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Evaluation of Management and Slaughtering Practices of Broiler at Live Bird Market in Dhaka North City Corporation (DNCC)

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ABSTRACT

Broiler management and slaughtering at live bird markets pose significant risks to public health, animal welfare, and food safety due to poor hygiene practices. This 12-month study collected 50 randomly selected samples from eight live bird markets in the Dhaka North City Corporation (DNCC). In the broiler management system at the kitchen market, all chickens arrived in the morning, with 92% of sellers collecting birds from suppliers, and vans were the main mode of transport (96%) in the study area. Daily sales ranged between 100–200 kg for 80% of sellers, while 14% sold <100 kg and 6% sold 200–300 kg, medium-sized birds were most in demand (70%) and birds were mostly handled by wings (94%), crumble feed was given both day and night, but no seasonal care, glucose, or antibiotics were used. Approximately 96% of vendors did not conduct ante-mortem inspections, and none observed a feed withdrawal period prior to slaughter. Most vendors (94%) practiced halal slaughtering, while 6% used both halal and Jatka methods. Manual dressing (76%) was the most common, followed by skinned (24%) and cut pieces (22%). The majority of poultry sellers in the study area were either illiterate or had only completed primary education, possessed 5 to 10 years of work experience, and lacked both food safety training and health certification. These factors contribute to limited knowledge, poor attitudes, and unsafe meat-handling practices, underscoring the need for ongoing food safety education and hands-on training to foster understanding and positive behavioral change.

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Introduction

The poultry sector in Bangladesh has emerged as a successful and fast-growing commercial sector, playing a crucial role in providing nutritious food and generating income. Broiler farming is particularly accepted by farmers due to its short lifecycle and low capital requirements. This sector helps address major issues in Bangladesh, such as unemployment, poor nutrition, poverty, and bridges the protein gap of animal origin (Akram, 2006). The management and slaughtering practices of broilers at live bird markets pose significant challenges. Hygiene standards are often suboptimal, contributing to public health risks and animal welfare concerns (Nahar et al., 2020). Food security, nutrition, and safety are closely related. Most raw food, especially that from livestock (meat, milk, and egg), is extremely susceptible to microbial contamination and food poisoning due to the richness of nutrients (Soriyi et al., 2008; Bersisa et al., 2019; Akinyera et al., 2018). Broilers are handled in overcrowded, poorly ventilated conditions with improper waste disposal, increasing zoonotic disease transmission, and compromising meat quality (Rahman et al., 2020; Alam et al., 2019; Islam et al., 2019). The meat of poultry and livestock may get infected with foodborne pathogens while being in the process of slaughtering, dressing, handling, and storage, or infections by contact with other fresh agricultural items at local markets (Clayton et al., 2002; Greig et al., 2007; Rasschaert et al., 2008). Poor handling practices, which contribute in large part to meat-related risks (Devleesschauwer et al., 2018), are responsible for around 600 million foodborne illnesses and 420,000 fatalities each year (WHO, 2014). Inadequate training of market workers exacerbates these issues, leading to substandard slaughter practices and increased stress on birds (Ahmed et al., 2021). The lack of standardized procedures during slaughter can lead to inhumane treatment of birds and potential contamination of meat products (Karim et al., 2019). In poultry slaughtering settings, bacterial pathogens on processing equipment and surfaces can contaminate meat (Cegar et al., 2022). Health issues often stem from the condition of contact surfaces and the safety of water used in processing (Adeyanju & Ishola, 2014). Environmental pollution and the use of the same equipment for many birds lead to cross-contamination (Wang, 2019). Given the circumstances, this study was undertaken to assess management and slaughter practices at live broiler markets to ensure safe food, public health, and animal welfare.

Materials and Method

Experimental Design

The research was conducted across various live bird markets, namely Agargaon, Taltola, Shewrapara, Shyamoli, Mohammadpur, Farmgate, BNP Bazar, and Mohakhali, in the Dhaka North City Corporation (DNCC) area. A total of 50 data points were collected through random sampling from these markets to ensure the representativeness and reliability of the findings. The study spanned a duration of 12 months, i.e. July 2024 to June 2025. This year-long timeframe allowed us to capture seasonal variations and gain a comprehensive understanding of broiler management and slaughter practices across different seasons.

Preparation of questionnaire

The structured questionnaire for this study was developed based on several previously published, reliable, and validated questionnaires used in similar research (Adesokan and Raji, 2014; Tegegne and Phyo, 2017; Siddiky et al., 2022), with necessary modifications to align with the study's objectives. Before commencing actual data collection, the draft questionnaire was pretested with a small group of chicken vendors from the target area. Based on feedback from this pretesting, revisions and adjustments were made to finalize the questionnaire. Data for the study were gathered exclusively through primary sources via face-to-face interviews. To facilitate effective communication with the sellers, the questionnaire was also translated into Bengali.

There were two main sections of the questionnaire. The first section of the questionnaire was about socio-economic information (such as vendor sex, age, education level, years of vending, income, way of experience, health certificate, and food safety training) and practices in poultry selling and processing (such as arrival time of birds, bird sources, transportation system, numbers, age, feed supply and sources, water supply, chicken sold every day, duration of bird retention, types of chicken sold, ante-mortem inspection, maintenance of feed withdrawal period, selling system, device used for bleeding, slaughtering method, maintenance of bleeding time, dressing method, carcass cleaning, types of cuts, cleaning slaughter area, cleaning agent, etc.). The second section of the questionnaire contained 16 closed-ended questions on sellers' knowledge and food safety issues, with three possible responses ("Yes," "No," and "No idea").

Statistical analysis

After collecting data and information from the market, it was transferred to tabulation sheets in Microsoft Excel. Statistical analyses were performed in Microsoft Excel on the gathered data.

Results

Profile of personnel engaged in broiler processing in the kitchen market of Dhaka North City Corporation

Table 1 illustrates the sociodemographic characteristics of the poultry sellers. The data showed that 12% of sellers were aged 25 to 35, while the majority (60%) were aged 35 to 45, and 24% were aged 45 or older. All 50 participants in the current study were male and had prior experience in poultry trading. A significant portion of sellers (52%) could sign only their names; 30% were illiterate; and none had received food safety training or possessed a health certificate. Regarding work experience, about 70% of sellers had been in the poultry trade for 5 to 10 years, while 24% had over 10 years of experience.

Table 1. Profile of personnel engaged in broiler processing in the kitchen market of Dhaka North City Corporation

Features	Number (n)	%
Age (years)		
<25	2	4
25-35	6	12
35-45	30	60
>45	12	24
Gender		
Male	50	100
Female	0	0
Educational level		
Illiterate	15	30
Signature	26	52
Primary	6	12
Secondary	2	4
Higher secondary	1	2
Year of vending		
<5	3	6
5-10	35	70
>10	12	24
Way of experience		
Personal	50	100
Training	0	0
Have food safety training?		
Yes	0	0
No	100	100
Have health certificate?		
Yes	0	0
No	50	100

Current management practices of broiler at live bird market of DNCC

Table 2 outlines the prevailing broiler management practices at DNCC live bird markets. All chickens (100%) arrived in the morning, with 92% sourced from suppliers, 4% from farms, and 4% from both. Vans were the main transport (96%). Daily sales ranged between 100–200 kg for 80% of sellers, while 14% sold <100 kg and 6% sold 200–300 kg, Medium-sized birds were most in demand (70%), followed by large (24%) and small (6%). Most vendors (74%) kept birds for 1 day in overcrowded conditions; 22% for 2 days; and 4% for up to 1 week. Birds were mostly handled by wings (94%) and by legs (6%) before slaughter. Crumble feed was given both day and night, and water was provided ad libitum by a plastic drinker, but no seasonal care, glucose, or antibiotics were used.

Table 2. Current management practices of broiler at live bird market of DNCC

Features	Number (n)	%
Arrival of the bird		
Morning	50	100
Afternoon	0	0
Source of live birds		
Direct farm	2	4
Supplier	46	92
Both	2	4
Transportation system		
Van	48	96
Pick up	2	4
Broiler sold every day (kg)		
<100	7	14
100-200	40	80
200-300	3	6
Which bird demand is higher in the market?		
Small	3	6
Medium	35	70
Large	12	24
Kept the broiler at the shop for selling		
One day	37	74
Two days	11	22
Week	2	4
The method of birds		
Overcrowding	50	100
Optimum level	0	0
Gasping birds from cage/crate		
Wings	47	94
Legs	3	6
Supply any feed?		
Yes	50	100
No	0	0
Which type of feed supply?		
Mash	0	0
Crumble	50	100
Pellet	0	0

Table 2. Contd.

Features	Number (n)	%
Time of feed supply		
Only day	0	0
Both day and night	50	100
Water supply		
Ad-libitum	50	100
Controlled	0	0
Types of drinkers		
Plastic	50	100
Metallic	0	0
Season-wise, any special management taken?		
Yes	0	0
No	50	100
Add any antibiotic/glucose in water?		
Yes	0	0
No	50	100

Existence of selling and slaughtering practices of broilers at the local live bird market in DNCC

Table 3 presents the existing broiler-selling and slaughter practices at the local live bird market in DNCC. Approximately 96% of vendors did not conduct ante-mortem inspections, and none observed a feed withdrawal period prior to slaughter. Regarding bleeding methods, 96% of vendors used drums, while just 4% used cones, though all maintained the ideal bleeding time of 1–2 minutes. Most vendors (94%) practiced halal slaughtering, while 6% used both halal and Jatka methods. Manual dressing was common (76%), with 54% selling skinless birds, followed by skinned (24%) and cut pieces (22%). Scalding and evisceration were performed by 74% of vendors, and 80% cleaned the carcass with water post-dressing—practices. All vendors (100%) cleaned their slaughter areas daily; 78% used detergent and water, 6% added disinfectant, and 16% used only water. Additionally, all sellers used the same location for both slaughtering and selling.

Sellers Knowledge of Safety in Meat Processing

Table 4 highlights the knowledge and challenges faced by poultry sellers regarding safety practices during poultry processing in DNCC's traditional markets. A large proportion (80%) of vendors were unaware of foodborne pathogens, and the majority (88%) have no idea that foodborne pathogens infect dressed chicken. Despite this, many sellers demonstrated good awareness of hygienic practices: 82% recognized that regular handwashing reduces the risk of germ contamination before and during chicken dressing, and 92% emphasized cleaning knives and cutting boards. However, 90% did not use protective clothing, which helps to improve hygienic practices, and 70% lacked knowledge of proper poultry waste disposal—factors that heighten

contamination risks. While most vendors (96%) were aware of pest-related contamination, only 14% recognized that diarrhea could be caused by consuming contaminated meat or by eating and drinking within the market, with 86% lacking awareness.

Table 3. Existence of selling and slaughtering practices of broilers at the local live bird market in DNCC

Features	Number (n)	%
Ante mortem screening		
Yes	2	4
No	48	96
Selling system		
Live	0	0
Dressed	0	0
Both	50	100
If the customer purchases dressed bird, then it is		
Skinned	12	24
Skinless	27	54
Cut piece	11	22
Maintenance of feed withdrawal period		
Yes	0	0
No	50	100
Slaughtering method		
Halal	47	94
Halal + Jatka	3	6
Device used for bleeding		
Cone	2	4
Drum	48	96
No device	0	0
Maintenance of bleeding time?		
Yes	50	100
No	0	0
Is scalding & evisceration performed?		
Yes	37	74
No	13	26
Dressing system		
Manual	38	76
Mechanical	6	12
Both	6	12
Carcass cleaning		
Yes	40	80
No	10	20

Table 3. Contd.

Features	Number (n)	%
Types of cuts		
Whole	30	60
Cut up parts	20	40
Cleaning slaughter area		
Daily	50	100
Weekly	0	0
Bi-weekly	0	0
Cleaning agent		
Detergent + water	39	78
Detergent + Disinfectant	3	6
Water only	8	16
Waste disposal system		
Open place	0	0
Drain	0	0
Bag	50	100
Slaughtering & it selling point		
Same	50	100
Separate	0	0

Table 4. Overview of the knowledge & issues of poultry sellers regarding safety during poultry processing in the traditional market of DNCC

Statements	Response n, (%)		
	Yes	No	No idea
Do you have knowledge of foodborne pathogens?	2 (4)	8 (16)	40 (80)
Does chicken dressing expose you to any food-borne pathogens?	5 (10)	42 (84)	3 (6)
Can a foodborne pathogen infect dressed chicken?	6 (12)	0 (0)	44 (88)
Regular hand washing lowers the possibility of germ contamination before and during chicken dressing.	41 (82)	0 (0)	9 (18)
Wearing personal protective equipment (apron, shoes, gloves, hair cover) could help improve hygienic practices.	0 (0)	45 (90)	5 (10)
Regularly cleaning a cutting board & knives can help reduce microbial contamination.	46 (92)	1 (2)	3 (6)
Pests and insects could contaminate raw dressed chicken.	48 (96)	0 (0)	2 (4)
Eating and drinking in a wet market raises the possibility of microbial contamination.	7 (14)	0 (0)	43 (86)
Proper disposal of poultry waste reduces the risk of microbial infections and their spread.	15 (30)	0 (0)	35 (70)

Discussion

In these findings, the age distribution partially aligns with that of Khairunnesa et al. (2020), who observed that over half of the poultry vendors in Gazipur city wet markets were aged 30-49. However, this result is lower than those reported in earlier studies (Akabanda et al., 2017; Sharif and Al-Malki, 2010; Soares et al., 2012; Tegegne and Phyo, 2017), but higher than those reported by Farahat et al. (2015). All participants in this study were male and had prior experience in poultry trading, which concurs with observations by Adesokan and Raji (2014), Jianu and Golet (2014), and Tegegne and Phyo (2017). The current results for education, training, and health certification are consistent with previous research by Al Banna et al. (2021), Khairunnesa et al. (2020), Sarma et al. (2022), and Siddiky et al. (2022). Regarding work experience, most of the sellers had been in the poultry trade for 5 to 10 years, which differs from Siddiky et al. (2022), who reported that 66.9% of respondents had less than 5 years of experience in the sector. The recent outcomes of bird arrivals, their sources, and transportation systems are consistent with those reported by Islam et al. (2023). Unlike DNCC, birds in Gazipur were mostly farm-sourced and arrived in the evening (Khairunnesa et al., 2020). In our study, 80% of the sellers sold broiler between 100-200kg, which contrasts with Siddiky et al. (2022), who found over 51% sold <100 kg. Medium-sized birds' demand was higher than that of large and small birds, and most vendors kept broilers for 1 day in overcrowded conditions, which aligns with the findings of Siddiky et al. (2022). In the case of antemortem inspection and feed withdrawal period prior to slaughter, the findings are contrasts with Khairunnesa et al. (2020), who found that all sellers in their study performed both practices. Such differences may stem from regional variations and varying levels of awareness among sellers.

In the present study, all vendors sold birds either live or dressed, depending on customer preference. These results align with Islam et al. (2023). However, Khairunnesa et al. (2020) reported that only about half followed this dual approach; two-thirds of sellers used cones, and only about half observed proper bleeding time, which contrasts with our study. Most vendors used the halal method of slaughter, and very few used the jatka method. The findings of scalding, evisceration, and the dressing system are consistent with those of Khairunnesa et al. (2020). Carcass cleaning and slaughter area cleaning were performed in our study, and these hygiene practices also align with those reported by Khairunnesa et al. (2020). Table 4 represents the sellers' knowledge of safety in meat processing and shows that a large proportion of vendors were unaware of foodborne pathogens, consistent with Siddiky et al. (2022). The results regarding hygienic practices align with studies by Abdullah Ansari-Lari et al. (2010), Tegegne and Phyo (2017), and Siddiky et al. (2022). This lack of awareness is likely linked to the high number of uneducated or primary school dropout meat handlers and the complete absence of food safety training. Poor understanding of food safety, zoonotic diseases, antibiotic resistance, and pathogens among sellers may contribute to food contamination and pose health risks to both handlers and consumers.

Conclusion

The management and slaughtering practices of broilers at live bird markets raise significant public health and animal welfare concerns due to poor hygiene. In the study area, all chickens arrived in the morning, with 92% sourced from suppliers and 96% transported by vans. Daily sales ranged from 100–200 kg for 80% of sellers, with medium-sized birds most preferred (70%). Halal slaughtering was practiced by 94%, and manual dressing was predominant. Most sellers were illiterate or had minimal education, lacked food safety training or health certification, and had 5–10 years of experience. These gaps contributed to unsafe practices. Continuous education and hands-on training are crucial to improve food safety awareness and behavior.

Competing Interest

The authors declare that they have no competing interests.

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