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An Insight into The Knowledge Level of Dairy Farmers About Retention of Placenta in Punjab, India

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ABSTRACT

The present study was conducted on 300 Dairy farmers visiting three main Veterinary institutions (100 farmers from each), namely Teaching Veterinary Clinical Complex (TVCC), Civil Veterinary Hospitals (CVH) and Veterinary Polyclinics of Punjab state to assess the knowledge level of dairy farmers about Retention of Placenta in dairy animals. Data analysis revealed that there are preferences of dairy farmers for mixed farming (cows and buffaloes) as compared to individual cow farming or buffalo farming. Dairy farmers were categorized in to Group I (rearing cows only, n=84), Group II (rearing buffaloes only, n=30) and Group III (rearing both Cow and buffalo, n=186). Most of dairy farmers had medium to large farm size for Group I and Group III farming, while most of dairy farmers in Group II had small to medium farms. There was statistically significant difference between knowledge level of the farmers of Group II and Group III (at $P< 0.05$) but Group I did not differ statistically significant with Group II and Group III. Majority of the dairy farmers (63.10 %, 60 %, 85.48 % of dairy farmers belonging to Group I, II and III respectively) had medium knowledge level score. Suitable extension intervention should be done to enhance the knowledge level of dairy farmers about retention of Placenta.

Keywords:Dairy, Farmer, Knowledge, Punjab, Retention of Placenta.

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INTRODUCTION

In dairy sector, Punjab state is among the leading states of the country. Punjab has highest average per capita milk availability (1283g), while at national level, it is 459 g in year 2022-23 (Anonymous, 2024). Dairy farming is expanding its wings from subsidiary occupation to main occupation of farmers. However, profitability from a dairy herd is influenced by reproductive performance of dairy animals. Consequences of poor reproductive performance are lowered milk yield due to reproductive disorders and shortened productive life (Gröhn and Rajala-Schultz,

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2000). Retention of placenta (ROP) is one of the most common reproductive disorders occurring in dairy animals after parturition. Frequency of ROP range from 5 to 10% (Stephen, 2008). Due to ROP, there is a decrease in milk production (Kumari *et al.,* 2015); longer interval to first estrus and breeding; increased number of services per conception; decrease in conception rate and increase in chances of metritis (Gaafar*et al.,* 2010). All these consequencescause economic loss to dairy farmer. The economic losses due to ROP persuade extension workers to educate the dairy farmers about it. Before conducting any extension activity in an efficient manner, the extension worker should assess the existing knowledge level, place of farmer and type of animal reared by them (Kasaija, 2016), as it helps in planning future strategy. However, in the research literature, there is scanty information about knowledge level of dairy farmers about Retention of Placenta. So, an elaborative study involving dairy farmers belonging to whole of Punjab was planned to get insight in to knowledge level of dairy farmers belonging to Punjab state about Retention of Placenta

MATERIALS AND METHODS

Locale of Study and Sampling Procedure

Historically, Punjab state is geographically divided into three major regions (namamahay, Malwa and Doaba) due to the rivers (Anonymous, 2022). For treatment of their animals and to get proper guidance, the dairy farmers of Punjab state are visiting three main Veterinary institutions namely, Teaching Veterinary Clinical Complex (TVCC), Civil Veterinary Hospitals (CVH) and Veterinary Polyclinics.

Teaching Veterinary Clinical Complex (TVCC) is a Veterinary clinical complex situated at Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana. Civil Veterinary Hospitals (CVH) are located in rural and urban areas of different districts. There is only one Veterinary polyclinic located in one district. For CVH and Polyclinic selection, three districts (namely Ludhiana, Amritsar and Jalandhar) were selected in Malwa, Majha and Doab regions respectively on the basis of maximum livestock (cattle and buffalo) population in Punjab. A total of 300 dairy farmers visiting these three different Veterinary institutions (100 dairy farmers from each) were randomly selected. Dairy farmers rearing cows only were assigned Group I, those who were rearing only buffaloes were assigned Group II and those who were rearing both Cow and buffalo were assigned Group III. Among the total sample size of 300, Group I had 84 dairy farmers. Group II had 30 dairy farmers and Group III had 186 dairy farmers.

Preparation of Survey Instrument and Data Collection

An interview schedule containing a total of 17 questions/items related with objectives of study was prepared after carefully examining relevant literature and discussions with subject matter experts/ field extension workers/progressive dairy farmers. The questions were made according to understanding level of farmers. The farmers were motivated to express their answers in their own language. The ideal response for Question number 1 to 6 and Question number 8 to 17 was 'Yes'. Question number 2 was an openended question, where farmers were asked to answer according to their understanding. For quantification of data, the farmers who answered correct were awarded 'One' score, while those who have given incorrect answer were graded 'Zero' for that particular question. For Question number 7, the dairy farmers who had answered 'One symptom' were given 'One' score; those who had answered two symptoms, were awarded 'Two' score and those who had answered three symptoms were given 'three' score. So, the maximum score that a farmer can get while answering all the questions of survey instrument was 19. The information about socio-personal profile parameters of dairy farmers was gathered by directing questioning and seeing the documents. Personal interview schedule method was used as tool of data collection.

Data analysis and categorization of farmers

Tabulation of gathered data was done in Microsoft Excel and analysis was performed with the help of SPSS version 20.0. Dairy farmers obtaining < 6, 6-13 and > 13 score were categorized in to low, medium and high knowledge level category respectively (Basis was to divide the dairy farmers in to three equal categories, as the maximum score is 19).

RESULTS AND DISCUSSION

Table 1 indicated that, out of 300 interviewed dairy farmers, 84 (28 %) were rearing cows only and 30 (10 %) rearing buffalo only, while 186 (62 %) rearing both cows and buffaloes. This suggests that there are more preferences of dairy farmers for mixed farming (cows and buffaloes) as compared to individual cow farming or buffalo farming. Majority of Group I dairy farmers belong to middle and old age group, while majority (66.67%) of Group II

dairy farmers belong to middle age group and farmers of Group III fall in old age group category. All the farmers of Group I and Group II were male farmers and 97.85 percent of Group III farmers were males. This suggests that dairy farming in Punjab state is mostly done by middle to old age male farmers. The education level of most of the farmers belonging to Group I, II and III was up to or above high school. Ahirwar*et al.,* (2016) also reported that the majority (55%) of peri-urban farmers of Rewa district of Madhya Pradesh were middle aged, with a high school being the most common level of education (38.33%).

The family type of most of the farmers belonging to Group I and III was nuclear. This suggests that these days there is a change in family type from joint to nuclear families among dairy farmers. Family size of most of the families was reported to be large. Kasrija (2016) also reported that dairying in Punjab is done mostly by middle aged (53.15 %) farmers. Only small proportions of farmers had large (7.04%) and joint (24.26%) families.

Most (45.24%) of Group Ifarmers had medium farm size, followed by 34.52 percent having large farm size and approximately 20 percent farmers with small farm size. In Group II, 56.67 percent were having medium farm sizeand rest 43.33 % farmers were having small farm size. The majority (61.83%) of farmers of Group III were having large farm size followed by 37.63 percenthaving medium farm size. So, it can be inferred that most of dairy farmers had medium to large farm for Cow farms and for mixed (cow and buffalo) farming, while most of dairy farmers rearing buffaloes had small to medium farms.

Majority (76.34%) of Group III dairy farmers were having small land holding followed by 23.65 percent with medium land holding, while 60 percent of Group II were having medium land holding and 13.33 percent of Group II dairy farmers had large land holding. In Group I, most of the farmers belong to small and medium land holding category. However,Nilkanth*et al.,* (2019) reported that majority of dairy farmers (65.83%) were small farmers having land holding of 2.5-5.0 acres and all were rearing cattle.

A glance at Table 2 indicated that 66.67 percent, 53.33 percent, 44.62 percent of dairy farmers of Group I, II and III respectively were aware about the role of placenta in dilation of cervix. A large number of farmers belonging to Group I, II and III did not know about correct timing for considering the condition as ROP. However, Amin and Hussein (2022) reported that ROP is a pathological condition in which there is failure to expel foetal membranes within 12–24 h after parturition.

Most (55%) of farmers were not aware about effects of feeding of mineral mixture, calcium supplementation in last month of gestation on removal of placenta. Majority (60 %) of farmers were unaware about the fact that suckling by calf for colostrum helps in easy expulsion of placenta on time. So, more extension camps should be arranged at field level with help of local Veterinary officer for enhancement of knowledge level of dairy farmers. Majority (62.67 %) of farmers were aware about the fact that the uterine infections were responsible for ROP. A very large chunk of farmers (77.33 %) considered brucellosis as predisposing cause of ROP among infectious diseases, 66 percent considered pyometra and 31.67 percent considered endometritis as a predisposing cause of ROP.

Also, the Group I dairy farmers were more aware about Brucellosis as a cause of ROP while majority of Group II dairy farmers knew about it. These results of infectious diseases are overlapping because farmers considered one or two diseases as predisposing cause for ROP.

Majority (68.33%) of dairy farmers were aware about the fact that nutritional imbalance leads to ROP.

A perusal of Table 2.1 indicates that 65 percent of dairy farmers knew that dystocia conditions can be a predisposing cause of ROP. Although majority (93.33 %) of dairy farmers of Group IIhad awareness that the care of recently calved animal helps in easy expulsion of placenta but still many of farmers were unaware about it, indicating the need of enhancement of knowledge level of dairy farmers. Almost 3/4th of the dairy farmers of Group II and half of farmers of Group III knew that stress and bad management at farm had negative impact on expulsion of placenta. Majority (93.33%) of Group II dairy farmers informed that there was loss to economy if ROP not treated timely.

Table 1: Socio-personal profile of the dairy farmers

Parameters	Category	Group I (n=84)	Group II (n=30)	Group III (n=186)	Total (n=300)
Age	Young Age (21-30 years)	16(19.05)	0(0)	16(8.60)	32 (10.67)
	Middle Age (31-40 years)	34(40.47)	20(66.67)	81(43.55)	135 (45.00)
	Old Age (>40 years)	34(40.47)	10(33.33)	89(47.85)	133 (43.33)

Sex	Male	84(100.00)	30(100.00)	182(97.85)	296 (98.67)
	Female	0(0)	0(0)	4(2.15)	4 (1.33)
Educational qualifications	Illiterate (No formal education)	2(2.38)	0(0)	8(4.30)	10 (3.33)
	UptoHigh school (upto 10th)	38(45.24)	24(80.00)	132(70.97)	194 (64.67)
	Higher Secondary and above (upto 12th)	34(40.47)	6(20.00)	32(17.20)	72 (24.00)
	Graduation or above	10(11.90)	0(0)	14(7.53)	24 (8.00)
Family Type	Nuclear	53(63.10)	14(46.67)	115(61.83)	182 (60.67)
	Joint	31(36.90)	16(53.33)	71(38.17)	118 (39.33)
Family Size	Small (1-4 Members)	28(33.33)	1(3.33)	39(20.97)	68 (22.67)
	Large (5 or more than 5)	56(66.67)	29(96.67)	147(79.03)	232 (77.33)
Farm Size	Small (1-5 dairy animals)	17(20.24)	13(43.33)	1(0.54)	31(10.33)
	Medium (6-10 dairy animals)	38(45.24)	17(56.67)	70(37.63)	125(41.67)
	Large (More than 10 dairy animals)	29(34.52)	0(0)	115(61.83)	144(48.00)
Land holding (Acre)	Landless (without land)	0(0)	4(13.33)	0(0)	4 (1.33)
	Small (upto10 acre)	50(59.52)	4(13.33)	142(76.34)	196 (65.33)
	Medium (11-20 acre)	33(39.30)	18(60.00)	44(23.65)	95 (31.67)
	Large (>20 acres)	1(1.20)	4(13.33)	0(0)	5 (1.67)

Figure in parenthesis indicate percentage

Table 2: Distribution of dairy farmers according to knowledge about Retention of placenta

Q. No.	Parameters (Knowledge)	Category	Group I (n= 84)	Group II (n= 30)	Group III (n=186)	Total (n=300)
1.	Are you aware about role of placenta in animal delivery by dilating cervix?	Yes	56(66.67)	16(53.33)	83(44.62)	155(51.67)
		No	28(33.33)	14(46.67)	103(55.37)	145(48.33)
2.	After how much time of calving you consider it as ROP?	<6 hrs	16(19.04)	1(3.33)	58(31.18)	75(25.00)
		6-12hrs	23(27.38)	16(53.33)	73(39.24)	112(37.33)
		12-18 hrs	28(33.33)	11(36.67)	49(26.34)	88(29.33)
		>24 hrs	17(20.23)	2(6.67)	6(3.22)	25(8.33)
3.	Are you aware that feeding of mineral mixture and calcium supplementation can affects the expulsion of placenta?	Yes	51(60.71)	17(56.67)	67(36.02)	135(45.00)
		No	43(51.19)	13(43.33)	119(63.97)	165(55.00)
4.	Are you aware that feeding colostrum to calf within 2 hrs of calving help in expulsion of placenta?	Yes	37(44.04)	6(20.00)	77(41.39)	120(40.00)
		No	47(55.95)	24(80.00)	109(58.60)	180(60.00)
5.	Are you aware that old age is a factor responsible for ROP?	Yes	49(58.33)	22(73.33)	124(66.67)	195(65.00)
		No	35(41.67)	8(26.67)	62(33.33)	105(35.00)
6.	Do you think uterine infections are responsible for ROP?	Yes	60(71.42)	28(93.33)	100(53.76)	188(62.67)
		No	24(28.57)	2(6.67)	86(46.23)	112(37.33)
7.	If yes which infections according to you leads to ROP	Brucellosis	75(89.28)	18(60.00)	139(74.73)	232(77.33)
		Endometritis	13(15.47)	9(30.00)	73(39.24)	95(31.67)
		Pyometra	56(66.67)	13(43.33)	129(69.35)	198(66.00)
8.	Do you think nutrition imbalance can lead to ROP?	Yes	53(63.09)	26(86.67)	126(67.74)	205(68.33)
		No	31(36.90)	4(13.33)	60(32.25)	95(31.67)

Figure in parenthesis indicate percentage

Table 2.1: Distribution of dairy farmers according to knowledge about Retention of placenta (contd.)

Q. No.	Parameters (Knowledge)	Category	Group I (n= 84)	Group II (n= 30)	Group III (n=186)	Total (n=300)
9.	Are you aware that dystocia conditions are predisposing cause of ROP?	Yes	54(64.28)	23(76.67)	118(63.44)	195(65.00)
		No	30(35.71)	7(23.33)	68(36.55)	105(35.00)
10.	Do you know about care of recently calved animal can help in easy expulsion of placenta?	Yes	53(63.09)	28(93.33)	95(51.07)	176(58.67)
		No	31(36.90)	2(6.67)	91(48.92)	124(41.33)
11.	Do you know that stress and bad management at farm can affect placenta expulsion?	Yes	34(40.47)	23(76.67)	92(49.46)	149(49.67)
		No	50(59.52)	7(23.33)	94(50.53)	151(50.33)
12.	Do you know about economic loss if ROP is not treated at time?	Yes	57(67.85)	28(93.33)	135(72.58)	220(73.33)
		No	27(32.14)	2(6.67)	51(27.41)	80(26.67)
13.	Do you know that ROP can affect future fertility of animal?	Yes	72(85.71)	20(66.67)	122(65.59)	214(71.33)
		No	12(14.28)	10(33.33)	64(34.40)	86(28.67)
14.	Do you know that calcium supplementation in last 2 months of pregnancy is not recommended?	Yes	44(52.38)	9(30.00)	85(45.69)	138(46.00)
		No	40(47.61)	21(70.00)	101(54.30)	162(54.00)
15.	Is there any effect on Milk Yield?	Yes	42(50.00)	27(90.00)	149(80.10)	218(72.67)
		No	42(50.00)	3(10.00)	37(19.89)	82(27.33)
16.	Is there any effect on next conception rate?	Yes	72(85.71)	20(66.67)	122(65.59)	214(71.33)
		No	12(14.28)	10(33.33)	64(34.40)	86(28.67)
17.	Any effect on next estrus?	Yes	65(77.38)	21(70.00)	129(69.35)	215(71.67)
		No	19(22.61)	9(30.00)	57(30.64)	85(28.33)

Figure in parenthesis indicate percentage

Majority of the farmers of Group I, II and III were aware that ROP directly affect the future fertility of animal. Most of the farmers (54 %) were unaware about extra calcium supplementation in feed in last stages of gestation and were facing problems like milk fever in their animals. For prevention from these complications farmers should be provided proper and accurate knowledge about the transition period, the changes that occur in transition period, the type of feed required by an animal at that time. This can be made possible with awareness camps and providing need based instructional materials to farmers that were easily accessible. More than 50 percent of dairy farmers of all three groups informed that ROP affects the milk yield, conception rate, subsequent estrus which would ultimately leads to loss of economy of dairy farm as one calf a year is necessary for healthy and profitable farms.

Table 3 describe that 63.10 percent, 60 percent, 85.48 percent of dairy farmers had medium knowledge level score in Group I, II and III respectively. None of dairy farmers of group II had low level knowledge score regarding ROP while in Group I and III there were less than 5 percent dairy farmers who had low level of knowledge score.

Table 3: Distribution of dairy farmers according to score of knowledge level

S. No.	Knowledge level	Group I (n=84)	Group II (n=30)	Group III (n=186)
1.	Low (< 6)	4(4.76)	0(0.00)	5(2.68)
2.	Medium (6-13)	53(63.10)	18(60.00)	159(85.48)
3.	High (> 13)	27(32.14)	12(40.00)	22(11.82)

Figure in parenthesis indicate percentage

Table 4 depicts that result of comparing means by ANOVA. There was statistically significant difference between the mean knowledge score of farmers of Group II and Group III (at $P< 0.05$) but Group I did not differ statistically significant with Group II and Group III.

Table 4: Mean knowledge score (Mean± SE) of dairy farmers

Group	Mean Knowledge Score ± S.E.	Knowledge level
Group I (n=84)	11.69 ± 0.32	Medium
Group II (n=30)	12.37 ± 0.46[a]	Medium
Group III (n=186)	11.27 ± 0.17[b]	Medium

Means in columns with different superscript are significant at P< 0.05

Table 5 indicated that knowledge about retention of placenta is significantly negatively correlated at 0.01 level with age of dairy farmer, while knowledge is non significantly positively correlated with education, family size and land holding.

Table 5: Correlation coefficient 'r' value of socio-personal profile with overall pooled group's knowledge about Retention of placenta

Pearson's correlation coefficient 'r'	Age	Education	Family Size	Family Type	Land Holding
Retention of Placenta	-0.287**	0.053	0.017	-0.113	0.033

(**) Correlation is significant at the 0.01 level (2-tailed).

CONCLUSION

The present study highlighted that in Punjab, mixed farming (rearing both cows and buffaloes) is more preferred as compared to individual cow farming or buffalo farming. The knowledge level of dairy farmers about retention of placenta fell under medium category. Suitable extension activities should be organized to enrich the dairy farmers' knowledge about cause, prevention and treatment of retention of placenta.

CONFLICT OF INTEREST

Authors don't have any conflict of interest.

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