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CONTROL STRATEGIES OF MASTITIS/UDDER PROBLEMS IN THE DAIRY FARMS OF HYDERABAD

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ABSTRACT

Present study was conducted to record the mastitis/udder problems and control strategies in 50 randomly selected dairy farms in Hyderabad. The following conditions such as, teat cracks, teat injuries, teat fibrosis, mastitis, broken udder, teat hyperkeratosis, teat dermatitis, teat obstruction, teat stenosis, udder abscess, bloody milk and milk clots were recorded in random selected animals, The data showed that Dalta geeh mixed with honey, cow butter, Turpentine oil mixed with motor oil was traditionally used for treatment of teat cracks and teat injuries. Lemon fruit 500 g + sugar 250g + Mitha soda 120 g were traditionally used for 3 days to treat teat fibrosis, red chilli powder 250g with one-liter water was commonly used for treat mastitis. There was no traditional method of treatment for broken udder. Cow butter + common oil were used for teat hyperkeratosis. Cow butter mix Sulpher powder was used for teat dermatitis. Mustard oil 500g mixed with lemon 250 grams were given orally for teat obstruction. While lemon 250 grams + sugar 250 grams was used to treat stenosis. Udder abscess was removed by the inserting the intravenous 16-gauge needle. Mitha soda 120g, sugar 120g and red chilli 100g mix all was used for the treatment of milk clots and red chilli 250 g with 1-liter water were traditionally used for the treatment of bloody milk.

1. INTRODUCTION

Pakistan is fourth largest milk producing country worldwide in which Buffalo is a good milking animal that fulfills the requirement of milk and makes (GoP) [1]. It is an important asset for livelihood and key to reduce the poverty, it has also an important role to create a lucrative market to earn foreign exchange with huge potential for export (Tariq *et al.*,) [2]. There are many diseases that affect the health and milk production of the buffalo (Varshney and Naresh) [3]. Udder health is a major part of the body that affects the direct milk production and price of buffaloes.

Different stress factors such as parturition, dystocia, endo and ecto-parasites, malnutrition and movement over long distances have been observed that produce direct and indirect lesions of the udder and predisposing cause of mastitis (Wellenberg *et al.*,) [4]. Mastitis is a major disease of the milking animals, that causes severe economic losses, as mastitis may occur before or after the parturition (subclinical or clinical), and a large numbers of udder lesions reduce the milk production including teat cracks, teat injuries, udder edema, teat abscess, numeric teat and teat or udder fibrosis (Sudhan and Sharma) [5].

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The control of mastitis and udder problems at dairy farms are prevented by strict farm management such as, hygienic and clean surrounding, regular washing of the farms by antiseptic solutions, dry bedding for all the milking animals and prevention of the contamination of drinking water and feed, while dipping of teats before and after is not only helpful to control the mastitis but also stop the spread of mastitis and udder problems. Mastitis treatment largely depends on the use of allopathic drugs like, Penicillin, Oxytetracycline, Gentamycin and Ampicillin, these poor-quality drugs, faulty administration practices unawareness of the selection of drugs and incorrect dosage has been documented that organism have developed the resistant to these antibiotics (Halasa *et al.*,) [6].

The alternative practices are commonly and widely used to treat the mastitis and udder problems at commercial dairy farms, the treatment is practiced by farmers or healers initially with the medicinal plants as a traditional drugs, however, their efficacy and cure rate is partially documented, Fibrosis treatment by allopathic medicine is partially successful and farmers always try to cure it by traditional drugs and the most control practices for udder problems adopted at the dairy farms includes, reducing the incidence of new udder infections, eliminating existing mastitis. Whereas, pre and postpartum application of antiseptics wash to udder, control of flies, improvement of environmental and animal hygiene, application of teat sealants are appropriate methods of protection (McDougall *et al.*,) [7].

There is no any published data on the managements and control measures on mastitis and udder problems in the dairy farms of the study area, therefore, this study has been designed to record the epidemiological knowledge of dairy farmers regarding the mastitis/udder problems and control strategies practices at the dairy farms of Hyderabad.

2. MATERIALS AND METHODS

Study area

The present study was conducted to record the mastitis / udder problems, and commonly used traditional remedies for the controlling of the mastitis and udder problems at dairy farms of Hyderabad. Hyderabad district was established in 1768. It is Located at 25.367°N latitude and 68.367 °E longitude, it is located on the east bank of the Indus River.

Data collection

A cross sectional survey was conducted to collect the information from 50 dairy farms randomly visited regarding mastitis/udder problems and control strategies.

Data Analysis

The Statistical analysis of the data was performed by using statistical software SPSS (ver. 24.0; 2017. IBM, USA).

3. RESULTS

A cross sectional survey was curried out to record the mastitis and udder problems control strategies in the dairy farms of district Hyderabad. The dairy farms were visited and there building structures and management practices were recorded. The farmers and farm workers generally interview for their personal information regarding the dairy experience related to dairy animal raring, experience at different types of farms, handling herd size, feeding practices and dairy farms cleaning.

Basic characteristics of the respondents

Data regarding basic characteristics of the respondents are shown in Table 1. A total of 300 respondents were interrogated, out of 300 respondents, 115 (38.33%) were above the 30 years of age whereas, 80 (26.66%) were below the age of 30 years. Maximum number of respondents 255 (85.00%) were illiterate. While, most of the dairy farmers were owners of the dairy farms and they had adopted the dairy farming as their professional business (85.00%), and had experience of more than 25 years in dairy farming sector.

Main features of the dairy farms of district Hyderabad

Table 2 indicates the main features of the dairy farms of district Hyderabad. According to the data 300 (100.00%) of the farmers kept only buffaloes to their respectable farms. The most of the farms (24 out of 50) were consisting of 101 to 200 (34.0%) animals.

Majority of the farmers (94.00%) had Cemented farms. The range of numbers of animals at Cemented farms (94%) and Semi Cemented farms (6%) were 150 to 500 and 80 to 200 respectively. The farm cleaning pattern to remove the dung and other waste material was similar at both types of the farms.

Identification of the mastitis and udder problems

The farmers and respondents were enquired about the awareness of identification of the mastitis and udder problems in the dairy farms (Table 3). The data revealed that almost 280 (93.33%) farmers/ respondents were able to recognize the mastitis and udder problem through the observation of symptoms and clinical signs, like, decrease in milk production (quantity and quality of the milk), off feed, anorexia, feeling hotness of the udder, change in the posture or walk, hardness of the teat and difficulty in milking. Only 20 (6.66%) respondents replied that they take help from the veterinary doctors to check the problem and confirm the disease. While, there was no any farmer or respondent who was depending on the only laboratorial techniques for confirmatory diagnosis of the mastitis or udder problems.

Mastitis and udder control strategies

The data of Table 4 shows the mastitis/udder problems control strategies at the dairy farms of Hyderabad. In the study area majority of respondents 140 (46.66%) reported that they use both traditional methods and allopathic practices. While 145 (48.33%) respondents reported that they use only tradition practices for the mastitis/udder problems, 5 (1.66%) respondents were not satisfied with the both treatment (Traditional and Allopathic) of mastitis. While, only 10 (3.33%) respondents reported that they completely prefer the allopathic treatment as early as possible to treat the mastitis and udder problems.

Treatment of the mastitis/udder problems

The respondents were evaluated regarding of the treatment of the mastitis and udder problems in the study area as shown in the Table 5. The 50 (16.66%) respondents favor of the veterinary doctors, 235 (78.33%) respondents were reported that they treat dairy animals them self. While, 15 (5%) were only dependents of traditional healers.

The Fifty farms comprising of 10540 animals (maximum 500 animals and minimum 80 animals) were visited to collect the data about the mastitis/ udder problems, the maximum numbers of cases were recorded of mastitis (57) followed by Teat injuries (19) and Teat canal fibrosis (10) respectively. As shown in Table 6.

Age wise prevalence of mastitis, teat and udder problems in dairy farmers of Hyderabad

The age wise prevalence of teat and udder problems were observed mastitis, the aged animals (8-10 years) were most probably affected with udder disease, as shown in Table 7.

Incident percentage of mastitis and udder related problems at dairy farms

Figure 1 Shown data record had revealed that most of mastitis/udder problems were appeared from September to December, followed by January to April and the minimum numbers of cases were recorded between May to August.

Traditional treatment (per os) adopted by the dairy farmers for the mastitis/udder problems

The data collected on traditional medicine given by oral route to prevent the mastitis/udder problems were mainly Lemon, Red Chillies Mitha soda, Gulkand, Till oil (*sesamum indicum*), Mustard oil and Noshader, as shown in the Table 8.

Traditional medicine used externally for the treatment of Teat cracks and Udder injuries adopted by the respondents at dairy farms

The traditional medicine adopted by farmer for udder skin problems was also effective to cure or decrease the mastitis/udder problems, as they were using the Clay, Dalda ghee, Honey, Turpentine oil and common mustard oil mixed with sulphur effectively for external use. The treatment of teat sphincter stenosis or obstruction was reported successfully by removing of fibrotic tissues at sphincter using by the shaving blade edge aseptically and using lemon 250g+sugar 500g *per os* (2 days), and Mustard oil 500g *per os* at night once time, as shown in Table 9.

4. DISCUSSION

Buffalo is said to be the white gold of Pakistan, it makes Pakistan to stands 4th largest milk producing country in the world, milking buffaloes face udder

problems due to the negligence of care and good management. In this current study, we recorded the control strategies adopted to treat and prevent the mastitis and udder problems at Cemented and Sami Cemented farms. However, at both farms washing and cleaning pattern was similar to reduce the contamination and debris material from the dairy farms.

In the study area, all the respondents were well experienced of dairy forming and most respondents (38.30%) were between the ages of 30 to 40 years and most of the respondents were illiterate (85.00%), our results were similar as reported by (Yirga *et al.*,) [8], that most of the respondents practicing ethno-veterinary at Tigray regional state of Ethiopia were illiterate (66.7%). The most of the respondents (93%) at buffalo's farms were depending on the self-treatment by visual examination for the mastitis/udder problem diagnosis based on the experience and interaction of animal behavior rather than to depend on a qualified veterinarian for the proper diagnosis and treatment. The most of the respondents 48.33% at dairy farms were depending only in traditional practices in this modern era, while, the only 3.33 % respondents were dependent on allopathic practices, while, 78.33% respondent were practicing themselves to treat udder problems, and only 16.66% farmers preferred veterinary doctor for the treatment of mastitis and udder problems, these results were similar with the (Deeba *et al.*,) [9] who reported that from 54 ethno-veterinary healers 41 were using local traditional plants for the treatment of mastitis in Pakistan. Our results are also more similar with (Dilshad *et al.*,) [10] that ethno veterinary practice is very popular by the local traditional plants for the treatment of mastitis in cattle and buffaloes in the Sargodha district, Pakistan.

In this study 10540 buffaloes were examined for the udder affections and their traditional treatment adopted at the Hyderabad dairy farms. The buffalo udder anomalies such as; mastitis, fibrosis, teat sphincter stenosis and teat injuries were recorded 57, 10, 02 and 19 respectively. While from 55 mastitis cases, the maximum numbers 33 were from 8-10 years of the age 33 cases. These results were similar with the previously reported by (Sharif *et al.*,) [11] that the prevalence rate of mastitis in buffaloes is about 48% in Pakistan. While, (Dhakal *et al.*,) [12], reported that 355 buffaloes had 23 subclinical and 332 clinical mastitis cases from Chitwan, Nepal. Our mastitis/udder problems result are similar with the previously report of (Lise *et al.*,) [13] that mastitis is at 1st number diseases ranked in Pakistan at dairy farms. However, our results are in contrast with the (Dhakal *et al.*,) [12], reported that 355 of clinical mastitis cases were diagnosed from 2002 to 2005 at the Veterinary Teaching Hospital, Chitwan, Nepal, and most of (16%) were at the age of first calving of buffalo with 1st month of parturition. This variation might be due to the environment building structure and management practices adopted by the farmers.

The second most important problem of buffaloes of udder affections was teat cracks/injuries (0.189%), this may be due to the possibility of getting trauma to the affected quarters. Teat canal fibrosis and Teat sphincter stenosis was mostly acquired by the result of trauma to teat sphincter or due to acute mastitis, the respondent reported that they treat it with the surgical circular incision by the shaving blade edge. The treatment of teat stenosis was in agreement with (Abdel Hady) [14], who reported that stenosis and teat fibrosis is only treated by surgically in cows.

In the present study, a single case of broken udder was reported which was looking a big sized buffalo's udders in relative to the normal udder this was may be due to the heavy weight on the udder supporting ligaments with pre-parturient edema, directed teats with dropping of the udder ventrally. These observations of present study are similar with (Blowey and Weaver) [15] and (Lisie *et al.*,) [13], who reported that, breakdown of lateral or medial support of the udder heavy muscles causes the dropping of the udder ventrally and predispose to mastitis, udder edema, and udder or teat injuries. Ethno-veterinary practices with the mastitis/udder problems treatment adopted by the local the respondents were with Lemon, Red chillies, Mitha soda, Sugar, Mustard oil, Till oil and Clay (as external used), since long time, these results were similar with the (Deeba *et al.*,) [9], who reported that ethno-veterinary practices for the control of mastitis in dairy animals in peri-urban areas of Faisalabad was popular with the red chilies, mustard oil and lemon due to very effectiveness, cheap and easily availability in Pakistan.

5. CONCLUSION

It was concluded that from the present study that most of the buildings of dairy farms were cemented, large number of dairy farm workers/ respondents of the study area were uneducated but had experience to recognize the mastitis/udder problems through clinical signs (Swelling, Pain, Redness, Reduce milk production with milk clots etc.) Most dominant disorder was recorded Mastitis. Teat cracks/injuries

and Teat fibrosis due to chronic mastitis in the dairy farms of district Hyderaba. Traditional medicine adopted to treat and control the mastitis/udder problems were Mustered oil, Red chillies, Sugar, lemons and Mitha soda.

6. CONFLICT OF INTEREST

All authors have declared that there is no conflict of interests regarding the publication of this article.

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Table 1. Background characteristics of the total respondents of dairy farms of district Hyderabad (No. of respondents 300)

Sr. No.	Characteristics	Particulars	No. of respondents	Percentage (%)
1.	Age (Years)	20-30 30-40 40-above	105 115 80	35.00 38.33 26.66
2.	Education	Illiterate Primary Pass Secondary Pass	255 35 10	85.00 11.66 03.33
3.	Experience (Years)	Since childhood 05-10 10-20 20-30 More than 30	35 45 100 70 50	11.66 15.00 33.33 23.33 16.66
4.	Occupation	Businessman Landlord Tenant Servants	35 10 05 250	11.66 03.33 01.66 83.33

*Percentage has been calculated from the totals No. of respondents.

Table 2. Main features of the dairy farms of district Hyderabad (No. of farms 50)

Sr. No.	Characteristics	Particulars	No. of farms	Percentage (%)
1.	Farm types	Buffalo	50	100
2.	Total no: of animals	50-100 101-200 201-300 301-400 Above than 400	07 24 12 06 01	14 48 24 12 02
3.	Herd size (animals/farm)	Cemented farms Semi Cemented farms	100-500 80-200	94 06
4.	Type of construction	Cemented farms Semi Cemented farms	47 03	94 06
5.	Pasture rotation pattern	Seasonal Mixed	47 03	94 06
6.	Animal types (animals)	Milking Dry Near to parturition	80-490 00 10	98 00 02
7.	Feeding pattern Drinking Pattern Cleaning Pattern	Two Times Two Times Two Times	All	100

*Percentage has been calculated from the total no. of farms

Table 3. Criteria for diagnosis of the mastitis and udder problems at the dairy farms of district Hyderabad (No. of respondents 300)

Sr. No.	Particulars/ Criteria	No. of respondents	Percentage (%)
1.	By Laboratorial diagnosis only	00	00
2.	By self-experience (symptoms and clinical signs)	280	93
3.	By Veterinarian diagnosis	20	07
Total		300	100

*Percentage has been calculated from the total no. of respondents.

Table 4. Mastitis/udder problems control strategies practices adopted by the dairy farmers of district Hyderabad

Sr. No.	Particular / methods	No. of respondents	Percentages (%)
1.	Traditional practices	145	48.33
2.	Allopathic practices	10	3.33
3.	Traditional and Allopathic (both method)	140	46.66
4.	No any method effective to cure	5	1.66

*Percentage has been calculated from the total no. of respondents.

Table 5. Treatment of mastitis/udder problems used at the dairy farms of district Hyderabad

Sr. No.	Treatment of mastitis/udder problems	Criteria	No. of respondents	Percentage (%)
1.	By veterinarian	Allopathic	50	16.66
2.	By Traditional healers	Medicinal plants	15	5
3.	By them self (workers at farms)	Medicinal plants/ Allopathic	235	78.33
4.	Total		300	100

*Percentage has been calculated from the total no. of respondents.

Table 6. Description of farms with mastitis/udder problems at dairy farms of district Hyderabad

Farm No.	Total No. of animals at farm	No. of animals with mastitis	Teat cracks/ injuries	Teat fibrosis	Bloody milk	Teat sphincter stenosis	Broken udder	Percentage (%)
1.	200	1-(RF)	0	0	0	0	0	0.5
2.	400	2-(RR, RF)	1(RF)	1(RF)	0	0	0	1
3.	150	0	1(RF)	0	0	0	0	0.66666
4.	300	1(RR)	0	0	0	0	0	0.33333
5.	340	0	1(RF)	0	0	0	0	0.294
6.	250	1(LF)	0	1(RF)	1(RR)	0	0	1.2
7.	220	1(RF)	1(RR)	0	0	0	0	0.9090
8.	100	0	1(RR)	0	0	1(RR)	0	2
9.	150	0	1(RF)	0	0	0	0	0.6666
10.	140	1(LR)	0	0	0	0	0	0.714
11.	300	2(RR,LR)	0	0	0	0	0	0.6666
12.	300	1(LR)	0	1(RR)	1	0	0	1
13.	250	1(RR)	0	0	0	0	0	0.4
14.	380	1(LF)	0	0	0	0	0	0.263
15.	200	1(RF)	0	0	0	0	0	0.5
16.	230	2(RR)	0	1(RR)	2(RF)	0	0	0.869
17.	200	0	1(RR)	0	0	0	0	0.5
18.	180	2(LF)	0	0	0	0	0	1.111
19.	120	1(RF)	0	0	0	0	0	0.8333
20.	130	1(RR)	0	0	0	0	0	0.769
21.	400	1(LF)	0	0	0	0	1(RR)	0.5
22.	280	1(RF)	0	1(RF)	0	0	0	0.714
23.	200	2(RR)	0	0	0	0	0	1
24.	300	1(RF)	0	0	0	0	0	0.3333
25.	200	3(RR)	0	0	0	0	0	1.5

26.	140	1(RF)	0	0	0	0	0	0.714
27.	80	0	3(RF)	0	0	0	0	3.75
28.	350	0	2(RR)	1(RR)	0	0	0	0.857
29.	500	2(RF)	0	0	0	0	0	0.4
30.	200	1(RR)	0	0	0	0	0	0.5
31.	100	1(RR)	0	2(LR)	0	0	0	3
32.	130	2(RR)	0	0	0	0	0	1.538
33.	200	1(LF)	0	0	0	0	0	0.5
34.	240	3(LF)	0	0	0	0	0	1.25
35.	100	1(RR)	0	0	0	0	0	1
36.	200	0	1(RF)	1(RR)	0	0	0	2
37.	300	2(RR)	0	0	0	0	0	0.6666
38.	400	2(LF)	0	0	0	0	0	0.5
39.	120	1(RR)	0	0	0	0	0	0.8333
40.	80	1(LR)	0	0	0	1(RF)	0	2.5
41.	180	1(RF)	0	0	0	0	0	0.5555
42.	130	0	2(LF)	0	0	0	0	1.538
43.	200	2(RR)	0	0	0	0	0	2
44.	120	1(LR)	0	0	0	0	0	0.8333
45.	100	2(RR)	0	0	0	0	0	2
46.	90	0	2(RR)	1(RR)	0	0	0	3.333
47.	150	1(LF)	2(RF)	0	0	0	0	2
48.	190	0	0	0	0	0	0	0
49.	300	3(LF)	0	0	0	0	0	1
50.	140	2(RF)	0	0	0	0	0	2.142
Total	**10540**	**57**	**20**	**10**	**3**	**2**	**1**	**93**

RF (Right Front), **LF** (Left Front), **RR** (Right Rear), **LR** (Left Rear).
*Percentage has been calculated from the total No. of animals/farm.
0- indicates that there was no any case observed during the visit.

Table 7. Age wise prevalence of mastitis, teat and udder problems in dairy farmers of Hyderabad (No. of animals-10540)

Age of the animals/ No. of animals	4-6/5300	6-8/4200	8-10/1040	Percentage (%)
Mastitis	15	9	33	00.54
Teat cracks/ injury	6	5	9	00.189
Teat canal fibrosis	3	2	5	0.09
Bloody milk	3	0	0	0.028
Teat sphincter fibrosis	1	1	0	0.018
Broken udder	0	0	1	00.009

*Percentage has been calculated from the total No. of animals.

Table 8. Traditional treatment (*per os*) adopted by the dairy farmers for the mastitis/udder problems (No. of respondents: 300)

Sr. No.	Problem	Traditional medicine	No. of respondents	Effective percentage (%)
1.	Acute mastitis	Lemon 250g + Sugar 250g+ Mitha soda 120g *per os* once time	285	95
2.	Chronic mastitis	Lemon 500g + Sugar 500g *per os* 5 days	210	70
3.	Udder edema	Noshadar 120g dissolved 1 litter water+ Red chillies 250g *per os* once time to 3 days	250	83.33
4.	Bloody milk	1, Lemon 250g +Sugar250g + Red chillies *per os* once time 2, Gulkand 1/2kg+ white zeera 120g water *per os* once time 3, Till oil 300ml, *per os* 3days 4, one pieces Life bouy soap dissolved in 1 litter of water *per os* once time	200	66.66
5.	Teat sphincter fibrosis at early stage	Lemon 500g + Sugar 500g per *os* 3 days	180	60

*Each problem's percentage has been calculated from the total No. of respondents.

Table 9. Traditional treatment (external use) adopted by respondents for mastitis/udder skin problems at dairy farms of district Hyderabad (No. of respondents: 300).

Sr. No.	Problems	Traditional medicine	No. of respondents	Percentage (%)
1.	Mastitis/ Udder inflammation	Clay	280	93.33
2.	Udder edema	Clay	200	66.66
3.	Teat cracks/injuries	1, Dalda banaspati ghee 50g mixed with honey 2 tea spoons, 2, Motor engine oil used 3, Turpentine oil mixed with mustard oil was used until to heal. mustard oil mixed Sulpher powder	290	96.66
4.	Teat sphincter stenosis/fibrosis	1. used shaving blade edge to remove the fibrotic tissue 2. lemon 250g+sugar 500g *per os* (2 days), Mustard oil 500ml *per os* at night once time	150	50

*Each problem's percentage has been calculated from the total No. of respondents.

Figure 1. Incident percentage of mastitis and udder related problems at dairy farms of district Hyderabad