

Overview of The Implementation of Merchant Hygiene and Sanitation and the Physical Quality of Broiler Chicken in Tradisional Markets of Ambon City

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ABSTRACT

Broiler chicken meat is one of the most highly demanded animal protein sources by the people of Ambon City. However, handling at the traditional market level often fails to meet food safety standards. This study aims to describe the implementation of merchant hygiene and sanitation, as well as its impact on the physical quality of broiler chicken sold in the traditional markets of Ambon City. This study used a descriptive observational design with a cross-sectional approach. Sampling was conducted at the main markets of Ambon City. Data collection was carried out through observation using a checklist referring to the Decree of the Minister of Health of the Republic of Indonesia (Kepmenkes RI) No. 519/MENKES/SK/X/2008 and organoleptic examination of chicken meat (color, odor, texture). The results showed that the merchants had not implemented good personal hygiene, indicated by the low use of personal protective equipment (aprons, gloves) and non-standardized handwashing behaviors. The merchants still use sales table made of old wood, and the cutting boards were porous (wooden blocks). These conditions correlated with the findings on the physical quality of chicken meat. It can be concluded that, based on organoleptic physical quality, the meat being marketed is in good quality

INTRODUCTION

The consumption rate of broiler chicken meat in Ambon City continues to show an upward trend in line with population growth and increasing awareness of family nutritional needs. Chicken meat is chosen because it is relatively affordable compared to beef and easy to prepare. Nevertheless, as an animal sourced food, chicken meat is highly perishable and susceptible to microorganism contamination if not handled properly.

The topography and coastal tropical climate in Ambon City, characterized by high humidity, can accelerate the growth rate of spoilage bacteria in fresh meat. Therefore, the ASUH concept (Safe, Healthy, Whole, and Halal) must be strictly applied throughout the distribution chain, especially at the final point of sale, namely traditional markets. In reality, traditional markets are often faced with the stigma of being slum-like muddy, and lacking in adequate sanitation facilities.

Standards for handling fresh food in traditional markets have been regulated through the Decree of The Minister of Health of The Republic of Indonesia No. 519/MENKES/SK/X/2008 concerning Guidelines for Healthy Market Operation and The Indonesia National Standard (SNI) 3924:2009 regarding carcass quality. However, implementation in the field heavily relies on the hygiene behavior of the merchants (food handlers) and the availability of environmental sanitation facilities. A lack of understanding among merchants regarding hygiene and sanitation risks causing a decline in the physical quality of chicken meat, ultimately leading to the threat of foodborne diseases for consumers. It can also be caused by improper food handling, including from unsafe sources (WHO, 2006). Unsanitary environmental conditions also facilitate the presence of bacterial vectors, such as flies (Afshari et al, 2018).

This research is urgently needed considering that Traditional Markets (A and B) in Ambon City are largest food distribution centers for the people of Ambon and its surrounding areas. The purpose of this study is to factually map how food handler hygiene and environmental sanitation are implemented by merchants, and to observe the physical quality of the broiler chicken meat being sold.

LITERATURE REVIEW

Hygiene and Sanitation

Food is a basic necessity in daily life, so it must be regulated and maintained to prevent the spread of diseases that can harm health. Hygiene and sanitation are preventative measures in the food supply chain to minimize biological, physical, and chemical contamination of carcasses or fresh meat. Hygiene aims to ensure a clean and healthy environment to prevent disease, while sanitation aims to prevent food contamination from hazardous substances that cause disease, including environmental factors (Hutasoid, 2018).

Efforts that can be made include implementing the principles of personal hygiene. Food handlers suffering from a disease can transmit their illness to others—for example, suffering from influenza and coughs—either directly or through the processed food. This is the reason why food handlers who are

suffering from influenza and coughs must not perform tasks that involve direct contact with food or consumers (Wasanti, 2020).

It is important to recognize sources of contamination from the human body, which, aside from being a work tool, is also a source of contamination for other humans and the environment, including food and beverages. The hygiene requirements for food handlers, according to the Hospital Nutrition Service Guidelines from the Ministry of Health of the Republic of Indonesia (2013). These sources of contamination include :

1. Sources of contamination from the human body (hands, hair, mouth, nose, and ears). Ways to maintain personal cleanliness are as follows :
 - a. Bathing regularly with soap and clean water in a proper and correct manner.
 - b. Brushing teeth with toothpaste and a toothbrush before bed, upon waking up, and after meal.
 - c. Wearing clean clothes.
 - d. Making it a habit to routinely clean the nostrils, ear canals, and fingernails; nails should always be kept short to make them easy to clean
 - e. Disposing of waste in proper places according to health requirements, and always washing hands with soap and clean water after defecating or urinating.
 - f. Keeping the skin clean from unnecessary cosmetic products.
2. Other important sources of contamination: open wounds/scabs, boils/pus, and dandruff/other dirt from the hair.
Things that must be considered in food safety efforts are:
 - a. Cuts must be immediately covered with a waterproof plaster/bandage
 - b. Early-stage scabs or boils must be covered with a waterproof plaster/bandage.
 - c. Hair must be covered with a head covering that secures the front part so it does not hang loose or fall out.
3. Sources of contamination due to behavior :
This includes dirty hands, coughing, sneezing, saliva droplets, combing hair near food, and wearing jewelry
4. Sources of contamination due to ignorance:
Ignorance can occur due to a lack of knowledge and low awareness. This can lead to hazards such as:
 - a. The use of fake or counterfeit ingredients.
 - b. The use of spoiled or low-quality food ingredients.
 - c. The inability to distinguish between food-grade and non-food-grade materials.
 - d. The inability to distinguish safe food coloring for food ingredients.

Organoleptic Physical Quality

Organoleptic evaluation refers to the testing of food based on consumer preference and willingness to consume a product. An organoleptic test is an assessment method that utilizes human senses as the primary instrument for

measuring product acceptability. Sensory properties of food are attributes that are solely recognized or measured through sensory perception, namely sight, smell, taste, touch, and hearing (Mamuaja, 2016). Organoleptic testing plays an essential role in the quality control of food ingredients as it provides immediate indications of spoilage or deterioration in a product. Organoleptic properties refer to the combination of appearance, color, aroma, flavor, and texture of a food product.

Consumers are often initially drawn to food by its visual appearance, particularly its color. An appealing color invites consumers to sample the product (Lamusu, 2018). Aroma is also a crucial factor in the sensory evaluation of a product. Aroma is generated by volatile compounds in food; when the product is in the mouth, these volatile compounds are detected by the olfactory system in the nasal cavity (Negara et al., 2016). Taste is one of the key determinants influencing individual food acceptability. The taste of food plays a critical role, as this indicator allows consumers to perceive and evaluate palatability. The taste profile of a food product is largely influenced by the primary ingredients used. Texture is a sensory attribute associated with touch or tactile sensation. Texture is generally considered as important as aroma and taste, as it directly affects overall mouthfeel and flavor perception. Texture is most critical in soft and crispy foods, with the most commonly evaluated characteristics being hardness, tenderness, and moisture content. Furthermore, texture encompasses all mechanical, geometric, and surface attributes of a product, characterized by its roughness or smoothness. Consequently, texture plays a vital role in determining overall food acceptability (Paramita, et al., 2024).

Traditional Market

A market is a designated location where sellers and buyers meet to conduct the exchange of goods and services at specific times. It is defined as a transaction venue where purchasing and selling activities occur between vendors and consumers. Historically, traditional markets have been an integral part of Indonesian culture, and communities continue to rely on them to fulfill their daily needs (Swastha & Sukotjo, 2020).

A traditional market is typically established and managed by local government authorities or regional entities. It comprises infrastructure such as kiosks, shops, stalls, or open booths managed by micro, small, medium-to-large-scale vendors, or cooperatives, operating through direct price bargaining. This bargaining process fosters a personal and emotional rapport between sellers and buyers – an interaction that is rarely found in modern retail environments (Ismail et al., 2019; Toni, 2013). Furthermore, traditional markets serve as the bedrock of the grassroots economy. The commodities traded are predominantly local produce with less stringent sorting and grading standards, though high-quality goods remain available. In terms of volume, the inventory maintained per vendor is relatively limited. The supply chain generally spans from producers, distributors, and sub-distributors to retailers before reaching the end consumer (Gusti, 2022). According to Angkasawati and Milasari (2021), a distinct characteristic of traditional or people's markets is the vendors' reluctance to sell

goods in large volumes due to limited working capital and inadequate storage infrastructure, such as commercial refrigeration units.

Traditional markets play a strategic role in driving economic growth in Indonesia and possess an inherent, natural competitive advantage. The existence of these markets provides vital socioeconomic support not only to local and central governments, but especially to community members whose livelihoods depend on commercial trading activities. Within this ecosystem, various stakeholders—including vendors, buyers, and manual laborers—strive to improve their economic well-being. Collectively, these actors play a pivotal role in sustaining the continued existence and resilience of traditional markets in Indonesia (Ester & Didik, 2013).

METHODS

This research is a descriptive observational study utilizing a cross-sectional approach. Data collection was conducted at poultry selling locations in two main traditional markets in Ambon City (Market A and B).

The population in this study was all fresh broiler chicken merchants in those locations. At each market location, 5 samples of broiler chicken merchants were taken with 3 replications. The research instruments used included :

1. Hygiene and Sanitation Observation Sheet
Developed based on the feasibility assessment instrument of Kepmenkes RI No. 519/MENKES/SK/X/2008), encompassing variables of food handler cleanliness (health, use of PPE, handwashing behavior) and sanitation facilities (sales tables, clean water, trash bins, drainage systems, and vector control).
2. Organoleptic Test (Physical Quality)
Conducted visually and by palpation to assess color, odor, consistency (texture) and the presence of slime on the chicken carcass, referring to SNI 3924:2009. Observations were made on chicken meat sold at 06.00WIT.

Data Analysis

The obtained data were analyzed using univariate analysis and presented in the form of frequency distribution tables and descriptive narratives to provide a comprehensive overview of the observed variables.

Based on field observations, hygiene and sanitation merchant of Broiler chicken can show in Table 1.

Table 1. Results of Observations Higiene and Sanitation Merchant of Broiler Chicken

No	Observation Variables and Indicators	Traditional Market			
		A		B	
		Yes	No	Yes	No
A	Personal hygiene				
1	The merchant appears healthy	100%	-	100 %	-
2	Nail cleanliness	80%	20%	100 %	-

3	The merchant wears a clean, waterproof work apron	40%	60%	20%	80%
4	The merchant wears a head covering (hat/hairnet) to prevent hair from falling onto the meat	30%	70%	60 %	40%
5	The merchant washes hands and running water before and after handling chicken meat	80%	20%	80%	20%
6	The merchant does not smoke, eat or spit while selling and processing meat	80%	20%	80%	20%
B	Environmental and Facility Sanitation (STALL)				
1	The stall is located in the wet zone (separated from the sale of chemicals or non-food items)	100%	-	80%	-
2	The table surface is made of waterproof, flat, non-rusting, and easy-to-clean material (e.g., stainless steel or ceramics).	70%	30%	60%	40%
3	There is a supply of clean running water from a tap (not stagnant dirty water in a bucket) for washing purposes.	70%	30%	70%	30%
4	The Wastewater Drainage System is closed, does not emit foul odors, and dirty water flows smoothly (no puddles of blood/water on the floor).	80%	20%	60%	40%
5	There is a waterproof trash bin with a tight lid, lined with a plastic bag inside.	80%	20%	80%	20%
6	The stall is free from pets (cats/dogs) and rodents (rats).	80%	20%	70%	30%

No	Observation Variables and Indicators	Traditional Market			
		A		B	
		Ya	Tidak	Ya	Tidak
C	Equipment Sanitation				
1	The cutting knife is made of rust-proof material (stainless steel) and appears clean.	100%	-	100%	-
2	The cutting board is intact, not cracked/deeply grooved, and is not made of porous/moldy wooden blocks.	80%	20%	80%	20%

Table 2. Organoleptic Physical Quality of Broiler Chicken Meat

D	Product Handling & Physical Quality (Organoleptic)				
1	Fresh chicken meat (carcass) is placed separately from offal (intestines, liver, gizzard).	100%	-	80%	20%
2	Chicken meat is protected from direct dust exposure, intense sunlight, and is not swarmed by flies.	80%	20%	80%	20%
3	There are temperature control efforts (e.g., the use of crystal ice lining or a showcase chiller).	100%	-	100%	-
4	Color: The chicken carcass appears bright grayish-white (not dull yellow, pale, or bluish).	100%	-	100%	-
5	Odor: Has a characteristic fresh chicken aroma (does not emit a pungent rancid or rotten smell).	100%	-	100%	-
6	Consistency (Texture): The meat feels elastic (if pressed with a finger, the meat surface will immediately return to its original shape, not mushy/slimy).	70%	30%	70%	30%

RESULTS AND DISCUSSION

Personal Hygiene

Based on the data in Table 1, it was found that in terms of personal hygiene, an average of around 80% was considered good because merchant had good health and hygiene. However most merchants did not use complete Personal Protective Equipment (PPE). The use of waterproof aprons and head coverings was very rarely found. Some merchants argued that wearing gloves made it difficult for them to cut chicken carcass because it felt slippery.

Furthermore, unhygienic behaviors such as smoking while serving customers and handling money simultaneously with handling meat without washing hand first were still frequently encountered. This aligns with previous studies stating that low levels of education and a lack of socialization regarding food safety significantly contribute to the formation of bad habits among traditional market merchants. Khotimah M, K and Wulandari W (2024), research also reported that the higher the level of education of food handlers, the more likely the individual is to maintain personal hygiene, such as wearing a head covering, cutting nails short, and wearing clean work clothes. Good education will form the basic for healthy behavior, including the application of food hygiene and sanitation. As also explained by Who (2006), Dirty hands of food handlers are the main transmitting agents for bacterial contaminants such a *Staphylococcus aureus* and *Escherichia coli*. The presence of *Escherichia coli* is an indicator of food and beverage sanitation (Katon, et al., 2020). This bacteria can cause diarrhea and gastrointestinal infection (Sari dan Sari, 2021).

However, about 80% merchant wash their hand in Market A and Market B. This is thought to be due to the positive attitude of the merchant, so that they are driven by the knowledge they have to act. Islamiah et al (2024) also concluded that attitude is an important variable that influences of consistency of food sanitation implementation.

Environmental and Equipment Sanitation

In terms of environmental sanitation and equipment, Market A and Market B has chicken sales in the wet zone, separated from no food items. Therefore, it meets the standards stipulated in The Decree of the Minister of Health of the Republic of Indonesia (Kepmenkes RI) No. 519/MENKES/SK/X/2008

Approximately 70% of the water supply was running from the tap, while 30% used water collected in buckets. The availability of running clean water was very limited. Merchants generally used water stored in buckets repeatedly to wash both the chicken carcasses and their knives. This practice carries a high risk of causing cross-contaminations.

Most of the merchants in Market A and Market B are around 70%-80% free from the presence of pets and rodents, although around 20%-30% still find pets.

All of the merchants in Market A and Market B use the cutting knife is made of rust-proof material (stainless steel) and appears clean.

Approximately 20% in both Markets A and B were still use sales table made of old wood, and the cutting boards were porous (wooden blocks). Wooden materials absorb water, blood, and fat, making them an ideal medium for the proliferation of pathogenic microorganisms.

Things found in all aspects are also found by Dafiyanti et al (2022), in their research, which stated that some merchants do not undergo health checks and therefore never know whether they have an infectious disease or not, do not wash their hands before or after serving customers, continue to smoke, use water used repeatedly to wash equipment and so on.

Physical Quality of Broiler Chicken Meat

Organoleptic valuation indicated a linear correlation between display duration and the physical quality of the meat. During the observation, the quality of chicken meat generally still met the SNI standards. Based on Table 2, it was found that the results of organoleptic observations at 06.00 WIT, about 80%-100% of chickens in Market A and Market B had bright grayish-white carcass color, characteristic fresh meat odor (not a pungent rancid smell), and elastic meat consistency (returning to its original position when pressed). The color of the chicken meat shows that the meat is free from bruising, so based on SNI, the quality of chicken meat is categorized as quality I.

The meat smells fresh and is free of any foul odors. The surface of the meat is moist and contains a significant amount of fat. Approximately 70% of chicken meat is elastic, while 30% is inelastic due to quality degradation, categorizing it as quality II according to SNI 3924:2009.

CONCLUSIONS AND RECOMMENDATIONS

The implementation of hygiene and sanitation by broiler chicken merchants in the traditional markets of Ambon City has not fully met the environmental health requirements set by the government. Low discipline in using PPE, lack of running clean water facilities, and the use of wooden work equipment are the main risk factors. These suboptimal sanitation and hygiene conditions can impact the physical quality of chicken meat. In terms of organoleptic physical quality, both color and odor are still categorized as quality I according to SNI, while the texture is categorized as quality II because approximately 20% of chicken meat was found to have decreased due to soft and inelastic meat in both markets A and B. Thus, it can be concluded that, based on organoleptic physical quality, the meat being marketed is in good quality.

FURTHER STUDY

This study still has limitations, so further research on Overview of The Implementation of Merchant Hygiene and Sanitation and the Physical Quality of Broiler Chicken is needed to refine this study and enhance the insights of readers and the authors.

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