

Veterinary Public Health Perspectives in the Slaughter of Sacrificial Animals in Bina Widya District of Municipal Pekanbaru

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ABSTRACT

The slaughter of sacrificial animals is an annual ritual held by Muslims throughout the world which is directly associated with the potential spread of animal diseases, both non-zoonotic and zoonotic, and the threat to food safety of animal origin. This research aims to collect data from sacrificial officers in 2023 regarding the implementation of aspects of veterinary public health and animal welfare in the slaughter of sacrificial animals. A total of 58 respondents from 45 mosques in Bina Widya District, Pekanbaru City, were surveyed and interviewed purposively. The survey results show that there are two categories of field conditions, namely positive and negative categories with the negative category (72.85%) occupying the largest percentage compared to the positive category (27.15%). The t-test analysis confirmed that there was a significant difference (t statistical $>$ $t(0.95)$ table) between positive and negative conditions in the infrastructure aspect ($3.42 > 2.13$); sanitation-hygiene of sacrificial workers ($6.06 > 2.13$); health of sacrificial animals ($4.54 > 2.13$); sanitation-hygiene of meat/offal ($11.15 > 2.13$). Significant differences were not confirmed between positive and negative conditions from animal welfare aspects ($1.66 < 2.13$). Based on the analysis of the average scores, it was concluded that the infrastructure, sanitation and hygiene of sacrificial workers and sanitation and hygiene of meat/offal were in a "very poor" condition (average score $<$ 26.84), and then the animal welfare and health aspects animals are in a "poor" condition ($26.84 <$ average score $<$ 33.45).

Keywords: animals, health, perspectives, public, sacrificial, veterinary

1. Introduction

Eid al-Adha is an Islamic holiday celebrated every year by Muslims throughout the world. One of the rituals carried out during the Eid al-Adha celebration is the order to slaughter livestock (cows, goats, sheep, buffalo, camels and so on). It can be ascertained that during Eid al-Adha and the three days of Tasyrik the number of animal slaughters is very large and takes place in various locations that are not official slaughtering places^[1].

Animal slaughter is a process of ending an animal's life to obtain the main product (meat) for consumption purposes^[2]. The slaughter of sacrificial animals has very complex negative implications if it is not carried out in accordance with animal health and veterinary public health procedures. The sacrificial animal meat production process has two sides, which are critical points in a series of processes that have the potential to spread pathogens into the environment, transmitting disease both between animals and from animals to humans. Furthermore, the meat production process is closely related to the spread of infectious diseases and epidemic risks due to the high level of direct contact between animals or animal products and humans^[3].

A report stated that microbiological examination of meat samples produced by a slaughterhouse in municipal Pekanbaru did not meet consumption requirements presented by high *E. coli* and Coliform contamination^[4]. Another report also concluded that the level of knowledge about zoonotic categorized as low, the level of knowledge about food-borne disease categorized as moderate and the level of knowledge about halal meat and thayyib categorized as very good. Implementation of the veterinary administration and postmortem inspection categorized as very bad. Implementation of rest and fasting animals, antemortem inspection and slaughter procedures was categorized as moderate^[5].

2. Materials and Methods

This research was conducted in five sub-districts in the Bina Widya District, Municipal Pekanbaru, which include Bina Widya, Simpang Baru, Tobek Godang, Delima and Sungai Sibam. The research took place from late September to early October 2023. The observational method was carried out in this research on animal slaughter workers on Eid al-Adha 2023 located at several mosques in five sub-

districts of Bina Widya District. The selection of mosques and respondents was determined randomly and purposively^[6].

Interviews with respondents were carried out following a questionnaire and guided directly by the surveyor. The data collected includes values for each positive condition attribute (+) and negative condition attribute (-) in the slaughter of sacrificial animals based on a veterinary public health perspective. The assessment of each attribute is carried out by measuring several variables consisting of sacrificial infrastructure and facilities, welfare of sacrificial animals, sanitation and hygiene of sacrificial officers, health of sacrificial animals and sanitation and hygiene of meat/offal.

The data obtained consists of percentage values (%) and scores for each condition of the parameters measured where positive conditions are given a value of 2 and negative conditions are given a value of 1. The t test was carried out to determine the difference between positive and negative conditions for each parameter. Categorization of slaughter conditions was calculated based on statistical rules which include excellent (score > mean +1.5SD), good (mean +0.5SD < score < mean +1.5SD), fair (mean -0.5SD < score < mean + 0.5SD), poor (mean -1.5SD < score < mean -0.5SD) and very poor (score < mean -1.5SD)^[7].

3. Results

The results of a survey of sacrificial officers in 45 mosques in the district representing positive and negative conditions in each perspective are shown in **Figure 1**.

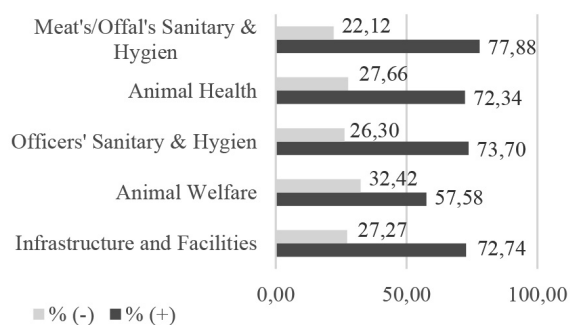


Figure 1. Average percentage (%) of positive and negative conditions for each perspective in the slaughter of sacrificial animals.

Table 1 presents the level of difference between the two conditions based on the t test at the $\alpha = 5\%$ level.

Table 1. Comparison between the average positive and negative conditions in the slaughter of sacrificial animals

Parameters	Condition (%)	
	(+)	(-)
Infrastructure & Facilities	27.26 ^a	72.74 ^b
Animal welfare	32.42 ^a	67.58 ^a
Officers' sanitary & hygiene	26.30 ^a	73.70 ^b
Animal health	27.66 ^a	72.34 ^b
Meat's/offal's sanitary & hygiene	22.12 ^a	77.88 ^b

Note: Values followed by the same letter in different columns are not significantly different at the $\alpha = 5\%$ level

Table 2. Statistical calculation for determining condition categories

Categories	$\bar{x} - 1.5SD$	$\bar{x} - 0.5SD$	$\bar{x} + 0.5SD$	$\bar{x} + 1.5SD$
	26.84	33.45	40.06	46.68
Excellent				>46.68
Good			40.06–46.68	
Fair		33.45–40.06		
Poor	26.84–33.45			
Very poor	<26.84			

Table 3. Categorization of the conditions for the slaughter of the sacrificial animals

Parameters	Score	Category
Infrastructure & Facilities	30.47	Poor
Animal welfare	37.61	Fair
Officers' sanitary & hygiene	30.51	Poor
Animal health	32.09	Poor
Meat's/offal's sanitary & hygiene	25.66	Very poor

The results of statistical calculations to determine condition categories are presented in **Table 2**. Furthermore, **Table 3** presents a categorization of the conditions for the slaughter of the sacrificial animals in those surveyed locations.

4. Discussion

Overall, the percentage of negative conditions presented was higher than the percentage of positive conditions (Figure 1). This shows that in general, negative conditions still represent the implementation of sacrifices in Bina Widya District in 2023. The highest percentage of negative conditions was found in the sanitation and hygiene variable of meat/offal (77.88%) and the highest percentage of positive conditions was found in the animal welfare variable (32.42%). A survey reported that public knowledge about zoonoses, health of sacrificial animals and postmortem examinations was still low regarding sacrificial slaughter in municipal Pekanbaru^[5]. However, another report stated that very good conditions were found in the

hygiene and sanitation practices of slaughtering sacrificial animals during the 2022 Foot and Mouth Disease (FMD) outbreak in a community group^[8].

It is clear that four of the five veterinary public health perspectives in the slaughter of sacrificial animals show different conditions, except for the animal welfare perspective (**Table 1**). This statistical analysis reinforces the fact that the slaughter of sacrificial animals in these locations is dominated by conditions that are not in accordance with a veterinary public health perspective. Adequate slaughter facilities and proper sanitation are key factors in meat production and distribution as well as preventing the spread of animal and human diseases in the animal slaughter process^[9]. A study result recommended the importance of improving animal slaughter facilities to minimize public health risks. This is related to the many lacks of facilities in the practice of animal slaughter which has the potential to spread disease and meat contamination^[10].

Another very important variable in animal slaughter is the animal welfare aspect. One of the biggest ethical issues in food animals (livestock) is the welfare of animals at the end of their lives and during the slaughter process^[11]. In several countries, continuous review and improvisation of animal welfare in the animal slaughter process is necessary to continue to meet the ever-growing sentiment of the general public^[12].

Sanitation and hygiene of sacrificial animal slaughter workers is also a key factor that has so far received little attention. The health condition of these officers greatly influences the safety of meat for consumption by the general public.

A hepatological review regarding this matter concluded that slaughterhouse workers are a high occupational risk group for hepatic infections so that screening tests must be carried out periodically to prevent infectious infections^[13]. This recommendation is very important, especially for individuals who are directly involved in animal slaughter, including sacrificial animal slaughter officers who have intensive direct contact with animals. The potential for zoonotic transmission is also very high for sacrificial workers. Many common parasites and pathogens identified in slaughterhouses include *Mycobacterium bovis* which is a pathogen of Bovine Tuberculosis which is classified as zoonotic^[14].

Furthermore, the lack of certainty about the health of sacrificial animals has remained a common problem in many places for many years. An epidemiological analysis of helminthiasis cases in sacrificial goats showed that Fasciolosis cases were found in sacrificial animals in municipal Batu with a prevalence of 22.79% in cattle, 1.65% in goats and 4.83% in sheep^[15]. The most worrying disease from sacrificial animals is zoonosis, as has been reported where the results of postmortem examinations of 12,444 cattle slaughtered over a period of 22 months, found a prevalence of hydatidosis of 1.56%, cysticercosis of 1.49% and tuberculosis of 0.32%. Furthermore, the seroprevalence rate for brucellosis is 12%, toxoplasmosis 12% and leptospirosis 51%. The results of this study confirm that slaughtered animals have the potential to be exposed to various zoonotic pathogens, including sacrificial animals^[16].

Apart from being a 'product' of worship, sacrificial meat is also an animal product whose safety must be guaranteed for consumption by the wider

community. In the production process, the quality of sacrificial meat is greatly influenced by sanitation and hygiene throughout the process until the meat is distributed to the community. A surveillance on the prevalence and characterization of Shiga Toxin-producing *Escherichia coli* (STEC) isolated from sacrificial animals in DKI Jakarta Province was also carried out. The results of this research confirmed that 5.30% of sacrificial meat samples and 8.30% of faecal samples from sacrificial animals contained non-O157 STEC. Of the samples taken, one isolate was detected carrying flagellar H7 but no samples carried the *rfbE* gene. Furthermore, the results of the antimicrobial susceptibility test detected antibiotic resistance (erythromycin and oxacillin). The results of this research represent that the sacrificial meat examined has potential public health risks^[17]. Furthermore, unhygienic meat handling practices have the potential to cause higher contamination and cross-contamination which results in more serious public health implications^[18].

5. Conclusion

This research concludes that based on a veterinary public health perspective, the condition of sacrificial implementation in Bina Widya District in 2023 is in the very poor to fair category. This condition is not in accordance with the principles of producing meat that is halal, safe, healthy and intact for public consumption.

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