ VI/ 2011 concerning Food Service Sanitation Hygiene, namely food that is prone to food such as gravy cooked the last time.⁷

According to 4 informants, the food condition given to consumers is still warm or hot. This explanation is in line with that explained by a nutritionist who explained that when food is served hot, the temperature must be hot when done, so it is necessary to prepare a tool to warm it. The food needs to be covered before serving, or for example, food with the soup can be stored in a container with stainless material so that the sauce remains warm when done to consumers. The statement of the main informant is also in line with what one consumer said that the food delivered to the consumer is still warm, which means it has just been cooked or heated.

Based on the in-depth interviews with each food handler, it is known that cooked food will be directly served to consumers or

placed on the display window table. According to one informant, cooked food will be placed in each serving container according to the type of food each. This explanation follows Permenkes No. 1096/MENKES/ PER/ VI/ 2011 concerning Food Service Sanitation Hygiene that each kind of food is placed in a separate container to prevent cross-contamination. Based on the interviews with four informants, food handlers will first wipe plates and spoons before giving consumers a cloth. This explanation does not follow the nutrition expert who stated that the handling of food serving containers for consumers does not need to be wiped because the food handlers also do not know whether the cloth used is clean, so consumers should soak their cutlery in hot water.

Based on the results of interviews with four informants, food handlers use cutlery in plates, spoons, and forks. This statement follows what Vice Dean II explained: some food handlers use plates, spoons, and forks, but Vice Dean II is still not sure whether the spoons have been washed clean. In the future, Vice Dean II wants to implement a healthy canteen to use single-use cutlery, but the drawback is that single-use cutlery can increase plastic waste and styrofoam.

Based on the results of in-depth interviews with each food handler, it was found that food handlers did not understand or understand the provisions related to personal hygiene in food management. According to all informants, food handlers use tools to handle cooked food. The tools used are tongs, sieves, spoons, or ladles for soupy foods. This explanation follows Permenkes No. 1096/MENKES/ PER/ VI/ 2011 concerning Food Service Sanitation Hygiene, namely using tools such as plastic gloves, tongs, or cutlery as protection from direct contact with food. According to all

informants, food handlers do not use rings while managing food. This explanation follows Permenkes No. 1096/MENKES/ PER/ VI/ 2011 concerning Food Service Sanitation Hygiene, which requires that the behavior of food handlers while managing food is not wearing jewelry. According to one of the informants, food handlers use plastic gloves when handling food. This explanation aligns with nutrition experts' description that nails must be cut and still use gloves not to touch food directly. However, according to the other four informants who did not use plastic gloves because they thought they would not connect food now, the statement was not following the explanation given by nutrition experts, which required food handlers to use plastic gloves and continue to use intermediary tools to touch food.

According to 2 informants, the way food handlers dry their hands after washing their hands is to use a tissue. This explanation is in line with the statement from nutrition experts that after washing your hands, you should use a tissue to dry your hands. While the other three informants, the way to dry hands is to use a special hand cloth. This statement is not in line with the explanation from the nutrition expert who stated that it is better to dry hands using tissue because food handlers do not know whether washcloths that have been used repeatedly are still clean. According to one informant, food handlers will wash their hands before touching food and after hands feel dirty or after many cooking activities. This explanation is not following what is explained by nutrition experts who say that there are five crucial moments for food handlers to wash their hands according to the WHO's six steps, namely before work, after touching raw food ingredients, after handling body parts, after eating and after using the bathroom.

Based on the interviews with four informants, food handlers use an apron or apron as an outer garment, and the apron is made of cotton. This statement is not in line with a nutrition expert who explained that food handlers do not use an apron made of cloth but from a plastic tarpaulin. According to 2 informants, using an apron is not always when managing food, while according to another informant, food handlers do not use aprons while ordering food. This explanation is not following the statement of nutrition experts, which states that food handlers must use it while handling food, and the use of aprons after a day of work should not be stored but should be washed every day.

According to all informants, food handlers will continue to sell even though they are experiencing minor health problems, such as fever, cough, and flu. This explanation does not follow the statements of key informants and nutrition experts who stated that if a food handler was sick, he could not come to work—the nutrition expert from the nutrition installation of Dr. RSUP. Mohammad Hoesin Palembang will recommend food handlers at the nutrition installation who are sick for treatment and cannot come to work. According to all the informants, the food handlers wore the same clothes from home. This explanation follows the statement from Vice Dean II, which stated that currently, food handlers are wearing different clothes. In the future, Vice Dean II wants that when the canteen is back in operation, each food handler will wear the same special uniform, for example, using batik.

Based on the in-depth interviews with each food handler, it is known that food handlers use cooking utensils made of stainless steel. If the food handler has finished selling the food, the cooking utensils and cutlery will be washed using special dishwashing soap. Based on the

interviews with the five informants, food handlers use tools for cooking made of plastic, aluminum, stainless, and steel. The explanation is following Permenkes No. 1096/ MENKES/ PER/ VI/ 2011 concerning Food Service Sanitation Hygiene because the ingredients mentioned by food handlers are not included as a prohibition on toxic heavy metals, namely lead, arsenic, copper, zinc, and others. According to 4 informants, the cooking utensils used by food handlers are stainless steel. This explanation is in line with the statement from a nutrition expert who explained that the tools used when dealing with heat should not be made of plastic and endeavored to be made of stainless. According to 4 informants, food handlers use cutting boards made of wood. This explanation is not following the statement from a nutrition expert who stated that the cutting board used should not be made of wood because the wood is feared that there will be powder falling into the food.

According to 2 informants, food handlers use two different cutting boards to cut and chop vegetables. This explanation is in line with a nutritionist who stated that the cutting board used for cutting vegetables is different from the cutting board used for cutting meat. The cutting board used for cutting meat is made of wood, while the cutting board used for cutting vegetables is plastic. This explanation does not follow nutrition experts and Permenkes No. 1096/ MENKES/ PER/ VI/ 2011 concerning Food Service Sanitation Hygiene, which states that the cutting boards must be made of materials other than wood. According to all the informants, food handlers will throw their trash into the garbage dump behind Madang. This explanation follows what was explained by Vice Dean II: each food handler had been asked to dispose of the garbage after each sale to the garbage dump behind Madang because the garbage dump

can be sure there will be a garbage truck that transports it every day. The two previous explanations align with statements from nutrition experts and key informants who stated that food waste from food handlers must be disposed of everyday and should not be allowed to pile up to the brim.

According to Vice Dean II, until now, there has only been one inspection of the equipment used by food handlers, and no regular inspection has been carried out. This explanation is not in line with what the nutrition expert stated that it is necessary to check by the Health Laboratory Center (BLK) by wiping cooking utensils, cutlery, cooked food, and checking the water used to find out whether it is contaminated or has been contaminated by bacteria. *e. coli*. If this check cannot be carried out every month, it should be done at least every six months. There is only one facility for washing in the canteen. This explanation is not following the statement from a nutrition expert who stated that the canteen needs to provide a special hand washing place for canteen handlers and a special place for washing cooking utensils. There are at least two sinks for washing hands and two sinks for washing cooking utensils. Regarding the sewerage, a party will supervise to ensure that food handlers do not throw food waste into the gutter, only water used for washing dishes that goes directly into minimizing unpleasant odors from the sewer. The explanation follows the nutrition expert who stated that the garbage disposal channel must be cleaned every day with running water; if an unpleasant smell is inhaled from the sewer, the campus needs to intervene to deal with the problem. However, the statement from Vice Dean II was not in line with the statement from the key informant who explained that every food processing business should be provided with a septic tank so that used water for washing dishes is not discharged

into the city sewer because the city sewer is specifically for storing rainwater.

5. CONCLUSION

Based on the results of research and discussions conducted by researchers regarding the application of the principles of food hygiene and sanitation to food handlers in the Madang Campus canteen, Faculty of Medicine, Sriwijaya University, it was concluded that in general, the application of food hygiene and sanitation principles which includes the selection of food ingredients, food storage, food processing, food presentation, personal hygiene, and equipment sanitation facilities had been carried out by food handlers. However, there are still some discrepancies between applying the principles carried out by food handlers and the rules that should be carried out.

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