Research

Animal Welfare Practices at Duck Slaughter Facilities in Traditional Markets at Bogor City

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ABSTRACT

Animal welfare is an important aspect of poultry slaughtering since it directly affects the quality of meat produced. This study aimed to evaluate animal welfare practices during duck slaughter in traditional markets of Bogor City. A census-based survey approach was conducted on seven slaughter sites between May and December 2023. Data were collected through direct observation using a checklist from the Guidelines for Animal Welfare Development in Animal Product Business Units 2023. The evaluated aspects included arrival, resting, pre-slaughter, slaughter, human resources, and emergency procedures. The results showed that 71% of the slaughter sites were categorized as moderate and 29% as poor, with no sites achieving a good category. The slaughter aspect was the most compliant, with a 95% conformity rate, while arrival, pre-slaughter, human resources, and emergency procedures scored low. The low implementation was mainly due to limited facilities, a lack of training for traders, and the absence of authorized officers at the sites. These findings indicate that animal welfare practices in duck slaughter at traditional markets have not been optimal. Improvements are required through regular training for traders, routine monitoring by relevant authorities, improvement of transport and resting facilities, and strengthening of local regulations to ensure better animal welfare implementation.
Keywords: animal welfare, Bogor, duck, slaughter, traditional market

ABSTRAK

Kesejahteraan hewan menjadi aspek penting yang perlu diperhatikan dan diterapkan dalam pemotongan hewan ternak, termasuk pemotongan pada itik. Penelitian ini bertujuan untuk mengevaluasi tingkat praktik kesejahteraan hewan pada proses penyembelihan itik di pasar tradisional di Kota Bogor. Pemotongan itik di Kota Bogor hanya dilakukan di tiga pasar dengan total keseluruhan terdapat tujuh pemotongan sehingga seluruhnya dijadikan sampel dalam penelitian ini. Pengumpulan data dilakukan melalui observasi langsung dan penilaian terhadap praktik kesejahteraan hewan dengan menggunakan *checklist* yang terdapat dalam Pedoman Pembinaan Kesrawan Pada Unit Usaha Produk Hewan Tahun 2023. Aspek kesejahteraan hewan yang dinilai meliputi aspek kedatangan, istirahat, pra-penyembelihan, penyembelihan, sumber daya manusia, dan rencana darurat. Kategori penilaian tingkat praktik kesejahteraan hewan dikategorikan menjadi baik, sedang, dan buruk. Hasil penelitian menunjukkan bahwa 71% pemotongan itik di pasar tradisional di Kota Bogor berkategori sedang, sementara 29% berkategori buruk, dan tidak ada pemotongan berkategori baik. Penyimpangan ini banyak terjadi pada aspek kedatangan, pr-penyembelihan, sumber daya manusia, dan rencana darurat. Oleh karena itu, perlu dilakukan peningkatan praktik kesejahteraan melalui program Edukasi, Informasi, dan Komunikasi serta perlu dilakukan pemantauan pemotongan itik secara berkala oleh instansi terkait.
Kata kunci: Bogor, itik, kesejahteraan hewan, pasar tradisional, pemotongan

INTRUDOCTION

Ducks are an important species of waterfowl commonly utilized to produce meat and eggs as valuable sources of animal protein. Compared with other poultry species, ducks exhibit greater tolerance to a wide range of environmental conditions, including cold, heat, and humidity, making them relatively easy to manage under both traditional and commercial farming systems (Eratalar *et al.*, 2022). Moreover, duck meat is characterized by its distinctive flavor, which has contributed to a growing consumer preference for its consumption (Habibi, 2016). The increasing demand for duck meat requires not only adequate production in quantitative terms but also compliance with established quality standards. Among the major determinants of meat quality is the implementation of appropriate animal welfare practices throughout the rearing and slaughtering processes.

The concept of animal welfare has been formulated into the Five Freedoms by the Royal Society for the Prevention of Cruelty to Animals (FAWC, 2012). These include freedom from hunger and thirst, discomfort, pain, injury, and disease, fear and distress, and the freedom to express normal behavior. The application of these principles is essential, as poor welfare conditions can increase the susceptibility of livestock to diseases and reduce the quality of animal-derived food products (Center for Food Safety, 2020).

The city of Bogor has a relatively high level of duck meat consumption. According to data from the Department of Food Security, Agriculture, and Fisheries (DKPP, 2022), duck meat production in this region reaches nearly one ton per year. However, most ducks slaughtered in traditional markets in Bogor City are not raised within the city itself but are supplied from Bogor Regency, particularly from Parung and Dramaga subdistricts. The ducks traded generally consist of both broiler ducks and culled layer ducks, depending on farm availability. Slaughtering is typically carried out in traditional markets that lack poultry slaughterhouse–equivalent facilities, resulting in suboptimal monitoring of animal welfare conditions during the process.

This study was conducted to evaluate the implementation of animal welfare practices during duck slaughtering in traditional markets in Bogor City. The findings are expected to provide an overview of the current field conditions and serve as a basis for developing strategies to improve the implementation of animal welfare standards in poultry slaughtering practices in Indonesia.

MATERIALS AND METHOD

This study was conducted at seven duck slaughtering sites located within three traditional markets in Bogor City between May and December 2023. A survey method with a census approach was employed, in which all identified slaughtering sites were included as research samples.

Data were collected through direct observation using a checklist adapted from the Guidelines for Animal Welfare Supervision in Animal Product Business Units (Latif et al., 2023). The respondents consisted of traders or owners of the duck slaughtering sites. Recorded respondent characteristics included gender, age, education level, trading experience, and history of participation in animal welfare training.

The animal welfare assessment covered six categories: (1) arrival, (2) resting, (3) pre-slaughter, (4) slaughter, (5) human resources, and (6) emergency procedures. A total of 38 assessment indicators were evaluated, each scored as either "compliant" or "non-compliant."

The assessment score was calculated using the formula described by Arikunto (2013):

$$\frac{\text{Score obtained}}{\text{Maximum Possible score}} \, x \, 100\%$$

The resulting scores were then classified into three levels of animal welfare implementation—good, moderate, and poor—based on the categorization criteria proposed by Arikunto (2013) and the *Veterinary Establishment Number* (VEN) regulation stipulated in the *Regulation of the Minister of Agriculture of the Republic of Indonesia* (2020). The general scoring categories are shown in Table 1.

Table 1. General Categories of Animal Welfare Assessment

Category	Assessment of Welfare Aspects	Animal Welfare Assessment per Slaughter Site
Good	> 75%	≥ 26 compliant items
Moderate	41–75%	13–25 compliant items
Poor	0–40%	1–12 compliant items

Table 1 presents the general scoring criteria used to categorize the level of animal welfare implementation at duck slaughter sites. The scoring system combines quantitative and qualitative indicators to assess compliance with animal welfare standards across six evaluated aspects. Each observation item

was rated as either compliant or non-compliant, and the overall percentage score was calculated based on the total number of compliant items relative to the maximum possible score (Arikunto, 2013).

Slaughter sites achieving more than 75% compliance or at least 26 compliant items were classified as Good, indicating high adherence to welfare standards. Sites with compliance between 41–75% (13–25 compliant items) were categorized as Moderate, while those scoring 40% or below (≤12 compliant items) were classified as Poor. This classification framework aligns with the criteria outlined in the Veterinary Establishment Number (VEN) regulation (Ministry of Agriculture, 2020), ensuring comparability with national animal welfare evaluation standards.

All collected data were processed using Microsoft Excel 2010® and subjected to descriptive analysis. The results were presented through tabular and graphical formats to facilitate interpretation and comparison across the assessed sites.

RESULTS

1. Respondent Characteristics

Respondent characteristics included gender, age, education level, trading experience, and history of participation in animal welfare training. Detailed data are presented in Table 2. All respondents were male, most of whom were within the productive age range, and 71.5% had 1–5 years of trading experience. Notably, none of the respondents had ever participated in animal welfare training, indicating a lack of knowledge transfer to traders.

2. Arrival Aspect

The assessment of the arrival aspect covered transport equipment, unloading process, ventilation, and lighting. The results are presented in Table 3. All traders (100%) did not use transport vehicles that met technical standards. This finding is significant since the risk of stress and mortality in ducks is high during transportation.

3. Resting Aspect

The resting aspect evaluated cage conditions such as noise, lighting, ventilation, and resting time. The results are shown in Table 4. Although all ducks were rested for at least 30 minutes, every site was exposed to market noise, potentially increasing stress, and reducing meat quality.

Table 2. Characteristics of Traders at Duck Slaughter Sites in Traditional Markets of Bogor City

Respondent Characteristics	Number of Respondents	Percentage (%)
Gender		
• Male	7	100
• Female	0	0
Age (years)		
• 25–44	5	71.5
• 45–60	2	28.5
Education Level		
• Junior high school or equivalent	2	28.5
• Senior high school or equivalent	3	43.0
• University	2	28.5
Trading Experience		
• < 1 year	0	0
• 1–5 years	5	71.5
• > 5 years	2	28.5
History of animal welfare training		
• Yes	0	0
• No	7	100

4. Pre-slaughter Aspect

The pre-slaughter aspect evaluated duck handling, segregation of sick ducks, and handling methods prior to slaughter. Results are presented in Table 5.

Although all traders separated sick ducks, 57% handled ducks roughly when removing them from cages. The absence of stunning procedures was a major shortcoming in this aspect.

Table 3. Arrival Aspect at Duck Slaughter Sites in Traditional Markets of Bogor City

No	Component	Compliant	%	Non-compliant	%
1	Transport equipment meets technical requirements	0	0	7	100
2	Animal welfare inspection upon arrival	0	0	7	100
3	Floor height facilitates unloading	0	0	7	100
4	Dim lighting in unloading area	0	0	7	100
5	Adequate air circulation	6	86	1	14
	Average compliance		17		83

Table 4. Resting Aspect at Duck Slaughter Sites in Traditional Markets of Bogor City

No	Component	Compliant	%	Non-compliant	%
1	Free from excessive noise	0	0	7	100
2	Protection from sunlight and rain	5	71	2	29
3	Adequate air circulation	6	86	1	14
4	Low light intensity	0	0	7	100
5	Ease of ante-mortem inspection	0	0	7	100
6	Resting in transport or dedicated area	1	14	6	86
7	Careful unloading	6	86	1	14
8	Proper stacking of crates	4	57	3	43
9	≥1 m gap between top crate and roof	3	43	4	57
10	Temperature and humidity appropriate	0	0	7	100
11	Minimum resting time 30 minutes	7	100	0	0
	Average compliance		42		58

Table 5. Pre-slaughter Aspect at Duck Slaughter Sites in Traditional Markets of Bogor City

No	Component	Compliant	%	Non-compliant	%
1	Careful removal from cages	3	43	4	57
2	Separation of sick ducks	7	100	0	0
3	Not lifted by wings, legs, or neck	6	86	1	14
4	Use of overhead conveyor or restrainer	0	0	7	100
5	Adequate spacing between suspended ducks	0	0	7	100
6	Breast position facing slaughterer	6	86	1	14
7	Dim lighting before stunning/scalding	0	0	7	100
8	Hanging-to-scalding time ≤ 1 min	0	0	7	100
9	Equipment made of strong, non-corrosive material	0	0	7	100
10	Equipment suitable for duck body weight	0	0	7	100
11	Electric stunning applied to the head	0	0	7	100
12	Electric current strength and duration appropriate	0	0	7	100
	Average compliance		26		74

5. Slaughter Aspect

The slaughter aspect evaluated knife quality, cutting duration, and incision position. Results are presented in Table 6.

The slaughter aspect had the highest conformity rate (95%). All traders performed the cut within 10 seconds, demonstrating strong adherence to halal slaughter practices.

6. Human Resources Aspect

This aspect assessed the presence of animal welfare officers or responsible personnel. Results are summarized in Table 7.

Although all traders separated sick ducks, 57% handled ducks roughly when removing them from cages. The absence of stunning procedures was a major shortcoming in this aspect.

7. Emergency Procedures Aspect

The emergency aspect assessed the availability of standard operating procedures (SOPs) for emergency situations. The results are presented in Table 8.

All sites lacked emergency response guidelines, and only 43% had emergency slaughter guidelines, reflecting inadequate preparedness for unexpected situations.

8. Recapitulation of All Assessment Aspects

A summary of the six aspects of animal welfare is presented in Figure 1.

The slaughter aspect had the highest compliance, whereas arrival, pre-slaughter, human resources, and emergency procedures had the lowest.

9. Overall Animal Welfare Implementation Level

The overall welfare category across the seven slaughter facilities is shown in Figure 2.

Most slaughter facilities were classified as moderate (71%), while the remaining 29% were poor, with no facilities achieved the good category. Detailed conformity and non-conformity data for each facility are presented in Table 9.

Slaughter facilities at Anyar and Bogor markets fell into the poor category, while the others were classified as moderate, reinforcing that animal welfare standards were not yet optimally implemented.

Table 6. Slaughter Aspect at Duck Slaughter Sites in Traditional Markets of Bogor City

No	Component	Compliant	%	Non-compliant	%
1	Knife made of strong, non-corrosive, easy-to-clean material	7	100	0	0
2	Knife sharpness	7	100	0	0
3	Blade length ≥ 4× neck width	6	86	1	14
4	Cutting duration < 10 seconds	7	100	0	0
5	Incision below lower jaw	6	86	1	14
6	Death confirmed before scalding	7	100	0	0
	Average compliance		95		5

Table 7. Human Resources Aspect at Duck Slaughter Sites in Traditional Markets of Bogor City

No	Component	Compliant	%	Non-compliant	%
1	Availability of animal welfare officer	0	0	7	100
2	Availability of welfare supervisor	0	0	7	100
	Average compliance		0		100

Table 8. Emergency Procedures Aspect at Duck Slaughter Sites in Traditional Markets of Bogor City

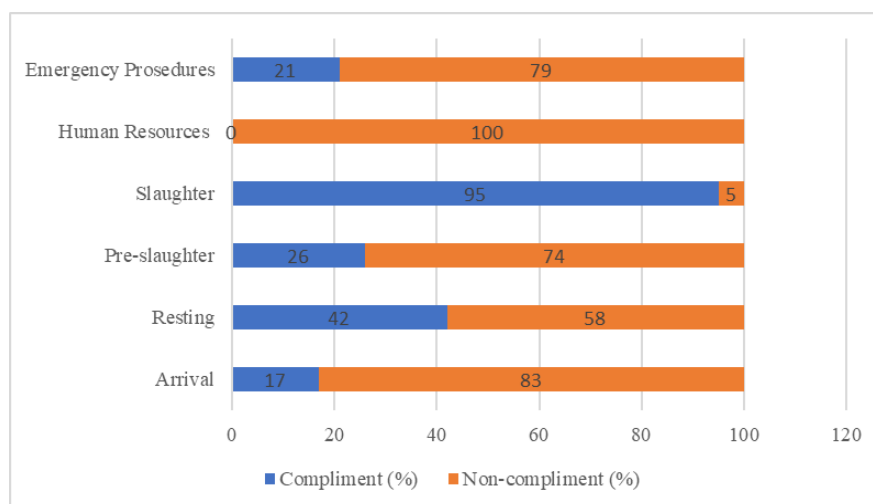| No	Component	Compliant	%	Non-compliant	%
1	Availability of emergency response guidelines	0	0	7	100
2	Availability of emergency slaughter guidelines	3	43	4	57
	Average compliance		21		79

Figure 1. Recapitulation of Animal Welfare Aspect Scores at Duck Slaughter Sites in Traditional Markets of Bogor City
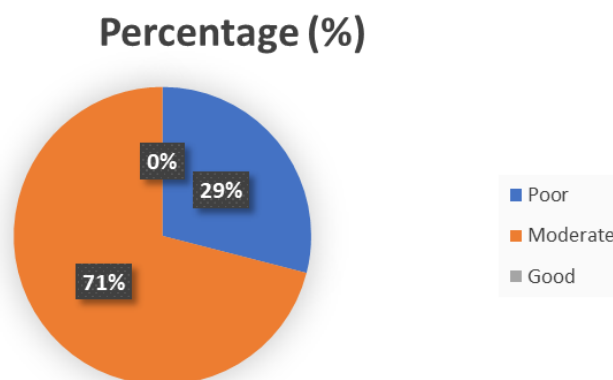

Figure 2. Animal Welfare Category at Duck Slaughter Facilities in Traditional Markets of Bogor City

Table 9. General Assessment of Animal Welfare at Duck Slaughter Facilities in Traditional Markets of Bogor City

Market	Site	Compliant	Non-compliant	Category
Anyar	1	10	28	Poor
	2	17	21	Moderate
Jambu Dua	1	14	24	Moderate
	2	16	22	Moderate
	3	15	23	Moderate
Bogor	1	15	23	Moderate
	2	12	26	Poor

DISCUSSION

The findings of this study indicate that animal welfare practices during duck slaughter in traditional markets of Bogor City remain suboptimal. Most slaughter facilities were classified as moderate (71%), while the remaining 29% were categorized as poor, and none met the good category. These results suggest that the implementation of animal welfare principles in traditional slaughter facilities continues to face both structural and managerial constraints.

The study revealed that none of the traders used transport vehicles that complied with the technical requirements stated in the Guidelines for Animal Welfare in Animal Transportation (Ma'arif *et al.*, 2020). According to these guidelines, poultry should be transported using covered trucks or pickup vehicles equipped with containers or crates. However,

in practice, ducks were commonly transported using open pickup trucks or motorcycles without proper crates. Such conditions increase the risk of stress and mortality during transportation. Heat accumulation, motion, vibration, vehicle deceleration, and lack of feed and water during transport are recognized stressors that negatively affect animal welfare (Zhu *et al.*, 2014). Nur'aini (2019) also reported that transport stress is a major cause of poultry mortality. Similarly, a recent large-scale study demonstrated that travel distance, season, and ventilation significantly influence the dead-on-arrival rate of ducks (Xin *et al.*, 2025).

Upon arrival, ducks were placed directly in cages serving as temporary resting areas without prior physical or welfare inspection. In most facilities, ducks were rested in boxes or holding pens before slaughter. Although 86% of resting cages allowed sufficient air exchange, the proximity of these cages to slaughtering areas resulted in unpleasant odors, indicating a need for improved ventilation (Poultry Indonesia, 2021). None of the facilities had proper lighting arrangements, despite light intensity being a crucial environmental factor affecting feed intake, metabolism, and stress in poultry (Husein *et al.*, 2013; Kasiyati, 2018; Seto, 2020; Anonymous, 2023). Inadequate lighting increases the risk of stress and negatively affects meat quality. Moreover, the absence of proper floor height in resting areas increases the risk of injury during unloading, as appropriate elevation facilitates easier handling and reduces animal discomfort (ASPCA, 2017). These limitations may be attributed to the restricted space available in traditional market environments.

Although all ducks were rested for at least 30 minutes before slaughter, environmental factors, such as excessive noise from the market and nearby roads were not controlled. Noise is known to elevate stress levels and cause physiological disturbances in poultry (Susanti *et al.*, 2018). Similarly, uncontrolled temperature and humidity can lead to heat stress, resulting in oxidative stress and deterioration of meat quality (Nova & Zein, 2020; Zhi *et al.*, 2024). Adequate resting time under comfortable conditions can reduce muscle glycolysis and improve carcass quality (Tamzil *et al.*, 2022). These findings indicate that the "freedom from discomfort," as emphasized in the Five Freedoms (FAWC, 2012), has not been fully implemented in these facilities.

In the pre-slaughter stage, although all traders separated sick ducks in accordance with national regulations (PPRI, 2012), most handled ducks roughly during removal from cages, often by pulling the wings or legs. Such handling violates the welfare principle of freedom from pain and distress (Mellor, 2016). Furthermore, stunning was not applied at any facility. In contrast, reversible stunning methods have been widely adopted internationally to ensure animal welfare while maintaining compliance with halal slaughter standards (Fuseini *et al.*, 2023; Tarawneh *et al.*, 2024).

The slaughter aspect, however, demonstrated the highest level of compliance (95%). Traders showed strong adherence to halal slaughter procedures, ensuring knife sharpness, rapid cutting (<10 seconds), and confirmation of death prior to scalding. These practices align with the Fatwa of the Indonesian Ulama Council (MUI, 2009), which emphasizes the importance of a swift cut to ensure halal slaughter. Nonetheless, some traders used knives that were not fully proportional to the duck's neck size, potentially reducing cutting efficiency. This suggests that traders prioritized halal compliance but paid less attention to overall welfare considerations. In principle, halal and thayyib (wholesome) aspects should coexist to produce products that are both religiously lawful and of high quality and safety (Paujiah & Smeer, 2024).

The human resource aspect represented one of the most critical deficiencies, as none of the slaughter facilities had animal welfare officers or responsible personnel. The absence of such officials reflects weak enforcement of welfare standards. The Government Regulation of Indonesia (2017) highlights the essential role of veterinary authorities in ensuring the implementation of animal welfare. Trained personnel are vital for conducting animal-based measures (ABMs), including the observation of injuries, abnormal behavior, or physiological responses (EFSA, 2023). Without on-site supervision, it is unlikely that welfare practices will improve consistently.

Similarly, the emergency preparedness aspect showed serious shortcomings. Most facilities lacked standard operating procedures (SOPs) or contingency plans for emergency conditions. International guidelines emphasize the importance of emergency management systems to prevent major losses during accidents or technical failures (Ma'arif *et al.*, 2019; PPRI, 2012). The absence of such procedures indicates that traders rely primarily on personal experience rather than written protocols when handling critical situations.

Overall, this study highlights a gap between relatively good halal compliance and low animal welfare performance. Traders in traditional markets tend to prioritize the religious aspect of slaughter while,

neglecting pre-slaughter management, transportation, and welfare supervision. Similar findings were reported by Mudiarta (2008) and Islahuddin (2009), who noted that small-scale slaughter operations in traditional markets generally face infrastructure limitations, low awareness, and lack of training. To address these issues, a comprehensive strategy is required, including continuous education for traders, routine supervision by competent authorities, improvement of transport and holding facilities, and strengthening of local regulations aligned with national standards (MPRI, 2020). The implementation of these measures would help ensure that duck slaughter practices in traditional markets are more consistent with animal welfare principles while also producing safer and higher-quality products for consumers.

Most duck slaughter operations in the traditional markets of Bogor City were classified as moderate (71%) and poor (29%) in terms of animal welfare implementation. Among all evaluated aspects, the slaughter process showed the highest level of compliance, while the arrival, pre-slaughter, human resources, and emergency preparedness aspects demonstrated the lowest scores. These findings indicate that animal welfare practices in traditional market slaughter sites remain far from optimal.

To improve animal welfare implementation in duck slaughtering, several actions are recommended:

1. Regular training and education for traders and slaughter personnel to enhance their understanding of animal welfare principles and humane handling practices.
2. Routine supervision and monitoring by relevant veterinary authorities to ensure consistent application of welfare standards.
3. Improvement of infrastructure and facilities, particularly for transportation, unloading, and resting areas, to reduce stress and injury in animals.
4. Appointment of trained animal welfare officers or responsible personnel at slaughter facilities to oversee compliance with welfare protocols.
5. Development and enforcement of local regulations harmonized with national animal welfare and veterinary control standards to strengthen legal compliance and sustainability.

Implementing these measures would foster the gradual integration of animal welfare principles into traditional poultry markets, ensuring not only ethical slaughtering practices but also the production of safer, higher-quality, and more sustainable animal-based food products.

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