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Farmers' Perception, Attitude and Behavioral Practices Related to Dairy Cow Welfare and Milk Production in Bangladesh

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Abstract

Background:

The perception and attitude of farmers directly relate to human-animal interactions and these attitudes and perceptions affect farmers' behavior towards animals' productivity and animal welfare. To our knowledge, there is no study has been conducted to assess perceptions, attitudes and behavior towards dairy cow production and welfare in Bangladesh.

Methodology:

A cross-sectional survey was conducted on 270 dairy farmers in Baghabarighat milk shed areas (BMSA) of Sirajganj and Pabna districts in Bangladesh. The study was conducted to assess the perception, attitude, and behavioral practices of animal welfare affecting milk production among animal owners through face-to-face interviews using two sets of questionnaires. The first part represented the socio-demographic characteristics of the participants, and the other parts included the perception, attitude, and behavior of the dairy farmers, which have an impact on milk production.

Results:

The majority of dairy farmers are engaged in dairy farming but have no formal education or training. Below one fifth knew about animal welfare, and 77.78% of farmers did not agree to provide readily accessible feed and water at all times. Almost 83.33% of dairy farmers thought that reducing unnecessary pain, distress, and mental suffering might decrease the production capability of the dairy cow. It was also believed by all the farmers that good attitudes and behaviors increase milk production. The majority of the farmers stated that negative handling (beat/slap/shouting) during milking decreases milk production, and only a few percentages said that negative handling has no effect on milk production. Almost all of the farmers stated that their economic pressure makes it impossible to maintain the desired level of animal welfare.

Conclusion:

In conclusion, farm animal welfare is still in its early stages of development, and there are lots of limitations in our country to improve this condition. More efforts are needed to improve farmers' perceptions and change their attitudes toward their dairy animals in the process of establishing farm animal welfare standards and legislation in Bangladesh.

Keywords: Dairy farmers, Perception, Attitude, Practice, Animal welfare, Bangladesh.

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Introduction

Dairy farming in Bangladesh is one of the most important means of providing livelihood and nutritional security to vast rural population. During recent decades animal farming has gone through considerable changes. Average farm size has increased, resulting in farmers spending less time with individual animals and making it more difficult to detect abnormal behavior and illnesses in livestock (Council, 2009). Improved animal welfare in this context is strongly linked to farm productivity, food security, and human health (Doyle *et al.*, 2021). However, the welfare of livestock managed under these farming systems can be poor as a result of several factors including limited resources, inadequate knowledge and skills of animal keepers, and weak veterinary services (Rahman & Reed, 2014). This subsequently limits the potential contribution of livestock sectors toward food and nutritional security and improved livelihoods, both at a household level and to the national economy (Sinclair *et al.*, 2019).

Livestock owners are responsible for ensuring all aspects of animal welfare, including proper management, housing, nutrition, disease prevention and treatment, animal care, human handling, and when necessary, humane killing (Madzingira, 2018). Perception and attitude of farmers directly relate to human-animal interactions and these attitudes and perceptions affect farmers' behavior towards animals and animal welfare (Kielland *et al.*, 2009). Dairy farmers' attitudes are reflected in their behavior towards animals, which, in turn, affects animal behavior, welfare and productivity. Higher milk yield in farms is a positive indicators of human-animal interaction (HAI) (Breuer *et al.*, 2000). Moreover, empathy is positively correlated with milk yield and that negative beliefs had a negative correlation with milk yield (Hanna *et al.*, 2009). Though developed country has established a link with farmers' attitudes and behavior towards animal productivity and welfare, farm animal welfare is a relatively new and neglected issue in developing country including Bangladesh. Hence, it is not clear their knowledge of different components of animal welfare, however, nor how well they are putting these into practice. Overall animal welfare in Bangladesh faces numerous challenges that have not been addressed. So, understanding welfare knowledge, attitude, and practice among livestock farmers is an important step toward identifying the gaps in animal care and providing a proper recommendation that will help to improve animal welfare and well-being.

To our knowledge, there is no empirical data have been presented to assess perceptions, attitudes and behavior towards cattle production and welfare in Bangladesh. This is first time we attempted to know the people's attitudes how they consider the issue of dairy cattle welfare in Baghabarighat Milk Shed Area (BMSA). The people of these areas traditionally involved in rearing high yielding dairy cows long before the partition of Bangladesh. Baghabarighat under Sirajgonj and Pabna district of Bangladesh is highly promising and most milk producing area which reflects our country. Therefore, a systematic research work in this line is urgently needed to explore socio-demographic status of dairy farmers and their perceptions, attitudes and behavior towards milk yield and dairy cattle welfare in Sirajganj and Pabna district, Bangladesh.

Methodology

Study design

The cross-sectional survey was conducted on dairy farms in Baghabarighat Milk Shed Area (BMSA) which are the most important milk producing area in Bangladesh. Shahjadpur and Ullapara upazilas from Sirajgonj district and Sathia and Bera upazilas from Pabna district were selected for this study (Table 1). These farms mostly supply milk to the Bangladesh Milk Producers' Cooperative Union limited (BMPCUL), the largest and oldest dairy cooperative in Bangladesh.

Table 1. Study area and sampling size in Sirajgonj and Pabna district

District	Upazila	Dairy Farmers (n=270)	
		Number	Percentage (%)
Pabna	Bera	40	14.81
	Sathia	50	18.52
Sirajgonj	Shahjadpur	120	44.44
	Ullapara	60	22.23
	Total	270	100.00

Data collection

Data collection was performed by direct observation of farm and questionnaire interview with farmers. Measurements were only once on every farm after morning milking time. The questionnaire was included two set of questions. First part represented the socio-demographic characteristics of the participants and other part of the question includes the perceptions, attitude and behavior of dairy farmer's about animal welfare affecting milk production.

Data analysis

The descriptive analyses such as percentage of socio-economic and socio-personal status of dairy farmers and their perceptiona, attitudes and behaviour towards dairy cattle welfare were performed by using Microsoft Excel computer programme.

Results

Socio-demographic profile of dairy farmers (Table 2)

The study on dairy farmers reveals that the majority (58.90%) are middle-aged (36-50 years), predominantly male (94.07%), and largely uneducated (50.37% with no formal education) and untrained in dairy farming (95.56%). Milk production among farmers is categorized as low (<20 liters/day) for 44.07%, medium (20-50 liters/day) for 41.49%, and high (>50 liters/day) for 14.44%. Milk sales show 45.56% in the low category (<15 liters/day). Most farmers (84.44%) supply milk to Milk Vita, with smaller proportions to local milkmen (13.34%) and Pran Dairy (2.22%). Milk consumption is low (<2 liters/day) for 65.19% of farmers. Income levels are predominantly low, with 72.59% earning less than 70,000 BDT/year, 22.60% in the medium range (70,000-100,000 BDT/year), and 4.81% earning over 100,000 BDT/year.

Table 2. Socio-demographic characteristics of dairy farmers

SL No.	Parameters	Categories	Dairy Farmers (n=270)	
			Number	Percentage (%)
1.	Gender	Male	254	94.07
		Female	16	5.93
2.	Education	Illiterate	136	50.37
		Primary	84	31.11
		Secondary/Higher	50	18.52
3.	Age	15-35	38	14.07
		36-50	159	58.90
		51-75	65	24.07
		>75	8	2.96
4.	Formal Training	Yes	136	4.44
		No	93	95.56
5.	Total milk production	Low (<20 litres)	119	44.07
		Medium (20-50 L)	112	41.49
		High (>50 L)	39	14.44
6.	Milk supply	Milk Vita	228	84.44
		Pran Dairy	06	02.22
		Milkermen/Ghos	36	13.34
7.	Total milk consumption	Low (<2 L)	176	65.19
		Medium (2-4 L)	85	31.48
		High (> 4 L)	09	03.33
8.	Total annual income	Low (<70000 BDT)	196	72.59
		Medium (70000-100000 BDT)	61	22.60
		High (>100000 BDT)	13	04.81

Perception of Farmers towards dairy cow welfare (Table 3)

The study in the Sirajgonj and Pabna Districts revealed a significant lack of awareness about animal welfare among dairy farmers, with only 11.48% being informed on the topic. Most farmers (77.78%) believed that readily accessible feed is unnecessary and increases production costs, while 62.96% agreed to provide water at all times. Despite economic concerns, 83.33% recognized the need to reduce pain and distress to maintain production capabilities, and 87.04% believed that adequate space and facilities enhance productivity. After being informed, 87.41% acknowledged the importance of animal welfare for Bangladesh, and nearly all (95.81%) agreed that animals feel pain like humans (Table 3). However, economic considerations still dominated, with low willingness to pay more for good quality milk due to the belief that boiling eliminates all germs. These findings highlight the need for educational initiatives to improve animal welfare knowledge and practices among dairy farmers.

Table 3. Perception of Farmers towards dairy cow welfare

SL. No	Questions	Option	Dairy Perception	Farmer
			Number (n = 270)	Percentage (%)
1	Do people understand what animal welfare is?	Yes	31	11.48
		No	219	81.11
2	Should provide readily access to feed at all time?	Yes	60	22.22
		No	210	77.78
3	Should provide readily access to water at all times?	Yes	170	62.96
		No	100	37.04
4	Need to reduce unnecessary pain, fair, distress, and mental, sufferings?	Yes	225	83.33
		No	45	16.67
5	Do you feel rapid diagnosis and treatment when required?	Yes	219	81.11
		No	51	18.89
6	Should provide comfortable housing with adequate space and facilities for resting?	Yes	235	87.04
		No	35	12.96
7	Do you think animal welfare is important in Bangladesh?	Yes	236	87.41
		No	34	12.59
8	Do you think that animal feels pain like human?	Yes	256	94.81
		No	14	5.19
9	Willingness to pay more if animal welfare ensures and provides hygienic animal products for you?	Yes	196	72.59
		No	74	27.41

Effect of positive and negative attitudes on milk production (Table 4)

It is evident from the study that positive attitudes and behaviors have a significant effect on milk production stated by farmers and shown on Table 4. About 100% farmers believed good attitudes and behaviors increase milk production. The majority of the farmers (93.33%) said that calm talking or gentle message before milking increase milk production and 6.67% farmers believed than calm talking or gentle message have no effect on milk production. Majority of the farmers (93.70%) believed that slow and steady movement before milking increase milk production and 76.67% farmers called their cows with special name and they believed that during milking, by calling with special name they got the desired milk production and 23.33% farmers didn't call their cows by special name.

In the study, it was revealed that negative attitudes and behaviors have a significant effect on milk production as stated by farmers (Table 4). Majority of the farmers (92.97%) stated that negative handling (beat/slap/shouting) during milking causes decrease milk production. Only 7.03% said that negative handling has no effect on milk production. About 93% farmers stated that any fear/stress/beat during milking decrease milk production whereas 7.40% gave opposite statement. Majority of farmers (98.51%) stated that new milkmen or no calf or dog, cat around responsible for decreased milk production and the 1.49% stated the reverse. In our study area majority of the farmers (83.70%) believed that poor housing or management have no effect on milk production due to lack of their knowledge. Almost all farmers (98.0%) opined that any disease such as mastitis/lameness/injury decrease milk production. About 93% farmers believed that environmental noise/sound decrease milk production and only 7.03% farmers have no idea about this.

Positive and negative response of farmers

The study on dairy farmers' perceptions of cattle welfare reveals a consensus that animals feel pain like humans and that good feeding and gentle handling boost production. Most farmers (90.74%) recognize that cows' physical health impacts productivity, and all believe that comfort extends an animal's life. However, economic pressures challenge welfare goals for 98.15% of farmers. A majority (58.68%) prioritize high yield over welfare, with 53.70% thinking animals respond better to shouting than calm. Increasing herd size is seen as detrimental to individual welfare by 90% of farmers, and 91.45% believe animals only need basic necessities, while a small minority (8.15%) emphasize the importance of good human-animal interaction.

Table 4. Attitudes and behaviors of dairy farmers

Parameter	Response	Total Farmer (n=270)	
		Number	Percentage (%)
Positive attitudes and behavior increase milk production			
Good attitude/behaviour	Yes	270	100
	No	00	00
Calm Talking/gentle message	Yes	252	93.33
	No	18	06.67
Slow and steady movement before milking	Yes	253	93.70
	No	17	06.30
Calling cow with special name	Yes	207	76.67
	No	63	23.33
Negative attitude decreases milk production			
Negative handing (beat/slap/shouting)	Yes	251	92.97
	No	19	07.03
Any fear/stress/beat during milking	Yes	250	92.60
	No	20	07.40
No calf /new milker/unknown people/dog/cat/ around	Yes	266	98.51
	No	04	01.49
Poor housing/ poor management	Yes	44	16.30
	No	226	83.70
Any diseases such as mastitis/lameness/injury	Yes	266	98.51
	No	04	01.49
Environmental noise/sound	Yes	251	92.97
	No	19	07.03

Table 5. Positive and negative response of farmers

Questions	Response	Dairy Farmer (n=270)	
		Number	Percentage (%)
Animal feel pain like human	Yes	270	100
	No	00	00
Animal react better to shouting compared to calm voice	Yes	125	46.30
	No	145	53.70
Physical health of cow has impact on production	Yes	245	90.74
	No	25	9.26
Animal welfare can increase the level of production	Yes	270	100
	No	00	00
High yield is more important than maximizing animal welfare	Yes	159	58.89
	No	111	41.11
A comfortable animal lives a longer life	Yes	270	100
	No	00	00
Animal with high level of welfare produce more that of low-level welfare	Yes	245	90.74
	No	25	9.26
Increasing animal number have negative effect of guarantee of single animal welfare	Yes	243	90.00
	No	27	10
Economic pressure makes impossible to maintain the aimed level of animal welfare	Yes	265	98.15
	No	05	1.85
Animal need only feed, water and a place to lie down to be satisfied	Yes	248	91.85
	No	22	8.15

Discussion

The findings of the study align closely with the conclusions drawn by Ormandy and Schuppli (2014) regarding the significant impact of personnel perception, attitudes and behaviors on production capabilities. The farmers in the study emphasized several practical measures to enhance animal welfare, such as providing sufficient space, solid flooring, comfortable bedding, adequate litter, and access to pastures when feasible. These measures are critical in promoting animal welfare, which in turn positively influences productivity.

In terms of healthcare, the farmers highlighted the importance of monitoring animal behavior, maintaining hoof and coat conditions, ensuring proper feeding, regular veterinary care, and treating diseases like mastitis promptly Spooner et al. (2014). Immediate treatment of diseased animals is a common practice among dairy farmers, who often attempt initial treatments themselves before calling a veterinarian. Cardoso et al. (2019) emphasized the necessity of reducing pain and suffering based on the animals' conditions, supporting the farmers' practices.

A significant majority (92.97%) of the farmers in the study reported that negative handling, such as beating, slapping, or shouting, during milking decreased milk production. This observation supports the findings of Hemsworth et al. (1993), who noted that positive human-animal interactions, including gentle touch and calm communication, enhance productivity and welfare. Seabrook (1994) and Pajor et al. (2000) also highlighted the benefits of positive interactions and the detrimental effects of negative ones, with negative interactions leading to physiological stress responses in animals.

The study further revealed that 92.60% of farmers believed that fear or stress during milking reduced milk production. Environmental changes and isolation from other cattle can induce fear, leading to decreased milk yield (Rushen et al., 2011). Additionally, 76.67% of farmers reported naming their cows, believing it led to higher milk production, aligning with findings by Bertenshaw and Rowlinson (2009) that named cows are easier to handle and have higher yields. Interestingly, 83.70% of farmers did not believe that poor housing or management affected milk production, attributing this belief to a lack of education and training. Educated farmers with a high perception of animal welfare were more likely to provide training on animal health and welfare to their personnel (Kellert, 1988). Cognitive-behavioral training for personnel could improve animal welfare and productivity (Carless et al., 2007).

All farmers agreed that animals feel pain similarly to humans, although a few admitted to occasional beating. The perception and attitude of farmers directly influence human-animal interactions, impacting behavior towards animals and their welfare (Hemsworth et al., 2000). Surprisingly, 53.70% of farmers believed that animals respond better to shouting than to a calm voice, a negative belief also reported by Hanna et al. (2009). Economic pressures were cited by almost all farmers (98.15%) as a barrier to maintaining high levels of animal welfare, with only 1.85% reporting no economic problems. The imbalance between milk prices and feed costs significantly impacts their ability to sustain animal welfare standards. Farmers indicated that low milk prices and high feed costs left little profit, with calves being their primary source of financial gain.

Only 8.15% of farmers acknowledged the need for good human-animal interaction in addition to basic needs like food, water, and shelter. Farmers focused on technical and economic aspects often overlooked the importance of their relationship with the animals. Welfare perception was higher among farmers of small farms where milk and wool are primarily consumed domestically. In contrast, those who sold these products for profit had more negative attitudes towards animal welfare (Dockes and Kling-Eveillard, 2006). Overall, this study underscores the importance of educating and training farmers on animal welfare practices. Positive human-animal interactions, proper healthcare, and addressing economic challenges are essential for enhancing both animal welfare and production capabilities.

Conclusion

The livestock production system influenced livestock keeper's knowledge, attitude and behavior for ensuring animal welfare and it is likely that this is related to resource availability, and potentially due to different approaches in livestock ownership. There is a lack of information about animal welfare throughout Bangladesh. Poor attitudes and behaviors regarding animal welfare that were noted in this study may be the result of insufficient information, which may be linked to a farming community that is not well-informed about the needs of animals in terms of their physical, biological, and behavioral needs. Owners may not be able to adopt a good attitude toward animal welfare and, consequently, fail to improve practice if they are not provided with suitable knowledge on the subject. Access to animal welfare-related information and training initiatives to improve livestock welfare is considered important to increase the awareness of the farmers on animal welfare, and seems to be lacking in the Bangladeshi agricultural extension system. To conclude, more efforts are needed to improve the farmers perception and change their attitude to their dairy animals in the process of establishing farm animal welfare standards and legislations in Bangladesh.

Conflict of Interest

The Authors declare that they have no conflict of interest.

Ethical statement

The study was approved by the Ethics and Animal Welfare Committee in faculty of veterinary sciences, Bangladesh Agricultural University (0245/2024/EAWC/BAU). Prior to the start of the interviews, each participant was informed their identity would remain anonymous and provided consent.

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References

1. Farm Animal Welfare Council. Farm animal welfare in Great Britain: Past, present and future. FAWC. 2009; 17 Smith Square, London.<http://www.fawc.org.uk>.
2. Cardoso CS, von Keyserlingk MG, Hötzel MJ. Views of dairy farmers, agricultural advisors, and lay citizens on the ideal dairy farm. *J Dairy Sci.* 2019; 102(2): 1811-1821. doi: 10.3168/jds.2018-14688. PMID: 30580941.
3. Hanna D, Sneddon IA, Beattie VE. The relationship between the stockperson's personality and attitudes and the productivity of dairy cows. *Animal.* 2009; 3(5): 737-43. doi: 10.1017/S1751731109003991. PMID: 22444453.
4. Kellert SR. Human-animal interactions: A review of American attitudes toward wild and domestic animals in the twentieth century. In: *Animals and people sharing the world* (Ed. A. N. Rowan). University Press of New England: Hanover-New Hampshire, USA, 1988; 137-175.
5. Ormandy EH, Schuppli CA. Public Attitudes toward Animal Research: A Review. *Animals (Basel).* 2014; 4(3): 391-408. doi: 10.3390/ani4030391. PMid: 26480314.
6. Rushen J, Butterworth A, Swanson JC. Animal behavior and well-being symposium: Farm animal welfare assurance: science and application. *J Anim Sci.* 2011; 89(4): 1219-28. doi: 10.2527/jas.2010-3589. PMid: 21216980.
7. Spooner JM, Schuppli CA, Fraser D. Attitudes of Canadian citizens toward farm animal welfare: A qualitative study. *Livestock Science* 2014; 163: 150-158.

8. Bertenshaw C, Rowlinson P. Exploring stock managers' perceptions of the human-animal relationships on dairy farms and an association with milk production. *Anthrozoös* 2009; 22 (1): 59-69. doi: 10.2752/175303708X390473.
9. Breuer K, Hemsworth PH, Barnett JL, Matthews LR, Coleman GJ. Behavioural response to humans and the productivity of commercial dairy cows. *Appl Anim Behav Sci.* 2000; 1; 66(4): 273-288. doi:10.1016/s0168-1591(99)00097-0. PMID:10700627.
10. Carless SA, Fewings-Hall S, Hall M, Hay M, Hemsworth PH, Coleman GJ. Selecting unskilled and semi-skilled blue-collar workers: The criterion-related validity of the PDI-employment inventory. *Int J Select Assess.* 2007; 15(3): 335-340. doi: 10.1111/j.1468-2389.2007.00392.x.
11. Dockes AC, Kling-Eveillard F. Farmers and advisers' representations of animals and animal welfare. *Livest Sci.* 2006; 103(3): 243-249. doi: 10.1016/j.livsci.2006.05.012.
12. Hemsworth PH, Coleman GJ, Barnett JL, Borg S. Relationships between human-animal interactions and productivity of commercial dairy cows. *J Anim Sci.* 2000; 78(11): 2821-31. doi: 10.2527/2000.78112821x. PMID: 11063304.
13. Hemsworth PH, Barnett JL, Coleman GJ. The Human-Animal Relationship in Agriculture and its consequences for the animal. *Animal Welfare.* 1993; 2(1): 33-51.
14. Kielland C, Ruud LE, Zanella AJ, Østerås O. Prevalence and risk factors for skin lesions on legs of dairy cattle housed in freestalls in Norway. *J Dairy Sci.* 2009; 92(11): 5487-96. doi: 10.3168/jds.2009-2293. PMID: 19841211.
15. Pajor EA, Rushen J, de Passillé AM. Aversion learning techniques to evaluate dairy cattle handling practices. *Appl Anim Behav Sci.* 2000; 69(2): 89-102. doi: 10.1016/s0168-1591(00)00119-2. PMID: 10906394.
16. Seabrook MF. Psychological interaction between the milker and the dairy cow. In: *Dairy systems for the 21st century* (ed. Bucklin, R.). American society of agricultural engineers, St. Joseph, USA, 1994; 49-58
17. Sinclair M, Fryer C, Phillips CJC. The Benefits of Improving Animal Welfare from the Perspective of Livestock Stakeholders across Asia. *Animals.* 2019; 9(4): 123. <https://doi.org/10.3390/ani9040123>.

18. Doyle RE, Wieland B, Saville K, Grace D, Campbell AJD. The importance of animal welfare and Veterinary Services in a changing world. *Rev Sci Tech*. 2021; 40(2): 469-481. doi: 10.20506/rst.40.2.3238. PMid: 34542100.
19. Abul Rahman S, Reed K. The management and welfare of working animals: identifying problems, seeking solutions and anticipating the future. *Rev Sci Tech*. 2014; 33(1): 197-202. doi: 10.20506/rst.33.1.2272. PMid: 25000792.
20. Madzingira O. Animal Welfare Considerations in Food-Producing Animals. *InTech*. 2018. doi:10.5772/intechopen.78223