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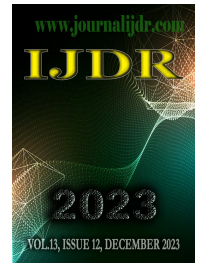
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RESEARCH ARTICLE

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CHALLENGES IN CLEAN MILK PRODUCTION: A COMPREHENSIVE LOOK AT CONSTRAINTS FACED BY DAIRY FARMERS IN NORTH GUJARAT AND THEIR PROFILE

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ABSTRACT

Socio-personal characteristics of the respondents viz- age, education, farm experience, Size of family, herd size, land holding, annual income, extension participation, source of information, risk orientation, economic motivation was studied. A multistage, purposive and random sampling technique was selected for the study. The present investigation was carried out in North Gujarat. Three districts of North Gujarat viz., Banaskantha, Sabarkantha and Mehsana were purposively selected for the study. From each selected district, three talukas and two villages from each selected taluka were randomly selected for the study. Thus, eighteen villages were selected from the nine selected talukas. From each village, ten dairy farmers were randomly selected as respondents. Thus, total 180 respondents were selected for the study. Half of the dairy farmers were middle aged (50.55 %) and had high school and above level education (49.99 %). Overwhelming majority (89.45 %) of the dairy farmers had up to 4 family members. Nearly half of the dairy farmers had medium herd size (47.22 %) and high level of dairy farming experience (53.89%). Little more than three-fifths (61.12 %) of the dairy farmers were marginal and small farmers and nearly half (47.78 %) of the dairy farmers had annual income ranging from ₹5,00,001 to ₹1,00,000. More than two-thirds of the dairy farmers had medium extension participation (70.00 %), medium level of utilization of information sources (66.67 %), medium risk orientation (69.45 %) and medium economic motivation (70.00%). The major constraints faced by the dairy farmers were in adoption of clean milk production practices; lack of incentives for clean milk, lack of capital for pucca animal shed, suggestions endorsed by the dairy farmers were in adoption of clean milk production practices; subsidy should be provided for purchasing disinfectants and detergents required for clean milk production.

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INTRODUCTION

Dairy farming has been an important part of the agricultural scenario for thousands of years. India being a predominantly agrarian economy has about 70 per cent of its population living in villages, where livestock play a crucial role in the socio-economic life. Livestock provide high-quality foods such as milk, cheese, butter, ghee, etc. India is not only one of the top producers of milk in the world, but also the largest consumer of milk and milk products in the world. Due to the shortfall in supply, we have to import significant amounts of milk products to meet internal demand. Agriculture and animal husbandry have a symbiotic relationship, in which the agricultural sector provides feed and fodder for the livestock and animals provide milk, manure and draught power for various agricultural operations.

Dairy sector is instrumental in bringing socio-economic transformation in India. It has created a lot of employment opportunities and also provides improved nutritional benefits. In clean milk production, milking is the key operation on a dairy farm. Milking is an art requiring experience and skill. Milking should be conducted gently, quietly, quickly, cleanly and completely. Cleanliness of animal sheds, cleanliness of animals, cleanliness of milkers and milking pails, milking methods, transportation of milk from dairy farm to processing units are important operations to adopt by the dairy farmers. The domestic milk production could be increased in terms of quantity and quality with adoption of Good Dairy Farming Practices (FAO, 2011). Milk quality is utmost important factor in dairying today due to consumer's awareness regarding "Quality". Although, India ranks first in milk production, quality of milk produced is not satisfactory due to lack of technical knowledge to the farmers (Ogale, 1999).

OBJECTIVE

1. To study theselected characteristics of the dairy farmers

METHODOLOGY

The present study was carried out in North Gujarat. Out of six districts of North Gujarat, three districts were purposively selected. From each selected district, three talukas were selected randomly. Thus, total nine talukas were selected from the three selected districts. Two villages from each selected taluka were randomly selected for the study. Thus, eighteen villages were selected from the nine selected talukas for the study. From each village ten dairy farmers were randomly selected as respondents for the study. Thus, total 180 respondents were selected for the study. Ex-Post-Facto research design was used in the present study (Kerlinger, 1976). The data were collected through pre-tested Gujrati interview schedule and investigator contacted all the data personally. The data were gathered, processed and analyzed to draw the meaningful conclusion. The statistical tools used for the analysis of the data were percentage, mean, standard deviation, correlation coefficient.

- 1) **Age:** Age of the dairy farmer was considered as the number of completed years of age at the time of interview. On the basis of National Adult Education Programme (NAEP), Ministry of Education, Government of India.
- 2) **Education:** Education was operationalized as the number of years of formal education attained by the dairy farmers. For measurement of the education, approach to measure education component of the socio-economic status scale developed by Pandya and Pandya (2008) was used.
- 3) **Experience in dairy farming:** Experience of the respondent as dairy farmer was recorded in year. Actual experience in dairy farming in years was recorded as score of experience in dairy farming.
- 4) **Size of family:** Family size has been operationalized as a group of members who are closely related and living together under one roof with common kitchen. Family size is defined as the total number of members in the family of a respondent. Depending on the number of members in a family, the families of the dairy farmers were categorized as small, medium and large family.
- 5) **Herd size:** Herd size refers to the number of large milch animals such as cows and buffaloes possessed by the dairy farmer.
- 6) **Annual income:** For measuring annual income of the respondent, income from all the sources was recorded. The dairy farmers based on their annual income were categorized into five groups.
- 7) **Land holding:** For measuring land holding of the dairy farmers, approach to measureland holding component of the socio-economic status scale developed by Pandya and Pandya (2008) was used.
- 8) **Extension Participation:** Extension participation was measured by using the scale developed by Siddaramaiah & Jalihal (1983). Extension participation referred to the extent of involvement of the dairy farmers in extension activities during last three years.
- 9) **Source of information:** Source of information play a majorrole in the diffusion and adoption of new ideas or innovations. Information sources are operationalized as the sources through which dairy farmers get information about new ideas or method of animal husbandry. For measuring use of information sources by the dairy farmers, a schedule was developed by listing all possible sources of information available in the study area. The use of source was measured against three categories of utilization viz., regularly, occasionally and never by assigning 2, 1 and 0 score, respectively. The total score for each respondent was calculated by summing-up the scores of all the sources utilized by the respondent.
- 10) **Risk Orientation:** The dairy farmers willingness to take risk was measured with the help of scale developed by Supe (2007) with due modifications. The scale consists of six statements. The responses from the dairy farmers were obtained against each item

in terms of their degree of agreement or disagreement. The dairy farmers were classified into three categories on the basis of mean and standard deviation

- 11) **Economic motivation:** Economic motivation refers to orientation towards profit maximization by adopting innovations, technologies and management practices and the relative value placed by the dairy farmer on economic ends. The variable was measured with the help of scale developed by Supe (2007). This scale consists of seven items. The total score of each respondent was calculated. Then, the respondents were grouped into three categories viz., low, medium and high economic motivation on the basis of mean and standard deviation.
- 12) **Constraints:** The constraints were operationally defined as the difficulties experienced by the dairy farmers in adoption and management of clean milk production practices. To know the constraints, a direct question 'state the constraints you faced in adopting clean milk production practices' was asked to the dairy farmers. Frequency and percentage of each constraint were calculated and ranks were assigned accordingly.
- 13) **Suggestions:** The dairy farmers were asked to give their valuable suggestions to overcome the constraints they faced. The suggestions offered were ranked on the basis of frequencies and percentage of the farmers for the respective suggestion.

RESULT AND DISCUSSION

The data presented in the Table 1 indicated that nearly half (50.55 %) of the dairy farmers were from the middle age group, followed by 27.22 and 22.23 per cent in the young age and old age group, respectively. Nearly one-third (32.22 %) of the dairy farmers had high school education, followed by 36.12 per cent of the dairy farmers had middle school education. Where as, 17.77 per cent of the dairy farmers had graduation and above education and 11.12 per cent of the dairy farmers had primary education. Remaining 2.77 per cent of the dairy farmers were functionally literate. more than half (53.89 %) of the dairy farmers had high level of experience in dairy farming, followed by 38.89 and 7.22 per cent of them medium and low level of experience in dairy farming, respectively.

More than overwhelming majority (89.45 %) of the dairy farmers had up to 4 family members, followed by 8.33 per cent of the dairy farmers who had 5 to 8 family members. Only 2.22 per cent of the dairy farmers had above 8 members in their family. Nearly half (47.22 %) of the dairy farmers had medium herd size of large milch animal, followed by 38.89 and 13.89 per cent of them had large and small herd size, respectively. Nearly half (47.78 %) of the dairy farmers had annual income ranging from ₹5,00,000 to ₹1,00,000, followed by 18.33 per cent and 11.67 per cent of the farmers who had annual income ₹1,00,000 to ₹1,50,000 and above ₹2,00,000, respectively. Whereas equal number (11.11 % each) of dairy farmers had annual income upto ₹50,000 and from ₹1,50,000 to ₹2,00,000. nearly one-third (31.67 %) of the dairy farmers had 1.01 to 2.00 ha of land holding, followed by 29.45, 28.88 and 10.00 per cent who had 0.01 to 1.00 ha, 2.01 to 4.00 ha and 4.01 to 10.00 ha of land holding, respectively. More than two-thirds (70 %) of the dairy farmers had medium extension participation, followed by 15.55 and 14.45 per cent of them had high and low extension participation, respectively. Two-Thirds (66.67 %) of the dairy farmers had medium level of utilization of information sources.

Equal number (16.67 % each) of the dairy farmers had utilized their information sources at high and low level. more than two-thirds (69.45 %) of the dairy farmers had medium risk orientation, followed by 16.11 and 14.44 per cent of the dairy farmers who had high and low risk orientation, respectively. More than two-thirds (70 %) of the dairy farmers had medium economic motivation, followed by 16.67 and 13.33 per cent of the dairy farmers who had low and high-economic motivation, respectively. The data presented in the Table 2 indicates that dairy farmers faced eight constraints in adoption of clean milk production practices.

Table 1. Socio-personal profile of the dairy farmers

Sr. No	Personal characteristic	Category	Frequency	Per cent
1.	Age	Young (upto 35 years)	49	27.22
		Middle (36 to 50 years)	91	50.55
		Old (above 50 years)	40	22.23
2.	Education	Illiterate	0	0.00
		Functionally literate	50	2.77
		Primary school	20	11.12
		Middle school	65	36.12
		High school	58	32.22
3.	Experience in dairy farming	Graduation/Post-Graduation	32	17.77
		Low (up to 5 years)	13	7.22
		Medium (6 to 10 years)	70	38.89
4.	Size of family	High (above 10 years)	97	53.89
		Small (up to 4 members)	161	89.45
		Medium (5 to 8 members)	15	8.33
5.	Herd size	Large (above 8 members)	4	2.22
		Small herd size (up to 2 milch animals)	25	13.89
		Medium herd size (3-5 milch animals)	85	47.22
6.	Annual income	Large herd size (more than 5 milch animals)	70	38.89
		Up to ₹50,000	20	11.11
		₹50,000 to ₹1,00,000	86	47.78
		₹1,00,000 to ₹1,50,000	33	18.33
		₹1,50,000 to ₹2,00,000	20	11.11
		Above ₹2,00,000	21	11.67
7.	Land holding	Up to ₹50,000	20	11.11
		₹50,000 to ₹1,00,000	86	47.78
		₹1,00,000 to ₹1,50,000	33	18.33
		₹1,50,000 to ₹2,00,000	20	11.11
		Above ₹2,00,000	21	11.67
		Landless	0	0.00
		Marginal (0.01 to 1.00 ha)	53	29.45
		Small (1.01 to 2.00 ha)	57	31.67
8.	Extension Participation	Semi medium (2.01 to 4.00 ha)	52	28.88
		Medium (4.01 to 10.00 ha)	18	10.00
		Big (above 10.00 ha)	0	0.00
		Landless	0	0.00
		Marginal (0.01 to 1.00 ha)	53	29.45
		Low	26	14.45
		Medium	126	70.00
		High	28	15.55
9.	Source of information	Mean = 25.75S.D. = 11.91		
		Low utilization	30	16.66
		Medium utilization	120	66.67
		High utilization	30	16.67
10.	Risk orientation	Mean = 18.03 S.D. = 3.92		
		Low risk orientation	26	14.44
		Medium risk orientation	125	69.45
		High risk orientation	29	16.11
11.	Economic motivation	Mean = 22.11 S.D. = 3.29		
		Low economic motivation	30	16.67
		Medium economic motivation	126	70.00
		High economic motivation	24	13.33
		Mean = 23.55 S.D. = 2.76		

Table 2. Constraints faced by the dairy farmers in adoption of clean milk production practicesn = 180

Sr. No.	Constraints	Frequency	Per cent	Rank
1.	Lack of capital for pucca animal shed	110	61.11	II
2.	Poor knowledge about CMP practices	69	38.33	VIII
3.	Lack of necessary space for the separate milking area	75	41.66	VII
4.	Poor knowledge about vaccination schedule	94	52.22	III
5.	High cost of disinfectants, detergents and sprayers	89	49.44	IV
6.	Lack of knowledge about the disease of teats udder	64	35.55	IX
7.	Veterinary services are not available timely	86	47.77	V
8.	Lack of incentives for production of clean and quality milk	113	62.77	I
9.	Clean milk production practices increase workload	86	46.11	VI

Table 3. Suggestions from the dairy farmers to overcome the constraints faced by the dairy farmers in adoption of clean milk production practices n = 180

Sr. No.	Suggestions	Frequency	Per cent	Rank
1.	Subsidy should be provided for purchasing disinfectants and detergents required for clean milk production.	124	68.88	I
2.	Training on clean milk production should be organized.	78	43.33	IV
3.	Timely veterinary services should be made available in the village.	102	56.66	III
4.	Training should be organized in the village for easy access.	69	38.33	V
5.	Premium price for quality and milk should be given.	110	61.11	II

The constraints faced by majority of the dairy farmers in descending order of the importance were; lack of incentives for production of clean and quality milk (62.77 %), lack of capital for pucca animal shed (61.11 %), poor knowledge about vaccination schedule (52.22 %) and ranked first, second and third, respectively. The other constraints faced by considerable number of the dairy farmers were; high cost of disinfectants, detergents and sprayers (49.44 %), veterinary services are not available timely (47.77 %), clean milk production practices increase workload (46.11 %), lack of necessary space for the separate milking area (41.66 %), poor knowledge about CMP practices (38.33 %), lack of knowledge about the disease of teats udder (35.55 %) and ranked fourth, fifth, sixth, seventh, eighth and ninth, respectively. The data presented in the Table 3 indicates that dairy farmers have five suggestions in adoption of clean milk production practices. The suggestions by majority of the dairy farmers in descending order of the importance were; subsidy should be provided for purchasing disinfectants and detergents required for clean milk production (68.88 %), premium price for quality and milk should be given (61.11 %), timely veterinary services should be made available in the village (56.66 %) and ranked first, second and third, respectively. The other suggestions of the dairy farmers were; training on clean milk production should be organized (43.33 %), training should be organized in the village for easy access (38.33 %) and ranked fourth and fifth, respectively.

CONCLUSION

The adoption of clean milk production practices among dairy farmers reveals key demographic trends, with a significant portion being middle-aged, having high school education or above, and typically having up to four family members.

Experience and herd size varied, but a substantial number had medium-sized herds and extensive farming experience. A majority were marginal or small-scale farmers with annual incomes ranging from ₹5,00,001 to ₹1,00,000. The study also found that most farmers demonstrated medium levels of extension participation, information source utilization, risk orientation, and economic motivation. Challenges in adopting clean milk practices were identified, including a lack of incentives and capital for essential infrastructure. The farmers suggested subsidies for purchasing disinfectants and detergents as potential solutions.

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