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RESEARCH ARTICLE

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FMD VACCINATION STATUS OF MILCH CATTLE AND BUFFALO IN BAREILLY (INDIA)

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ABSTRACT

The data were gathered from randomly selected 240 farmers of 12 villages in two blocks and the veterinary officers of state department of animal husbandry posted in Bareilly district, India. Besides, the available records regarding FMD vaccination in particular were also scanned to substantiate the information. Overall, only 25.83% respondents knew the vaccination schedule for FMD. 50% of the respondents in block II and 68.33% in block I were involved in regular vaccination of animals every year. Overall, only 59.17% respondents reported that their animals were vaccinated against FMD every year. According to 59.17% of respondents, buffaloes were the animals covered under FMD vaccination followed by cattle. Whereas, 85% vets reported that they vaccinated buffaloes as prophylaxis followed by cattle (80%). It might be due to more buffaloes in the research area. Only 7.88% of total animals were covered under vaccination. The comparable figures for whole Bareilly district for FMD is 6.85% and for UP, it is 30% for all types of vaccination across all species of animals. 45% doctors reported that they had refrigerator in their hospital to maintain cold chain for FMD vaccine storage. Overall, 49.17% respondents ranked poverty as most important constraints in getting their animals vaccinated. 45% vets reported that illiteracy among farmers was the main constraints and they ranked it as first.

KEYWORDS: FMD, vaccination, animals, hospital, illiteracy, vaccination constraints

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INTRODUCTION

India owns one of the largest livestock wealth in the world, which substantially contributes to national economy and also play a vital role in sustaining livelihood of rural people. This livestock-based economy (including fisheries) contributes about 5.37% (2002-03) to the total GDP of India, in spite of the fact that livestock sector in India is seriously affected every year due to various diseases. Disease in farm animals has a significant economic impact on livestock production and incurs substantial costs for societies in both developed and developing countries (FAO, 1962).There are certain major diseases afflicting livestock that are serious and fast spreading in India. One of such diseases is Foot and Mouth Disease (FMD). According to an estimate, in India, FMD alone causes loss of approximately Rs. 4000 crores per year (Saxena, 1994). Countries free from this disease inflict trade embargo on export of animals and animal products on the countries, where FMD is inadequately controlled (Perry *et al*., 1999). Because of this trade embargo, India suffers heavy economic losses in terms of export potential apart from the production losses. India's potential for exporting animal products is likely to increase significantly if India is declared disease free for FMD, as it has already overcome major hurdle by eradicating Rinderpest.

It is now well-accepted fact that prevention especially through vaccination is the only remedy to control FMD in Indian context. Moreover, Government of India had started to operate FMD Control Programme in the selected 54 districts, divided in four zones (Negi, 2003). However, successful implementation of vaccination campaign depends on various factors, viz. timely availability of good quality vaccine, mass awareness/publicity efforts, staff and infrastructural adequacy with vaccination performing agencies, their level of commitment and overcoming the impediments at farmers' level including various socio-economic, educational and psychological factors usually coming on the way of vaccination programmes. The present study, therefore, was focused on to ascertain the current status of FMD vaccination in Bareilly District of Uttar Pradesh (UP), India.

MATERIAL AND METHODS

The study was conducted in Bareilly district of Uttar

Pradesh (UP). Bareilly district is comprised of 15 blocks. Out of these, two blocks namely Bithri Chainpur and Bhuta were selected. Bithri Chainpur was selected purposively since Indian Veterinary Research Institute (IVRI) was involved in vaccination against FMD and HS in six villages of this block. Bhuta block was selected randomly. Six villages were selected from each block. Thus, a total of twelve villages were selected for the study. From each village, twenty farmers were selected randomly and all veterinarians from Bareilly district were selected. Thus, a total of 240 farmers and 29 veterinary officers were considered as the sample volume of the study.

The data were collected from respondents through personal interview with the help of semi- structured interview schedule developed for the study. The interview schedules were developed for farmers and veterinary officers separately. The interview schedules developed were pretested and suitably modified and finalized for data collection. Thus, primary data were gathered from all selected farmers. All veterinary officers of Bareilly district were contacted during data collection but only 20 veterinary officers responded. Thus, final analysis related to veterinary doctors was based on the responses of 20 doctors only. Information from secondary sources like departmental documents, records, reports and other sources were also collected. The secondary data were collected from office of Chief Veterinary Officer (CVO), Bareilly and veterinary hospitals located in the selected blocks. The Data were tabulated and subjected to simple statistical tools such as mean, percentage, and Kendall's coefficient of concordance.

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RESULTS AND DISCUSSION

Knowledge about Vaccination Schedule for FMD

Respondents were inquired about knowledge of vaccination schedule for FMD and its frequency (once or twice). 33.33% respondents in block I and 18.33% in block II had knowledge of vaccination schedule for FMD (Table 1). Overall, only 25.83% of farmers were aware about the schedule of FMD vaccination. A big majority (74.17%) were unaware about the schedule of vaccination which calls for strong initiatives to be taken to raise farmers' awareness on this important aspect in the area of animal health care.

They were further probed to seek information about frequency of vaccination against FMD in a year. Only 20% of the respondents in block I and 18.19% of respondents in block II reported that they get their animals vaccinated twice in a year. George *et al.* (2002) also reported that more than half of farm women did not know the schedule of FMD vaccination. Among the respondents who knew the vaccination schedule, only 19.35% had knowledge that it should be performed twice in a year, whereas, the specific recommendation for FMD vaccination is that it should be performed twice in a year (Radostits *et al.*2000). Jitendran *et al.* (1998) reported that 57% of the farmers in Himachal Pradesh were aware about the schedule of vaccination against infectious diseases, especially FMD, of which only 52% farmers adopted the vaccination either fully (45%) or partially (7%)

Table 1: Knowledge about vaccination schedule for FMD (N=240)

Response/Block	Yes	No
Block I (N=120)	40 (33.33)	80 (66.67)
Block II (N=120)	22 (18.33)	98 (81.67)
Total (N=240)	62 (25.83)	178 (74.17)

Figures in parentheses indicate percentages

Table 2: Knowledge about frequency of vaccination against FMD

Frequency/Block	Once (before or after monsoon)	Twice (both before & after monsoon)
Block I (N=40)	32 (80.00)	8 (20.00)
Block II (N=22)	18 (81.81)	4 (18.19)
Total (N=62)	50 (80.65)	12 (19.35)

Figures in parentheses indicate percentages

Regular Vaccination against FMD

Findings of whether the respondents get their animals vaccinated every year or not are represented (Table 3). It indicates that 50% of the respondents in block II and 68.33% in block I were involved in regular vaccination of animals every year. Overall, only 59.17% respondents reported that their animals were vaccinated against FMD every year. Whereas, for effective control of FMD about 60-80% of animals need to be covered under vaccination (Ahuja & Sen, 2002). Ahuja *et al*. (2000) also reported that in Rajasthan, 31.8% of the respondents had their animals vaccinated against FMD; comparable figures for Gujarat and Kerala were 13.6% and 78.7%, respectively. All the respondents possessing crossbred, vaccinated their animals regularly. Dwivedi (1996) also reported that all farmers had provided vaccination against FMD to crossbred cattle against diseases, whereas, none of the farmers provided vaccination to local cattle. Ahuja and Sen (2002) further reported that within cattle, the rate of vaccination for crossbred animals was more than twice than that for indigenous animals. Thus, possessing of more heads of local cattle and decreasing trend in crossbred

population might be one of the reasons for not getting animals vaccinated every year by a large number of respondents (40.83%).

Table 3: Getting animals vaccinated against FMD every year (N=240)

Response/Block	Yes	No
Block I (N=120)	82 (68.33)	38 (31.67)
Block II (N=120)	60 (50.00)	60 (50.00)
Total (N=240)	142 (59.17)	98 (40.83)

Figures in parentheses indicate percentages

Coverage of animals under FMD Vaccination

Table 4 and 5 indicate species covered under FMD vaccination as reported by farmers and doctors, respectively. The data in tables show that in pooled sample, in case of 59.17% of respondents, buffaloes were the animals covered under FMD vaccination followed by cattle and buffaloes (21.67%). Whereas, 85% doctors reported that they vaccinated buffaloes as prophylaxis followed by cattle (80%). It might be due to more buffaloes in the research area. Table 4 also shows that in block II, no calves were covered under vaccination. None of them vaccinated these animals as prophylaxis. This might be the reason for outbreak of FMD in these species leading to further spread of FMD in other animals of the area. Only 10.83% respondents reported that cattle were vaccinated against FMD. Kumar *et al.* (2000) also reported that coverage of cattle through FMD vaccination was discouraging.

Table 4: Species covered under FMD vaccination (reported by farmers) (N=240)

Species/Block	Block I (N=120)	Block II (N=120)	Total (N=240)
Cattle	14(11.67)	12(10.00)	26(10.83)
Buffaloes	46(38.33)	96(80.00)	142(59.17)
Cattle & buffaloes	40(33.33)	12(10.00)	52(21.67)
Cattle & calf	10(8.33)	0	10(4.16)
Buffaloes & calf	2(1.67)	0	2(0.83)
Cattle, buffaloes & calf	8 (6.66)	0	8 (3.33)

Figures in parentheses indicate percentages

Table 5: Species covered under FMD vaccination (Reported by Veterinary doctors) (N=20)

Animals	Prophylaxis	Post outbreak	Both
Cattle	16 (80.00)	0	2 (10.00)
Buffaloes	17 (85.00)	0	2 (10.00)
Calf	13 (65.00)	0	1 (5.00)

Figures in parentheses indicate percentages

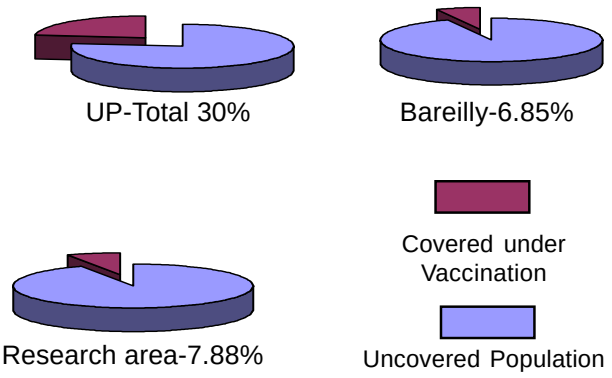

Fig. 1: Coverage of animals under vaccination in UP and against FMD in Bareilly and research area.

None of the veterinary officer reported that they vaccinated cattle, buffaloes and calf after outbreak. This indicates that they did not carry out ring vaccination in the other healthy animals in neighborhood in case of outbreak of disease. Ring vaccination within a perimeter encircling an area of disease outbreak might promptly stop the spread of disease. Moreover, when we compare the total target population for FMD vaccination and average number of vaccination done by veterinary officers over last three years in the research area (Fig. 1), it is evident that only 7.88% of total animals were covered under vaccination and the comparable figures for whole Bareilly district for FMD is 6.85% (Source:- Chief Veterinary Officer, Bareilly). Similarly, Vaccination coverage for UP is 30% for all types of vaccination across all species of animals (Source: The Director, Animal Husbandry, Lucknow).This necessitates the increased coverage of animals as also of different species under FMD vaccination so as to control the disease effectively.

Infrastructure available for FMD Vaccination at Veterinary Hospital

Veterinary officers were inquired about storage facility available in hospital (Table 6). 45% of them reported that they had refrigerator in their hospital and another 45% reported that they had nothing in the name of device to maintain cold chain for vaccine storage. Non-availability of storage device might lead to spoilage of vaccine quality, which would result in no immunity in vaccinated herd. Thus, chances of reoccurrence of disease even after vaccination might increase. This might result in loss of faith and credibility of the vaccination performing agency leading to reduced vaccination by the farmers in future.

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Table 6: Storage facility available for vaccine in hospital (N=20)

S.No.	Facility	Total
1.	Refrigerator	9 (45.00)
2.	Thermos Bottle	1 (5.00)
3.	Cool cabinet	1 (5.00)
4.	None	9 (45.00)

Figures in parentheses indicate percentages

Constraints Faced by Farmers

Constraints faced by farmers are represented in table 7. They were told to rank these constraints. 49.16% respondents ranked lack of money to afford vaccine cost as rank first across the blocks. Ranking of lack of money to afford vaccine cost was found significant ($P<0.05$). As most of the respondents were dependent on agriculture with less than one acre of land holding, their source of income was limited. This might be the reason for ranking lack of money to afford vaccine cost as number first. Most of the respondents were of the opinion that whenever they were offered vaccine free of cost, they went for vaccination of their animals. The state animal husbandry department charges a levy of Rs 5.30 per dose (for large animals) of FMD vaccine, which might be the reason for farmers for not responding to the vaccination against FMD. Moreover, less mortality due to FMD might have also made farmers reluctant and less conscious to its control. Venkatasubramanian *et al.* (1996) also reported that main constraints relating to disease control/prevention were the cost of veterinary services, inadequate knowledge of disease symptoms, and inadequate services of veterinary institutions.

Constraints faced by Veterinary Doctors

Constraints faced by veterinary doctors in successful implementation of vaccination programme are represented in table 8. They were told to rank these constraints. 45% doctors reported that illiteracy among farmers was the main constraints and they ranked it as first. Ranking of illiteracy by doctors was found significant at 5% level of significance. 25% doctors said that due to cost factor involved, farmers did not come forward for vaccination. 20% doctors ranked fear among farmers about fever, less milk yield etc after vaccination as first. 5% doctors also ranked lack of infrastructure facility as rank first. This indicates that illiteracy among farmers, myth related to after-effects of vaccination and

Table 7: Constraints faced by farmers (N=240)

Reasons/Rank	Non-availability of veterinary aid	Remote location of veterinary hospital	Lack of extension efforts	Poor result of vaccination	Lack of money to afford vaccine cost
I	62 (25.83)	20 (8.33)	36 (15.00)	0	118 (49.16)
II	143 (59.58)	20 (8.33)	44 (18.33)	4 (1.66)	29 (12.08)
III	19 (7.91)	18 (7.50)	108 (45.00)	8 (3.33)	44 (18.33)
IV	12 (5.00)	54 (22.50)	8 (3.33)	78 (32.50)	33 (13.75)
V	0	76 (31.66)	0	70 (29.16)	8 (3.33)

Figures in parentheses indicate percentages

Table 8: Constraints faced by veterinary doctors (N=20)

Reasons/Rank	I	II	III	IV	V	VI	VII
Illiterate farmers	9 (45.00)	3 (15.00)	2 (10.00)	2 (10.00)	0	0	0
Cost factor of vaccine	5 (25.00)	2 (10.00)	2 (10.00)	2 (10.00)	0	2 (10.00)	2 (10.00)
Showing uncertainty about results	1 (5.00)	2 (10.00)	1 (5.00)	1 (5.00)	4 (20.00)	1 (5.00)	1 (5.00)
Fear of temp rise, reduced milk yield	4 (20.00)	4 (20.00)	4 (20.00)	4 (20.00)	0	1 (5.00)	1 (5.00)
Non-supply of vaccine	0	0	2 (10.00)	2 (10.00)	2 (10.00)	1 (5.00)	1 (5.00)
Lack of infrastructure	1 (5.00)	5 (25.00)	1 (5.00)	1 (5.00)	0	3 (15.00)	3 (15.00)
Insufficient man power	0	3 (15.00)	1 (5.00)	1 (5.00)	2 (10.00)	1 (5.00)	1 (5.00)

Figures in parentheses indicate percentages

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lack of infrastructure were the constraints faced by doctors in implementing successful vaccination programme.

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