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RESEARCH ARTICLE

Impact of COVID-19 Lockdown on Livestock and Poultry Sectors: Veterinary Students Perception and Suggestions

K.P. Saravanan[1]

1. Assistant. Prof.,
Deptt. of Vet. and AH Extension Education,
Veterinary College and Research Institute,
Orathanadu, TNVAS,
Tamil Nadu, India

Corresponding author e-mail: k.p.saravananvet@gmail.com

ABSTRACT

The study was undertaken to know perception of veterinary students on impact of COVID-19 lockdown on livestock and poultry sectors and suggestions to manage the lockdown impact. Data were collected through google form from 73 veterinary undergraduate students on July 2021. The data was analysed by descriptive statistics, Rank Based Quotient (RBQ) and results were interpreted. Our results revealed that veterinary students strongly agreed with increased prices for concentrate feed and limited supply (50.70%), limited availability of veterinary doctors for private practices (39.70%), declined livestock sales owing to livestock transportation constraints (41.10%) and declined demand for meat/livestock due to consumer unreadiness (28.80%) toward the livestock sectors. Further, the study reported that veterinary students had greater perception on price drop of eggs and broiler chicken during lockdown's initial period (47.90%), rise in consumption of country chicken meat and eggs (61.60%) and farm labour shortages (47.90%) in the poultry sector. These participants suggested, expansion of milk collection centres; and sell milk and meat via a mobile van (RBQ 47.06); give COVID-19 vaccination priority to farm labour; employ family labour for farm maintenance (RBQ 36.76); and promote COVID-19 measures through prominent local leaders (RBQ 35.29) to manage COVID-19 impact on livestock.

Key words: *COVID-19; Impact; Livestock; Perception; Poultry.*

In India, the livestock and poultry sectors provide primary sources of income to the majority of farmers and considering emergency assets. The government announced COVID-19 lockdown in March 2020 followed by May 2021 in Tamil Nadu. Several industries have been affected by the news of the lockdown. However, there is no exemption for livestock and poultry sectors. These sectors are also highly suffered by lockdown namely, reduction in demand of different commodities, drug unavailability, wastage of the produce due to the closure of transport and market chains, changes in occupation, farmers income, financial suffering, distress sale of the produce and labour shortage, daily milk production reductions, feed shortage, economic losses of livestock sector (*Biswal et al. 2020*; *Hussain et al. 2020*; *Amitha and Karthikeyan, 2022*; *Kumari and Babel 2022*). The COVID-19 shutdown has had a detrimental effect on livestock and poultry sectors. Under this background, to know the veterinary student's perception on impact of the COVID-19 lockdown on the livestock and poultry sectors and suggestions to manage the impact, the study was formulated.

METHODOLOGY

The study was conducted to know the perception of veterinary students towards the impact of COVID-19 lockdown on livestock and poultry sectors. Data were collected from 73 undergraduate students of Veterinary College Research Institute, Orathanadu, Tamil Nadu through pretested google forms on July 2021. The list of perception statements was identified and compiled by using literature review, expert consultations and key informant techniques. Perception statements on livestock aspect in four dimensions and poultry sector aspect two dimensions were listed. Totally

24 statements were included on livestock aspect and poultry aspects nine statement were included. Respondents were asked to express their perception on a five-point continuum (SDA- Strongly disagree, SWDA – Somewhat disagree, DA- Neither agree/ Disagree, SWA- Somewhat agree, SA- Strongly agree). They expressed their perception based on their observations from different localities; interactions with livestock and poultry farmers, veterinary clinic exposure and other media exposures.

Suggestions to manage the COVID-19 impact : List of suggestions to manage the COVID-19 impact were identified through literature research and expert consultations. Suggestions were ranked by Rank Based Quotient (RBQ) technique.

$$RBQ = \frac{\Sigma fi\,(n + 1 - I)}{N \times n} \times 100$$

Where,

RBQ= Rank Based Quotient

F_i = Number of students reporting a particular suggestion under i^{th} rank

N = Total number of students

I = Number of ranks

n = Number of suggestions

Statistical analysis : The data were analysed by descriptive statistics percentage, frequency and results were interpreted.

RESULTS AND DISCUSSION

The results are interpreted in three aspects first sources of information for students on impact of COVID-19 followed by perception and suggestions to manage the impact.

Source of information on impact of COVID 19 on Livestock and Poultry : The majority of the students (83.82%) had acquired the information through their own experiences and farmers' experiences followed by 66.18 per cent had information from interactions with veterinary doctors and 64.17 per cent had by peer group contact. Around one-third of students have obtained from television (39.71%), What's App group (38.24%) and Facebook (33.82%). Students retrieved information through following social medias, namely the local WhatsApp group, *Kalnadai valarppu* group, field vet, and making vet. Least number of respondents were obtained the information through Instagram, newspaper radio and websites.

Regarding other mass media, they include *Pasumai Vikadan*, Tamil Nadu Agricultural University magazines, Sports Star, *Door Dharsan Pothigai, Dinamalar, Dinathanthi*, Eduvet, Makingvet for retrieving information.

Perception of veterinary students on impact of COVID-19 lockdown on livestock farming : Respondents' perceptions are discussed in three aspects: First perception towards livestock healthcare followed by milk and meat marketing on impact of COVID-19 lockdown.

Perception towards livestock health care: Table 1 reveals that more than one-third of respondents (39.70%) had perceived and strongly agreed with the statements on the limited availability of veterinary doctors for private practices and no foot and mouth disease vaccination for the last two years. *FAO, 2021* also reported that 50% of private veterinarian were affected during lockdown to render routine services. Another study also reported that halt of routine vaccination programme by the Government (*Biswal et al. 2020*). Nearly half of respondents (46.60%) strongly agreed with the statement on increased use of teleconsultation for veterinary treatment, followed by inadequate health care camps on a consistent basis and farmers' increased tendency to self-medicate respectively (34.20% and 32.90%). Artificial Insemination (AI) service delivery and provision of animal health services such as vaccine and other treatment also decreased, with more than 40% of dairy farmers reporting such decreases during the period (*Meseret et al. 2021*).

Perception towards milk marketing : According to Table 1, more than one-third of the students (41.10%) strongly agreed with the statement on decreased milk sales due to livestock transportation constraints, followed by 37 per cent of the students who perceived low milk prices from local cooperative societies and 35.60 per cent of the respondents who agreed with the fell in milk procurement volume. Due to closure of restaurants and hotels, the collapse of the home delivery system, residents are unable to leave these individuals must rely on supplies from such dealers of adulterated milk.

Perception towards the meat marketing : A critical look on Table 1 shows that 28.80% of the students strongly perceived with statement on declined demand for meat/livestock due to consumer unreadiness followed by 23.30 per cent of the students had agreed with demand for beef has risen in some areas. High cost of mutton and chicken, farmers belief eating increase the self-immunity in some regions the demand for beef

Table 1. Perception of students towards the impact of the COVID-19 lockdown on livestock farming and poultry sector (N=73)

Statements	SDA (%)	SWDA (%)	DA (%)	SWA (%)	SA (%)
Livestock healthcare					
Limited availability of veterinary doctors for private practices	7(9.60)	10(13.70)	5(6.80)	22(30.10)	29(39.70)
No FMD vaccination for the last two years	10(13.70)	8(11)	12(16.40)	14(19.20)	29(39.70)
Increased use of teleconsultation for veterinary treatment	3(4.10)	3(4.10)	8(11)	34(46.60)	25(34.20)
Farmers' increased tendency to self-medication	3(4.10)	4(5.50)	4(5.50)	39(53.40)	23(31.50)
Inadequate health care camps on a consistent basis	2(2.70)	3(4.10)	11(15.10)	33(45.20)	24(32.90)
Farmers' reluctance to visit veterinarians for treatment	7(9.60)	11(15.10)	6(8.20)	30(41.10)	19(26)
Decrease in the supply of semen straw for Artificial insemination	9(12.30)	12(16.40)	12(16.40)	34(46.60)	6(8.21)
Reduced number of artificial insemination practice	11(15.10)	13(16.40)	5(6.80)	38(52.10)	6(8.21)
Milk marketing					
Declined milk sales owing to livestock transportation constraints	1(1.40)	6(8.20)	5(6.80)	31(42.50)	30(41.10)
Fall in milk procurement volume by local cooperative societies	3(4.10)	10(13.70)	5(6.80)	29(39.70)	26(35.60)
Low prices for milk by local cooperative societies	10(13.70)	12(16.40)	4(5.50)	20(27.40)	27(37)
Improved hygienic measures in milk collection centres	3(4.10)	7(9.60)	13(17.80)	29(39.70)	21(28.80)
Rise in adulteration of milk in rural areas	4(5.50)	10(13.70)	13(17.80)	25(34.20)	21(28.80)
Diminished milk processing capacity of smallholder farmers	0(0)	5(6.80)	11(15.10)	36(49.30)	21(28.80)
Drop in sales of frozen milk products	5(6.80)	6(8.20)	8(11)	35(47.90)	19(26)
Livestock meat marketing					
Declined demand for meat/livestock due to consumer unreadiness	6(8.20)	9(12.30)	9(12.30)	28(38.40)	21(28.80)
Demand for beef meat has risen in some areas	3(4.10)	9(12.30)	16(21.90)	28(38.40)	17(23.30)
Distress sales of young and adult livestock due to lower slaughter numbers	4(5.50)	4(5.50)	9(12.30)	40(54.80)	16(21.90)
Increased hygienic practices in meat stalls	5(6.80)	9(12.30)	11(15.10)	36(49.30)	12(16.40)
Decline in the number of slaughtered calves	2(2.70)	12(16.40)	17(23.30)	29(39.70)	13(17.80)
Livestock farm management					
Increased prices for concentrate feed and limited supply	1(1.40)	5(6.80)	3(4.10)	27(37.00)	37(50.70)
Inadequate finance for small-scale dairy farmers/new farm entrepreneurs	0 (0)	3 (4.10)	7 (9.60)	29 (39.70)	34(46.60)
Limited access to veterinary doctors for emergency veterinary care	2(2.70)	4(5.50)	5(6.80)	33(45.20)	29(39.70)
Reduction of herd/flock size or sale of a portion for family support	0 (0)	6(8.20)	12(16.40)	32(43.80)	23(31.50)
Poultry farm management					
Farm labour shortages	0 (0)	2 (2.70)	5 (6.80)	31 (41.20)	35 (47.90)
Egg stagnation and storage challenges for small poultry farms	2 (2.70)	2 (2.70)	3 (4.10)	32 (43.80)	34 (46.60)
Closure of small-scale broiler/layer farms	1 1.40)	6 (8.20)	14(19.20)	25 (34.20)	27 (37)
Increased soyabean and maize prices	1 (1.40)	0 (0)	16(21.90)	35 (47.90)	21 (28.80)
Marketing aspects					
Price drop of eggs and broiler chicken during lockdown's initial period	1 (1.40)	5 (6.80)	6 (8.20)	16 (21.90)	45 (61.60)
Rise in consumption of country chicken meat and eggs	1(1.40)	3(4.10)	4(5.50)	30(41.10)	35(47.90)
Increased egg and meat consumption during the lockdown's middle phase	0(0)	5(6.80)	5(6.80)	28(38.40)	35(47.90)
Difficulties to smallholder farmers in transporting poultry to markets	0(0)	4(5.50)	2(2.70)	32(43.80)	35(47.90)
Improved hygienic standards in chicken meat shops	5(6.80)	5(6.80)	18(24.70)	31(42.50)	14(19.20)

SDA- Strongly disagree, SWDA – Somewhat disagree, DA- Neither agree/Disagree, SWA- Somewhat agree, SA- Strongly agree

has increased in some region. *Narendra Babu et al. (2022)* also reported that 70.60 per cent and 77.78 per cent hike in the prices of retail sales of carabeef and beef. One-fifth (21.90%) of them had strongly agreed on the statement of distress sales of young and adult livestock due to lower slaughter numbers. Adult goat and kids were temporarily and unexpectedly retained on farms as a result of a decrease in the number of animals slaughtered during this period (*Vidaurreta et al. 2020*).

Perception towards livestock farm management : The perception of students about COVID-19 impact on livestock farm management showed that half of the students (50.70%) were in agreed with the statement that increased prices for concentrate feed and limited supply (*Saravanan et al. 2021* reported similar result that high cost of concentrate feed is a major problem in dairy farming. Inadequate finance for small-scale dairy farmers/new farm entrepreneurs was perceived by 46.60% of the students. More than one-third of the students (39.70%) were agreed with statement on limited access to veterinary doctors for emergency veterinary care.

Perception of veterinary students on impact of COVID-19 lockdown poultry farm management : Sample respondents of the veterinary students were asked about their perception of the impact of the COVID-19 lockdown on the poultry sector and the results are indicated in Table 1. The results revealed that 47.90% of the students agreed with the statement on farm labour shortages followed by had strongly agreed with the statements on egg stagnation and storage challenges for small poultry farms (46.60%) and closure of small-scale broiler/layer farms (37%) respectively. *Fang et al. (2021)* also reported that more than 30% of broiler farms and 10 per cent of layer farms closed before June 2021 in Myanmar.

Perception towards the poultry meat marketing : When enquired about the impact of COVID-19 lockdown on poultry meat marketing, 61.60 per cent of the students had perceived that price drop of eggs and broiler chicken during the initial period of lockdown. Due to rumours in social media about chickens as the likely carriers of the virus, initial period egg and broiler sale prices have been reduced (*Biswal et al. 2020*). Nearly half of the students (47.90%) also perceived with statements on rise in consumption of country chicken meat and eggs; increased egg and meat consumption during the middle phase of lockdown and difficulties to smallholder farmers in transporting poultry to markets.

Table 2. Suggestions on livestock health care (N= 68)

Suggestions	RBQ value	Rank
Livestock health care		
Promote COVID-19 measures through prominent local leaders	35.29	I
Veterinarians may recommend herbal therapies for mild ailments	18.63	II
Develop a mobile app for emergency veterinarian care	17.16	III
Sensitize farmers to non-pharmaceutical biosecurity interventions at the farm level	16.18	IV
Suggestions for appointment-based veterinary medical care	6.86	V
Regulate the sale of prescription drugs in pharmacies	6.37	VI
Milk and meat marketing		
Expansion of milk collection centres and sell milk and meat via mobile van	47.06	I
Conduct training on the preparation of value-added milk and meat products	24.26	II
Price reductions for value-added milk and meat products	14.71	III
Inspect milk collection centres for adulteration	9.56	IV
Livestock farm management		
Give COVID-19 vaccination priority to farm labour and employ family labour for farm maintenance	36.76	I
Government can provide subsidies, feed ingredients to small farms, and lower fuel taxes.	22.35	II
Encourage farmers to fodder cultivation and extend grazing duration	16.76	III
Create a local WhatsApp group for farmers to share market information	12.35	IV
Use alternate feed sources and local ingredients in the feed ration	3.24	V

Health conscious and high nutritive value might be the reasons for strongly agreed towards increased consumption on country chicken. *Narendra Babu et al. (2022)* also reported that 48.10% changes in the consumers in the preference of meat.

Suggestions to manage the COVID-19 impact : To manage the COVID-19 impact, veterinary students have given advice on three different topics: animal health care, milk and meat marketing, and livestock farm management.

Suggestions on livestock health care : For livestock

health care, six suggestions were ranked. Table 2 indicates that promote COVID-19 measures through prominent local leaders was ranked first with an RBQ value of 35.29 followed by veterinarians may recommend herbal therapies for mild ailments (18.63) and develop a mobile app for emergency veterinarian care (17.16), sensitize farmers to non-pharmaceutical biosecurity interventions at the farm level (16.18) were ranked second, third and fourth respectively.

Suggestions on milk and meat marketing : The veterinary students' suggestions towards milk and meat marketing were mentioned in Table 2. It reveals that students suggested that expansion of milk collection centres and sell milk and meat via a mobile van (RBQ47.06) followed by conduct training on the preparation of value-added milk and meat products (RBQ 24.26) and price reductions for value-added milk and meat products (RBQ 14.71) were ranked first, second and third respectively.

Suggestions on livestock farm management : Veterinary students' suggestions on livestock farm management were mentioned in Table 2. Among the suggestions, give COVID-19 vaccination priority to farm labour and employ family labour for farm maintenance was ranked first with an RBQ value of 36.76 followed by government can provide subsidies, feed ingredients to small farms and lower fuel taxes (22.35); encourage farmers to fodder cultivation and extend grazing duration (16.76) were ranked second and third, respectively.

CONCLUSION

The study indicates livestock and poultry industries have been affected by the COVID-19 pandemic. It revealed changes in livestock and poultry sectors supply chain management, health care and marketing. The COVID-19 infection has not been eradicated fully. Hence, the study recommending contingency steps such as promote COVID-19 measures through prominent local leaders to mitigate the impact and Expansion of milk collection centres and sell milk and meat via mobile van. It would be helpful to policymakers in developing guidelines for livestock stakeholders.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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