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A scale to measure the attitude of dairy farmers towards dairy animal welfare

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Abstract

Animal welfare has become an emotional and public policy issue and the concerns have increased worldwide in the past few decades. In developed countries consumer's demands for higher standards of animal protection have incumbently led to policy-makers and legislators to respond accordingly. But in developing countries, it is still an issue of think forward. Present study made an attempt to develop an attitude scale to measure dairy farmers' attitude towards dairy animal welfare using Likerts (1932) summated ratings method. Article describes in detail the methodological steps followed in the development of the scale. Scale so developed has a high reliability with the internal consistency coefficient being 0.83. The Content validity of the scale was also satisfactory. Further, this scale was used to collect the data from 160 dairy farmers of two districts (80 from each) in Rajasthan. Content validity of the scale is also satisfactory given the steps followed. The study has revealed that majority of the respondents from both the districts were having moderately favorable attitude towards dairy animal welfare.

Keywords: Animal welfare, consumer, dairy farmer, attitude, summated ratings method

Introduction

The concept of animal welfare is important for commercial as well as ethical reasons. It has gained recognition by governments, national and international bodies, academic institutions and individuals the world over (Mogoa *et al.*, 2005) [9]. Good practices of animal welfare are underpinned by the framework provided in the five familiar freedoms that were developed by FAWC – UK (Farm Animal Welfare Committee) to describe an animal's fundamental needs (Gregory, 1998; Bech *et al.*, 2008; Vessier *et al.*, 2008) [5, 1, 11]. There are increasing public concerns about certain production practices which have resulted to demands for change in some existing production systems (Rollin, 2004) [4, 10]. Consumer's demands for higher standards of animal protection have incumbently led to policy-makers and legislators to respond accordingly (Horgan, 2005) [7]. The scientific assessment of animal welfare is a key element in efforts to implement good animal welfare practices (FAO, 2009) [9] and as such should employ an objective approach. In this study, the five freedoms were used as the basis to assess the animal welfare.

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) [4]. Therefore, a better understanding of underlying attitudes towards animal welfare is of paramount importance. An attitude scale is designed to provide a valid, or accurate, measure of an individual's attitude towards a real or psychological object. The present article describes the development of scale to measure the attitude of farmers towards dairy animal welfare.

Research Methodology

An attitude is a personal disposition common to individuals but possessed in different degrees. This impels them to react to objects, situations or propositions in ways that can be called favorable or unfavorable (Guilford, 1954) [6]. In simpler way, attitude can be defined as the degree of negative or positive feeling of dairy farmers towards dairy animal welfare.

Summated ratings method as suggested by Likert (1932) [8] was followed for construction of the present attitude scale. Different steps and procedure adopted in construction of the scale are described below:

Collection of Statements

A list of 86 statements was made after thorough review of literature on dairy animal welfare

and discussions with experts, subject matter specialists, academicians, veterinarians, dairy farmers and friends as primary sources for collection of statements (items) reflecting attitude towards dairy animal welfare. The statements were carefully edited in the light of 14 criteria as suggested by Edwards (1969)^[2] resulting in a total of 56 statements.

Relevancy of Statements

This list of 56 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 dairy farmers 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 74.85, 0.69 and 2.07, respectively were selected for the final selection of statements. In this way, out

of the 56 items, only 33 were retained in the first stage.

Item analysis, scoring and calculation of ‘t’ value

An interview schedule was prepared consisting of 33 statements to collect the responses from 40 farmers from non-sample area through personal interview. The respondents were asked to indicate the degree of agreement or disagreement on a three point continuum namely agree, undecided and disagree with the weightages 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)^[2].

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

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

Sl. No.	Statement	‘t’ value
1	Farmer treats his dairy animals as he treats his children.	1.41
2	Animal welfare is important for animal health	3.18
3	Dairy animal needs comfortable environment to express their natural behaviour.	1.10
4	Compassion and empathy for dairy animals is the duty of only those who deals with these animals.	3.13
5	Dairy animals have the same ability to feel pain and discomfort as humans.	0.29
6	Dairy animals raised on commercial dairy farms have a better life than those raised on small farms.	3.35
7	Dairy animals raised under higher standards of welfare will produce safe and healthy milk.	0.67
8	Farmers should be compensated, if forced to comply with higher dairy animal welfare standards.	0.36
9	For farmers or producers, high dairy product prices are more important than the well-being of dairy animals.	3.21
10	I am concerned about dairy animal welfare.	1.50
11	I feel it is better to cull the diseased and aged dairy animal than providing treatment.	2.75
12	I get upset when I see animals in bad conditions.	1.34
13	I think all living beings are equally valuable and must be accorded equal moral weight.	1.34
14	I think it is acceptable that cattle and buffaloes should be raised only for their milk consumption.	3.58
15	I think one should provide ready access to fresh water and feed for better animal health and vigour.	1.10
16	I think that human economic gain is more important than setting aside more land for animal shelter.	3.54
17	I would like to adopt or follow animal welfare conditions, even without any incentives.	0.36
18	I would not sale my animals to an individual who does not care for it well if paid a premium.	3.29
19	I would vote for a strict law in that would require people to treat their dairy animals more humanely.	1.57
20	If food companies improve dairy animal welfare standards, the prices of dairy products will rise.	1.90
21	In general the welfare of dairy animals in our country needs to be improved.	1.41
22	In my opinion inflicting cruelty to dairy animals is sin.	0.49
23	In my view it is better to euthanize the animal if the sufferings are not curable.	0.76
24	It is farmer’s responsibility to ensure animal welfare of dairy animals at his dairy farm.	0.33
25	People should participate in a protest or demonstration related to dairy animal welfare.	0.29
26	Role and responsibility of Veterinary Officers should be more pronounced to improve the dairy animal welfare at field level.	0.74
27	Scientific measures of dairy animal welfare should be used to determine how dairy animals are treated, not moral or ethical considerations.	3.09
28	Government should take an active role in promoting dairy animal welfare.	1.63
29	The use of animals for human entertainment viz., bull-fighting and racing is cruel.	1.00
30	Those farmers and traders who don’t care for their animal’s welfare should be punished.	0.45
31	Good animal welfare will increase the volume of milk cows produce.	0.74
32	Good animal welfare will improve human health.	0.26
33	Good animal welfare will benefit the reputation of our country.	1.34

All the statements having ‘t’ value equal to or greater than 1.75 were selected as indicating by Edwards (1969) [2]. Thus the final scale consists of 10 statements.

Reliability of the Scale

The split half method of reliability was applied to test the reliability of the scale. Final 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. Score of all the 40 respondents for each item of two halves were calculated. The Pearson product moment co-efficient of correlation was computed between the two sets of scores of the scale with the following formula:

The ‘r’ value obtained was 0.72. Since this really measures the reliability of only half of the test, an adjustment was made to obtain the true reliability using the Spearman-Brown prophecy formula. The formula used was:

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

The reliability coefficient of entire scale was found to be 0.83 which is in range of 0.8 to 0.9 indicated a high reliability of the scale.

Validity of the Scale

Validity of the scale 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. In the present study, keeping in view the resource limitations, only content validity of scale was aimed at. 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) [10].

Method of Scoring

For each positive statement the score ranged from 1 to 3 with 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. Minimum and maximum possible scores of attitude scale were 10 and 30, 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 minimum and maximum scores.

Table 2: Selected statements to judge the attitude of the dairy farmers towards dairy animal welfare

Sl. No.	Statements	t-value	Nature of statements
1	Animal welfare is important for animal health	3.18	+
2	Compassion and empathy for dairy animals is the duty of only those who deals with these animals.	3.13	-
3	Dairy animals raised on small farms have a better life than those raised in commercial dairy farms.	3.35	+
4	For farmers or producers, high dairy product prices are more important than the well-being of dairy animals.	3.21	-
5	I feel it is better to cull the diseased and aged dairy animal than providing treatment.	2.75	-
6	I think it is acceptable that cattle and buffaloes should be raised only for their milk consumption.	3.58	-
7	I think that human economic gain is much more important than setting aside more land for animal shelter.	3.54	-
8	I would not sale my animals to an individual who does not care for it well if paid a premium.	3.29	+
9	If food companies improve dairy animal welfare standards, the prices of dairy products will rise.	1.90	+
10	Scientific measures of dairy animal welfare should be used to determine how dairy animals are treated, not moral or ethical considerations.	3.09	+

As given in the table 2, based on the ‘t’ values, total 10 statements were selected for the final scale to judge the attitude of the dairy farmers towards dairy animal welfare. Out of these, five statements were positive in nature and remaining five statements were negative.

Results and Discussion

After getting the final statements, the scale was used for data collection from Jaipur and Udaipur districts of Rajasthan to measure the attitude of dairy farmers towards dairy animal welfare

Table 3: Attitude (score) of dairy farmers towards dairy animal welfare

Attitude (score)	Jaipur N=80	Udaipur N=80	Pooled N=160	Test of significance
Less favorable (up to 17.33)	14 (17.50)	17 (21.25)	31 (19.37)	Man-Whitney test Z = -0.285 (non-significant)
Moderately favorable(17.33 - 23.67)	50 (62.50)	57 (71.25)	107 (66.88)	
Highly favorable (23.67 - 30)	16 (20.00)	6 (7.50)	22 (13.75)	
Total	80 (100.00)	80 (100.00)	160 (100.00)	
Mean ±Std	20.16±4.05	19.9±2.89	20.03±3.51	

Data shown in table 3 revealed that majority of the dairy farmers had moderately favorable attitude from all the three categories i.e. Jaipur (62.50%), Udaipur (71.25%) and pooled (66.88%). Dairy farmers of Jaipur were having highly favorable attitude in 20.00 per cent cases in contrast to dairy farmers of Udaipur where only 7.50 per cent had highly

favorable attitude. The mean attitude score of dairy farmers in Jaipur district was found 20.16 which is marginally higher than the mean score of dairy farmers from Udaipur (19.90) with an overall average of 20.03. This difference between two districts was found non – significant with Z value of -0.285.

Conclusion

Study concluded that the attitude of dairy farmers 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. In this situation, different kind of training programmes on dairy animal welfare 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.

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