

Evaluating food sanitation, hygiene, and quality in the nutrition installation of an Indonesian mental hospital: A qualitative study

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Abstract

Background: Food sanitation and hygiene is an effort to control factors such as the environment, equipment, personnel, and food items that may cause health problems, diseases, or food poisoning. Hospitals are healthcare institutions that provide comprehensive individual healthcare. One crucial aspect of healthcare services in hospitals is nutrition installation, which plays a vital role in the patients' recovery process.

Objective: This study aimed to analyze the food sanitation, hygiene, and quality at the Nutrition Installation of the Southeast Sulawesi Provincial Mental Hospital in 2022.

Methods: This study employed qualitative research with a phenomenological approach. The information was sourced from two key informants and four ordinary informants. Data collection methods included in-depth interviews to explore the topic thoroughly, careful and direct observations, documentation through photographs of relevant phenomena, symbols, and signs, as well as recording dialogues during the research process. Triangulation techniques, including source, method, and research time, were used to ensure data and information validity. Data analysis involved classification, sorting, and presentation.

Results: The findings indicated that the food storage and processing practices complied with the requirements outlined in Decree of Indonesia Minister of Health (Permenkes) No. 1096 of 2011. However, the selection of foodstuffs, food presentation, food transportation, and personal hygiene of food handlers do not meet the standards. Furthermore, based on the assessment of the physical feasibility of food sanitation hygiene at the nutrition Installation of the hospitals, a score of 80 was obtained, which falls below the minimum requirement specified in the requirement.

Conclusion: The study revealed a significant non-compliance with the use of personal protective equipment (PPE) by food handlers during food processing and serving. Furthermore, health checks were not conducted, and the Nutrition Installation of the selected hospitals lacked a certificate of sanitary hygiene eligibility.

Keywords: *hygiene; sanitation; personal protective equipment; food quality; Indonesia; hospital*

Background

Food sanitation hygiene is a crucial endeavor aimed at controlling various factors such as the environment, equipment, personnel, and food items that have the potential to cause health problems, diseases, or food poisoning (Djukic et al., 2016; Faour-Klingbeil & CD Todd, 2020). Food plays a vital role in sustaining human life as it provides the necessary energy for survival. To ensure safe and high-quality food for consumption, it is essential to adhere to the regulations and principles of food sanitation hygiene during the food processing stage. This ensures that the resulting food is healthy, clean, safe, and beneficial to the body (Anggia Novia Gita Kirana, 2016; Rahman et al., 2018; Yunancy et al., 2020).

Foodborne diseases continue to pose a significant challenge in several developing countries (Hoelzer et al., 2018). According to the World Health Organization (WHO), millions of cases of hospitalization and deaths occur each year due to infections caused by consuming food contaminated with harmful substances. In a given year, the country experiences approximately 76 million cases of food poisoning, with 325 individuals requiring treatment and 5000 fatalities resulting from foodborne illnesses. A survey conducted by WHO in New Zealand, Europe, and the United States revealed that up to 10% of people suffer from foodborne illnesses annually (World Health Organization, 1999). The incidence of foodborne diseases can be attributed to various factors, including food obtained from unsafe sources, inadequate personal hygiene practices, and cross-contamination (Fitriana et al., 2018).

In 2019, Indonesia experienced a significant number of food poisoning cases, reaching a total of 6.192 reported cases. Among the provinces, West Java had the highest incidence rate with 2.377 cases, followed by East Java with 1.213 cases, and DKI Jakarta with 943 cases (Badan Pengawas Obat dan Makanan, 2020). In Southeast Sulawesi Province, there were 632 individuals affected by poisoning cases throughout the year 2019, with a total frequency of 443 cases. The data on poisoning cases were collected from 33 hospitals and PKM facilities across Southeast Sulawesi (Badan Pengawas Obat dan Makanan, 2020).

A hospital is a healthcare institution that offers comprehensive individual health care services, including inpatient, outpatient, and emergency services (Kementerian Kesehatan Republik Indonesia, 2011). Nutrition installation is one of the vital healthcare services provided in hospitals, playing a crucial role in the recovery process for patients (Wahyuni, 2021). According to Regulation of the Minister of Health of the Republic of Indonesia No. 1096 of 2011, which addresses Jasaboga (food service) sanitation hygiene, health service facilities are classified as group B services (Fajar, 2019).

The Southeast Sulawesi Provincial Mental Hospital, or called RSJ Sultra, is the sole psychiatric hospital situated at Jalan Dr. Sutomo No. 29, Kendari City. This hospital is classified as a class B-type hospital. It has implemented various initiatives to enhance healing services for patients seeking treatment. In the year 2020, it served 2.840 patients, and in 2021, it served 3.150 patients. Among the range of services provided by the Southeast Sulawesi Provincial Mental Hospital, nutrition services hold a significant role alongside medical and other nursing services. These nutrition services encompass the procurement, storage, processing, transportation, and presentation of food to the patients undergoing treatment at the hospital. The researchers selected the Southeast Sulawesi Provincial Mental Hospital as the study location due to its focus on providing services in mental health and the surrounding environment. Consequently, the researchers aim to investigate whether the food intake provided at the hospital adheres to the standards of food sanitation hygiene outlined in Permenkes No. 1096 / Menkes / Per/VI / 2011.

Based on the mentioned issues, the research interest lies in conducting an analysis of the quality of food sanitation hygiene at the Nutrition Installation of the Southeast Sulawesi Provincial Mental Hospital, in accordance with the guidelines set by Minister of Health Regulation No. 1096/Menkes/Per/VI/2011. The objective of this study was to analyze the quality of food sanitation hygiene at the Nutrition Installation of the Southeast Sulawesi Provincial Mental Hospital. Specifically, the study aims to assess the following aspects: food selection, food storage, food processing, food presentation, food transportation, food handler personal hygiene, and the physical feasibility of food sanitation hygiene at the Nutrition Installation of the Southeast Sulawesi

Provincial Mental Hospital. The assessment will be conducted in accordance with the guidelines specified in Minister of Health Regulation No. 1096/Menkes/Per/VI/2011.

Methods

Study Design and Setting

A phenomenological study design was employed. This approach allows for a deeper exploration and understanding of the phenomena experienced by the informants. By utilizing the phenomenological method, the study aims to elucidate the issues concerning the quality of food sanitation hygiene at the Nutrition Installation of the Southeast Sulawesi Provincial Mental Hospital. The objective is to identify any deviations from the applicable regulations and theories, providing an in-depth explanation of the problem at hand. This research methodology allows for the simultaneous analysis and acquisition of detailed and in-depth information, aligning with the research objectives. The study aims to analyze multiple variables, including food selection, food storage, food processing, food presentation, food transportation, personal hygiene of food handlers, and the physical feasibility assessment of food sanitation hygiene at the Nutrition Installation of the Southeast Sulawesi Provincial Mental Hospital. The research was conducted between December 1, 2022, and March 31, 2023, at the Nutrition Installation of the Southeast Sulawesi Provincial Mental Hospital.

Participants

The information for this study was gathered from various informants, who were categorized into two groups: key informants and ordinary informants. The key informants consisted of the heads of the nutrition installations, as they possess extensive knowledge and expertise regarding food sanitation hygiene in hospital nutrition installations. They also hold direct authority in managing these aspects. On the other hand, the ordinary informants included individuals responsible for food administration activities, food handlers, waiters, and food transporters. Although they may have limited knowledge and authority, they are directly involved and experienced in the processes related to food sanitation hygiene.

Data Collection

Interview techniques are employed to conduct in-depth and comprehensive exploration of the

phenomena related to hospital nutrition installations, which are the focus of this research. Interviews are conducted with one key informant who possesses knowledge about the requirements, policies, standard operating procedures (SOPs), and their implementation concerning food sanitation hygiene. The informants are typically interviewed regarding various aspects, including food selection, food storage, food processing, personal hygiene, food presentation, and food transportation. Additionally, a resource person may be included in the interviews to provide valuable insights and expertise on the subject matter.

Observation techniques are employed to carefully and directly observe and review the conditions that occur within the hospital nutrition installations, thereby validating and providing evidence for the research design being conducted. Through observation, researchers can directly witness the actual practices and conditions related to food sanitation hygiene in the hospital nutrition installations, ensuring the accuracy and reliability of the collected data.

Documentation techniques play a crucial role in the research process by capturing visual evidence of phenomena, symbols, and signs that occur within the hospital nutrition installations. This includes taking photographs to provide visual documentation. Additionally, recording dialogues that take place during the research process helps to preserve and analyze important information. To ensure the validity and reliability of the data and information gathered in this study, triangulation techniques were employed (Lexy, 2002). Triangulation involves the use of multiple sources, methods, and research timeframes. By incorporating data from different sources, utilizing various research methods, and conducting the study over a specific period of time, the researchers can strengthen the credibility and robustness of the findings. Triangulation helps to reduce bias and enhance the overall validity of the research outcomes. Data and information are obtained using tools such as interview guidelines, checklists, and mobile phones, which serve as voice recording tools and documentation devices.

Data Analysis

Data collection is interactive with data analysis (Rijali, 2019). Qualitative data, which is considered subjective or in-depth information, is presented in

narrative form. Data analysis begins with the data classification stage, where the data is sorted and categorized. This process involves copying the interview results in the form of a word-for-word narrative, followed by extracting key points verbatim. These key points are selected in accordance with Article 43 of Minister of Health Regulation Number 1096 of 2011, which pertains to Jasaboga sanitation hygiene. After the data is collected according to its purpose, the next stage is data presentation. The data is presented in the form of narratives and interview matrices, which provide an interpretation of the data in a more accessible manner.

Ethical Considerations

The Health Research Ethics Commission of Research and Community Service at Halu Oleo University has approved this research protocol in accordance with ethical recommendations (Approval number: 1278/UN29.20.1.2/PG/2022).

Results

Selection of Food Materials

The selection of food ingredients at RSJ Sultra Nutrition Installation is carried out by the person in charge of the food organizer. The sourcing of food ingredients for RSJ Sultra nutrition installation is done through a third-party partner, who purchases the food ingredients from the local market in Kendari city. Each receipt of food ingredients must be checked and verified by the food ingredient recipient team at the RSJ Sultra nutrition institution, ensuring they meet the predetermined specifications. In the event that the received goods do not comply with the nutritional installation's specifications, they can be returned to the third-party supplier.

"Groceries are obtained from third-party partners and delivered to the nutrition installation. The goods are then checked, weighed, and examined to ensure they meet the specifications. If any items do not match the required criteria, they are returned".

The food ingredients used in RSJ Sultra Nutrition Installation are sourced from third-party partners who purchase them from local markets. These partners have been official and longstanding collaborators with the institution. The food ingredients provided by suppliers undergo preliminary checks by the person in charge of food organizer activities. The ingredients are directly

inspected and compared against the specifications. Additionally, they are weighed, and if any of the food ingredients fail to meet the required specifications, they are returned. Packaged groceries that are accepted must have labels indicating their brand and expiry date. The specific brand of packaged food items is not specified, but they must have an MUI/halal label and be registered with BPOM (Indonesia's Food and Drug Authority). Furthermore, the received packaged food ingredients must not have exceeded their expiration date and are always subjected to thorough checks.

"Yes, food ingredients have labels. There are MUI/halal and BPOM labels." (SA)

Raw (fresh) food ingredients, such as fish, chicken, vegetables, and fruit, are also selected based on their physical condition. For instance, when examining raw fish, clear eyes, shiny skin, and red gills are indicators of freshness. Fresh red meat should have no odor. As for fresh vegetables, they should not be rotten or wilted. These checks are conducted each time foodstuffs are received.

"The physical condition of food ingredients is always checked. For example, when it comes to fish, the freshness is determined by clear eyes, shiny skin, and red gills. Fresh red meat should be odorless. In the case of vegetables, freshness is indicated by them not being rotten or wilted.

The nutritional installation of RSJ Sultra utilizes food additives in the form of flavoring, specifically by incorporating custom-blended spices that cater to the cooking requirements.

"Using custom-blended spices according to the specific needs."

There is currently no dedicated reception room for receiving foodstuffs. The reception area is located in front of the food processing room. However, efforts are underway to establish a separate room specifically for receiving foodstuffs from the Nutrition Installation of RSJ Sultra.

"A special area of note is available and is currently still incorporated in the processing area." (SA)

Based on the results of the sorting stage observations conducted by the Nutrition Installation of RSJ Sultra, it is evident that the food ingredients

are sourced from official places. The ingredients obtained from suppliers undergo thorough checks upon receipt, which are carried out by the designated person in charge of food organization. Additionally, the packaging materials bear MUI and BPOM labels, while the packaged food ingredients are branded and in good condition (i.e., not damaged, broken, or expired). The physical condition of all new foodstuffs is assessed, and fresh food ingredients exhibit desirable qualities such as a bright red color, absence of rot or mold, and no signs of wilting. Furthermore, the use of food additives is carefully monitored, with particular attention given to the appropriate serving dose.

Foodstuff Storage

The RSJ Sultra Nutrition Installation maintains a storage warehouse to facilitate its operations. The storage activities at the RSJ Sultra Nutrition Installation encompass two types: wet food storage and dry food ingredient storage. To ensure proper inventory management, the installation employs the FIFO (First-In, First-Out) and FEFO (First-Expired, First-Out) systems.

"Wet and dry storage at RSJ Sultra Nutrition Installation follows the FIFO and FEFO systems, meaning that older incoming goods are replaced with newer ones through systematic rotation."

The storage conditions at RSJ Sultra Nutrition Installation are designed to protect against dust pollution. Special warehouses are utilized, ensuring a tightly closed environment when not in use and preventing any mixing with equipment. The storage rooms are equipped with temperature control and air conditioning systems. Furthermore, the storage area is safeguarded against the presence of harmful chemicals, as it is not intended for storing any chemicals within the nutrition installation. Precautions are taken to prevent insects and rodents from entering the storage area. According to the informant, no instances of rats or insects have been found in the food storage warehouse.

"A separate peace is maintained in a closed warehouse, featuring specialized cabinets and shelves that are protected against rodents and chemicals. The storage area also incorporates room temperature control."

The water channel or pipe is situated at a significant distance from the nutrition institution. It runs behind

the nutrient installation and is a closed channel. It is important to note that the location of the food storage area is not near or adjacent to the underwater channels or pipes.

"The water pipes are positioned away from the nutrition installation and are located behind closed channels." (SA)

The cabinets or shelves used for storage at the nutrition installation do not adhere to any specific size standard. They typically utilize the standard sizes commonly used in general storage practices. However, it is worth noting that there is a specific requirement for maintaining a distance of 30 cm between the cabinet or shelf and the floor. Additionally, cleanliness and tidiness are maintained on a daily basis.

"It doesn't have to be a specific size; the most important thing is that the closet is clean and well-maintained. However, if the closet's floor area exceeds 30 square feet, it should not be in direct contact with the floor." (AN)

The recommended temperature range for storing foodstuffs in dry storage is 18°C to 25°C. Temperature control is conducted daily to ensure proper storage conditions.

"18-25 degrees Celsius." (SA)

At the RSJ Sultra Nutrition Installation, foodstuffs are stored separately based on their type. Additionally, food ingredients are placed on dedicated shelves according to the specific type of foodstuff they belong to. This organization ensures proper segregation and easy access to the stored items.

"The items are appropriately organized and segregated according to the specifications of the goods, ensuring that different types of foodstuffs are not mixed together. This careful arrangement maintains the integrity and quality of the stored items." (SA)

Wet foodstuffs are stored separately based on their type, with side dishes, for instance, being stored in the freezer. The storage temperature is adjusted accordingly, taking into consideration the specific storage location and the type of foodstuffs being stored. To ensure proper storage conditions, the temperature of each wet foodstuff storage area is checked and recorded. This includes conducting

daily checks on refrigerators (both freezer and refrigerator). A temperature record sheet is maintained for each refrigerator, documenting the recorded temperatures for monitoring and record-keeping purposes.

"Stored in the refrigerator, arranged by type. Daily temperature control is conducted (AN)"

Strong-smelling foodstuffs such as fish, chicken, and meat are stored in a sealed freezer, and the storage location is adjusted based on the type of foodstuff.

"Of the freezer." (AN)

Foodstuff Processing

Food processing involves a series of activities that transform food ingredients into finished products. The processing process adheres to the applicable portion standards and takes place in a designated area dedicated to food processing. Within this area, there are tables for preparing vegetables and designated spaces for cooking.

"Yes, there is a special area." (HN)

Aluminum and stainless-steel utensils are used for cooking purposes. When it comes to food processing, plastic cutting boards are utilized for vegetables, while wooden cutting boards are employed for fish and meat.

"Stainless steel is used for pots and pans, while plastic cutting boards are used for vegetables, and wood cutting boards are used for fish and meat" (HA)

The storage containers used for finished food are equipped with lids. Each food storage container, whether it contains dry or soupy dishes, is kept separate.

"The containers are tightly sealed to prevent any contamination. They are separated into different containers based on their respective types." (HA)

The ingredients and preparations for cooking various cuisines are adjusted according to the pre-arranged menu. A daily menu schedule is followed, specifying the dishes to be prepared. Typically, the cooking order begins with rice, followed by fish, tempeh, and vegetables. However, the actual

cooking order may be adjusted based on the discretion of the cook on duty.

"If the ingredients are cooked in accordance with the daily menu that has been planned, the cooking process begins with rice, followed by fish, tempeh, and vegetables." (HN)

Food handlers taste the food by taking small samples using a spatula and then transferring them to a dedicated spoon specifically used for tasting purposes.

"Use a spatula with a special spoon." (HA)

Washing of foodstuffs is done gradually, starting with thawing frozen food ingredients such as meat and fish. These ingredients are then cleaned by washing them thoroughly. Fruits and vegetables are also washed carefully. After the washing process, the food ingredients are ready for further processing. Washing is performed under running water, and the washing station is located next to the food processing room.

"Food should be washed using a food wash and running water. Vegetables should be washed using containers, while meat or fish that is still frozen should be soaked first and then washed." (HN)

Food Serving

The Nutrition Installation at the Southeast Sulawesi Hospital employs a centralized system for serving food, wherein meals are distributed directly to patients in individual portions. The food serving process at the Nutrition Installation involves several steps. Firstly, the food is prepared, and then the waiter organizes the baskets. Next, the necessary preparations are made to determine the number of baskets to be delivered per room. Subsequently, the food is placed into food containers and securely closed. Finally, the delivery is carried out to the patient's room

"The waiter arranges the baskets, and then the number of required baskets is calculated based on the room." (UK)

Each type of food is placed in separate containers, with each food item having its designated spot. Vegetables, fish, and fruit are all kept separate. The food containers served are securely closed

"The containers are categorized based on the type of food, such as vegetables and fish. Each type of food is placed in its respective container. The containers are closed securely." (MI)

The food is served using plastic containers. Specifically, for mental patients, the use of glass or stainless-steel materials is not permitted due to safety concerns. Glass containers can be vulnerable if a patient who has access to them is involved in an incident, and stainless-steel containers may pose a risk as well. Therefore, plastic containers are used for serving food to ensure the safety of the patients

"For items made of plastic, specifically for mental patients, stainless steel or glass cannot be used due to safety concerns." (UK)

The food served to the patient is warm. This is done because when a plastic container is served while hot, it can cause an odor in the container. Additionally, there is no provision for serving food in a cold state.

"Serving hot food." "Never served cold food."
(MI)

Food that has been cooked must be distributed immediately, ensuring that no leftover meals remain. The food served is intended for a single meal, and for the subsequent meals (such as breakfast, lunch, and dinner), fresh food is cooked again.

"There is no food to stay. A treat for one meal."
(MI)

Food Transport

The transport equipment used to deliver ready-to-eat food to the patients is in good, clean, and sealed condition. However, it does not have a temperature regulator.

"The transport equipment used to deliver ready-to-eat food to the patients is in good condition, clean, and closed to ensure food readiness. However, there is no temperature control." (SA)

The number of servings that can be transported using the distribution transport depends on the number of patients.

"We adjust it according to the number of patients." (WS)

There is no distinction in the use of lanes or routes for transportation purposes. When transporting ready-to-eat food to be served to patients, the front door is used. On the other hand, for transporting soiled items from the patient's room, the same route is used, entering through the side door that leads directly to the washing area.

"The entry route passes here and also here (while pointing)." (SA)

Personal Hygiene of the Food Handlers

Periodic health checks for the handlers at the Nutrition Installation in Southeast Sulawesi Hospital have never been conducted. If a disease is discovered, it must be reported to the leadership, specifically the head of the installation.

"There's never been a health check." (HN)

The food handlers do not possess a certificate for food sanitation and hygiene course.

"There isn't any yet." (HA)

The food handlers confirm that they are not suffering from any infectious diseases. If they were to experience such a condition, appropriate actions would be taken. When handling food, the food handlers utilize equipment such as disposable gloves, spoons, and food tongs.

"If anyone is found to be suffering from a contagious disease, prompt action is taken. The utensils used include gloves, spoons, and tongs". (HN)

Food handlers are strictly prohibited from eating or chewing while working, as it is regulated and not allowed. However, there are no specific rules regarding the prohibition of wearing jewelry while handling food. It is mandatory for food handlers to wash their hands with soap before and after food preparation, as well as after using the toilet. They are required to wear aprons and caps while processing food. Additionally, food handlers are instructed to wear closed rubber sandals or shoes specifically designated for use in nutrition installations. Clean and sterile clothing is also worn by the handlers. Masks are worn, and when sneezing, they are required to use proper etiquette by covering the mouth and nose with the inside of their upper arm.

"Can't talk while eating." "If it depends on jewelry, there are those who wear it and those who don't." "Yes, always washing your hands with soap is the most important thing because we want to prepare food." "Put on an apron." "If there is a hair cover." "Wear closed-toe sandals or shoes." "Clean and tidy clothes." "Wearing a mask when coughing or cleaning is ethical." (HN)

Food Sanitation Hygiene Due Diligence Assessment

Based on the results of the assessment conducted on various components related to food sanitation hygiene, such as building location, lighting, ventilation, food processing rooms, hand washing, and toilet facilities, as well as factors like clean water, dirty water, disposal/trash cans, food, employees, eating and cooking utensils, and space serving food, an overall assessment score of 80 was obtained. However, it was found that two components, namely employees and the food serving room, did not meet the requirements. Consequently, the overall assessment score remained below the minimum value of 83 or 84 out of 92 required for a Class B food service sanitation hygiene rating.

Discussion

Selection of Food Materials

The first stage of food organization involves the procurement of food ingredients. When food ingredients are obtained through self-purchasing, the process is referred to as sorting food ingredients. On the other hand, when food ingredients are acquired by ordering from suppliers, the process is known as receiving food ingredients, as stated in Kepmenkes RI No. 1096/Menkes/SK/VII/2011 ([Kementerian Kesehatan Republik Indonesia, 2011](#)). Based on the research findings, it was observed that the room designated for receiving food ingredients is connected to the food processing area in the Nutrition Installation of the Southeast Sulawesi Hospital. The responsibility of receiving food ingredients falls upon the Receiving Officer, who is a nutritionist and also oversees the organization of food-related activities in the nutritional installation. During the receiving process, the food ingredients are carefully inspected to ensure they meet the desired specifications set by the nutritional installation. The ingredients are weighed, documented, and cross-referenced with the order list. If any food items are found to be non-

compliant with the specified standards or are not part of the original order, they have the option to be returned to the supplier. However, it is worth noting that the proximity of the food receiving area to the food washing/cleaning area poses a potential risk of food contamination. This close proximity increases the likelihood of cross-contamination between the two areas.

According to Minister of Health Regulation Number 7 of 2019, the preference is given to selecting food ingredients from official sources of good quality. At the Nutrition Installation of the Southeast Sulawesi Hospital, the received food ingredients meet these criteria. They are intact, have consistent sizes, remain fresh without any color changes, show no signs of damage or mold growth. These desirable qualities can be attributed to the fact that the food ingredients are procured from an official third-party source. Based on interview findings, it was revealed that the third-party entity purchases the food directly from the local market in Kendari city. This aligns with the research conducted by [Sari et al. \(2013\)](#), which also highlights that food handlers in charge of selecting raw food ingredients often rely on traditional markets under government supervision.

The Nutrition Installation at the Southeast Sulawesi Hospital follows specific guidelines regarding the procurement of packaged food ingredients. According to Regulation of the Minister of Health Number 1096 of 2011, packaged food ingredients received must bear the labels of BPOM (Food and Drug Supervisory Agency) and MUI (Indonesian Ulama Council), and should have clear brand identification. Furthermore, the packaging should be undamaged, not bloated, and within the expiration date specified. In line with this regulation, the informant confirmed that each received food ingredient is checked for its expiration date, ensuring that only ingredients within their valid period are utilized. Additionally, the use of food additives at the Nutrition Installation involves the blending of seasonings according to the specific dish's portion, without the presence of an expiration date. [Sari et al. \(2013\)](#) similarly highlighted the use of non-expired food ingredients in their findings.

At the Nutrition Installation of the Southeast Sulawesi Hospital, there is currently no designated area specifically for receiving food ingredients. Instead, a temporary area is utilized that is situated

in front of the food processing area and adjacent to the food ingredient washing/cleaning area. The observations made by researchers align with the information provided by the informants during in-depth interviews. It is confirmed that the source of received food ingredients is from official establishments, ensuring good quality and non-expired ingredients. However, it is worth noting that the lack of a dedicated area for receiving food ingredients is a notable observation.

The selection of food ingredients is a crucial step in ensuring food safety and hygiene. When choosing food ingredients for processing into prepared meals, it is essential to prioritize good quality ingredients. However, based on the research findings, it appears that the selection of food ingredients at the Nutrition Installation of the Southeast Sulawesi Hospital does not fully comply with the standards outlined in the Minister of Health Regulation Number 1096 of 2011 regarding Jasaboga sanitation hygiene. To mitigate the risk of contamination from the food washing/cleaning room, it is recommended to establish a dedicated area specifically for the selection of food ingredients. This separate area would help prevent cross-contamination and maintain the hygiene and quality of the selected ingredients.

Foodstuff Storage

The process of preserving unused food items is referred to as food storage. Food storage can be categorized into two types: wet food storage and dry food storage, as mentioned by [Jiastuti \(2018\)](#). The Nutrition Installation of the Sultra Hospital has implemented a storage system that aligns with the types of food ingredients. This includes the segregation of storage areas for wet ingredients and dry ingredients. Additionally, the hospital has ensured that food storage areas are organized based on temperature requirements to maintain the quality of the ingredients. Furthermore, the installation has implemented a separation between raw and cooked materials to prevent cross-contamination. These practices are in accordance with the research conducted by [Utami and Ardillah \(2020\)](#), which emphasizes the need for dedicated storage areas for food preservation.

According to Regulation of the Minister of Health Number 1096 of 2011, food storage areas must be safeguarded against potential contamination from

bacteria, insects, rats, and other animals. Additionally, based on the findings from interviews and observations, it is noted that the storage shed is not situated beneath a water channel or pipe. In fact, the water channel or pipe is positioned on the opposite side of the food storage area. The condition of the shelves or storage cabinets typically follows commonly used sizes, with a specific focus on the distance between the cabinets and the floor, which is usually set at 30 cm. Additionally, it is recommended not to attach these cabinets to the wall. This aligns with a research suggesting that the height of shelves or cupboards from the floor should be at least 15 cm and that they should not be attached to the walls ([Jiastuti, 2018](#)). This prevents the warehouse from becoming damp, thus avoiding the growth of mold or mildew that could potentially damage the goods stored on the shelves or in the storage cabinets

The cleanliness of the storage area can be considered excellent as there was no presence of dirt, insects, or food spills. Furthermore, the floor was clean and non-slippery. This is a result of daily cleaning maintenance in the food storage room. It is important to note that the storage warehouse exclusively stores foodstuffs and does not contain any other items such as pesticides or chemicals. Also, cold storage plays a crucial role in inhibiting bacterial growth and preserving the quality of food. To ensure proper storage, it is essential to maintain the appropriate temperature based on the type of food being stored. Therefore, it is highly recommended to install visible indicators and temperature controllers in each food storage area, whether it is for dry or wet storage. Additionally, regular temperature checks and record-keeping performed by the Nutrition Installation of the Southeast Sulawesi Hospital are highly appropriate

The food storage arrangements at the Nutrition Installation of the Southeast Sulawesi Hospital are commendable as they adhere to the principles of First In, First Out (FIFO) and First Expired, First Out (FEFO). The positioning of foodstuffs is strategically organized to facilitate the effective application of the FIFO method, whereby older foods are placed at the front of the store and newer foodstuffs are placed at the back. Moreover, the storage warehouses have implemented proper separation measures, ensuring the segregation of food ingredients from non-food materials. Additionally, the separation of food

materials with strong odors has been diligently carried out to prevent cross-contamination.

The storage of food ingredients at the Nutrition Installation of the Southeast Sulawesi Hospital generally follows food storage standards based on Minister of Health Regulation Number 1096 of 2011 regarding *Jasaboga Sanitation Hygiene*. These standards include having storage rooms that are protected from dust, chemicals, insects, and rodents. Foodstuffs should not be mixed with hazardous materials or pesticides, and food ingredients should be kept far away from hazardous substances or pesticides. The placement of shelves or storage cabinets should be appropriate, and the storage temperature should be suitable for the type of food ingredients. The temperature should be checked and recorded every day, and strongly aromatic foodstuffs should be stored in closed containers. Moreover, food ingredients should not be placed under water channels or pipes. Additionally, there should be a designated area specifically for food storage.

Foodstuff Processing

The food processing room at the studied hospital has its own special room. Inside the processing room, there are individual areas for food processing, as well as tables for preparing vegetables without causing glare and shadows. There are 10 vents and 3 windows, in addition to 1 chimney that helps remove odors and smoke from the food processing area. During the observation, it was noted that the air circulation in the treatment room was very good, and it did not feel hot due to the efficient air circulation, supportive ventilation, open windows during the processing process, and the presence of a house fan near a ventilation point and a working chimney.

Food processing is carried out in a dedicated area within the room. The process is done manually, without specific temperature and time guidelines for each type of food being processed. The food processing prioritizes ingredients that require longer cooking times and have a longer shelf life, such as rice and fried side dishes. Finally, foods with higher water content, such as gravy and stir-fries, are cooked. This approach aligns with Regulation of the Minister of Health Number 1096 of 2011, which emphasizes prioritizing long-lasting foods like fried foods, followed by foods that require cooking and

have shorter shelf lives, such as gravies. The cooking utensils used at the Nutrition Installation of the Southeast Sulawesi Hospital include aluminum and stainless-steel utensils. Plastic cutting boards are used for vegetables, while wood cutting boards are used for fish and meat. The equipment used adheres to Regulation of the Minister of Health Number 1096 of 2011, which specifies that cooking utensils must be made of food-grade materials that are safe and harmless.

The washing of food ingredients follows standard operating procedures (SOP), which involves rinsing them with running water and then cutting them to preserve their nutrients. The food storage containers utilized at the Nutrition Installation of the Southeast Sulawesi Hospital are closed and separated for each type of food. This practice aligns with Regulation of the Minister of Health Number 1096 of 2011, which mandates the use of closed and separate storage containers for each type of food, including prepared/cooked food, as well as wet and dry food. After being cooked, food is subjected to organoleptic tests to determine its level of doneness and taste. However, this process of tasting the food is only carried out for certain dishes. The food handler begins by taking samples of the dishes to be tasted using a spatula, and then transferring them to a dedicated spoon that is exclusively used for food tasting. This practice aligns with Regulation of the Minister of Health Number 1096 of 2011, which emphasizes the use of a special spoon for tasting food that is always washed.

Food processing plays a crucial role in improving food safety by transforming raw ingredients into cooked food through careful selection and processing. The results indicate that the food processing practices at the Nutrition Installation of the Southeast Sulawesi Hospital meet the standards set by the Minister of Health Regulation No. 1096 of 2011.

Food Serving

Based on in-depth interviews with food handlers, it has been observed that the serving process at the Nutrition Installation of the South Sulawesi Hospital follows a specific sequence. It begins with the waiter preparing the trays and calculating the number of trays required per room. Then, the food is placed into the food containers, which are subsequently

closed. Finally, the food is delivered to the patient's room.

The serving equipment, including cutlery, is made of stainless steel and is maintained in good condition and cleanliness. The food is served to patients in different rooms of the Southeast Sulawesi Hospital, such as the emergency room, Srikandi, Mawar, Anggrek, Flamboyan, Melati, Matahari, Asoka, and Teratai. Plastic food containers with insulation and lids are used for this purpose. It is important to note that the use of plastic food containers is specifically intended for mental patients, as the use of glass or stainless-steel containers can pose a danger to the patients. For instance, if a patient were to hit another patient, the use of glass containers would increase the risk of injury. Therefore, plastic containers are used, ensuring they are insulated and closed.

When handling food ready to be served, the food handlers at the Nutrition Installation of the Southeast Sulawesi Hospital use spoons, tongs, or they may directly use hands that are wrapped in plastic to hold and move the food. According to the interview results, the food served to patients is warm and provided in one serving, without any leftover food being kept overnight. All the food is distributed during the current meal shift. The meals are freshly cooked just before serving, and the menu is consistently changed to avoid serving the same dishes repeatedly.

Based on the observations made by researchers, the overall process and conditions for serving food at the Nutrition Installation of the Southeast Sulawesi Hospital align with the information provided by the interviewees. However, there were some discrepancies between the interview results and the researchers' observations. For example, it was observed that one worker did not use gloves when handling cooked food and used bare hands instead of wrapping them in plastic while transferring side dishes to food containers. Additionally, some serving equipment, despite being clean, was held in the part that comes into contact with the food. Furthermore, there were instances where the food handlers engaged in conversations while serving food. It is important to address these discrepancies and ensure consistent adherence to proper food handling practices to maintain high standards of hygiene and safety in the serving process.

The serving equipment used for food still comes into direct contact with the food. However, according to Regulation of the Minister of Health Number 1096 of 2011, ready-to-use clean utensils should not be held in parts that come into direct contact with food or in areas that touch the mouth. Furthermore, there are still instances where workers handle food directly with their hands without using plastic wrap. According to Regulation of the Minister of Health Number 1096 of 2011, there are guidelines for hand protection when handling food, which include using tools like disposable plastic gloves, food tongs, or cutlery.

The results indicate that the food serving practices at the Nutrition Installation do not fully comply with the standards set by Regulation of the Minister of Health Number 1096 of 2011 and related guidelines. It is expected that the serving equipment used for food should be held in areas that do not come into direct contact with the food, such as the bottom or ends, and that workers should refrain from engaging in conversations during the process of serving food.

Food Transport

The transportation or distribution of food involves delivering cooked food to consumers and is a crucial stage to consider as it represents the final step before food reaches consumers (Stancu et al., 2016). According to Regulation of the Minister of Health Number 1096 of 2011, the means of transporting finished or processed food should utilize special carriers with hygienic conditions. However, it was found that the Mental Hospital Nutrition Installation transports food using an open iron trolley without temperature control. This does not comply with the requirements stated in Regulation of the Minister of Health Number 1096 of 2011, which specifies that means of conveyance should be intact, strong, and not susceptible to rusting.

The transportation of food in one trip depends on the number of inpatients. The study results indicate that there is no separate designated route for transporting ready-to-eat food and goods from the inpatient rooms. The same route is used, which includes both the exit and entry points for distribution. According to Regulation of the Minister of Health Number 1096 of 2011, a separate and dedicated route is necessary for transporting dirty materials/goods. It is crucial to ensure attention is

given to the transportation of food to prevent contamination from insects, dust, or bacterial re-contamination (Marpaung et al., 2012). The research findings regarding the transportation of food at the Nutrition Installation of the Southeast Sulawesi Hospital indicate that they do not meet the standards outlined in Regulation of the Minister of Health Number 1096 of 2011.

Personal Hygiene of Food Handlers

The Nutrition Installation of the Southeast Sulawesi Social Hospital, as an institutional food service provider, has not yet obtained a sanitation hygiene certificate issued by the Southeast Sulawesi Provincial Health Office. The interview results revealed that the food handlers at the nutrition Installation do not possess a sanitation hygiene course certificate, either provided by the hospital itself or obtained from external sources.

Furthermore, the in-depth interviews with food handlers indicated that they were aware of the provisions regarding personal hygiene. However, the results also revealed that the nutrition installation has never conducted health checks for food handlers. According to Regulation of the Minister of Health No. 1096 of 2011, food handlers are required to undergo periodic health checks at least twice a year by an authorized doctor. Unfortunately, in the Nutrition Installation of the Southeast Sulawesi Hospital, health checks have never been carried out, neither by the hospital nor by external authorities.

Regarding the health conditions of the food handlers, including acute respiratory infections, infectious diseases, or minor health issues such as coughs, flu, and fever, all the informants stated that the food handlers were in good health while on duty. If a worker becomes ill or experiences symptoms of illness, they are required to report to the head of the installation and seek permission, such as being allowed not to work. However, according to Regulation of the Minister of Health Number 1096 of 2011, all food handlers must be in good health, as confirmed by a doctor's certificate, and should not suffer from infectious diseases such as typhus, tuberculosis, hepatitis, and others. It is important to ensure that the food handlers comply with these health requirements to maintain the safety and well-being of both the handlers themselves and the consumers they serve.

When entering the food processing area, handlers are required to wear clean clothes. However, at the Nutrition Installation in Southeast Sulawesi Hospital, there are no specific clothes designated for food handlers. Head coverings should be worn by food handlers while working. The observation results revealed that some food handlers did not use head coverings when preparing and serving food.

Regarding the use of jewelry while working, there are no specific rules in place that prohibit food handlers from wearing jewelry while handling food. The study results indicate that some food handlers still wear jewelry such as rings, bracelets, and watches. Food handlers were not observed using a special cloth to cover their mouth and nose when sneezing. However, food handlers mentioned that they follow sneezing etiquette by using the inside of their upper arm. During the research, food handlers were observed using aprons and gloves. However, some food handlers neglected to use aprons and gloves while handling food. The purpose of using aprons is to protect food handlers from getting easily dirty and to reduce direct heat radiation from the stove (Munir & Cahyono, 2015). Food handlers are required to wear special waterproof shoes when working in the food processing room. However, the study results indicate that there are handlers who do not comply with this requirement and instead use uncovered sandals. During work, it was observed that no food handlers were eating or chewing. They only consumed food during designated breaks after cooking.

Regarding the habit of handwashing with soap while working, food handlers stated that they wash their hands before preparing food and after handling food. Moreover, informants reported that they typically wash their hands with soap after using the toilet. Based on the observations conducted by researchers, the personal hygiene practices of food handlers align with the statements provided by informants during in-depth interviews. However, it is important to note that the observed practices do not fully meet the requirements set by the Minister of Health. There are instances where food handlers engage in conversations while processing and serving food, which may pose a risk to food safety. Additionally, some food handlers still neglect to use gloves when handling and serving food.

To address these issues, it is recommended to provide regular training on proper hygiene and sanitation practices for food handlers. This training should be conducted every few years to ensure that handlers remain knowledgeable and mindful of their responsibilities. It is also crucial to emphasize the importance of using head coverings and masks while serving food.

Assessment of Physical Proper Test for Hygiene and Food Sanitation

Based on the finding, an assessment of the physical feasibility of food service sanitation hygiene was carried out in accordance with Minister of Health Regulation Number 1096 of 2011. The assessment covered various components such as food sanitation hygiene, building location, lighting, ventilation, food processing rooms, hand washing areas, toilets, clean water, dirty water, disposal/trash cans, food, employees, tableware and cooking equipment, and food serving rooms.

The assessment resulted in a score of 80, which falls below the minimum score of 83 required for a food sanitation hygiene class B. This indicates that the hygiene analysis of food sanitation in the nutrition installation at the Mental Hospital of the Province of Southeast Sulawesi did not meet the requirements based on the Decree of the Minister of Health of the Republic of Indonesia No. 1096/Menkes/Per/VI/2011, which sets the standards for food hygiene sanitation services. However, it is important to note that the research weight met the minimum requirement level of 83, or 84/92, with a percentage of 90.2%. This suggests that there are areas of improvement needed to meet the specific standards outlined in the Minister of Health's decree.

According to Regulation No. 1096/Menkes/Per/VI/2011 of the Minister of Health of the Republic of Indonesia, hygiene sanitation aims to control the risk factors that could lead to food contamination, including those originating from foodstuffs, individuals, locations, and equipment, in order to ensure food safety. The findings of this study align with a research conducted by [Sonia et al. \(2015\)](#) on the evaluation of food hygiene and sanitation practices at Sunan Kalijaga Hospital in Demak Regency. The results of their evaluation indicated scores below the minimum requirement of 80 for the physical suitability or hygiene and sanitation of food and beverage services. However, the evaluation

using the inspection form revealed relatively mild storage issues with a score of 81%.

Based on the findings, it is concluded that food sanitation at the studied hospital does not meet the requirements, with an assessment score ranging from $\leq 83\%$ to 90.2%. It is recommended to focus on regularly enhancing the knowledge of food handlers regarding food sanitation hygiene, increase supervision during food preparation processes, and consistently apply food sanitation hygiene practices when processing and serving food.

Conclusion

In general, sanitation hygiene practices, including aspects such as food sorting, storage, processing, serving, transportation, and personal hygiene for food handlers, have been implemented at the Nutrition Installation of the Southeast Sulawesi Hospital. However, there are still discrepancies between the actual implementation in the field and what should ideally be practiced. These discrepancies may arise due to the reluctance of some food handlers to adhere to sanitary hygiene provisions, as they may perceive them as troublesome or impractical. Additionally, limitations in implementing proper sanitary hygiene practices can contribute to the observed discrepancies. It is important to address these issues by raising awareness among food handlers about the significance of sanitary hygiene and its impact on food safety. Providing proper training and education, along with clear guidelines and practical solutions, can help overcome these challenges and promote consistent adherence to sanitation hygiene measures.

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The authors declared no conflicting interest.

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