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Knowledge, Attitude and Practice of Foot and Mouth Disease amongst Pastoral Practioners Adjoining the Bannerghatta National Park

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Abstract: A social survey to assess the knowledge, attitude and practice (KAP) of foot and mouth disease among pastoral practioners along forest-farm interfaces adjoining the Bannerghatta National Park was conducted in 83 households comprising of 206 interviewees. It was observed that although 92.23% had knowledge about the incidence and prevalence of the disease and its implications in their husbandry practices, the overall KAP score was considered to be average among the practioners. There seemed to be major misconceptions with regard to routine of vaccination for FMD, which needs to be attended to immediately. Especially, a large void was found in knowledge with regard to neonatal vaccination in livestock and re-vaccination schedules. Importantly, irrespective of previous vaccination or not, 75.24% of the participants reported of recent foot and mouth disease outbreak in their herd with almost 57.28% of them reporting an outbreak in 2018-19. A strong association was seen between lack of education and experience in livestock with foot and mouth disease occurrence. We also found that since many practice grazing in or near forest areas, FMDV could be prevalent in their livestock and not being transmitted by the wild animals. The community members were positive about preventive care and disease monitoring if they received support from the responsible stakeholders.

Keywords: Bannerghatta National Park, cattle, foot and mouth disease, vaccination, wildlife

1. Introduction

Foot and Mouth Disease (FMD) is a disease caused by Foot and Mouth Disease Virus (FMDV) belonging to genus *Apthovirus* of the family *Picornaviridae*. It exists in diagnostically 7 distinguishable serotypes namely, *O, A, Asia 1, South African Territory 1(SAT- 1), SAT- 2, SAT-3 and C,* however, serotypes *O, A and Asia 1* are most prevalent in India [1]. The serotypes can be further antigenically sub typed leading to epidemiological complexity and nearly 100% morbidity rate. The virus has a unique feature of low infective dose and high transmissibility due to varied range of modes of transmission and high rate of virus excretion by the infected, leading to further challenges in control and prevention [2].

The disease mainly manifests in cloven- footed animals, of order *Artiodactyla,* including livestock (cattle, pigs, sheep, and goat) and more than seventy species of wild animals including Indian gaur (*Bos gaurus*), Asian Elephants (*Elephas maximus*), and other native species of deer. Although clinical manifestation of FMD is varied amongst species, common signs and symptoms include fever of 2-3 days, characteristic vesicles followed by erosions in feet, mouth and teats, excessive salivation(sticky/foamy saliva), loss of appetite, lameness, low / bloody milk production and death, in rare cases. Mortality is mostly associated to FMD occurrence in newborns due to myocarditis owing to either vertical transmission or others.

Management of disease in form of treatment and vaccines (Bovilis^{R} Clovax/ Raksha- adjuvant vaccines) are available, however, factors of at least 80% immunization coverage for herd immunity, time, maternal immunity allowance, appropriate dose and route of vaccination are some of the challenges to achieve come control over the disease [1].

Government of India has put forth policies and is being revised on regular basis for rapid implementation of appropriate vaccination and zoo- sanitary measures for effective control of the disease and for restricting the dissemination of the virus. However, for a successful livestock disease control program, understanding the knowledge, attitude and practices of the livestock owners and their readiness to follow these control measures is an important factor that would determine the effectiveness of such programs [4].

Vaccination and sero- surveillance of domestic livestock is rather plausible when compared to wild animals, wherein achieving herd immunity amongst latter is not a practical approach.

However, due to the presence of pastoral villages' areas along the forest-farm interfaces along the Bannerghatta National Park (BNP), Karnataka and inevitability of interactions between the livestock and the

wild animals leads to dissemination of the virus amongst these animals. These interactions have resulted in FMD outbreaks previously [1].

During January 2008, FMD was recorded in BNP. FMDV serotype O was identified in necropsied sample (Heart) collected from a wild gaur. Phylogenetic analysis revealed clustering of the isolate in O/ME-SA/PanAsia lineage. Severe outbreaks of FMD in domestic animals were recorded in the southern region of India during 2007-2008 and the causative lineage was identified to be O/ME-SA/PanAsia lineage. Recently, during 2013-2014, FMD was recorded in chital deer and black buck in Bannerghatta Biological Park, Karnataka. In all the cases FMDV serotype O was confirmed and the isolates were found to group within O/ME-SA/Ind2001, which has been widely prevalent in India since 2008[1]. However, it was not confirmed whether the transmission of virus occurred from wild to domestic or vice versa.

This study concentrates on assessing knowledge, attitude and practices (KAP) amongst the livestock owners residing in these villages in the ecotone area of BNP that appoints as risk behavior for transmission of FMD from the livestock to the wild animals. The results thus obtained can be used as a baseline data for intervention beneficial to the community to enhance their KAP and also to identify hot- spots or possible high-risk zones of transmission to the wild.

2. Methodology

2.1 Knowledge, Attitude And Practice Study:

A cross sectional descriptive study was conducted amongst willing livestock owners in ecotones adjoining the BNP, Karnataka to enhance interventions and assess implications in wildlife. It was a in- person interview using a validated KAP questionnaire.

2.1.1 Study Area:

Bannerghatta National Park (BNP) is a protected area (PA) of about 256 km2 and belongs to the last largest scrub forest of the country, the Eastern Ghats. Surrounded by settlement on most sides of the boundary, Bannerghatta National Park is said to be encompassed by around 150 villages at a distance of 3km from the PA boundary. These communities of people being from lower economic strata depend mostly on agriculture and livestock rearing for their income [5]. Figure (1) illustrates all the villages abutting the margins of BNP.

The villages in this study were selected on basis of operational convenience and also to represent range of entire geographical area of BNP.

2.1.2 Sample Size and Sampling Technique

The entire region was divided into North- west, North- east, South- west and South- east. Note that at least two villages were sampled in each section to obtain what could be considered a representative sample of the ecotone area. Although sampling all or more villages is advantageous, logistics of the study limited it to the selected villages. A total of twelve villages were sampled. Table (1) illustrates all the villages that were sampled.

Further, the households were selected randomly and each member who attended livestock in that household was considered a study unit, based on availability and willingness to participate.

Because of lack of uniform official registration of all present livestock owners in a given village (some of them were registered under the "diary" system of the village gram panchayat, however, not everyone was included).

This sample size was based on a practical consideration of logistic possibility and rational power of test for the proposed statistical analysis.

2.1.3 Data Collection Tool

The KAP data sheet was prepared in consultation with virologists, veterinary doctors, epidemiologists and ecologists. The experts validated the questionnaire in terms of relevance, adequacy and clarity. The questionnaire was pilot tested among five healthcare professionals for validity and reliability.

The questionnaire consisted of interviewer details, household details of interviewee and socio-demographic data in the first section.

The second section consisted of ten Yes/No/Multiple choice questions (MCQ's) to assess the knowledge of the livestock attendant/s in terms of FMD, sources, transmission and vaccination. Grading system followed for this section was binary i.e. one for correct and zero for wrong answer.

Following this, a section was separately included to understand the current and past status of FMD in their herds.

In order to assess the attitudes of livestock attendant/s, eight statements graded by 5-point Likert scale were incorporated. Reverse scoring of the negative statement was done to calculate the final score.

In order to evaluate the practices of these livestock attendee/s, a set of thirteen Yes/ No/ MCQ's were incorporated in the questionnaire.

2.1.4 Data Collection

We carried out the KAP study amongst N = 206 people who attended to the livestock at 83 households (who owned livestock- cattle, buffalo, ox, sheep, goat and pig/s), respectively, from 12 villages adjoining BNP. The participants recruited based on willingness, availability and logistic feasibility.

All the participants were informed about the aims, methods, and implications of the study and confidentiality of the information thus collected, in the local language.

A signature was obtained at the end of interview to assure the confidentiality and credibility of participation and information.

2.1.5 Data Analysis

For knowledge and practice questions, each correct answer was conferred 1 score and wrong one was given 0. For the assessment of the score was given ranging from 5-1. All unattended questions were granted a score of 0. A scoring system was devised which was categorized into excellent (90% and above), Good (70-89%), Average (50-69%), Poor (30-49%) and Very Poor (less than 29%).

Further villages with least KAP score were identified for reference to be correlated as '**hot spots**' or villages with maximum risk behavior for FMD dissemination.

2.1.6 Statistical Analysis

The data was entered into Microsoft® Office Excel® 2007 SP3 MSO (12.0.6787.5000) and SPSS 15.0 for Windows (SPSS™Inc, Chicago, IL, USA).The categorical variables were weighted due to the difference in number of questions in each section. The weighted variables were used for further calculations. TheSpearman's rank correlation was calculated to measure the correlation between KAP. The results obtained were considered significant if the p value<0.05 at 95% Confidence Interval.

3. Results

3.1 Socio- Demographic Data

A total of 206 participants from 83 households were enrolled in the study. The detailed socio-demographic data is illustrated in Table (2). The educational qualifications were categorized into none, primary school (1-4th class), secondary education (5-10th class) and higher education (11th and above). Most of the participants were found to have no education (n=136, 66.03%) and above the age of 40 years old (n=132, 64.08%). The experience in livestock rather was observed to be in a range from less than ten years to more than fifty years, with highest number of participants falling in more than 50 years of experience range (n=75, 36.4%).

The production systems were differentiated into mixed crop- livestock system, pastoral system with diary/ dairy products and market-oriented system with mainly meat and milk for retail purpose. Major section of participants reported to be a part of mixed- crop- livestock system with farming, silk worm rearing and livestock (n=169, 82.04%).

The sex ratio of attendees to livestock observed less significant bias with almost equal proportion of participation (Male: n=108, 52.42% and Female: n=98, 47.58%).

Environmental factors were also evaluated to understand the underlying factors of practices and attitude, which can possibly lead to disease outbreak.

The availability of shed/ animal house for livestock was majorly seen, with at least a hut-like construction for shade and in- built trenches for food and water (n=139, 68%).

The practice of regular and appropriate means of animal house cleaning was majorly lacking, with just four participants reporting usage of disinfection methods (Sweeping: n=130, 63.12%; Washing with water/ dung: n=72, 34.94%; Disinfection: n=4, 1.94%).

Source of feed/ wash and drinking water was mostly found to be from a common/ single source, rather than separated source for each animal (Table (2)).

Most of the animal waste was seen to be used as compost/ manure for the fields owing to the mixed crop- livestock production system, however, only one participant reported of biogas usage (Compost: n=206 99.51). Most of the participants were reported to bury the carcasses of the dead animals, however, 8.25% of the participants reported to sell it/ give it away to the lower caste people in the village for meat purposes.

Majority of milk sellers reported that it was only a minor/ partial source of income to them while majority of meat sellers reported it as a major source of income for their livelihood.

The FMD occurrence, as reported by the livestock attendees, was noted to understand the prevalence of the disease. Table (6) illustrates the details of the same.

Table (3) illustrates village- wise livestock count in the study region.

3.2 Knowledge

Although most of the participants had previously heard or attended to FMD cases in their animals (n=190, 92.23%), only 6.80% of them were aware of the causative agent (n=14). Poor level of knowledge was seen with regard to transmission, animals affected and clinical features and very poor level of knowledge was observed with regard to vaccination and is related questions. The details are illustrated in Table (4).

3.3 Attitude

Attitude of the participants were scored between 5-1, 5 being the highest. About 57% of the participants reported FMD as one of the biggest problems compared to other production problems(n=117) and 56% of them reported FMD as the biggest problem compared to other infectious diseases owing to its high level of transmission and calves' death(n=115). However, only about 12% of them reported regular FMD vaccinations to be of very high effectivity (n=24) and about 26% of them reported very high difficulty in vaccinating their animals against FMD, either owing to lack of veterinary services nearby or lack of belief in effective prevention of FMD through regular vaccination or fear of side- effects of vaccinations(n=14, 6.80%).

Only 28 out of 206 participants believed that small holdings of livestock were sustainable, also only 9.22% (n=19) believed that restricting movement of animals and prevention of mixing of herd would be an effective way of prevention of diseases, as most of them reported difficulty in limiting movement of their livestock (n=74, 35.92%).

3.4 Practice

Most of the participants were willing to vaccinate their animals for FMD, provided the vaccinations were given to them at affordable prices or for free and at a feasible distance from village/ supplied home. Some farmers also reported free government supplied vaccinations, once every year, although the percentage of that was very low (n=11, 5.33% of 206).

Practices with regard to neonatal vaccinations and restriction of movement during outbreak were very poor. (Refer to Table (4)).

58% of the 206 participants reported of outdoor grazing, especially to the nearby forest which was in the range of distance o 100-2000km for all households.

Further, 72.03% of 206 people who reported of outdoor grazing also reported of FMD occurrence in their herd previously. Poor knowledge was seen with regard to the possibility of transmission of FMD from wild animals to livestock and vice versa.

3.5 Overall KAP Score

The results of the study showed that the participants had average KAP with most of them scoring below average (Figure (2). Also, village wise illustration of KAP scores to identify **hot- spots** of least KAP is shown in Figure (3).

3.6 Correlation and Significance

The correlation between Knowledge, Attitude and Practice was obtained of these respondents. There was good linear positive association between attitude and practice ($R= 0.95$, $p < 0.05$) with significance. Linear positive correlation was seen between knowledge and attitude & knowledge and practice (Table (5)).

Correlation was also calculated between knowledge and socio-demographic data such as education, experience in livestock and FMD occurrence. All had a good association with significance of $p<0.05$(Table (5)).

The correlation between FMD occurrence and common source of feed/ drink/ washing was also analyzed. A strong association ($R= 0.98$) with significance of $p<0.5$ was observed.

Importantly, since many participants reported of outdoor grazing in or near forest area, the correlation between outdoor grazing and FMD occurrence was calculated, however, no significance was observed($R=0.08$). This result might possibly point us towards the fact that FMDV is already circulating amongst the livestock and not being transmitted by the wild animals.

(Refer to Figure (4))

4. Discussion and Conclusion

The study was conducted to understand the level of knowledge, attitude and prevalent practices amongst the villagers residing in the ecotone area of BNP. The study revealed that that knowledge was poor and needed immediate action of enhancement and interventional activities for betterment in practices for prevention of infectious diseases such as FMD which could possibly influence conservation efforts for free-ranging wildlife of the adjoining forests.

Moreover, the study further revealed that the knowledge and practices of vaccination greatly depended on the government facilities provided to these villagers owing to he lacks of education or information with regard to these. Although several programs have been put forth by the government for the management and prevention of FMD, there seems to be a gap of information and practice of hygienic livestock management and regular vaccination in these villages.

Moreover, with the expansive outdoor grazing practices in the forest area and reported FMD prevalence in these regions, an immediate and rapid response is needed to put away any further outbreaks of FMD either in these livestock or in wild, leading to deaths.

Limitations of the study included relatively smaller sample size and sampling area owing to the logistic restrictions.

Future prospective of the study points towards a sero- surveillance in this ecotone area villages to correlate this KAP data to the prevalence data provided by such studies.

Also, villages with least KAP scores have been identified to understand hot- spots of possible transmission of FMD. These villages can be reported to the Forest department for intervention and educational awareness to prevent FMD in wildlife of this landscape.

5. Acknowledgements

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6. References

[1]. Subramaniam, S., Pattnaik, B., Sanyal, A., Mohapatra, J.K., Pawar, S.S., Sharma, G.K., Das, B. and Dash, B.B. (2012). Status of foot-and-mouth disease in India. Transbound. Emerg. Dis., 60: 197-203.

[2]. Raveendra Hegde , Amitha R, Gomes • P, Giridhar, Srikanth Kowalli, B. P. Shivashankar, K. J. Sudharshana, K. Nagaraj, R. Sesharao, K. C. Mallinath, B. P. Shankar, D. Nagaraj, C. M. Seema, Tanveer Ahmed Khan, G. V. Nagaraj, K. Srikal, N. K. Dharanesh, M. D. Venkatesha, C. Renukaprasad; "Epidemiology of foot and mouth disease in Karnataka state, India: a retrospective study"; VirusDis. (October–December 2014) 25(4):504–509; DOI 10.1007/s13337-014-0239-3

[3]. [Internet]." THE GLOBAL FOOT AND MOUTH DISEASE CONTROL STRATEGY STRENGTHENING ANIMAL HEALTH SYSTEMS THROUGH IMPROVED CONTROL OF MAJOR DISEASES" Fao.org. 2019. Available from: http://www.fao.org/3/a-an390e.pdf

[4]. Jemberu WT, Mourits MCM, Hogeveen H; "Farmers' Intentions to Implement Foot and Mouth Disease Control Measures in Ethiopia"; PLoS ONE10(9):e0138363; DOI :10.1371/journal. pone.0138363 (2015)

[5]. Singh V.V., (2008) Wildlife Management Plan for Bannerghatta National Park, 2008-09 to 2012-13. Government of Karnataka: 158 pp

7. List of Figures

FIGURE 1. Map of predominant villages abutting the margins of BNP

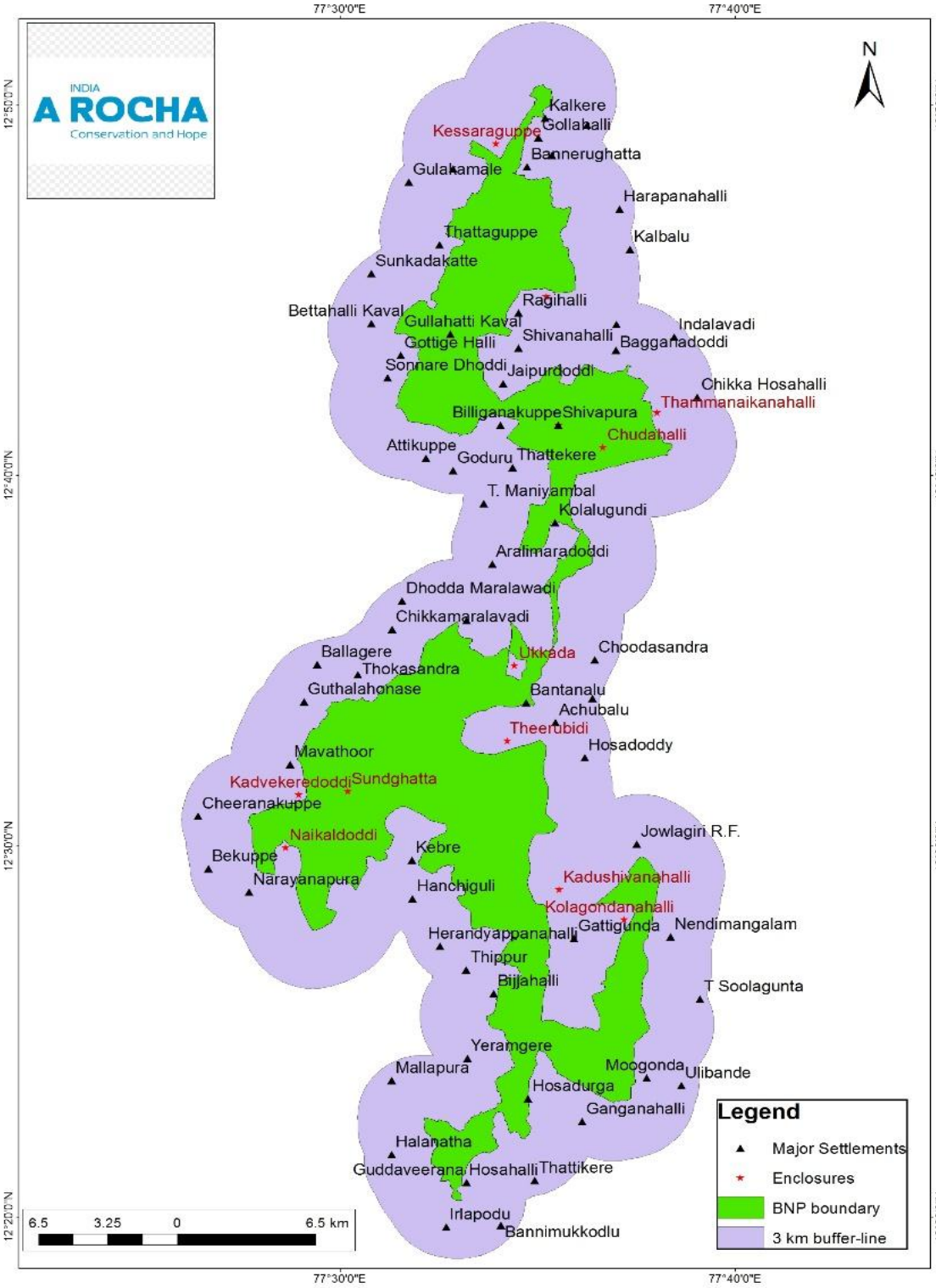


Figure 2. Graph Represnting Overall Score Scale (N=206), Kap Survey on Fmd, Bannerghatta

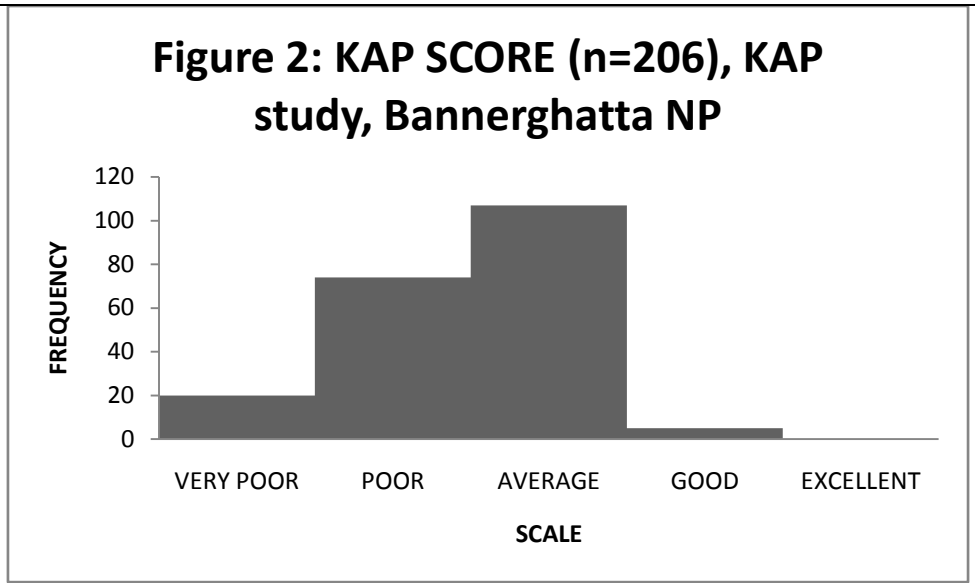
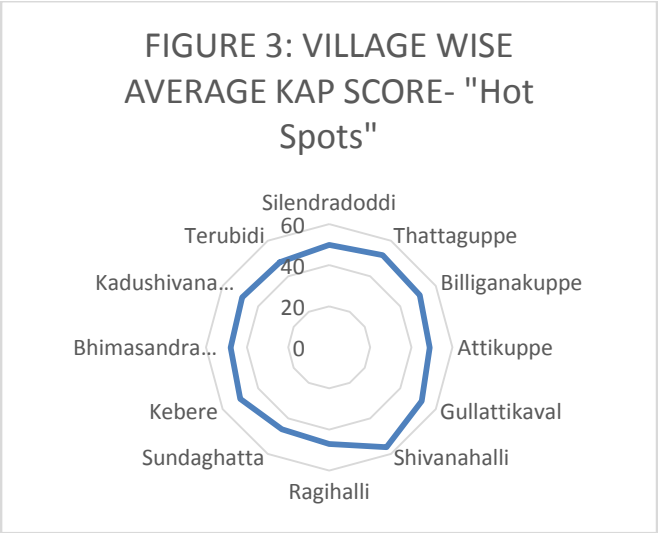
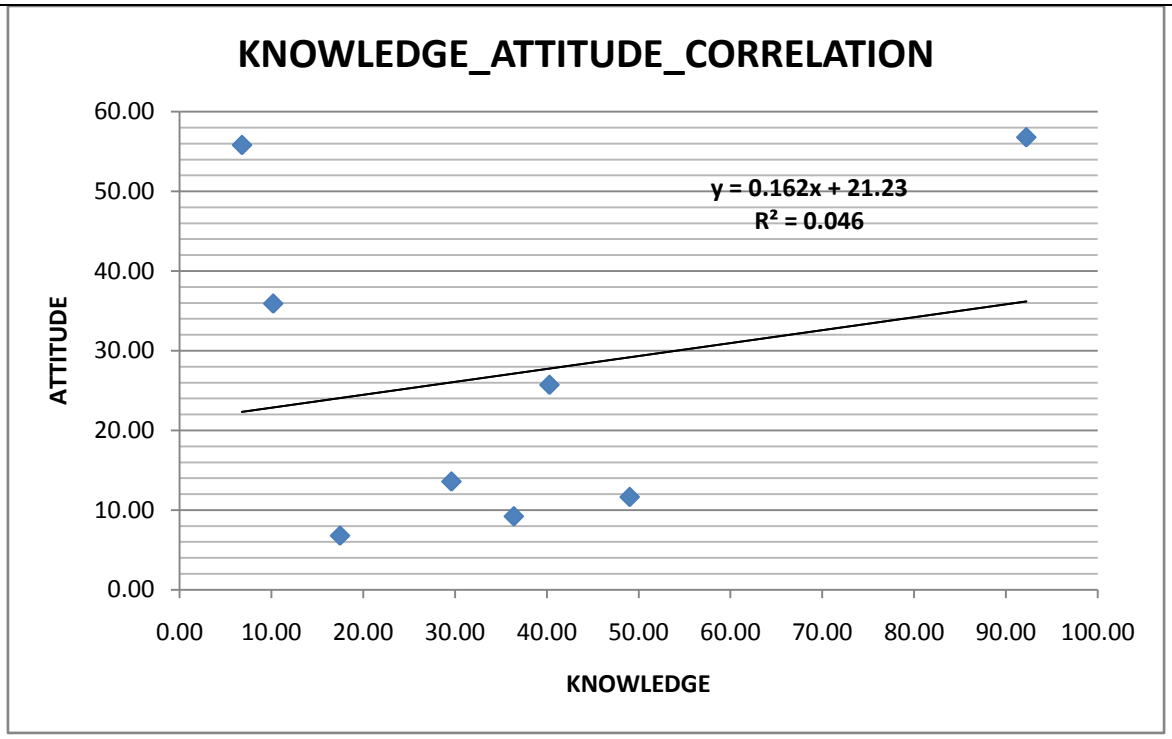


Figure 3. Overall Kap Scores (N=206), Kap Survey on Fmd, Bannerghatta.



Below 50	**50 and Above**
Terubidi	Silendradoddi
Bhimasandradoddi	Thattaguppe
Sundghatta	Billiganakuppe
Ragihalli	Gullattikaval
Attiguppe	Shivanahalli
Kadushivanalli	Kebere

Figure 4. Correlation Graphs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30.00
20.00
10.00
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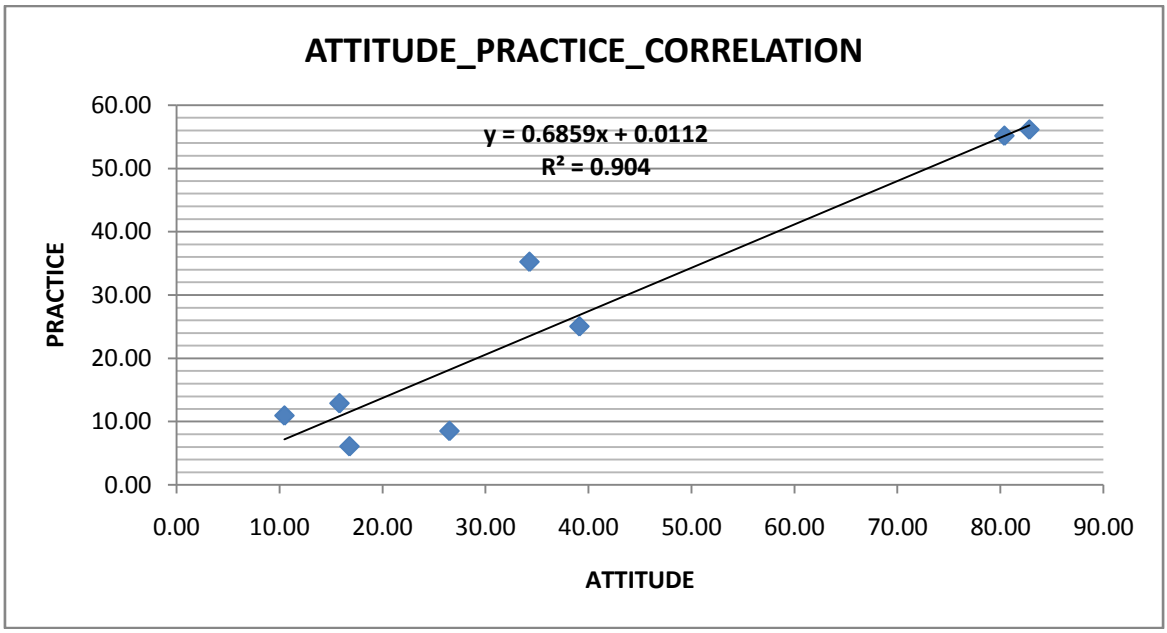
100.00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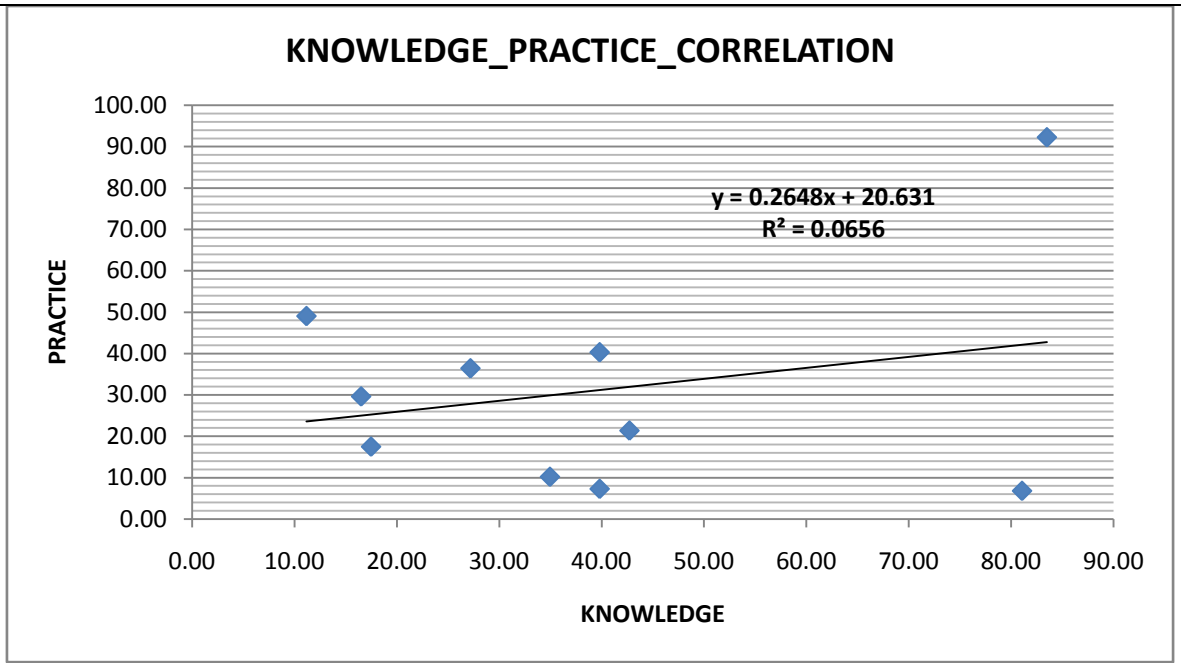
90.00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70.00
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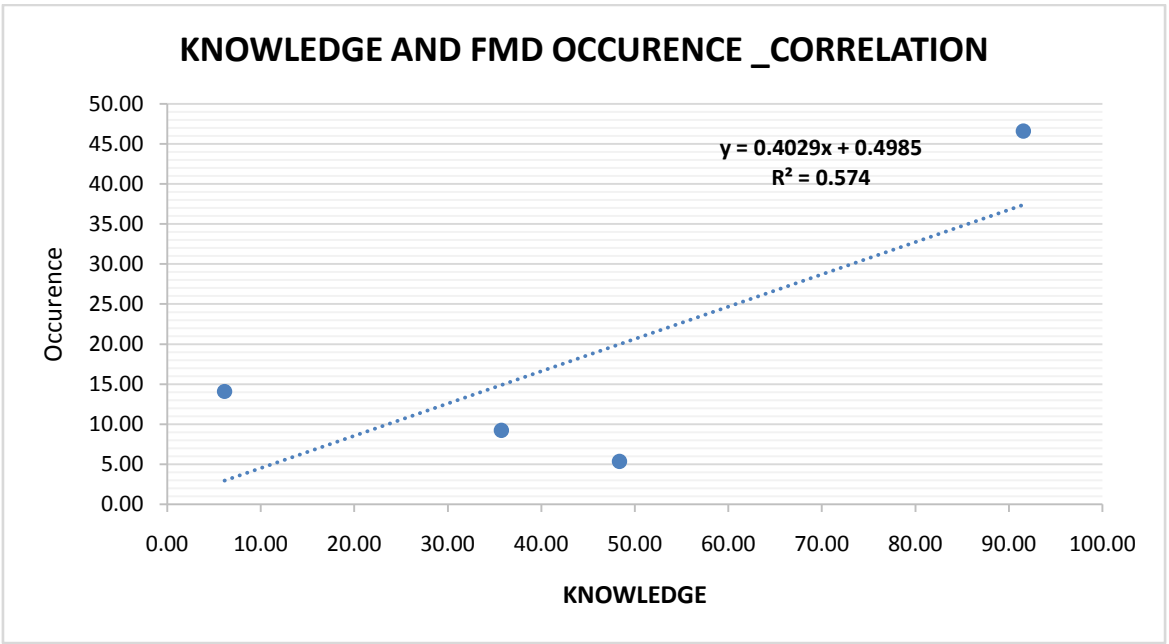
KNOWLEDGE AND FMD OCCURENCE _CORRELATION
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R² = 0.574
Occurence
KNOWLEDGE
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35.00
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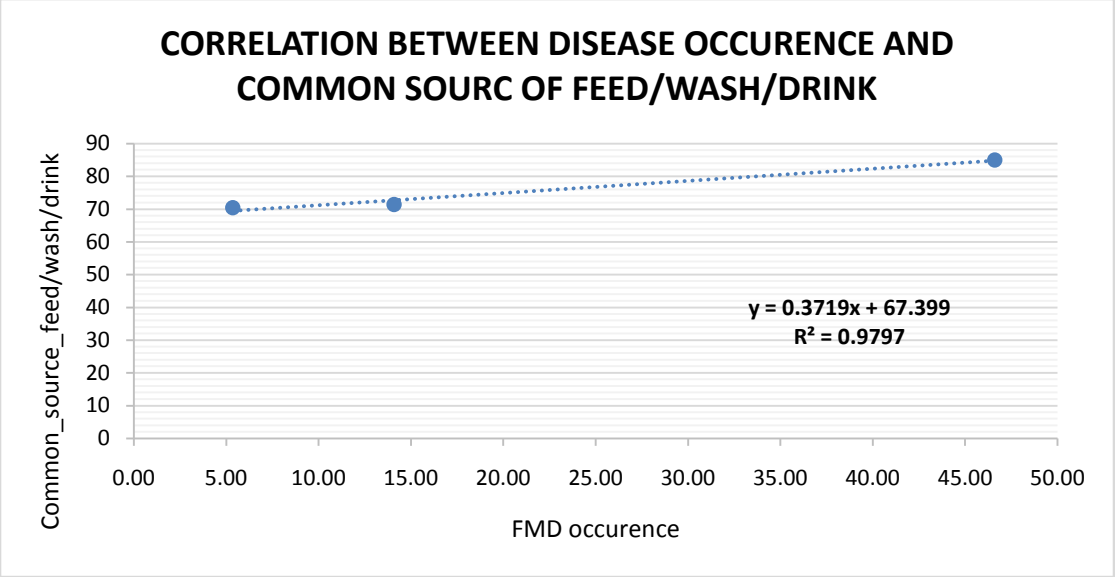

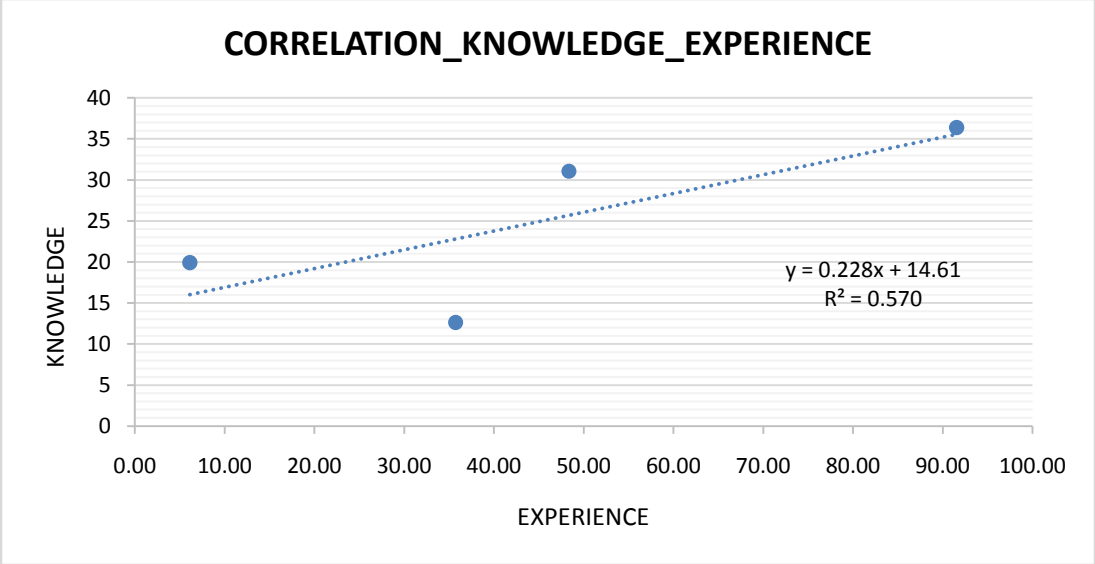

8. List of Tables

Table 1. List of Villages Surveyed For Kap Survey, Bannerghatta

Section	Village	No. of Households	No. of Members
North- West	Silendradoddi	5	20
	Thattaguppe	7	13
	Billiganakuppe	7	23
	Attikuppe	7	14
	Gullattikaval	9	17
North- East	Shivanahalli	7	13
	Ragihalli	7	16
South- West	Sundaghatta	7	18
	Kebere	6	17
South- East	Bhimasandradoddi	6	18
	Kadushivanahalli	6	14
	Terubidi	9	23
Total Sample Size= 206/ 83 Households			

TABLE 2. Socio- Demographic and Environmental Data of KAP survey, Bannerghatta.

Socio-Demography	**Category**	**Frequency**	**Percentage**
	None	136	66.03
	Primary	10	4.85
	Secondary	41	19.9
Education	Higher	19	9.22
	≥ 50 Years	75	36.4
	30- 49 Years	41	19.92
	10-29 Years	64	31.06
Experience In Livestock	<10 Years	26	12.62
	Crop-Livestock Mixed	169	82.04
	Pastoral	28	13.59
Production System	Market Oriented	9	4.37
	≥ 60 Years	40	19.42
	40-59 Years	92	44.66
	20-39 Years	66	32.04
Age	> 20 Years	8	3.88
	Male	108	52.42
	Female	98	47.58
Gender	Others	0	0
Environmental			
	Yes	139	68
Shed Available	No	67	32
	Sweeping	130	63.12
	Washing	72	34.94
Animal Housing Area_Cleaning	Disinfection	4	1.94
	Common	175	85
Source Of Water_Washing	Separated	31	15
	Common	147	71.36
Source Of Water_Drinking	Separated	59	28.64
	Common	145	70.39
Source_Feed	Separated	61	29.61
	Thrown Away	0	0
	Compost/Manure	205	99.51
Disposal_Animal Waste	Biogas	1	0.49
	Burial	189	91.75
Dead Animal_Management	Meat	17	8.25
Contribution Of Livestock To Livelihood	**Status_Income**	**Frequency**	**Percentage**
Milk	Major	45	21.84
	Partial	69	33.49

	Minor	82	39.82
	(Self- Use)	10	4.85
Meat	Major	17	51.51
	Partial	7	21.21
	Minor	9	27.27
	Total (Meat_Income)	33	16.07(Of 206)

Table 3. Livestock Count in Study Area

Section	**Village**	**Cattle**	**Ox**	**Buffalo**	**Goat**	**Sheep**	**Pig**	**Total**
	Gulattikaval	67	0	0	26	20	0	113
	Attiguppe	22	0	0	0	0	0	22
	Biliganakuppe	21	0	0	0	0	0	21
	Thattakuppe	32	0	0	0	0	0	32
North-West	Silendradoddi	21	0	0	44	27	0	92
	Shivanalli	34	2	0	3	0	0	39
North-East	Ragihalli	28	0	0	7	1	0	36
	Sundghatta	20	0	0	14	0	0	34
South- West	Kebere	32	0	0	0	0	0	32
	Bhimasandradoddi	26	2	2	10	0	0	40
	Terubidi	45	0	2	0	0	0	47
South- East	Kadushivanahalli	52	1	0	28	0	0	81
								Total=589

Table 4**:** Kap Scores, Kap Survey on Fmd, Bannerghtta

Knowledge- Related- Questions	**Frequency Of Appropriate Answers**	**Percentage**	**Score**
Heard Of Foot And Mouth Disease(Fmd)	190	92.23	Excellent
Causative Agent Of Fmd	14	6.80	Very Poor
Possible Ways Of Transmission	101	49.03	Poor
Animals That Can Be Affected By Fmdv	75	36.41	Poor
Clinical Features Of Fmd	83	40.29	Poor
Fmd Requires Clinical Consultation	61	29.61	Very Poor
De- Worming Pre- Vaccination	36	17.48	Very Poor
Effectivity Of Fmd Vaccination	21	10.19	Very Poor
Fmd Vaccination During Bad Weather	44	21.36	Very Poor
Fmd Vaccination During Draught	15	7.28	Very Poor
Fmd Vaccination During Fmd Outbreak	14	6.80	Very Poor
Fmd Vaccination Post Transport	23	11.17	Very Poor
Side- Effects Of Fmd Vaccination	25	12.14	Very Poor
Attitude- Related- Questions			
Problem Of Fmd Compared To Other Production Problems	117	56.80	Average
Problem Of Fmd Compared To Other Diseases	115	55.83	Average
Effectiveness Of Regular Vaccination	24	11.65	Very Poor

Effectiveness Of Restricting Movement	19	9.22	Very Poor
Difficulty In Vaccinating Animals	53	25.73	Very Poor
Effectiveness Of Small Holdings	28	13.59	Very Poor
Side- Effects Of Fmd Vaccination	14	6.80	Very Poor
Difficulty In Limiting Movement During Disease	74	35.92	Poor
Practice-Related- Questions			
Fmd Vaccination At Mrp	172	83.50	Good
Fmd Vaccination At No Cost From Government	167	81.07	Good
Number Of Times Vaccinated Against Fmd	23	11.17	Very Poor
Continuous Restriction Of Movement Of Animals	56	27.18	Very Poor
Limitation Of Movement During Outbreak	82	39.81	Poor
Duration Of Restriction During Outbreak	34	16.50	Very Poor
Newborn Vaccinations Followed By Booster Dose	36	17.48	Very Poor
Protection Pets	72	34.95	Poor
Outdoor Grazing - Not Allowed	88	42.72	Poor
Transmission Of Fmd From Wild To Domestic And Vice Versa	82	39.81	Poor

Table 5**:** Correlation, Associations and Significance, Kap Study on Fmd, Bannerghatta.

Correlation	R	P-Value	Significant
Knowledge_Education	0.9447222	<0.015481	Yes
Knowledge_Experience	0.7555792	<0.011499	Yes
Knowledge_Occurance	0.7576279	<0.011139	Yes
Occurrence_Common Source	0.989798	< 0.00001	Yes
Outdoor Grazing_Fmd Occurence	0.0860233	<0.219034	No
Knowledge_Attitude	0.2165641	<0.457221	No
Attitute_Practice	0.9508417	<0.000024	Yes
Practic_Knowledge	0.256125	<0.447178	No

Table 6**:** Fmd Occurrence and Prevelance (As Reported By Attendants Of Livestock), Kap Study on Fmd, Bannerghatta.

As Reportd by the Attendees	**Category**	**Frequency**	**Percentage**
Reported Fmd Outbreak	Yes	155	75.24
	No/ Unaware	51	24.76
Reported Last Outbreak	2019	61	29.61
	2018	57	27.67
	2017	19	9.22
	2016	8	3.88
	2015	10	4.85

Frequency Of Outbreak	Every Year	96	46.60
	Every 2 Years	29	14.08
	Every Five Years	11	5.34
	Every 10 Years	19	9.22
Trend In Occurrence	Decreasing	103	50.00
	Increasing	40	19.42
	Unchanged	12	5.83