



doi: <https://doi.org/10.20546/ijcrar.2024.1203.002>

A Study on Awareness of Foot and Mouth Disease (FMD) Vaccination in Andhara Pradesh, India

T. Sivasakthi Devi^{1*} and B. Ganesh Kumar²

¹Pandit Jawaharlal Nehru College of Agriculture and Research Institute (PAJANCOA & RI),
Karaikal – 609 603, India

²National Academy of Agricultural Research Management (NAARM), Hyderabad, Telangana - 500 030, India

*Corresponding author

Abstract

Foot and Mouth Disease (FMD) is a major disease of livestock especially in cattle and buffaloes in India and causes huge economic loss to livestock owners due to a reduction in milk yield. The study indicated that, the number of households reporting an FMD incidence in their village was more in Non-CP district like Nellore (35 per cent) followed by other areas. Similarly, the FMD-CP districts numbers of households reporting an outbreak in the year 2008 were less as compared to FMD-Non CP districts. Likewise, the death rates were also very low in CP districts in comparison to non-CP districts, which were 18.2 percent and 10.00 percent in CP districts, while it was 21.43 per cent and 22.13 per cent in non-CP districts, obviously indicating the efficacy of control programme. Further, the study revealed that the major reason for not vaccinating their livestock, especially bovines, against FMD was due to then milk production might fall. This was attributing the primary reason in all the districts; next non availability of regular vaccination services was the major reason. There as on too expensive was reported prominently in FMD non-CP areas, as the farmers had to go for vaccination by privately. Other reasons, for non-compliance of vaccination against FMD included don't know FMD and too expensive to transport the animals to veterinary hospitals were only to limited number of farmers.

Article Info

Received: xx January 2024

Accepted: xx February 2024

Available Online: 20 March 2024

Keywords

FMD, Vaccination, Milk yield, Awareness Programme.

Introduction

Foot and Mouth Disease (FMD) is a major disease of livestock especially in cattle and buffaloes in India and causes huge economic loss to livestock owners due to a reduction in milk yield. The Indian livestock sector accounts for a large share of the livestock resources in the global market and largest livestock populations in the world. The country ranks first with respect to cattle and buffaloes, second in goats, third in sheep and seventh in poultry production in the world. The Compound Annual

Growth Rate (CAGR) of livestock sector was 13.36% from 2014-15 to 2021-22. The contribution of livestock in total agriculture and allied sector Gross Value Added (GVA) has increased from 24.38 per cent (2014-15) to 30.19 per cent (2021-22).

Livestock sector contributed 5.73 per cent of total GVA in 2021-22. According to the 20th livestock census there are about 303.76 million bovines (cattle, buffalo, mithun and yak), 74.26 million sheep, 148.88 million goats, 9.06 million pigs and about 851.81 million poultry. Dairy is

the single largest agricultural commodity among the livestock sector which has contributing 5 per cent of the national economy and employing more than 8 crore farmers directly. India is ranked first in milk production contributing 24.64 percent of global milk production.

Milk production is growing at the Compound Annual Growth Rate (CAGR) of 5.85% over the past 9 years from 146.31 million tonnes during 2014-15 to 230.58 million tonnes during 2022-23. The per capita availability of milk is 459 grams per day in India during 2022-23 as against the world average of 322 grams per day in 2022. Even though the better growth in this sector in India, still Foot and mouth disease (FMD) is major disease for dairy animals which would be affected the milk yield and it's reflected in contribution of dairy sector in Indian economy.

Foot and mouth disease (FMD) has long been recognized globally as a serious threat to the livestock population. The transboundary nature of the disease and the severe economic consequences that follow its introduction continue to be a serious concern for FMD-free countries.

Farming communities are affected by FMD occurrences, reduction in milk production, drought performance, and ability to plough and traction are severely affected. The World Organization for Animal Health (WOAH) has officially recognized 69 nations and 21 zones around the world as FMD-free, with or without vaccination, and at the same time, more than 100 countries are still considered endemically or sporadically affected by the disease (Saravanan *et al.*, 2022).

FMD Vaccination Programme in India

The Department of Animal Husbandry and Dairying (DAHD) launched the National Animal Disease Control Programme (NADCP) in 2019 which is now a part of Livestock Health & Disease Control Programme. The program aims to control Foot & Mouth Disease (FMD) through vaccination leading to its eventual eradication by 2030.

It is 100% funded by Government of India, which is centrally procuring vaccines against FMD and supplying to States and is also providing for vaccination charges, accessories, awareness creation, cold chain infrastructure etc. to enable the States/ UTs to undertake vaccination in campaign mode. The livestock owners are sensitized and made aware through various information, education and communication measures to get their animals vaccinated

and requested to contact the nearest livestock health workers/ veterinarians to avail the facility. It is expected that with such continued efforts, the goal of controlling and eventually eradicating Foot & Mouth Disease from the country will be achieved which will also help in increasing the income of livestock farmers/ keepers and in boosting India's trade in livestock products.

Under this context, awareness of FMD and vaccination is very important among the farm communities to eradicate the FMD disease from India, for this the Government of India has launched FMD vaccination programme throughout the India and also 100% funded by Government of India.

Results and Discussion

The disease per-se impacts the susceptible and affected animal population both qualitatively and quantitatively. To begin with, the affected animal suffers from various symptoms and ends up in losing its productivity slowly. Hence, this study tried to give a picture about the statistics of outbreak of FMD, compared the mortality of FMD CP programme and Non-CP programme in sample districts.

FMD Incidences and Impact: CPs Non-CP areas in Andhra Pradesh

FMD episodes

The data presented in Table 1 reveals that the number of households reporting on FMD incidences in their village during the year 2008 in the FMD-CP implemented and non- implemented districts of Andhra Pradesh. The number of households reporting an FMD incidence in their village was more in Nellore District (35 per cent), followed by Mahbubnagar (31 per cent), Chittoor (31 per cent) and Medak (17 per cent) Districts. However, in the FMD-CP districts number of households reporting an outbreak in the year 2008 were 29 (19 per cent) and 26 (17 per cent) in Chittoor and Medak Districts, respectively, while in FMD Non-CP Districts, Nellore and Mahbubnagar Districts, it was 52 (35 per cent) and 35 (25 per cent). The average number of days FMD persisted in the villages of the FMD-CP Districts was only 27 days (Chittoor-25.9; Medak-28.1), whereas the persistency of FMD was longer in FMD Non-CP districts with 28.95 days (Nellore-33.4; Mahbubnagar-24.5). The FMD out breaks in the sample districts from the year to 2003-2008 are depicted in Figure 1.the result revealed that, though the number of incidences reported in the

FMD-CP implemented districts were high in the year 2003 and 2005, during the rest of the years, i.e. 2004, 2006, 2007, 2008 the incidence of FMD were high in the districts where the CP was not implemented. These pictures provide two insights.

One, the vaccination programme is effective in controlling or minimizing the disease outbreaks and the second and more important, in spite of a control programme in existence for about more than 5 years now, FMD outbreaks still continue to happen.

This again brings out the field reality that the animals move freely between CP covered and endemic, disease prone area in the state. Hence, more concerted efforts should be taken towards comprehensive coverage of all animals through vaccination for the whole region. Some institutional mechanism should also be put in place to monitor / regulate the movement of animals.

Morbidity and mortality due to FMD

The perusal of Table 2 reveals that the morbidity in CP districts was 18.72 per cent and 33.33 per cent, whereas in non-CP districts it was 20.33 per cent and 35.36 per cent, respectively.

Similarly, the death rates were also very low in CP districts in comparison to non-CP districts, which were 18.2 percent and 10.00 percent in CP districts, while it was 21.43 per cent and 22.13 per cent in non-CP districts, obviously indicating the efficacy of control programme.

Change in farm-level FMD attacks and death

The data presented in Table 3 and Table 4 shows that there was a decline in the number of FMD attacks at farm level in CP districts with an overall decrease of -36.67 per cent and -56.76 per cent in Chittoor and Medak districts, respectively.

However, among the non-CP districts, Nellore district showed an effective decline (-55.66 per cent) in the FMD attacks, while Mahbubnagar showing an increase of (58.44 per cent) during the corresponding period. This might be due to the efforts of *Gopal Mitra* in undertaking the vaccination activities against FMD in Nellore district. Since scheme has started functioning from 2006, there was a significant reduction in disease incidence over the last couple of years. Similarly, in Chittoor District, the farm level attacks of FMD from 2007 to 2008 decreased

more in indigenous cattle (-63.64 per cent), followed by local buffaloes (-33.33 per cent) and crossbred cattle (-31.82 per cent), while there was no change in attacks on graded buffaloes.

During the corresponding period, the farm level incidences in Medak District were more significantly decreased in local buffaloes (-94.12percent), followed by crossbred cattle (-60.36 per cent), graded buffaloes (-41.67 per cent) and indigenous cattle (-37.78 per cent).

The farm level attacks (2007-08) in Nellore district indicated that the attacks on local buffaloes decreased more significantly (-83.33percent), followed by indigenous cattle (-65.22 per cent), crossbred cattle (-52.78 per cent) and graded buffaloes (-15.38). Contrastingly, the farm level incidences of FMD in Mahbubnagar district had significantly increased in graded buffaloes (450.00 per cent), followed by local buffaloes (100.00 percent), indigenous cattle (83.33 per cent) and crossbred cattle (35.09 per cent).

Similarly, the change in mortality due to FMD attacks was also studied in the study districts. Between 2007 and 2008, the mortality in CP districts had reduced by 41.67 per cent and 70.37 per cent in Chittoor and Medak, respectively (Table 5). However, among the non-CP districts, Nellore showed an effective decline in deaths (-47.50 per cent), while Mahbubnagar showing an increase of (50.00percent) during the corresponding period (Table 6). In Chittoor district, the farm level FMD deaths showed 100 per cent decrease in indigenous cattle and graded buffaloes, while showing -22.22 per cent decrease in crossbred cattle and no change among local buffaloes. During the corresponding period, the farm level deaths in Medak district were reduced by 100 per cent in case of local and graded buffaloes, whereas -68.42 per cent decrease in crossbred cattle and -33.33 decrease in indigenous cattle.

The farm level deaths between 2007 and 2008 in Nellore district indicated that the deaths due to FMD on indigenous cattle (-75.00 percent), followed by local buffaloes (-50.00 percent), crossbred cattle (-45.16 per cent) and graded buffaloes (-33.33 per cent).

Contrastingly, the farm level incidences of FMD in Mahbubnagar District had significantly increased in indigenous cattle (600.00 per cent), followed by graded buffaloes (100.00 percent) and crossbred cattle (13.33 percent), while no change was reported in local buffaloes.

Table.1 Details about FMD episodes in the sample districts in 2008

S. No.	Particulars	FMD CP districts		FMD Non-CP districts	
		Chittoor	Medak	Nellore	Mahbubnagar
1.	Number of households Reporting an FMD out breaking their village 2008	48 (31%)	26 (17%)	53 (35%)	43 (31%)
2.	Number of households reporting affected by an outbreak in 2008	29 (19%)	26 (17%)	52 (35%)	35 (25%)
3.	Average number of days, FMD Persisted in the village	25.9	28.1	33.4	24.5

Note: Figures In parentheses indicate percentages to total no. of sample households

Table.2 FMD attacks and deaths in sample farms in 2008

S. No.	Parameter	FMD CP districts		FMD Non-CP districts	
		Chittoor	Medak	Nellore	Mahbubnagar
1.	Total animals	203	240	482	345
2.	Attacks	38 (18.72)	80 (33.33)	98 (20.33)	122 (35.36)
3.	Deaths	7 (18.42)	8 (10.00)	21 (21.43)	27 (22.13)

Note: Figures in parentheses under ‘attacks’ indicate percentages to total no. of animals in the affected households;
Figures in parentheses under ‘deaths’ indicate percentages to total no. of animals

Table.3 Change in farm-level FMD incidence in Control Programme districts between 2008 and 2007

Species/type of bovine	Chittoor			Medak		
	2008	2007	% Change	2008	2007	% Change
Indigenous cattle	4	11	-63.64	28	45	-37.78
Crossbred cattle	30	44	-31.82	44	111	-60.36
Local buffalo	2	3	-33.33	1	17	-94.12
Upgraded buffalo	2	2	0.00	7	12	-41.67
Total	38	60	-36.67	80	185	-56.76

Table.4 Change in farm-level FMD incidences in non-Control Programme districts between 2008 and 2007

Species/type of bovine	Nellore			Mahbubnagar		
	2008	2007	% Change	2008	2007	% Change
Indigenous cattle	16	46	-65.22	22	12	83.33
Crossbred cattle	68	144	-52.78	77	57	35.09
Local buffalo	3	18	-83.33	12	6	100.00
Upgraded buffalo	11	13	-15.38	11	2	450.00
Total	98	221	-55.66	122	77	58.44

Table.5 Change in farm-level FMD death in Control Programme districts between 2008 and 2007

Species/type of bovine	Chittoor			Medak		
	2008	2007	% Change	2008	2007	% Change
Indigenous cattle	0	2	-100.00	2	3	-33.33
Crossbred cattle	7	9	-22.22	6	19	-68.42
Local buffalo	0	0	---	0	2	-100.00
Upgraded buffalo	0	1	-100.00	0	3	-100.00
Total	7	12	-41.67	8	27	-70.37

Table.6 Change in farm-level FMD death in non-Control Programme districts between 2008 and 2007

Species/type of bovine	Nellore			Mahbubnagar		
	2008	2007	% Change	2008	2007	% Change
Indigenous cattle	1	4	-75.00	7	1	600.00
Crossbred cattle	17	31	-45.16	17	15	13.33
Local buffalo	1	2	-50.00	1	1	0.00
Upgraded buffalo	2	3	-33.33	2	1	100.00
Total	21	40	-47.50	27	18	50.00

Figure.1 FMD outbreaks in the sample districts during 2003-2008

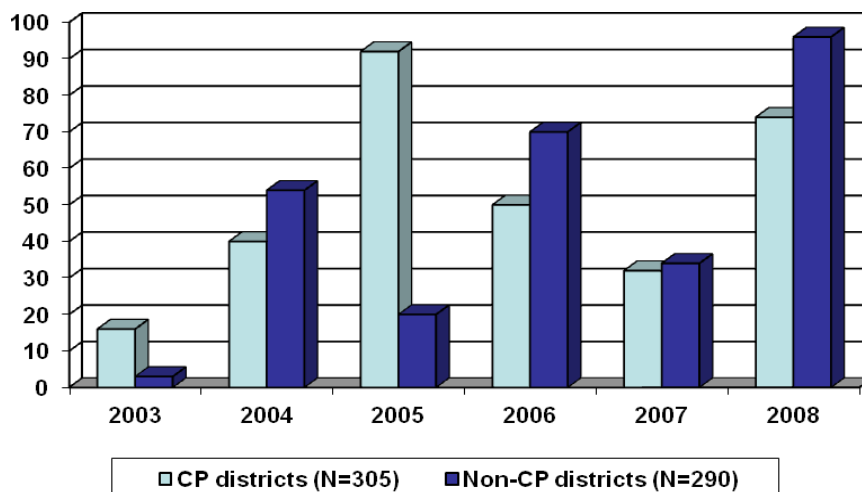
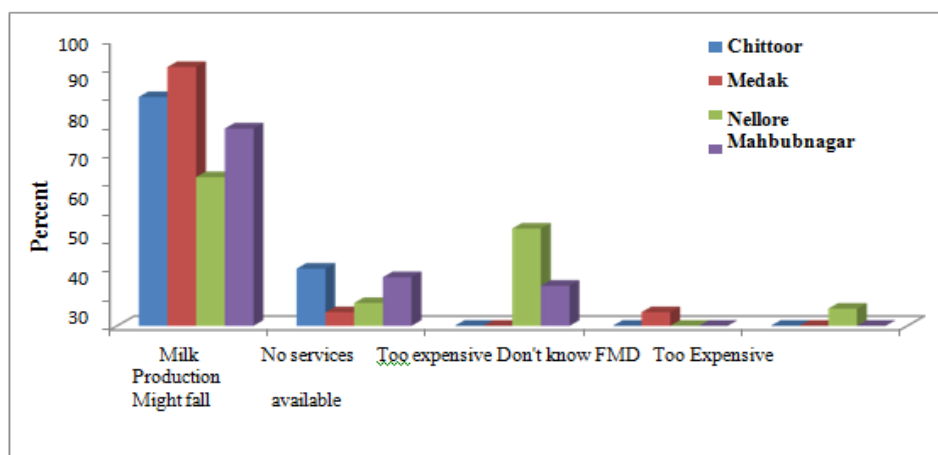


Figure.2 Reasons for not vaccinating against FMD in the sample districts



Reasons for not Vaccinating the animals against FMD

The major reason for not vaccinating their livestock, especially bovines, against FMD was due to then milk production might fall. This was attributing the primary reason in all the districts, since the milk was the major source for their livelihood and daily cash flow. Non availability of regular vaccination services was the second major reason. Although Chittoor district was under FMD-CP, this reason was stated to be prominent one as the vaccination was carried out only during specific periods and not as and when they bought the animals from neighbouring FMD non-CP areas. There as on too expensive was reported prominently in FMD non-CP areas, as the farmers had to go for vaccination by privately. Other reasons, for non-compliance of vaccination against FMD included don't know FMD and too expensive to transport the animals to veterinary hospitals were only to limited number of farmers (Figure 2.).

All these reasons expressed by the farmers indicate that their knowledge level on the importance of vaccination in controlling the FMD was very weak and hence, efforts should be made to create awareness about the scientific approaches available for effective control and ultimate stamping out of the disease from the state of Andhra Pradesh.

Conclusion

The study has revealed that the number of households reporting an FMD incidence in their village was less in CP districts when compares non-CP districts. Similarly the reporting an outbreak in the year 2008 was less in CP district than Non-CP districts. However, the incidence of FMD was high in the districts where the CP was not implemented. Moreover, the death rates were also very

low in CP districts in comparison to non-CP districts due to the vaccination programme is effective in controlling or minimizing the disease outbreaks and also more important, in spite of a control programme in existence for about more than 5 years now, FMD outbreaks still continue to happen. Hence, more efforts should be taken towards comprehensive coverage of all animals through vaccination for the whole region. Some institutional mechanism should also be put in place to monitor / regulate the movement of animals. In general the concluded that the creating awareness among the farmers in admitting vaccine their animals is good for the animal health and better milk yield and revenue.

Funding

This manuscript is written from the research study on 'Economic impact of FMD and its control in the dairy and meat value chains of selected high potential regions in India: A pilot study' sponsored by Indian Council of Agricultural Research, New Delhi.

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Report of Ministry of Fisheries, Animal Husbandry & Dairying (2023)pib.gov.in/

How to cite this article:

Sivasakthi Devi, T. and Ganesh Kumar, B. 2024. A Study on Awareness of Foot and Mouth Disease (FMD) Vaccination in Andhara Pradesh, India. *Int.J.Curr.Res.Aca.Rev.* 12(3), 14-19.
doi: <https://doi.org/10.20546/ijcrar.2024.1203.002>