

## Factors Affecting the Prevalence of Clinical Mastitis in Buffaloes Around Faisalabad District (Pakistan)

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### ABSTRACT

In the present study, certain physiological (stage of lactation and lactation number) and managerial (source of milk let down, method of milking and floor condition) factors were studied to determine their effect on clinical mastitis in buffalo. The study area included peri-urban and rural areas of Faisalabad. The data indicated that the prevalence of clinical mastitis was higher in peri-urban (25.12%) than rural (19.74%) areas. The highest incidence was observed during 4 to 6 months after calving both in peri-urban (45.76%) and rural areas (45.08%). Maximum cases of mastitis were found during third lactation both in peri-urban (19.00%) and rural (22.98%) areas. Prevalence was higher in animals milked with folded thumb pressure and in those in which milk let down was induced through suckling calves. Cemented and brick floors contributed more towards mastitis in comparison to kacha floors. The incidence was higher in hind-quarters 73.3 and 63.1% than in fore-quarters 26.6 and 36.8% in peri-urban and rural areas, respectively.

**Key Words:** Mastitis; Prevalence; Peri-urban; Rural; Faisalabad

### INTRODUCTION

Mastitis is the most dreadful disease confronting the dairy industry throughout the world but the situation in Pakistan is particularly very alarming and demands great attention for its control because of high economic losses due to this disease. Mastitis is one of the limiting factors in the development of dairy industry in Pakistan. In addition to causing colossal economic losses to the farmers, the disease is important from consumer's and milk processor's point of view. This is because the milk from affected animal may harbor the organisms potentially pathogenic for humans (zoonosis) and processing of such milk results in sub-optimal output of substandard finished fermented products like yogurt, cheese, etc. (Muhammad *et al.*, 1995)

Mastitis has also been implicated in decreasing reproductive performance (Cullor, 1991; Moore *et al.*, 1991; Moore & O'Connor, 1993; Schrick *et al.*, 2001). According to Ratafia (1987) annual losses caused by this disease were nearly \$35 billion at world level. In Pakistan, statistics of current losses due to this disease are not available although it was estimated two decades ago that in Punjab province alone, the total losses caused by clinical mastitis amounted to Rs. 240 million per annum (Chaudhry & Khan, 1978). It is pertinent to mention that this survey did not take into account the losses caused by sub-clinical mastitis.

Although, various etiological factors are associated with mastitis but it is commonly caused by bacterial pathogens. The internal environment of the mammary gland is favourable for the multiplication of invading bacteria. The by products of bacterial growth and metabolism irritate the delicate tissues of the glands causing inflammation (Schalm

*et al.*, 1971). Among bacteria, mastitis is mainly caused by *Staphylococcus aureus*, *Streptococcus agalactiae*, *Escherichia coli*, *Corynebacterium pyogenes*, *Str. dysgalactiae* and *Str. uberis* etc. (Radostits *et al.*, 2000).

The economic losses of mastitis due to Morality rate are negligible but the production losses due to lowered milk quality/quantity, destruction of affected quarters, increased charges of treatment and culling processes are tremendous. In United States, economic losses attributed to mastitis approaches \$ 2 billion each year (Nickerson, 1990).

It is surmised that losses associated with mastitis in Pakistan may even be proportionately higher than in United States because our dairy farmers are not adopting the preventing measures to that extent. These losses can be minimized by adopting various management practices which differ into appreciable extent in peri-urban and rural areas. The present study was, therefore, conducted to determine the effect of varying management and physiological factors on the prevalence of clinical mastitis in buffaloes kept in peri-urban and rural areas of Faisalabad.

### MATERIALS AND METHODS

The study was conducted in the represented parts of peri-urban and rural areas of district Faisalabad, using a pre-tested interview schedule. The area just around the Faisalabad constituted the peri-urban area which was divided into four sectors (Jhumra road, Samundri road, Jaranwala road and Jhang road) and thirty owners of buffaloes were interviewed from each sector (Gandawala,

Karadi, Naliawala and Kang bandala). The villages situated at least at 20 km distance were used as rural area in this study. Four such villages were randomly selected and thirty respondents were interviewed personally from each village. The questions asked were about the number of animals, swelling/redness of any teat/quarter, condition of milk from affected teat, position of quarter affected, stage and number of lactation, source of milk let down (calf, concentrate or oxytocin), method of milking (full hand or knuckle thumb pressure) and floor condition (kacha or pacca). Only clinical cases were taken into consideration.

## RESULTS AND DISCUSSION

The prevalence of mastitis in buffaloes in peri-urban and rural areas is depicted in Table I. Incidence of mastitis was found to be higher in peri-urban areas (25.12%) as compared to rural areas (19.74%). The herd size in peri-urban areas is generally greater than that in rural areas. Mastitis in buffalo is generally of contagious nature (Allore, 1993). As the herd size increases, the prevalence of mastitis increases (Fazal-ur-Rehman, 1995). Another probable reason might be that in peri-urban areas, majority of the animals were milked by labourer rather than by their owners. The labourer could not be as careful as the stock owners themselves. Therefore, due to their careless attitude in milking incidence of mastitis increases. In addition brick floor/hard bedding and dirty floor could also be a predisposing factors leading to higher incidence of mastitis in peri-urban areas (Joseph, 1996). These findings are in close agreement with those of Kalara and Duanda (1964) who reported that prevalence of mastitis was more in peri-urban than rural areas.

The effect of stage of lactation on incidence of mastitis is given in Table II. The effect of stage of lactation supported the contemplation that peak lactation period predisposes the udder tissues to mastitis infection. Maximum cases of mastitis (45.76%) were noticed in peri-urban areas from 4 to 6 months after calving. Almost, similar trend was observed in rural buffaloes. This might be due to retention of milk in the teats during this period, making them more prone to udder infection (Schalm *et al.*, 1971). Generally, the buffaloes have not been bred selectively and many of them are not so docile as to permit squeezing of all the milk from the udder.

The data given in Table III shows an association between the number of lactations and incidence of mastitis and indicates that the incidence of mastitis in buffaloes was highest during third lactation in both peri-urban and rural areas. The incidence regressed with subsequent increase in lactation numbers. It might be so because by third lactation, milk yield of dairy animal often reached its maximum (Wahid, 1965). Peak production coupled with unhygienic conditions might lead to clinical appearance of mastitis. Similar results have reported by Harrop *et al.* (1975). A comparison of both the milking methods (full hand and

**Table I. Prevalence of Mastitis in buffaloes in peri-urban and rural areas of Faisalabad according to position of quarters**

Area	Animals observed	Mastitic animals		Hind quarters		Fore quarters	
		No.	%	No.	%	No.	%
Peri-urban	870	218	25.12	160	73.3	58	26.6
Rural	524	103	19.74	65	63.1	38	36.8

**Table II. Effect of stage of lactation on prevalence of mastitis in buffaloes in peri-urban and rural areas of Faisalabad**

Stage of lactation	Peri-urban area		Rural area	
	No	%	No	%
1-3 months	86	39.45	34	33.25
4-6 months	99	45.41	46	45.63
7-9 months	22	10.09	17	16.75
10 months and above	11	5.05	5	4.92

**Table III. Effect of number of lactation on prevalence of bubaline mastitis in peri-urban and rural areas of Faisalabad**

No of Lactation	Peri-urban Area	Rural Area
1	10.75	8.94
2	12.05	11.38
3	19.00	22.98
4	13.45	16.98
5	12.20	14.65
6	15.10	13.42
7	10.24	7.35
8	7.21	5.10

folded thumb) revealed that prevalence of mastitis was higher when folded thumb method was used. It might be so, because by using this method for milking, the teat cistern is injured and this often leads to the development of adverse effects on teat canal. Analysis of data on prevalence of mastitis as affected by type of floor (Brick, cemented and Kacha) indicated that maximum cases of mastitis occurred when animals were kept on brick floor. Clean kacha floor and cemented floor with proper bedding material may reduce the problem. Various previous studies (Hoar & Roberts, 1972; Prost, 1984; Faull *et al.*, 1985) indicated that good management conditions reduce the incidence of mastitis to a great extent. Nickerson (1990) reported that proper milking procedure is important to reduce the incidence of mastitis.

The effect of other factors including source of milk let down, milking method and floor condition on the incidence of mastitis in peri-urban and rural areas has been depicted in Table IV and V, respectively. Maximum cases of mastitis were found during third lactation both in peri-urban (19.00%) and rural (22.98%) areas. Incidence was higher in those animals milked with thumb pressure and milk let down was done through calves. The results also indicated that more hindquarters were positive (76%) than fore quarters (24%). It might be due to more developed and longer teats than fore teats, greater liability of injury and

**Table IV. Some factors affecting the prevalence of clinical mastitis in buffalo in peri-urban areas of Faisalabad**

Factors	Number observed	Number affected	Per cent prevalence
<i>Source of milk let down</i>			
Calf	256	150	42.10
Concentrate	174	30	17.20
Oxytocin	304	36	11.80
<i>Milking methods</i>			
Full hand	612	51	8.30
Folded thumb	258	167	64.70
<i>Floor condition</i>			
Katcha	564	69	12.20
Pacca	306	149	48.60

**Table V. Some factors affecting the prevalence of clinical mastitis in buffalo in rural areas of Faisalabad**

Factors	Number	Affected	Per cent prevalence
<i>Source of milk let down</i>			
Calf	286	79	27.62
Concentrate	94	10	10.63
Oxytocin	144	14	9.72
<i>Milking methods</i>			
Full hand	127	16	12.60
Folded thumb	397	87	27.91
<i>Floor condition</i>			
Katcha	416	57	13.70
Pacca	108	46	42.59

more exposure of these teats to urine/dung. While milking they are pulled forwards and side ways that may lead to undue stress on them. These findings are in accordance with those of Geer *et al.* (1988) who reported 74% prevalence in hindquarters. Similarly, Joshi *et al.* (1976), John and William (1987), Al-Shawabkeh and Aziz (1989) reported that the involvement of rear quarters was greater than fore quarters. In the present study, certain physiological, (stage of lactation and lactation number) and management (source of milk let down, method of milking and floor condition) factors were studied to see their effect on clinical mastitis in buffalo. Study was around the Faisalabad city in peri-urban and rural areas during the year 2003. The data indicated that problem of clinical mastitis was higher in peri-urban (25.12%) than in rural (19.74%) areas.

**Recommendations.** The cases of mastitis can be reduced to an appreciable extent and the production can be increased by adopting following management measures on priority basis, i. Preventing the calf to cause any injury on teat / udder, ii. Full hand milking should be practiced, iii. Keeping the animals on wet and dirty floors should be discouraged, iv. Pacca floor must be even and properly bedded.

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