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RESEARCH PAPER

Sanitary management in slaughter houses in Madhya Pradesh

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ABSTRACT

In spite India being highest livestock populated country in the world, the meat production and its retailing is under traditional and primitive envelope and highly unorganized. Two districts, Bhopal and Indore, were purposively selected for the study. All the municipality run slaughter houses in the study area didn't have modern facilities. There was no lairage facility at Indore and Berasia slaughter houses. The water supplied by municipality was on limited time and quantity, hence meat retailer forced to use stored contaminated water for cleaning the meat. The bleaching powder 0.5 kg was used to clean the floor by only Mhow municipality run slaughter house. The slaughter houses waste released in common drainage could lead to several water borne diseases and environmental pollution. Butchers in all municipality slaughter houses were found not properly dressed, cleanliness and used unhygienic equipment. The lack of cold storage facility was the most and biggest problem at slaughter house faced by all meat retailers. There is need for active participation of retailers and the official of slaughter house management in the sanitary improvement at slaughter houses for safe and hygienic meat production. Hence, it is strongly recommended that the animals slaughter permission may only be given with a binding of maintenance of hygiene and modern facilities.

KEY WORDS : Sanitary management, Slaughter house, Livestock animals, Cleanliness, Environmental pollution

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Livestock enterprise plays an important role in solving unemployment problem with about 18 million people engaged in meat sector, namely trade of live animals, hides, bones, casings, horns and hooves etc. especially in the rural areas and there by supplement farm income, while organic manure from livestock and poultry enriches the soil fertility and facilitates vehicle the animals not properly arranged but looks like animals are being filled in a bag by the market intermediaries who never follow normal standards.

The marketing system of livestock is still harsh play since animals are being carried by walking an average of 15 to 65 kilometer to reach cattle markets and while transporting animals in miserable condition of slaughter house yard.

Meat production system in country is very primitive. At present, there is acute shortage of slaughter houses to produce meat under sanitary conditions. There are only 12 modern slaughter houses (Export Oriented Units) in the country using modern technology and none in Madhya Pradesh. The meat is being exported by modern slaughter houses not supplied to domestic market. Animals slaughter takes place in 12,000 unauthorized and 2,702 authorized slaughter houses, it shows effective inspection and monitoring has been missing. Modernization and relocation of slaughter houses have only met resistance from local people opposing animal slaughtering and meat consumption.

The market intermediaries never follow normal standards in transportation of animals. Yet another problem what they face is miserable condition of market yard and slaughterhouse premises. In Indian context culture, traditions, customs and taboos influence meat consumption to a great extent especially in rural societies. Trade of slaughter animals is carried out

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weekly/daily cattle markets dealing in sheep, goats and buffaloes.

METHODOLOGY

Two districts, Bhopal and Indore, were purposively selected for the study. These two districts have municipality run small and large animal slaughter houses and highest meat production in Madhya Pradesh state. From each district, two taluks were selected namely, Bhopal, Berasia in Bhopal district, Indore and Mhow in Indore district. The sanitary condition in large and small animals slaughter houses run by the municipality in the study area and two small animal butcheries run by military cantonment at Bhopal and Mhow were taken to get precision in comparison of sanitary condition. Stratified random sampling technique was adopted. The sample of 10 sheep/goat meat and 5 buffalo meat retailers' were randomly selected from each taluka making sample size of 40 sheep/ goat meat and 20 buffalo meat retailers. Thus, making a total sample size of 60 meat retailers. The data were collected through personal interview method from the meat retailers with the help of well-structured pre-tested schedule during 2009-10. The data pertaining to problems faced by meat retailers in slaughter houses were collected. The secondary data on location, demography, number of animals slaughtered and sanitary condition of slaughter houses in the study area were collected from district statistical office and slaughter house office of respective talukas.

ANALYSIS AND DISCUSSION

The findings of the present study as well as relevant discussion have been summarized under following heads:

Facilities available in slaughter houses:

The facilities available in slaughter houses in the study area have been presented in Table 1. The maximum number of animals (255) slaughtered at Bhopal and least 35 at Berasia slaughter houses in the study area. All the municipality run slaughter houses in the study area didn't have cold storage facility, byproduct storage facility, cement road inside slaughter houses, ventilation with exhausts fitted and compound wall around slaughter houses where as, these facilities were available in military butcheries at Mhow and Bhopal.

The maximum lairage facility 120 sq ft and 100 sq ft per animal was found at Mhow and Bhopal military butcheries, respectively and the least lairage facility 28.57 sq ft and 83.33 sq ft per animal found in Bhopal and Mhow municipality run slaughter houses, respectively. There was no lairage facility at Indore and Berasia slaughter houses. Floor space availability for slaughtering animals was maximum 40 sq ft per

Table 1 : Facilities available in slaughter houses

Particulars	Bhopal	Indore	Mhow	Berasia	Military butcheries	
					Mhow	Bhopal
Average number of animals slaughtered daily	210 (60b+150s/g)	190 (20b+170s/g)	30 (9b+21s/g)	35 (11b+24s/g)	35 (s/g)	45 (s/g)
Facilities available (sq.ft.)						
Modern / traditional	Traditional	Traditional	Traditional	Traditional	Semi-modern	Semi -modern
Cold storage	-	-	-	-	100	120
By product storage	-	-	-	-	300	300
Road in slaughter house	Foot path	Foot path	Foot path	Foot path	Cemented road	Cemented road
Ventilation	Open	Closed	Open	Open	Exhaust fitted	Exhaust fitted
Compound wall	-	-	-	-	Present	Present
Lairage*	6000	-	2500	-	4200	4500
Shed availability per animal	28.57	-	83.33	-	120	100
Floor for slaughtering	5200	4500	1200	1000	900	1000
Floor space per animal	24.76	23.68	40	28.5	25.75	22.22
Office area	700	800	120	150	600	500
Water and power supply						
Frequency of supply/ day	Once	Once.	Once	Once	Once	Once
Volume (litres)	15000	10000	1500	1200	3000	3500
Availability per animal	71.42	52.63	50	34.28	85.71	77.78
Supply/ bore well	Bore well	Municipality	Bore well	Municipality	Cantonment	Cantonment
Power supply during working hour	Continuous	Continuous	Interrupted	Interrupted	Continuous	Continuous
Average working hours	4	3	2.5	2.5	2	2

*Holding pens for a period before animals being slaughtered (b=buffalo, s= sheep, g= goat)

animal at Mhow slaughter houses run by municipality and the least 22.22 sq ft in military butcher at Bhopal. The large and small animals are being slaughtered on unhygienic and overcrowded slab/ floor was very usual (Fig. 1). The similar result was found by Dura *et al.* (1998).

Fig. 1 : Showing unhygienic and overcrowded floor

Water supply in slaughter houses per animal was maximum 85.71 litres and 77.78 litres at Mhow and Bhopal, respectively in military butcheries and the lowest water supply in slaughter houses per animal was 34.28 litres at Berasia followed by Mhow slaughter houses 52.63 litres of water. This was because the municipalities run slaughter houses were to depend on either water supplied by municipality or their own bore well. The water supplied by municipality was on limited time and quantity hence meat retailer forced to use stored contaminated water for cleaning the meat etc. (Fig. 2).

The municipalities run slaughter houses were found facing the disturbingly cruel, filthy and unsafe environment and raising the risk of contamination of meat leading to poor quality and exposure to health risk (Fig. 3). The similar result has been reported in a study also (Anonymous, 2009).The monitoring of critical points, slaughter house equipment, good slaughtering practice, and effective washing and disinfection are the key to obtaining good sanitary results. Thus, governments at all levels should work for bringing best sanitary facilities in local slaughter houses to assure good and hygienic meat to the consumers.

Sanitary management measures adopted at slaughter houses in study area:

Sanitary activities of the slaughter houses have been presented in Table 2.All slaughter houses run by municipality in the study area used to store contaminated water for cleaning

Table 2 : Sanitary measures taken at slaughter houses in study area

Particulars	Bhopal	Indore	Mhow	Bairasia	Military butcheries	
					Mhow	Bhopal
Cleaning of slaughter house						
Cleaning agent used (in L)	Only water	Only water	Only water	Only water	Hot water with detergent (0.5L) and phenol (1.5L)	Hot water with detergent (0.5L) and phenol (1.5L)
Frequency of cleaning/day and water used in liters	Once (3000)	Once (2500)	Once (1000)	Once (800)	Twice (1500)	Twice (1200)
Bleaching powder used (kg)	-	-	0.5	-	1.50	2
Waste disposal						
Blood (litres)	945	495	139	168	52.50	67.50
Excreta (kg)	487.50	312.50	55.50	67	43.75	56.25
Offal's and other waste (kg)	180	84	15.20	26.80	7	9
Total waste disposed (kg)	1612.50	891.50	209.78	261.80	103.25	132.75
Drainage system						
Drained to Nallah /canals/	Nallah	Nallah	Canals	Nallah	-	-
Sewerage /septic tank	-	-	-	-	Septic tank	Septic tank
solid waste dumped on open ground by municipality/ cantonment	Municipality	Municipality	Cantonment	Municipality	Cantonment	Cantonment
Butchers and equipment hygiene	Poor	Poor	Poor	Poor	Fair	Fair
Number of employees in slaughter house						
Veterinary officer	1	1	1	1	1	1
Assistant	1	4	2	1	4	4
Saffaiwalla	8	7	1	2	8	7
Watchman	2	3	2	2	2	2

Fig. 2 : Indicating water contamination

Fig. 3 : Exhibiting byproduct contamination

the floor, etc., at once a day. The bleaching powder 0.5 kg was used to clean the floor by only Mhow municipality run slaughter house. Sanitary working management of municipality run slaughter houses were not proper, which may cause zoonotic diseases as well as infection and environment problems. The same result was observed by Peryat *et al.* (2008) and Delhalle *et al.* (2008).

The waste released by municipality run slaughter houses in common drainage contaminated use of stored water and discharge of untreated waste water with high concentration of organics including animal feces and blood, parasite eggs and pathogenic bacteria that might easily be contaminated the receiving environment and endanger human health. The similar result found by Nhat (2006). Per day waste disposal were maximum by municipality run slaughter houses and open dumping of solid waste and releasing other liquid waste like blood and waste water in adjacent nallah. The slaughter houses waste released in common drainage could lead to several water born diseases and environmental pollution (Fig. 4). Butchers in all municipality slaughter houses were found not properly dressed, cleanliness and used unhygienic equipment in all slaughter houses except military butcheries in Fig. 1.

The military butcheries were cleaned twice a day by hot water with 0.5 litre detergent and 1.5 litres phenol by military cantonment. Septic tank used for liquid waste disposal and safe open dumping was done for solid waste disposal at military farms in military butcheries by military cantonment. All the slaughter houses had sufficient man power to carry out sanitary operations. It appeared that local governments have least interest in providing good infrastructure and control over the meat retailers working activities in abattoirs.

Sanitary aspects of modern and traditional slaughter houses:

From Table 3, it can be clearly and easily understood that sanitary management of modern slaughter houses was entirely standardized unlike traditional slaughter houses. Modern slaughter houses did have fully mechanized and automated to carry out daily working activities like automated

Table 3 : Sanitary aspects of modern and traditional slaughter houses

Particulars	Modern slaughter houses	Traditional slaughter houses
Quality of animals used	Disease free and good quality grades	No criterion is set up
Cleaning of animals before slaughter	Properly cleaned	Not cleaned
Killing of animals	Stunned and killed (Humane method)	Forcefully killing (Inhumane)
Slaughtering instrument used	Mechanized blades	Knife and axe (Halal method)
Skin removal	Removed mechanically	Hand pulling and peeling
Workers hygiene during working	Properly dressed and use gloves	Without dressing
Chilling / cold storage	Deep freezers	Kept open without chilling
Hide, skin and other offal's room	Separate rooms	No separate facility
Grading of dressed meat	Scientific grading	Physical grading
Packing	Well labeled and packed	No packing
Standards for sanitary and quality	Following ISO and HACCP standards	Neglected
Laboratory facilities	Well equipped	Not found
Waste disposal	Effluent treatment plant	Open dumping

Fig. 4 : Showing waste released contaminating receiving environment

Fig. 5 : Exhibiting stray animals in nearby slaughter house premises

animal washing, painless slaughtering, dressing of animals' carcass, skin removal and packing of meat. Tosla *et al.* (2008) stated that by automation of slaughter plant led to the reduction of contamination. Apart from these facilities, well equipped laboratory to standardize meat and for scientific grading, cold storage facility, separate rooms for storing hide and skin and lastly waste items of slaughtered animals were disposed off after effluent treatment process. These kind of sanitary management facilities were not found in traditional slaughter houses in the study area.

Problems faced by retailers at slaughter houses:

The condition of slaughter houses was not good in the study area, meat retailers faced many problems as shown in Table 4. The lack of cold storage facility was the most and biggest problem at slaughter house faced by all meat retailers, followed by no compound wall around slaughter houses, 93.33 per cent so their activities were open to public, 80 per cent felt the menace by stray animals (dogs, birds and pigs) in slaughter house premises Fig. 5. Whereas 53.33 per cent felt need of

Fig. 6 : Indicating no lairage and compound facility

Table 4 : Problems faced by the retailers at slaughter houses

Sr. No.	Particulars	Responses (n=60)
1.	Lack of drainage system	21 (35.00)
2.	Lack of water supply	15 (25.00)
3.	Poor electricity supply	9 (15.00)
4.	Lairage facility	32 (53.33)
5.	Non-availability of cold storage facility	60 (100.00)
6.	Congested and inconvenience location	23 (38.33)
7.	Lack of waste disposal	18 (30.00)
8.	Lack of hygiene	12 (20.00)
9.	Poor slaughtering sheds	27 (45.00)
10.	Lack of veterinary inspection	1 (1.67)
11.	Lack of slaughter house compound wall	56 (93.33)
12.	High charges by municipal corporation	6 (10.00)
13.	Menace by stray animals (dogs, pigs and birds)	48 (80.00)

Figures in parentheses indicate per cent to total number of retailers

lairage at slaughter house followed by poor slaughtering sheds 45 per cent, congested and inconvenience location 38.33 per cent, drainage systems were not good 35 per cent, waste disposal 30 per cent and hygiene 20 per cent were some other significant. There is need for jointly participation of retailers and the official of slaughter house management in the sanitary improvement at slaughter houses for safe and hygienic meat production.

Conclusion:

The facilities at slaughter houses were not good, which may be due to negligence of municipal corporation, local governance and lack of consumers' awareness about the condition in which meat is produced or obtained. The monitoring of critical points, slaughterhouse equipment, good slaughtering practice, and effective washing and disinfection are the key to obtaining good sanitary results. There is need for jointly participation of retailers and the official of slaughter house management in the sanitary improvement at slaughter houses for safe and hygienic meat production.Thus, governments at all levels should work for bringing best sanitary facilities in local slaughter houses to assure good and hygienic meat to the consumers. Hence it is strongly recommended that the animals slaughter permission may only be given with a binding of maintenance of hygiene and modern facilities.

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