



# Animal Welfare Considerations among Dairy Consumers in Rajasthan, India

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## Abstract

*Animal welfare is a complex subject with scientific, ethical, economic, cultural and political dimensions. The ever-growing consumer's interests in animal welfare have called for changes in farming practices. The aim of the study was to measure consumers' attitude towards dairy animal welfare. An attitude scale was developed and administered to the selected consumers of dairy products. The scale was based on Likerts (1932) summated ratings method. Internal consistency coefficient of 0.84 was suggestive of high reliability of the scale. The content validity of the scale was also satisfactory. A total of 160 consumers of two districts (80 from each) in Rajasthan were contacted to collect data on attitude towards animal welfare. It was found that majority of the respondents from Jaipur districts had less favorable attitude while attitude of respondents from Udaipur district was found moderately favourable towards dairy animal welfare.*

**Keywords:** Animal Welfare, Attitude, Consumers, Content Validity, Summated Ratings Method

## **Introduction**

Animal welfare involves incorporation of sensible and sensitive animal husbandry practices to the livestock in the farm (Bech *et al.*, 2008). The welfare of production animals remains a subject of wider social discussions among the public. There is a nationwide support and demand for having a strong base of animal welfare education in India (Verma, 2013). Over the years animal welfare has rose to prominence owing to commercial & ethical reasons. It has gained recognition by governments, national and international bodies, academic institutions and individuals the world over (Mogoa *et al.*, 2005). Five freedoms of animal welfare form the cornerstone of good practices of animal welfare. These freedoms have been framed by FAWC – UK (Farm Animal Welfare Committee) to describe an animal's fundamental needs (Gregory, 1998; Bech *et al.*, 2008; Vessier *et al.*, 2008). Increasing public concern about certain production practices not in tune with animal welfare have been under pressure for change in some existing production systems (Rollin, 2004). Also, Consumer's demands for higher standards of animal protection have incumbently led to policy-makers and legislators to respond accordingly (Horgan, 2005). The scientific assessment of animal welfare is a key element in efforts to implement good animal welfare practices (FAO, 2009) and as such should employ an objective approach. Animal welfare is a concept that can be studied scientifically but our understanding of this concept is influenced by value-based ideas about what is important or desirable for animals to have a good life. Thus, we have a concept that is both science based and value based (Fraser, 2008). Therefore, a better understanding of underlying attitudes towards animal welfare is of paramount importance. An attitude scale was prepared to provide a valid, or accurate, measure of an individual's attitude towards a real or psychological object. The present article inculcates the development of scale to measure the attitude of consumers towards dairy animal welfare.

## **Materials and Methods**

An attitude is a personal disposition that is shared by people to varying degrees. This impels them to react to objects, situations or propositions in ways that can be called favorable or unfavorable (Guilford, 1954). In simpler way, attitude can be defined as the degree of negative or positive feeling of consumers towards dairy animal welfare.

In above study, Summated Ratings Method as suggested by Likert (1932) was followed for construction of the attitude scale. Different steps and procedure adopted in construction of the scale are described as below:

### **Collection of Statements**

A list of 65 statements made after thorough review of literature on dairy animal welfare after in depth discussions with experts, subject matter specialists, academicians, veterinarians, consumers and friends as primary sources for collection of statements (items) reflecting attitude towards dairy animal welfare. The statements were edited carefully in the light of 14 criteria as suggested by Edwards (1969) making a total of 43 statements.

### **Relevancy of Statements**

After collection of statements, the list of 43 statements selected after editing was sent to the panel of judges. Judges comprised of experts in the field of extension education of various ICAR institutes and SAUs and SVUs (State Veterinary Universities). The statements were mailed to 130 judges with request to critically evaluate each statement for its relevancy to measure the attitude of consumers towards dairy animal welfare and to give their responses on three-point continuum, viz; 'most relevant, relevant and least relevant' with the score of 3, 2 and 1, respectively. The judges were also requested to add/delete or modify any item which they deemed fit.

Out of 130 judges, only 50 judges could give their response in a stipulated span of 2 months. Responses of judges were tabulated and analyzed to work out the Relevancy Percentage (RP), Relevancy Weightage (RW) and Mean Relevancy Score (MRS) for all statements. Items with RP, RW and MRS values greater than 74.11, 0.69 and 2.08, respectively were selected for the final selection of statements. In this way, out of the 43 items, only 22 were retained in the first stage.

### **Item Analysis, Scoring and Calculation of 't' Value**

An interview schedule of these 22 statements was prepared to collect the responses from 40 consumers of non-

sample area. The consumers were asked to indicate the degree of agreement or disagreement on a three-point continuum namely agree, undecided and disagree with the weightings of 3, 2, 1 for positive statements and 1, 2, 3 for negative statement, respectively. The attitude score of a respondent was obtained by summing up the scores of all items.

Thus, the obtained scores were arranged in descending order. For the purpose of item analysis, 25 per cent of the respondents with highest total scores and 25 per cent respondents with lowest total scores were selected. These two groups provided the criterion groups in terms of which item analysis was done. The 't' value (critical ratio), a measure of the extent, which a given statement differentiates between high and low groups of subjects for each statement was calculated using the formula given by Edwards (1969).

$$t = \frac{|\bar{X}_1 - \bar{X}_2|}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Where,

$X_1$  = Mean score of a given statement for the higher group

$X_2$  = Mean score of same statement for the lower group

$S_1^2$  = Variance of the distribution of the response of higher group to the statement

$S_2^2$  = Variance of the distribution of the response of lower group to the statement

$n_1$  = number of respondents in the higher group

$n_2$  = number of respondents in the lower group

**Table 1:** Statements of item analysis by consumers of non-sample area

S. No.	Statement	t-value
1	I am willing to pay more for dairy products with more animal welfare practices followed at farm.	2.5
2	I believe that buying animal welfare friendly dairy products could have a positive impact on the welfare of dairy animals.	2.86
3	I believe that imported dairy foods should be as per animal welfare standards accepted in India.	0.57
4	I consider the welfare of dairy animals when I make decisions about purchasing milk or other milk product.	1.52
5	The consumers think about low milk prices than the dairy animal welfare aspect.	2.05
6	I feel sufficiently informed about farm animal welfare.	0.73
7	As a consumer low milk prices are more important than the well-being of dairy animals.	1.63
8	In general, the welfare of dairy animals in our country needs to be improved.	2.93
9	If food companies improve dairy animal welfare standards, the prices of dairy products will rise.	1.41
10	I would vote for a strict law in that would require people to treat their dairy animals more humanely.	2.5
11	Farmers should be compensated, if forced to comply with higher dairy animal welfare standards.	3.08
12	I am concerned about dairy animal welfare.	0.95
13	Government should emphasize on the concept of dairy animal welfare by imparting training to different stakeholders.	1.08
14	Farmers and food companies put their own profits ahead of treating dairy animals humanely.	2.33
15	Animal welfare topic should be a part of curriculum in school education.	1.25
16	People should participate in a protest or demonstration related to dairy animal welfare.	2.24
17	Compassion and empathy for dairy animals is the duty of a person who deals with these animals.	0.37
18	Dairy animals raised on small farms have a better life than those raised in commercial dairy farms.	1.52
19	Dairy animals raised under higher standards of welfare will produce safe and healthy milk.	1.5
20	I am not concerned about dairy animal welfare	3.29
21	Role and responsibility of Veterinary Officers should be more pronounced to improve the dairy animal welfare at field level.	1.05
22	Food companies should voluntarily improve dairy animal welfare, and would advertise as such, if people really wanted it.	1.8

In second step, those statements having a t-value equal to or greater than 1.78 were selected indicated by Edwards (1969). Thus, the final scale consists of 10 statements.

### Reliability of the Scale

To test the reliability of the scale, The Split Half Method of Reliability was applied. Finally, 10 statement's attitude scale was split into two equal halves on the basis of odd and even number of statements and administered to 40 selected respondents in non-sample area. Scores of all the 40 respondents for each item of two halves were calculated. Then the Pearson product moment co-efficient of correlation was computed between the two sets of scores of the scale with the given formula:

The 'r' value obtained was 0.72. Since, this actually measures the reliability of only half of the test, so Spearman-Brown prophecy formula was used to obtain the true reliability. The formula used was:

$$\text{Reliability coefficient of the whole test} = \frac{2 \times \text{corelation between two halves}}{1 + \text{corelation between two halves}}$$

The reliability coefficient of entire scale was found to be 0.84 which is in range of 0.8 to 0.9 indicated a high reliability of the scale.

### Validity of the Scale

Validity refers to degree to which the scale is capable of achieving the aims or purposes. When attitudes are measured, using either Likert scaling or any other type of attitude measurement, the investigator must establish the validity of the instruments. An instrument ought to take into account four aspects of validity namely content, predictive, concurrent and construct validity. Keeping in view the resource limitations, only content validity of scale was calculated in the present study. In collection and selection of items for the construction of the present scale, sufficient care was taken by the researcher. At the same time, ambiguous items were rejected based on judge's ratings as described earlier. Given the number of steps taken like item collection by wide discussions, and their ultimate conformity with the opinion of experts and social scientists, and working out their agreement scores, it is concluded that the scale satisfies the content validity. Moreover, validity usually is a matter of degree rather than an all-or-none property and validation is an unending process (Nunnally and Bernstein, 1994).

**Table 2:** Final statements of attitude scale selected as a tool for data collection from consumers

S. No.	Statement	t-Value	Nature of statement
1	I am willing to pay more for dairy products with more animal welfare practices followed at farm.	2.5	+
2	I believe that buying animal welfare friendly dairy products could have a positive impact on the welfare of dairy animals.	2.86	+
3	Consumers think about low milk prices than the dairy animal welfare aspect.	2.05	-
4	In general, the welfare of dairy animals in our country needs to be improved.	2.93	+
5	I would vote for a strict law in that would require people to treat their dairy animals more humanely.	2.86	+
6	Farmers should be compensated, if forced to comply with higher dairy animal welfare standards.	3.08	+
7	Farmers and food companies put their own profits ahead of treating dairy animals humanely.	2.33	-
8	People should participate in a protest or demonstration related to dairy animal welfare.	2.24	+
9	I am not concerned about dairy animal welfare	3.29	-
10	Food companies should voluntarily improve dairy animal welfare, and would advertise as such, if people really wanted it.	1.8	+

### Method of Scoring

Scoring was done in a range of 1 to 3 for each positive statement. The score 1 for disagree, 2 for agree and 3 for strongly agree. Scoring pattern was reverse for negative statements. Attitude score of each respondent was calculated

by adding up the scores obtained by him/her on all the items. Maximum and minimum possible scores of attitude scale were 30 and 10, respectively. Based on the scores, the respondents were categorized in to three classes' viz., less favorable, moderately favorable and Highly favorable attitude using the class interval methods between the maximum and minimum scores.

## Results and Discussion

After selecting the list of final statements, the scale was used for data collection from dairy product consumers of Jaipur and Udaipur districts of Rajasthan to measure their attitude towards dairy animal welfare. The Table 3 reveals that overwhelming majority of the rural (77.50%) and 30.00 per cent of the urban consumers in Jaipur had less favorable (up to 17) attitude towards dairy animal welfare. Moderately favorable (17 to 23) attitude was seen among 37.50 of urban and 20.00 per cent rural consumers while 32.50 and 2.50 per cent of respondents in urban and rural area had highly favorable (23 to 29) attitude. The mean attitude score of the urban consumers was significantly higher than the rural with Z value of -4.481\*.

In Udaipur, it was found that majority of the urban (70.00%) as well as rural (62.50) consumers had moderately favorable attitude whereas highly favorable attitude was found among 30.00 and 7.50 per cent of the urban and rural consumers, respectively. Only 30.00 of rural and none of the urban consumers had less favorable attitude. The mean attitude score of 22.00 and 19.00 among urban and rural consumers indicate a significant difference between them with Z value of -4.913\*. Overall, 53.75 per cent of the consumers in Jaipur were having less favorable attitude, followed by moderately favorable and highly favorable with 28.75 and 17.50 per cent of the respondents.

**Table 3:** Distribution of the consumers according to their attitude towards dairy animal welfare

Attitude Score	Jaipur (n = 80)			Udaipur (n = 80)			Pooled (N = 160)
	Urban (n = 40)	Rural (n = 40)	Total (n = 80)	Urban (n = 40)	Rural (n = 40)	Total (n = 80)	
Less favorable (up to 17)	12 (30.00)	31 (77.50)	43 (53.75)	0 (0.00)	12 (30.00)	12 (15.00)	55 (34.38)
Moderately favorable (17 to 23)	15 (37.50)	8 (20.00)	23 (28.75)	28 (70.00)	25 (62.50)	53 (66.25)	76 (47.50)
Highly favorable (23 to 29)	13 (32.50)	1 (2.50)	14 (17.50)	12 (30.00)	3 (7.50)	15 (18.75)	29 (18.13)
Mean±Std.	19.76±4.25	15.±3.0	17.61±4.1	22.0±2.0	19.0±3.0	20±3.0	18.99±3.99
Test of significance	Between urban and rural			Between urban and rural			
(Man Whitney Test)	Z = -4.481*			Z = -4.913*			
(Between district) Z = -3.864*							

Moderately favorable attitude was reported by majority of the consumers (66.25%) in Udaipur, followed by highly favorable (18.75%) and less favorable (15.00%), respectively. The mean attitude score of the consumers in Udaipur was significantly higher than the consumers in Jaipur with Z value of -3.864\*. This difference indicates more price conscious nature of the consumers in Jaipur who were more concerned to the price of the dairy product rather than the welfare standards. Coleman (2008) reported that while a minority of respondents regarded animal welfare in general to be important (41%) almost half (49.3%) considered farm animal welfare to be important and a majority thought welfare of domestic pets (65%) and native animals (56.6%) to be important.

The pooled data reveals that 47.50 per cent of the total consumers from both the districts had moderately favorable attitude, followed by 34.38 per cent having less favorable. Only 18.13 per cent of the total consumers had highly favorable attitude. Kobrich *et al.* (2001) revealed that in an exploratory study carried out in Santiago, Chile, determined that 49.20 per cent of respondents expressed a “moderately positive” attitude and 28.20 per cent a “very positive” attitude in relation to Animal Welfare.

## Conclusion

Study concluded that in Indian perspective, the attitude of dairy consumers is much more economically oriented rather than the welfare standards followed to produce the dairy product. Attitude of consumers can be improved by making them aware about dairy animal welfare standards and the advantages in following them on economic as

well as ethical ground. For this, different kind of training programmes on welfare aspect of dairy animals and its importance for consumers should be organized by concerned department so as to improve the welfare and comfort level of dairy animals to utilize the maximum production potential of these animals.

### **Conflict of Interests**

There is no conflict of interest.

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