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Effectiveness of livestock services delivered by mobile veterinary units (MVUs): An exploration

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Abstract

Effective livestock service delivery has been a major concern in many of the developing countries including India. Livestock service delivery at farmers' doorstep not only provides easy accessible services to farmers but also lessen burden and cost of long distant transport. In this context Mobile Veterinary Unit (MVU) under *Rastriya Krishi Vikas Yojana* (RKVY) is an alternative to extend the services to farmers' doorstep, operational in all the 314 blocks of Odisha. The study was carried out in Kandhamal district of Odisha, with the objective of finding out the effectiveness of different services i.e. curative, preventive, breeding, diagnostic and miscellaneous services delivered by MVU in terms of availability, satisfaction and quality, as per the farmers and service providers' opinion. The study suggested there is quite a variation between services in terms of their availability, satisfaction and quality.

Keywords: livestock, mobile, veterinary units, exploration

Introduction

Livestock sector is an important sub-sector of agriculture and acts as a supplementary and complementary enterprise (DAHDF, 2016-17). It shares a major part of burden on agriculture in providing critical inputs, supplements income, generates employment opportunities, contributes to adequate nutritional requirement for household and acts as a dependable "bank on hooves" in times of need. Livestock is an important productive asset and source of income for about two third of India's farm households (Birthal, 2008) [3]. The productive potential of animals mainly depends on quality of nutrition, genetic constitution and animal health system, and, on all these counts, India has a poor record (Ahuja *et al.*, 2008) [1]. So in this context livestock service delivery can serve as a key to improve the productivity. Effective and efficient livestock service delivery system has become a subject of rising concern to many national and international organizations including FAO (Verma, 2012) [7]. Multiple approaches have been proposed to strengthen the livestock service delivery system, such as in African countries collaboration between public health and veterinary services could increase coverage of essential health interventions for people and livestock in remote rural areas (Schelling *et al.*, 2005) [5], whereas, in India approaches like collaborating with private companies, Non-Government organizations (NGOs), Cooperatives etc. But in rural India the scenario is very different where farmers are very poor not even able to maintain their own living, rearing animals is their main stay to livelihood but in the case of emergency like any disease to animal or during any outbreak, animals are being left to die without any treatment. Farmers are not able to pay for the treatment cost along with the high cost of transportation of animals to the dispensaries. Considering this government is trying to reach those poor farmers at their doorstep to provide the livestock services sometimes free or subsidized to lessen the burden on the farmers. To this end, it is pertinent to discuss about the Mobile livestock service delivery. In many Indian states such as Karnataka, Tamil Nadu, Andhra Pradesh, Orissa, Arunachal Pradesh, Meghalaya, Rajasthan, Gujarat, Madhya Pradesh, and Chhattisgarh provide door step veterinary services through Mobile Veterinary Unit (MVU) or ambulatory clinics. In the state of Orissa, the concept of MVU was initiated on 10th July, 2011 as targeted service delivery mechanism under National Agricultural Development Scheme or *Rastriya Krishi Vikas Yojana* (RKVY). Initially the scheme began in 10 tribal districts. Later on it was expanded and now it covers all the 314 blocks of the state. The aim of MVU is to ensure the desired veterinary services in interior pockets according to the preferred time of the farmers, with very less nominal cost of Rupees 2/ per service, so as to increase the productivity and make livestock rearing a profitable venture. MVU is operated by a team of professionals comprising one Veterinary Surgeon (V.S), one Livestock Inspector (L.I) and one attendant, reach out to organize animal health camps in otherwise inaccessible remote locations.

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The total working days for a MVU in a month are 20 days. In a week they work from Monday to Friday and each day organizes camp covering minimum of two of remote villages. The rest two days i.e. Saturday and Sunday they devote for monthly report and meeting.

Methodology

The study was carried out in Kandhamal district, one of the rural districts of Odisha, with very less developed communication facilities and most of the areas surrounded by hills and forests. The hilly terrain, less developed communication system in the district and distant location of veterinary institutions, made the area suitable for study the functioning of Mobile Veterinary Units (MVUs). In the 12 administrative blocks of Kandhamal district, 12 MVUs were functioning to deliver the services.

Among the twelve blocks, three blocks were selected randomly for this study. From each block, 3 villages, where MVUs had already provided services, were selected purposively. In the next stage, from the 9 selected villages, 10 farmers from each village, who had availed the services of MVU, were selected randomly. As such, 90 farmers in total were selected for the study. Further, from 12 MVUs of Kandhamal district, 12 veterinarians (V.Ss) and 11 livestock inspectors (L.Is), who were working in the 12 MVUs, were selected to study the service providers' view.

Data

Primary data were collected from the farmers and the service providers through a pre-tested interview schedule and questionnaire respectively. The pre-tested questionnaires were distributed to all the veterinarians and livestock inspectors during monthly meeting to document their response on functioning of MVUs.

Service providers and farmers were asked to score the different services provided by MVU at farmers' doorstep in terms of availability, satisfaction and quality. The services

include curative services, breeding services, preventive services, diagnostic services and miscellaneous services.

Under 'curative services', respondents were asked about medicinal treatments, minor surgical treatments, major surgical treatments and gynecological/obstetrical treatments, whereas, under 'breeding services' they were asked about A.I and pregnancy diagnosis, under 'preventive services' deworming and vaccination, while under 'diagnostic services' questions were asked about laboratory diagnosis, postmortem, radiography and under 'miscellaneous services' questions were asked about livestock advisory services, distribution of medicine, distribution of cattle feed, supply of publications, issue of health certificates and issue of postmortem certificates on 4 point continuum scale as 'available', 'sometimes available', 'rarely available' and 'not available', which was further assigned score as 3, 2, 1, 0 for counting the total score against each service for each respondent. For every activity three categories were made as low, medium and high for all factors like availability, satisfaction and quality.

As such for 'curative services', the score ranged between 0-12, so that score again was divided into three categories viz. 0-4 score for low level, 5-9 score for medium level and for more than 10 score high level was mentioned with respect to availability, satisfaction and quality.

Same procedure was followed for breeding and preventive services, where score ranged between 0-6. So for low level 0-2 score, for medium 3-5 score and for high more than 6 score were given for all factors like availability satisfaction and quality. Similarly, for diagnostic services, score varied between 0-9, so for low level diagnostic services score was 0-3, for medium score was 4-7 and for high score was more than 8. For miscellaneous services score varied from 0-18, so 0-6 score for low level, 7-13 score for medium level and more than 14 score for high level with respect to availability, satisfaction and quality.

Results and Discussions

1. Availability of livestock services delivered by MVU

i. Availability of services (Service providers' view)

Table 1: Distribution of service providers according to view on availability of livestock services (Services delivered by MVU)

Types of services	Level of availability	L.I. (n=11)	V.S.(n=12)	(N=23)
Curative	Medium (5-9)	11(100)	7(58.3)	18(78.3)
	High (>10)	0(0)	5(41.7)	5(21.7)
Breeding	Medium (3-5)	10(90.9)	12(100)	22(95.7)
	High (>6)	1(9.1)	0(0)	1(4.3)
Preventive	Medium (3-5)	2(18.2)	0(0)	2(8.7)
	High (>6)	9(81.8)	12(100)	21(91.3)
Diagnostic	Low (0-3)	11(100)	12(100)	23(100)
Miscellaneous	Low (0-3)	11(100)	12(100)	23(100)

(Figures in the parenthesis indicate percentage)

a. Availability of curative services

It can be inferred from the Table that cent percent L.Is reported medium availability of curative services, whereas, 58.8 percent V.Ss reported medium and 41.7 percent V.Ss reported for high availability of curative services. In overall sample, 78.3 percent respondents reported medium availability of curative services followed by 21.7 percent reported high availability.

b. Availability of breeding services

Table depicts that 90.9 percent L.Is said breeding services were having medium availability, whereas, 100 percent V.Ss reported medium availability of breeding services.

In total sample, 95.7 percent respondents reported medium availability of breeding services.

c. Availability of preventive services

A perusal of table reveals that 81.8 percent L.Is and 100 percent V.Ss revealed high availability of preventive services. In total sample, 91.3 percent respondents revealed high, while 8.7 percent respondents revealed medium availability of preventive services.

d. Availability of diagnostic services

It can be viewed from the table that the cent percent respondents reported low availability of preventive services.

e. Availability of miscellaneous services

Table indicates that cent percent respondents reported low availability of miscellaneous services. Though livestock advisory services and distribution of medicine in this category scored well but as a number of services under this category

were not at all available as per the prescribed guidelines of MVU, so availability of same becomes low.

ii. Availability of livestock services delivered by MVU (Farmers' view)**Table 2:** Distribution of farmers according to view on availability of livestock related services

(Services delivered by MVU)					
Types of services	Level of availability	Phulbani (n=30)	Khajuripada (n=30)	Phiringia (n=30)	Total (N=90)
Curative	Medium	27(90)	30(100)	30(100)	87(96.7)
	High	3(10)	0(0)	0(0)	3(3.3)
Breeding	Low	30(100)	30(100)	30(100)	90(100)
	Medium	6(20)	0(0)	0(0)	6(6.7)
Preventive	High	24(80)	30(100)	30(100)	84(93.3)
	Low	30(100)	30(100)	30(100)	90(100)
Miscellaneous	Low	30(100)	30(100)	30(100)	90(100)

(Figures in the parenthesis indicate percentage)

a. Availability of curative services

Perusal of table in overall sample, 96.7 percent respondents reported medium availability of curative service, whereas, 3.3 percent respondents reported high availability of curative services.

b. Availability of breeding services

From the table it is inferred that in all the three blocks, cent percent respondents reported low availability of breeding services.

c. Availability of preventive services

In the pooled sample, 93.3 percent of respondents expressed high availability of preventive service, whereas, only 6.7 percent reported for medium availability of preventive services.

d. Availability of diagnostic services

It is inferred from the Table that in all the 3 blocks under study, 100 percent respondents expressed low availability of diagnostic services by MVU.

e. Availability of Miscellaneous services

Table indicates, that 100 percent respondents reported low availability of miscellaneous services by MVU in their respective blocks.

From the table it can be concluded that in the study area availability of preventive services were high, whereas, according to majority of respondents' view availability of curative services were at medium level, while breeding services, diagnostic services, and miscellaneous services were very less available. This might be due to number of factors like very low frequency of MVU service for a particular village, so carrying out all the activities simultaneously is not possible and proper diagnostic facility at field level is not practically feasible. The provision of breeding services in the field level is again a major constraint as frequency of MVU is very less so it is not necessary that in the meantime all the

animals of that particular village will be in heat. So A.I activity becomes an absolute failure in that situation, though pregnancy diagnosis activity is going on but that again depends upon the timing. At field level, diagnostic activities like postmortem and radiology were not at all provided. Also the provision of postmortem is not in the prescribed guidelines of MVU. 'Miscellaneous services' like Livestock advisory service and distribution of medicine is practiced good in the field condition by the MVU professionals, but all other activities in this category like provision of cattle feed, supply of publication and issue of health certificate & issue of PM certificate is not at all being practiced by MVU professional, also all these activities were not in the prescribed work responsibility of MVU. Under 'Preventive activity', vaccination was being practiced in the field by MVU personnel followed by deworming. Under 'curative service', MVU personnel were more focused towards medicinal treatment and minor surgical treatment.

From the results of service providers and farmers, it can be inferred that views on availability of services were almost same by both, but variation was found with respect to breeding services, where major service providers revealed medium availability of breeding services but cent percent farmers across the 3 blocks reported for low availability, this could be due to sampling limitations, that data was collected only in 3 blocks out of 12 blocks in Kandhamal district. Another reason could be the need of farmers for breeding services may be more than what was being provided by MVU professionals. This result is in partial agreement with the findings of Verma (2012) [7] & Biradar (2009) [2], who reported the overall availability of livestock services to farmers were medium.

2. Satisfaction towards livestock services delivered by MVU**i. Satisfaction towards livestock service delivery by MVU (Service providers' view)****Table 3:** Distribution of service providers according to satisfaction towards livestock service delivered by MVU

Types of services	Level of Satisfaction	L.I. (n=11)	V.S. (n=12)	Total (N=23)
Curative	Medium (5-9)	10(90.9)	11(91.7)	21(91.3)
	High (>10)	1(9.1)	1(8.3)	2(8.7)
Breeding	Medium (3-5)	11(100)	12(100)	23(100)
Preventive	Medium (3-5)	2(18.2)	3(25)	5(21.7)
	High (>6)	9(81.8)	9(75)	18(78.3)
Diagnostic	Low (0-3)	11(100)	12(100)	23(100)
Miscellaneous	Low (0-6)	11(100)	12(100)	23(100)

Figures in the parenthesis indicate percentage.

a. Satisfaction towards curative services

Table indicates that majority of service providers (90.9% L.Is and 91.7% V.Ss) revealed medium level of satisfaction towards curative services. Only few respondents (8.75%) believed that the services offered were of high quality.

b. Satisfaction towards breeding services

All the respondents reported medium level satisfaction towards breeding services offered by their institutions.

c. Satisfaction towards preventive services

Majority of service providers (81.8% L.Is and 75 % V.Ss.) revealed high level of satisfaction towards curative services. Only a few respondents (8.75%) believed that the services offered were of high quality.

d. Satisfaction towards diagnostic services

It can be inferred from the table that all the respondents reported low satisfaction towards diagnostic services. This was due to lack of adequate diagnostic facilities available to them under field conditions.

e. Satisfaction towards miscellaneous services

Table indicates cent percent respondents replied for low satisfaction towards miscellaneous services.

It can be inferred from the table that availability of service is directly proportional to attached satisfaction towards that service. Service providers were highly satisfied towards preventive services. According to them vaccination for major disease of like H.S, FMD, B.Q, goat pox, PPR etc. were quite possible due to functioning of MVU. Service providers had also shown their medium level satisfaction towards livestock advisory services and distribution of medicine services. Though curative services supposed to be provided through MVU, but lack of time, less frequency of MVU vehicle to a particular village makes curative services available on moderate basis. Hence medium level of satisfaction was attached. Breeding activity is a timely activity so it was also not very successful in the study area. Study conducted by Ravikumar *et al.* (2007) [4] revealed that the majority of SDAH personnel had the fractional dissatisfaction on livestock service delivery of SDAH and they rated the service of SDAH as average.

ii. Satisfaction towards livestock service delivery (Farmers' view)**Table 4:** Distribution of farmers according to satisfaction towards livestock services

Services	Level of satisfaction	Phulbani (n=30)	Khajuripada (n=30)	Phiringia (n=30)	Total (N=90)
Curative	Medium	30(100)	30(100)	30(100)	90(100)
Breeding	Low	30(100)	30(100)	30(100)	90(100)
Preventive	Medium	25(83.3)	27(90)	26(86.7)	78(86.7)
	High	5(16.7)	3(10)	4(13.3)	12(13.3)
Diagnostic	Low	30(100)	30(100)	30(100)	90(100)
Miscellaneous	Low	30(100)	30(100)	30(100)	90(100)

Figures in the parenthesis indicate percentage

a. Satisfaction towards curative service

It can be inferred from the table that cent percent respondents in all the 3 blocks were having medium level satisfaction towards livestock related service. Thus, both the service providers and the clientele were similar in their views towards curative services.

b. Satisfaction towards breeding service

Data indicates, all the respondents in all the three blocks were found to be having low level of satisfaction towards breeding service. This is due to more timeliness of breeding services such as A.I. as also reported by service providers.

c. Satisfaction towards preventive services

In the overall sample, 86.7 percent of respondents had medium level of satisfaction, while 13.3 percent of respondents had high level of satisfaction toward preventive services. The satisfaction level of service providers was high in this case. Observability of preventive practices are low and delayed that might be the reason that the view regarding satisfaction towards this important activity varies between service providers and the livestock owners.

d. Satisfaction towards diagnostic service

Cent percent respondents in all the 3 blocks were found to have low satisfaction level towards diagnostic services in the study area.

e. Satisfaction towards miscellaneous service

100 percent respondents reported low level satisfaction with regards to miscellaneous services of MVU.

As discussed earlier, that satisfaction level towards a particular service is directly proportional to its availability. Among preventive services, the farmers were highly satisfied on vaccination practice. Again among miscellaneous services, people were satisfied towards livestock advisory services and medicine distribution services of MVU but due to non-availability of other activities in this category, it was considered as having low satisfactory level. This result is supported by the findings of Verma (2012) [7] and Biradar (2009) [2], who reported livestock farmers had medium level satisfaction towards all the services.

3. Quality of livestock services delivered by MVU**i. Quality of livestock services delivered by MVU (Service providers' view)****Table 5:** Distribution of service providers according to their views on quality of livestock service delivered by MVU

Types of services	Level of Quality	L.I. (n=11)	V.S. (n=12)	Total (N=23)
Curative	Medium(5-9)	7(63.6)	5(41.7)	12(52.2)
	High (>10)	4(36.4)	7(58.3)	11(47.8)
Breeding	Medium (3-5)	11(100)	12(100)	23(100)

Preventive	Medium (3-5)	4(36.4)	2(16.7)	6(26.1)
	High (>6)	7(63.6)	10(83.3)	17(73.9)
Diagnostic	Low(0-3)	11(100)	12(100)	23(100)
Miscellaneous	Low(0-6)	11(100)	12(100)	23(100)

Figures in the parenthesis indicate percentage.

a. Quality of curative services

It is revealed from the table that majority (63.6% and 58.3%) of L.Is and V.Ss, respectively, reported medium quality of curative services. In total sample, 52.2 percent respondents revealed quality of curative services were medium, whereas, 47.8 percent respondents revealed high quality of curative services.

b. Quality of breeding services

Cent percent respondents reported for medium quality of breeding services.

c. Quality of preventive services

It can be inferred from the table that 63.6 percent L.Is and 83.3 percent V.Ss revealed high quality of preventive services. In overall sample, 73.9 percent respondents reported for high quality of preventive service followed by 26.1 percent respondents reported the services were of medium

quality.

d. Quality of diagnostic services

All the service providers reported low quality of diagnostic services.

e. Quality of miscellaneous services

From the table in can be confirmed that all the respondents reported low quality of miscellaneous services.

Quality of livestock services is affected by number of external and internal factors, like how much time devoted towards that particular service, the physical facilities available for the service providers to perform the service, how much the service providers are focused towards that services, as also on the service providers efficiency and calibre in that particular area.

ii. Quality of service provided by MVU (Farmers' view)

Table 6: Distribution of farmers according to their view on quality of livestock service delivery by MVU

Services		Phulbani (n=30)	Khajuripada (n=30)	Phiringia (n=30)	Total(N=90)
Curative	Low (0-4)	30(100)	30(100)	30(100)	90(100)
Breeding	Low (0-2)	30(100)	30(100)	30(100)	90(100)
Preventive	Medium (3-5)	25(83.3)	25(83.3)	26(86.7)	76(84.4)
	High (6-8)	5(16.7)	5(16.7)	4(13.3)	14(15.6)
Diagnostic	Low (0-3)	30(100)	30(100)	30(100)	90(100)
Miscellaneous	Low (0-6)	30(100)	30(100)	30(100)	90(100)

Figures in the parenthesis indicate percentage.

a. Quality of curative services

Table depicts that cent percent respondents rated the quality of curative services provided by MVU were of medium category.

b. Quality of breeding services

In case of productive services, also all the respondents irrespective of blocks reported low quality of production services.

c. Quality of preventive services

It can be concluded from the table that in case of preventive services, majority (83.3%, 83.3% and 86.7%) of respondents of Phulbani, Khajuripada and Phiringia block, respectively rated the service as of medium quality, whereas 16.7 percent, 16.7 percent and 13.3 percent of respondents, respectively in Phulbani, Khajuripada and Phiringia block had rated it as of high quality. In both the blocks, Phulbani and Khajuripada, there was quite similarity with respect to the views of farmers on quality of preventive service.

d. Quality of diagnostic services

Table reveals, in all the 3 blocks, all the respondents reported low quality of diagnostic services.

e. Quality of miscellaneous services

It can be inferred from the table that under the miscellaneous services, the majority of respondents viewed the quality as low. Though same as availability and satisfaction they rated livestock advisory service and distribution of medicine as

good quality but due to unavailability of rest of services by MVU professionals, the overall score on quality for miscellaneous services was low.

Here it can be inferred that respondents ranked the quality of services mostly as per the availability. If any service was not available adequately, they ranked it poor quality, so there is very much similarity in views between availability and quality of services. This result is in contrary to Shakir *et al.* (1999)^[6], who reported curative veterinary services maintained priority in spite of the fact that preventive veterinary services were found to be more important than curative one.

Conclusion

Farmers' perception regarding the availability of any service, the attached satisfaction of farmers towards that service and their views on quality of that particular service can act as a very good indicator to assess the effectiveness of the service. All these three factors needed to be considered while formulating any effective livestock service delivery mechanism.

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