

Original Research Article

<https://doi.org/10.20546/ijcmas.2019.809.161>

Consciousness of Dairy Farmers about Brucellosis

S. J. Jadav^{1*} and S. K. Raval²

¹Dairy Vigyan Kendra, SMC College of Dairy Science, Anand Agricultural University,
Anand-388110, Gujarat, India

²Department of Veterinary Medicine, College of Veterinary Science and Animal Husbandry,
Anand, Anand Agricultural University, Anand-388110, Gujarat, India

*Corresponding author

ABSTRACT

The study was an emphasis on consciousness of dairy farmers about brucellosis. Brucellosis is one of the zoonotic diseases. Zoonotic diseases mean diseases which are transmitted from animal to human or human to animal. Using the simple random sampling method, 120 respondents from 12 villages of 6 talukas in the operational area of Dairy Vigyan Kendra, Vejalpur (DVK) were selected. Overall knowledge level of brucellosis among dairy farmers was low. Knowledge of brucellosis was divided into six components; General information of brucellosis, transmission, symptoms of animal, symptoms of human, control and preventive aspects. An arrangement of the major components of knowledge level of dairy farmers about brucellosis as 'Control→Prevention→Transmission→Symptoms of animal→ Symptoms of human→ General information' ordered in decreasing trend. There were more than half of dairy farmers had knowledge about buffalo (59.17%) & cow (56.67%) can be susceptible to brucellosis but very few in other species. No one dairy farmer had any knowledge about principle causative agent and vaccine name of brucellosis. Correlation 'r' computed between knowledge level of dairy farmers about brucellosis and experience in dairy farming (0.253), social participation (0.261), extension participation (0.471) and mass media exposure (0.375) were found to be significant at 0.01 level of significance. Majority of dairy farmers disagreed to sell susceptible or detected as brucellosis animals to neighbors (98.33%) or relatives (96.67%) or in the market (93.33%). There was 45.00 per cent of respondents consumed milk regularly from their own animal. The majority of respondents (65.83%) boiled milk regularly before it was consumed. Persons who directly or indirectly associated with different livestock animals should be provided training and information regarding brucellosis.

Keywords

Knowledge, Dairy
Farmers,
Brucellosis,
Zoonotic Disease

Article Info

Accepted:

15 August 2019

Available Online:

10 September 2019

Introduction

Brucellosis is one of the grievous zoonotic diseases in the world. Zoonotic disease means that the diseases which are naturally transmitted from animal to human and vice-

versa. Brucellosis is a zoonotic disease that affects humans, animals and wildlife. The principle cause of bovine brucellosis is *Brucella abortus*. In the 18th century contagious abortion was observed and the agent involved in it known as *Brucella*

abortus was discovered by Bang in 1897 in Denmark. Brucellosis of animal has affected adversely on animal production-productivity and human health. However, when the incidence of brucellosis is controlled in the animal reservoirs, there is a corresponding and significant decline in the incidence in humans (Seleemet *al.*,2010). The incidence of brucellosis in animals & humans which directly or indirectly relates on animal husbandry practices, living standards, hygiene, the interaction between humans and animals, food customs, and animal and human population density. Brucellosis is a chronic infection which can result in abortion, infertility, delayed heat, interrupted lactation, decrease animal production in domestic animals. Brucellosis can be susceptible in species of animals vi., buffalo, sheep, goat, cat, dog, swine, poultry, camel, horse, yaks, wild animals and human also. Consumption of contaminated milk and milk products, undercooked meat such as spleen, liver are mainly responsible for human brucellosis. Further, contact with vaginal discharge, urine, faeces and blood of infected animals through broken skin and mucous membrane of conjunctiva and inhalation of the organism can cause the disease. The aim of the study was evaluate the dairy farmers' consciousness about brucellosis in the operational area of Dairy Vigyan Kendra, Vejalpur.

Materials and Methods

Between September, 2018 to December, 2018 an interview schedule survey was conducted among dairy farmers in the operational area of Dairy Vigyan Kendra, Vejalpur (DVK, Vejalpur). DVK, Vejalpur established by the Government of Gujarat on 19th January 2013 at Vejalpur, under Anand Agricultural University, Anand to cater training need of the dairy farmers, to boost clean milk production and to increase animal productivity. The operational area of DVK is old Panchmahal

district of Gujarat. Panchmahal district located between 20.300 to 23.300 N latitude and 73.150 to 74.000 E longitudes and at 217 m AMSL (above mean sea level). Panchmahal district is within the border of Dahod District to the east, Vadodara district to the south, Rajasthan state to the east and Kheda district to the west.

Total six talukas of the operational area of DVK was randomly selected for the study. Two villages were selected randomly from each taluka and 10 dairy farmers were randomly selected from each village, thus making the total sample of 120 dairy farmers. A standardized, well-structured pre-tested interview schedule was prepared in light of the objectives in consultation with veterinary public health and veterinary medicine experts. The data were collected through personal interview method.

Limitation

The study was based on the information collected from the respondents for only one year i.e. 2018

Results and Discussion

Data presented in table 1 revealed the complete profile of dairy farmers comprising of different personal and socio-economical characteristics. In the study area, the majority of respondents (72.50%) were female. The majority of dairy farmers belonged to secondary education (32.50%), 31.67 per cent farmers had experience up to 5 years. Regarding livestock composition, a high majority of dairy farmers (84.17%) had buffalo animal followed by cow (63.33%), goat (22.50%), poultry (6.67%) and horse (0.83%). In the case of livestock herd size, Majority of dairy farmers (44.17%) had medium livestock herd size. The respondents (43.33%) fell in medium social participation,

dairy farmers (38.33%) fell in low extension participation, dairy farmers (48.33%) belonged to low mass media exposure in the operational area of DVK.

It is seen in table 2 that very less per cent of respondents (0.83%) had knowledge about zoonotic disease. The majority of dairy farmers did not have knowledge about zoonotic disease. They did not know the meaning of zoonotic. Only 6.67 per cent of dairy farmers knew that brucellosis is one of zoonotic disease. In similar result with 13.33 per cent of farmers of Anand district of Gujarat believed that brucellosis is a zoonotic disease (Thakkar, 2013). In Punjab, 46.0% of livestock farmers were aware of zoonotic nature of brucellosis (Hundal *et al.*, 2016). But in contrast (Díez & Coelho 2013) reported that 74.7 % farmer believed that brucellosis was a zoonotic disease. Only 4.17 per cent of respondents had knowledge that the cause of brucellosis is bacteria. There were 59.17 per cent of respondents had knowledge about buffalo can be susceptible to brucellosis followed by cow (56.67%), sheep & goat (25.83%), dog & cat (15.83%) and horse & camel (6.67%). There was no one had knowledge about the causative agent of bovine brucellosis. The principle cause of bovine brucellosis is *Brucella abortus* bacteria. Only 5.00 per cent of respondents able to answer that bovine brucellosis were diagnosed with serological test at a laboratory. Only 0.83 per cent of respondents answered right on the question of bovine brucellosis as a curable disease. Conversely, 99.13 per cent of respondents believed that bovine brucellosis can be a cure. Over half of the respondents (54.5%) believed that bovine brucellosis was a treatable infectious disease reported by Díez & Coelho 2013. Bovine brucellosis could not a curable disease in bovine. Regarding the transmission of bovine brucellosis disease (Table 3), 38.33 per cent of dairy farmers believed that bovine brucellosis can be

transmitted to both male & female and female farmers only (38.33%) followed by male farmers only (23.34%). The farmers (21.67%) believed that brucellosis of human can be transmitted to cattle. The majority of dairy farmers had not knowledge that bovine brucellosis can be transmitted from human to animal or animal to human. It is seen in table 3 that more than one-third (35.83%) of the dairy farmers had knowledge that ingestion of contaminated milk is a transmission route for brucellosis. There was 87% of the participants indicated that the consumption of unpasteurized milk is associated with a high risk of infection (Imadidden *et al.*, 2015). There was 30.00% farmers had knowledge that ingestion of food and water contaminated with discharges of aborted foetus or foetus membranes followed by 29.17, 24.17, 23.33, 15.83, 12.50, 10.83, 3.33 and 3.33 of them with knowledge about ingestion of contaminated milk's products like cheese, ice cream and yoghurt, Uncooked infected animal's meat such as liver & spleen, Bite of arthropods, Intact or abraded skin, inhalation, Contact of infected animal's vaginal discharge, Conjunctiva & Congenital Infection, respectively.

When asked about the symptoms of animal suffering from bovine brucellosis (Table 4), majority of dairy farmers (40.00%) had knowledge that it causes interrupted lactation followed by abortion in last trimester in animal (28.33%), retention of placenta in animal (25.83%), infertility (20.00%), delay heat in animal (18.33%), hygroma (15.83%), epididymitis and orchitis in the male animal (10.83%) and loose sexual desire and infertility in the bull (9.17%).

The result was differed with (Imadidden *et al.*, 2015) and reported that 76.4% of participants indicated that abortion is the most prominent clinical sign. A considerable proportion of participants also identified difficulties to

become pregnant (61.3%), weight loss (59.5%), and drop in milk production (49%).

Regarding symptoms of human who suffering from brucellosis was presented in table 5 and reported that 26.67 per cent of respondents indicated that anorexia is the most prominent clinical sign based on their knowledge. A considerable proportion of participants also identified to undulant fever & headache (25.83%), infertility in human (20.00%), constipation (18.33%), arthralgia & insomnia (17.50%), depression (15.83%), sexual impotence (14.16%) and arthritis, spondylitis, sacroiliitis, osteomyelitis, meningoencephalitis and endocarditis (1.67%) caused by brucellosis in human.

The data presented in table 6 regarding practices of control of brucellosis disease, most of the farmers buried or burnt a dead calve carcass and remaining farmers (9.17%) throw the carcass outside village or farm. Majority of dairy farmers (87.50%) called the veterinarian for treatment of animals within 24 hours of onset of symptoms.

Almost half of the respondents (49.17%) were not allowed to brucellosis diseased person to treat or handle their animal. 45.83 per cent of dairy farmers had not allowed an injured person to treat or handle the animals without protection.

Preventive aspects of brucellosis presented in table 7 indicated that majority of dairy farmers (77.50%) had knowledge that regular disinfected of animal sheds followed by care should be taken while handling and disposing of foetus, placental membrane and uterine discharge (65.00%), Proper boiling and pasteurization of milk & its products (56.67%), Using protective wears like apron, gloves, gumboots, masks, etc. (52.50%), To avoid the consumption of uncooked/undercooked meat(50.83%), Tick control

(41.17%), Vaccination (30.00%), Control of animal movements (18.33%). The farmers had very less knowledge regarding brucella testing in animals twice a year& Strain-19 vaccine used to female calves (5.00%), Strain-19 Brucella vaccine can be used to which age of animal ideally (3.33%) and S-19 vaccine can use to male calves (2.50%).

It means 97.50 per cent of dairy farmers believed that S-19 vaccine can be used to male calves. No one of dairy farmers had knowledge about the name vaccine of brucellosis.

Knowledge level of different category of dairy farmers about brucellosis presented in table 8 and revealed that 93.33 per cent of dairy farmers had low level of knowledge about general information of brucellosis disease like a causative agent, susceptible animals etc. followed by symptoms of human (76.67%), symptoms of animals (71.67%). There was 45.00 per cent and 39.17 per cent of dairy farmers had high and medium level of knowledge on control of brucellosis respectively.

The dairy farmer had low level knowledge regarding transmission route of disease (70.83%). In favour of the result (Arif *et al.*, 2017) reported that almost all farmers (97%) were not aware of the modes of transmission of brucellosis.

Knowledge level of dairy farmers in major components about brucellosis presented in table 9 and revealed that an arrangement of major components of knowledge level of dairy farmers about brucellosis as 'Control→Prevention→Transmission→Symptoms of animal→Symptoms of human→General information' ordered in decreasing trend of dairy farmers' knowledge level about brucellosis in these major activities.

Table.1 Profile of dairy farmers

(n = 120)

Sr. No.	Profile of dairy farmers	No. (%) of participants
1	Sex	
i	Male	33 (27.50)
ii	Female	87 (72.50)
2	Age	
i	Young (≤ 30 years)	22 (18.33)
ii	Middle aged (31–50 Years)	71 (59.17)
iii	Old (> 50 Years)	27 (22.50)
3	Education	
i	Illiterate	28 (23.33)
ii	primary education	30 (25.00)
iii	secondary education	39 (32.50)
iv	higher secondary education	14 (11.67)
v	Graduate and above	9 (7.50)
4	Experience in dairy farming	
i	up to 5 years	38 (31.67)
ii	6 to 10 years	20 (16.67)
iii	11 to 15 years	11 (9.17)
iv	16 to 20 years	17 (14.16)
v	Above 20 years	34 (28.33)
5	Caste	
i	ST	20 (16.67)
ii	SC	12 (10.00)
iii	SEBC	63 (52.50)
iv	GENERAL	25 (20.83)
6	Family type	
i	Nuclear family	63 (52.50)
ii	Joint family	57 (47.50)
7	Family size	
i	Small family (Up to 5 members)	55 (45.84)
ii	Medium family (From 6 to 8 members)	37 (30.83)
iii	Large family (Above 8 members)	28 (23.33)
8	Landholding	
i	Landless farmers	6 (5.00)
ii	Marginal farmer (Up to 1.00 ha)	68 (56.67)
iii	Small farmer (1.01 to 2.00 ha)	22 (18.33)
iv	Medium farmer (2.01 to 4.00 ha)	21 (17.50)
v	Large farmer (Above 4.00 ha)	3 (2.50)
9	Livestock Composition	
i	Cow	76 (63.33)
ii	Buffalo	101 (84.17)
iii	Goat	27 (22.50)
iv	Sheep	0 (0.00)
v	Horse	1 (0.83)
vi	Donkey	0 (0.00)

vii	Poultry	8 (6.67)
10	Livestock Herd Size	
i	Small (M-1/2SD)	44 (36.67)
ii	Medium In between (Mean \pm 1/2S.D.)	53 (44.17)
iii	Large (M+1/2SD)	23 (19.16)
iv	Mean	6.01
v	SD	5.49
11	Social participation	
i	Low (M-1/2SD)	45 (37.50)
ii	Medium In between (Mean \pm 1/2S.D.)	52 (43.33)
iii	High (M+1/2SD)	23 (19.17)
	Mean	1.025
	SD	1.29
12	Extension participation	
i	Low (M-1/2SD)	46 (38.33)
ii	Medium In between (Mean \pm 1/2SD)	34 (28.33)
iii	High (M+1/2SD)	40 (33.34)
	Mean	6.47
	SD	4.34
13	Mass media exposure	
i	Low (Mean – 1/2SD)	58 (48.33)
ii	Medium In between (Mean \pm 1/2SD)	27 (22.50)
iii	High (Mean + 1/2SD)	35 (29.17)
	Mean	1.98
	S.D.	1.93

Table.2 Knowledge of dairy farmers about general information of brucellosis
(n= 120)

Sr.No	Statements	No. (%) of participants
1	Zoonotic disease	1 (0.83)
2	Brucellosis as a zoonotic disease	8 (6.67)
3	As per your opinion, causes of brucellosis	
a.	Virus	1 (0.83)
b.	Bacteria	5 (4.17)
c.	Fungi	0 (0.00)
d.	Parasite	0 (0.00)
4	Susceptible animals that can have brucellosis	
a.	Cow	68 (56.67)
b.	Buffalo	71 (59.17)
c.	Dog & Cat	19 (15.83)
d.	Sheep & Goat	31 (25.83)
e.	Horse	8 (6.67)
f.	Camel	8 (6.67)
5	Causative agent of bovine brucellosis	0 (0.00)
6	Bovine brucellosis diagnosis by serological test	6 (5.00)
7	Bovine brucellosis as a curable disease	1 (0.83)

Table.3 Knowledge of dairy farmers about transmission of brucellosis

(n= 120)

Sr. No	Statements	No. (%) of participants
1	Bovine brucellosis transmitted to male farmers only.	28 (23.34)
2	Bovine brucellosis transmitted to female farmers only.	46 (38.33)
3	Bovine brucellosis transmitted to both male & female.	46 (38.33)
4	Brucellosis of dairy farmers transmitted to cattle.	26 (21.67)
5	Brucellosis of animals can transmit to man and vice versa through:	
A	Ingestion of food and water contaminated with discharges of aborted foetus or foetus membranes.	36 (30.00)
B	Ingestion of contaminated milk	43 (35.83)
C	Ingestion of contaminated milk's products like dahi, cheese, ice cream etc.	35 (29.17)
D	Uncooked infected animal's meat such as liver & spleen.	29 (24.17)
E	Inhalation route	15 (12.50)
F	Contact of infected animal's vaginal discharge	13 (10.83)
G	Bite of arthropods	28 (23.33)
H	Intact or abraded skin	19 (15.83)
I	Conjunctiva	4 (3.33)
J	Congenital Infection	4 (3.33)

Table.4 Knowledge of dairy farmers about symptoms of animal (suffering from brucellosis)

(n= 120)

Sr. No	Statements	No. (%) of participants
1	Abortion in last trimester in animal	34 (28.33)
2	Retention of placenta in animal	31 (25.83)
3	Infertility in animal	24 (20.00)
4	Delay heat in animal	22 (18.33)
5	Interrupted lactation	48 (40.00)
6	Epididymitis and orchitis in the male animal	13 (10.83)
7	Swelling of bursa of joint of limbs (Hygroma)	19 (15.83)
8	Loose sexual desire and infertility in the bull	11 (9.17)

Table.5 Knowledge of dairy farmers about symptoms of human (suffering from brucellosis)

(n= 120)

Sr. No	Statements	No. (%) of participants
1	Infertility in human	24 (20.00)
2	Undulant fever in human	31 (25.83)
3	Insomnia in human	21 (17.50)
4	Anorexia in human	32 (26.67)
5	Headache in the human	31 (25.83)
6	Arthralgia in human	21 (17.50)
7	Constipation in human	22 (18.33)
8	Sexual impotence in human	17 (14.16)
9	Depression in human	19 (15.83)
10	Brucellosis causes arthritis, spondylitis, sacroiliitis, osteomyelitis, meningoencephalitis and endocarditis.	2 (1.67)

Table.6 Knowledge of dairy farmers about control of brucellosis diseases

(n= 120)

Sr. No	Statements	No. (%) of participants
1	What did you do the carcass of a dead calve of infected animals?	
a.	Buried or Burnt	109 (90.83)
b.	Thrown outside village or farm	11 (9.17)
2	A veterinarian should be called for treatment of animals within 24 hours of onset of symptoms	105 (87.50)
3	Brucellosis diseased person cannot be allowed to treat or handle the animal	59 (49.17)
4	An injured person cannot be allowed to treat or handle the animal without protection	55 (45.83)
5	Consumption of raw milk of infected animal can spread brucellosis	43 (35.83)

Table.7 Knowledge of dairy farmers about preventive aspects of brucellosis diseases

(n= 120)

Sr. No	Statements	No. (%) of participants
1	Brucella testing in animals is to be done twice a year	6 (5.00)
2	Brucellosis diseases can be prevented by using protective wears (apron, gloves, gumboots, masks, etc.)	63 (52.50)
3	Animal sheds should be regularly disinfected	93 (77.50)
4	Care should be taken while handling and disposing of foetus, placental membrane and uterine discharge to prevent brucellosis	78 (65.00)
5	Proper boiling and pasteurization of milk & its products can prevent brucellosis diseases.	68 (56.67)
6	To avoid the consumption of uncooked/undercooked meat can prevent brucellosis diseases.	61 (50.83)
7	Brucellosis can be prevented in animals by vaccination	36 (30.00)
8	Name the vaccine used for bovine brucellosis	0 (0.00)
9	Age of animal ideally for Strain-19 Brucella vaccine	4 (3.33)
10	Strain-19 vaccine can use to female calves.	6 (5.00)
11	S-19 vaccine can use to male calves. (-)	3 (2.50)
12	Animal movements should be controlled to prevent spread of brucellosis.	22 (18.33)
13	Tick control can prevent spread of brucellosis diseases	50 (41.17)

*(-) indicates the negative question.

Table.8 Knowledge level of different category of dairy farmers about brucellosis

n=120

Sr. No.	Knowledge category	General Disease Information	Trans mission	Symptoms of animal	Symptoms of person	Control aspects	Preventive Aspects
		No. (%) of participants					
1	Low level (up to 33.33%)	112 (93.33)	85 (70.83)	86 (71.67)	92 (76.67)	19 (15.83)	57 (47.50)
2	Medium level (33.34 to 66.66%)	8 (6.67)	21 (17.50)	25 (20.83)	15 (12.50)	47 (39.17)	59 (49.17)
3	High level (>66.66 %)	-	14 (11.67)	9 (7.50)	13 (10.83)	54 (45.00)	4 (3.33)
Total		120 (100%)					

Table.9 Knowledge level of dairy farmers in different major components about brucellosis

Sr.No.	Major components about brucellosis	Knowledge level of dairy farmers in Percentage	Rank
1	General information of brucellosis	12.61	6
2	Transmission	23.15	3
3	Symptoms of animal	21.04	4
4	Symptoms of human	18.33	5
5	Control	67.64	1
6	Prevention	31.41	2

Table.10 Overall knowledge of dairy farmers about brucellosis diseases

(n= 120)

Sr.No.	Knowledge category	No. (%) of participants
1	Low level (up to 33.33%)	90 (75.00)
2	Medium level (33.34 to 66.66%)	27 (22.50)
3	High level (>66.66 %)	3 (2.50)

Table.11 Correlation (r) between the profile of the dairy farmers and knowledge of brucellosis

(n=120)

Sr.No.	Variable	Pearson 'r' value
1	Age	0.168 ^{NS}
2	Education	0.076 ^{NS}
3	Experience in dairy farming	0.253**
4	Family type	-0.101 ^{NS}
5	Family size	-0.037 ^{NS}
6	Landholding	0.122 ^{NS}
7	Livestock Herd Size	0.225*
8	Social participation	0.261**
9	Extension participation	0.471**
10	Mass media exposure	0.375**

**=Significant at 0.01 level; *=significant at 0.05level; NS= non-significant

Table.12 Adoption of dairy farmers regarding their practices associated to brucellosis infected animals

(n= 120)

Sr. No.	Dairy farmers' practices when an animal with bovine brucellosis is suspected or detected	No. (%) of participants		
		Most farmers	Some farmers	No one
1.	Selling detected animal in the market	0 (0.00)	8 (6.67)	112(93.33)
2.	Selling detected animal to neighbours	0 (0.00)	2 (1.67)	118(98.33)
3.	Selling detected animal to relatives	0 (0.00)	4 (3.33)	116 (96.67)
4.	Giving medication to the detected animals	44 (36.67)	72 (60.00)	4 (3.33)
5.	Isolation of detected animal from others	29 (24.17)	66 (55.00)	25 (20.83)

Table.13 Adoption of dairy farmers regarding practices related to consumption of milk & its products

(n= 120)

Sr.No.	Practices	Regularly	Sometimes	Never
1.	Consume milk produced from your dairy animals	54 (45.00)	31 (25.83)	35 (29.17)
2.	Purchase raw milk from other dairy farmers	0 (0.00)	7 (5.83)	113 (94.17)
3.	Boil raw milk before consumption	79 (65.83)	11 (9.17)	30 (25.00)
4.	Boil raw milk before making milk products like dahi, paneer etc	24 (20.00)	4 (3.33)	92 (76.67)

It is observed in table 10 that majority of the dairy farmers (75.00%) practicing dairy farming had low level of knowledge about brucellosis diseases followed by 22.50 and 2.50per cent of them were with medium and high level of knowledge of brucellosis, respectively.

The spearman correlation analysis conducted to identify the relationship between factors affecting the knowledge level of dairy farmers about brucellosis and independent variables. An observation of table 11 shows that 'r' computed between factors of knowledge level

of dairy farmers about brucellosis and experience in dairy farming (0.253), social participation (0.261), extension participation (0.471) and mass media exposure (0.375) were found to be significant at 0.01 level of significance. Livestock herd size (0.225) was found to be significant at 0.05 level of significance. The remaining variable like age, education, family type, family size and land holding were observed to be no significant relationship.

Adoption of dairy farmers regarding their practices associated to brucellosis infected

animals presented in table 12. When asked about how likely it is that dairy farmers sell detected brucellosis animals directly to neighbours or to relatives or in the market, the great majority of dairy farmers disagreed to sell susceptible or detected as brucellosis animals to neighbours (98.33%) or relatives (96.67%) or in the market (93.33%).

Most of the respondents also felt that when they have animal suspected of having brucellosis, most dairy farmers would take measures such as treating the animal and isolation the animal from others.

Dairy farmers' opinion regarding practices related to consumption of milk & its products presented in table 13 reported that 45.00 per cent of respondents consumed milk regularly from their own animals. The majority of respondents (65.83%) boiled milk regularly before it was consumed. In contrast, (Arif *et al.*, 2017) reported that the majority (66%) of the farmers' families were consumed raw milk and its products. On the other hand, 76.67 per cent reported that they never boiled milk before making milk product like dahi, paneer etc.

Level of knowledge of bovine brucellosis among dairy farmers (75.00%) was low. Most of the farmers have no idea about causes the disease which may contribute to the spread of brucellosis.

There were more than half of dairy farmers had knowledge about buffalo (59.17%) & cow (56.67%) can be susceptible to brucellosis but very less in other species like sheep & Goat (25.83%), Dog & Cat (15.83%) and Horse & Camel (6.67%). No one dairy farmer had any knowledge about a causative agent and vaccine name of brucellosis.

There was high majority of dairy farmers had low level of knowledge about general

information of brucellosis disease, symptoms of human & animals, transmission of disease and preventive aspect of disease.

The dairy farmers had high (45.00%) and medium (39.17%) level of knowledge on control aspects of brucellosis.

Implication

To provide training on zoonotic disease especially focus on brucellosis should be given to people working or contact direct or indirect with animals, milk, meat and product processing.

The public should be educated and informed about brucellosis diseases. To organize health campaign with frequent screening for brucellosis to identify infected animals so that it can be helpful to eradicate the disease.

The farmers are advised not to consume the raw milk and it must be boiled before consumption to prevent the brucellosis. Future research should be carried out on the prevalence of brucellosis in cow, buffalo, sheep, goat, dog and human beings.

References

- Arif, S., Thomson P.C., Hernandez-Jover M, McGill D.M., Warriach, H.M., Heller, J. (2017) Knowledge, attitudes and practices (KAP) relating to brucellosis in smallholder dairy farmers in two provinces in Pakistan. *PLoS ONE* 12(3): e0173365. <https://doi.org/10.1371/journal.pone.0173365>
- Diez, J.G., & Coelho, A.C. (2013). An evaluation of cattle farmers' knowledge of bovine brucellosis in northeast Portugal. *J. Infect. Public Health*, 6, 363-369. <http://dx.doi.org/10.1016/j.jiph.2013.0>

- 4.008
Hundal, J.S., Sodhi, S.S., Gupta, A., Singh, J., &Chahal, U.S. (2016). Awareness, knowledge, and risks of zoonotic diseases among livestock farmers in Punjab. *Vet. World.*, 9(2): 186-191.
- Imadidden I. Musallam, Mahmoud N. Abo-Shehada, and Javier Guitian. (2015). Knowledge, Attitudes, and Practices Associated with Brucellosis in Livestock Owners in Jordan. *Am. J. Trop. Med. Hyg.*, 93(6), 1148–1155 <http://dx.doi.org/10.4269/ajtmh.15-0294>
- 0294
Seleem, M.N., Boyle, S.M. & Sriranganathan, N., 2010, 'Brucellosis: A re-emerging zoonosis', *Veterinary microbiology* 140, 392–398. <http://dx.doi.org/10.1016/j.vetmic.2009.06.021>, PMID:19604656
- Thakkar, A.P. (2013). Study on knowledge of dairy farmers of Anand district about zoonotic diseases. Unpublished master's thesis, Anand Agricultural University, Anand, India.

How to cite this article:

Jadav S. J. and Raval S. K. 2019. Consciousness of Dairy Farmers about Brucellosis. *Int.J.Curr.Microbiol.App.Sci.* 8(09): 1404-1415. doi: <https://doi.org/10.20546/ijcmas.2019.809.161>