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Descriptive analysis of socio-economic profiles, information needs and skills among dairy farmers in marathwada region

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ABSTRACT

The present study was conducted to investigate the socio-economic profile, information needs and skill levels regarding clean milk production (CMP) among dairy farmers in the Marathwada region of Maharashtra. It was conducted in the Chh. Sambhaji Nagar and Beed districts comprising of a sample of 120 dairy farmers selected through a multistage random sampling plan. Data collected via interview schedule revealed that the majority of respondents were middle aged males from general categories with intermediate education, having medium to large families and small to medium landholdings. The findings indicate that 55.83% of dairy farmers fall into the "most needed" category for information regarding CMP, while 52.50% possess only "less skilled" capabilities. High F-values ($p<0.01$) confirm significant variations across these groups. The study highlights a substantial demand for information and a critical skill gap, emphasizing the necessity for targeted training interventions and extension support to enhance milk safety and quality in the region.

***Keywords**:* Dairy Farmer, Education, Needs, Skill and Socio-economic Profile

INTRODUCTION

Humans require food, clothing, shelter and sleep as basic necessities for survival. In the social sciences the "needs" is defined as the gap between an actual condition and a desired state. While India has emerged as the world's largest milk producer with an annual production of 230.6 million tonnes, a distinctive feature of its dairy business is that the majority of milk is generated by small, uneducated farmers who often lack knowledge of scientific livestock and economic practices. Though,

quantity has increased rapidly, India lags behind in milk quality. The safety and quality of raw milk are major reasons for poor export rates, as global consumers increasingly favour high quality goods. Clean milk production (CMP) is defined as milk from healthy animals with normal flavour, devoid of dirt, permissible bacterial counts and free from pathogens and toxins. However, in regions like Marathwada, challenges such as inadequate knowledge, limited training, and low mass media exposure hinder hygienic milk production. This study was specifically undertaken to know the information needs and skills of dairy farmers regarding clean milk production.

MATERIALS AND METHODS

The research was conducted in the Marathwada region of Maharashtra, focusing on two purposively selected districts viz. Chh. Sambhaji Nagar and Beed, chosen based on having the highest bovine populations in the region according to the 20th Livestock Census (2019). A multistage random sampling technique was utilized for selection of the respondents. Two tehsils from each district and ten villages from each tehsil were selected randomly. Three dairy farmers owning a minimum of 5 lactating bovine animals and a minimum daily farm milk production of 20 liters were randomly selected from each village. A total of 120 dairy farmers (60 from each districts) formed the final sample size. Data were analyzed using descriptive statistics (frequencies, percentages, means, standard deviations, ranges, and medians) to evaluate independent socio-economic variables (such as age, education, herd size, and milk yield) and dependent variables (information needs and skill levels). Class intervals, mean score categorizations, and F-values were deployed to determine group variances and identify core skill and information gaps.

RESULTS AND DISCUSSION

Descriptive statistics of socio-personal, economic and communication variables

The table 1 presents the descriptive statistics of the socio-personal, economic and communication variables considered in the study. The descriptive statistics indicated substantial variability in demographic, economic, and social characteristics among the respondents, providing a comprehensive understanding of their backgrounds and potential influences on their decision making. The age of participants ranged from 21 to 56 years, with a mean age of 33.62 years and a standard deviation of 8.71 years. This indicated that the sample included both young and middle-aged individuals. Gender distribution was coded as male (1) and female (2). The median value of 1 suggested that the majority of respondents were male. The social category variable, classified into five categories (General, OBC, SC, ST and NT), had been coded as 1, 2, 3, 4 and 5, respectively. A median of 1, indicating that most respondents belonged to the General category.

Education levels among the respondents varied from primary school (1) to graduate and above (5), with a range of 4. The median education level was 4, suggesting that the majority of respondents had completed intermediate education. Family size varied between 3 and 10 members, with a means of 6.93 and a standard deviation of 2.05. This suggested a predominance of medium to large families. Regarding family type, it was categorized as nuclear (1) or joint (2), with a median of 1, implying that most respondents lived in nuclear families.

Table 1. Descriptive statistics of socio-personal, economic and communication variables

Independent variables	Measurement (Code used)	Min.	Max.	Range	$\bar{X}\pm\sigma$	Median
Age	Years	21	56	35	33.62±8.71	--
Gender	Male (1) and Female (2)	1	2	1	--	1
Social category	General (1), OBC (2), SC (3), ST (4) and NT (5)	1	5	4	--	1
Education	Illiterate (0), Primary (1), Middle School (2), High School (3), Intermediate (4) and Graduate and above (5)	2	5	3	--	4
Family size	Members	3	10	7	6.93±2.05	--
Family type	Nuclear (1) and Joint (2)	1	2	1	--	1
Experience	Years	5	30	25	14.18±5.88	--
Land holding	acres	1.5	20	18.5	6.88±3.84	--
Dairy herd size	Cattle Equivalent Units (CEU)	7.70	31.35	23.65	12.97±3.65	--
Milk yield	Litres	30	150	120	54.66±19.67	--
Income	Rs. Lacs/annum	6.90	25.48	18.58	12.95±3.62	--
Interpersonal sources	Score	2	10	8	5.39±1.85	--
Mass media sources	Score	0	10	10	4.68±1.98	--
Social participation	Number	0	4	4	--	1
Training participation	Yes (1) and No (0)	0	1	1	--	0
Innovativeness	Score	10	38	28	20.47±4.10	--

Experience in the dairy farming ranged from 5 to 30 years, with a mean of 14.18 years and a standard deviation of 5.88 years, showing a considerable variation in experience levels. Landholding size varied from 1.5 to 20 acres, with an average of 6.88 acres, suggesting that most respondents owned small to medium-sized farms. The dairy herd size, measured in cattle equivalent units (CEU), ranged from 7.70 to 31.35 cattle equivalent, with a mean of 12.97 and a standard deviation of 3.65. This indicated significant variation in herd sizes. Milk yield ranged from 30 to 150 liters per day, with an average of 54.66 liters and a standard deviation of 19.67, suggesting a broad distribution in milk production capabilities. Annual income of respondents varied from 6.90 to 25.48 lakh rupees, with a mean of 12.95 lakh rupees and a standard deviation of 3.62, indicating moderate financial variation among the respondents. Interpersonal sources, measured on a score scale, had a mean of 5.39 with

a standard deviation of 1.85, whereas mass media sources had an average score of 4.68 with a standard deviation of 1.98. This suggested that interpersonal sources were slightly more utilized than mass media for obtaining information regarding dairy farming. Social participation was categorized into three levels *viz*. no participation (0), low participation (1) and high participation (>2-4). The range of this variable was 4, with a median of 1, indicating that most respondents had low social participation. The results are in agreement with the findings of Sabapara *et al.,* (2014) and Ram *et al.,* (2018). Training participation was measured as a binary variable (Yes=1, No=0). The median value of 0 indicated that the majority of respondents had not participated in training programs. Results are in agreement with the findings of Jeelani *et al.,* (2014), Chandrasekar *et al.,* (2017) and Godara *et al.,* (2017) who found that majority of the respondents had not received any training. Lastly, innovativeness scores ranged from 10 to 38, with a mean of 20.47 and a standard deviation of 4.10, highlighting moderate variation in innovative behavior among respondents.

Descriptive statistics of information needs and skill

The study analyzed two dependent variables information needs and skill analysis, categorizing them into different class intervals and assessing their frequencies, mean scores and F-values. The information needs of dairy farmers regarding clean milk production practices were divided into three categories based on class intervals (Table 2). The majority, 55.83 percent (n=67), fell into most needed (43-50) category, with the highest mean score of 44.72±1.59. A significant 39.17 percent (n=47) of respondents were categorized as needed (39-42), with a mean score of 40.68±1.09. Only 5 percent (n=6) of respondents fell into less needed (29-38) category, with a mean score of 34.50±3.56. Findings are in alignment with Adhikari *et al*. (2020) and contrary to the findings of Kumar *et al.* (2020).

Table 2. Descriptive statistics of information needs and skill

Variables and Class interval	**Frequency (%)**	$\bar{X}\pm\sigma$	**F value**
Information needs (score)			
Less needed (29-38)	6 (5.00)	34.50±3.56	177.72**
Needed (39-42)	47 (39.17)	40.68±1.09	
Most needed (43-50)	67 (55.83)	44.72±1.59	
		42.63±3.11	
Skill (score)			
Not skilled at all (18-20)	14 (11.67)	20.21±0.98	131.48**
Less skilled (22-25)	63 (52.50)	23.65±1.11	
Skilled (26-37)	43 (35.83)	28.47±2.82	
		24.98±3.40	
*Significant at 5% level, **significant at 1% level, Data in parentheses indicate the percentage			

Table 2 further depicts that, overall mean score for information needs was 42.63±3.11. The F-value of 177.72 was highly significant (p<0.01), indicating a strong difference among the groups. This suggests that the respondents had varying levels of information needs, with a majority expressing a high demand for information regarding clean milk production practices. Like information need, skills of dairy farmers regarding clean milk production practices was also categorized into three groups based on class intervals. The largest proportion, 52.50 percent (n=63), was in less skilled (22-25) category, with a mean score of 23.65±1.11. About 35.83 percent (n=43) were skilled (26-37), with a mean score of 28.47±2.82. A small proportion, 11.67 percent (n=14), belonged to not skilled (18-20) category, with a mean score of 20.21±0.98. The overall mean score for skill was 24.98±3.40. The F-value of 131.48 was highly significant (p<0.01), demonstrating notable differences in skill levels among respondents. These findings indicate that while many respondents had moderate skills, a considerable proportion lacked adequate skills. The results highlighted a strong demand for information and a considerable skill gap, emphasizing the need for targeted interventions to enhance skills and fulfil information needs.

CONCLUSION

The dairy farmers in the Marathwada region possess a moderate socio-economic standing but face pronounced knowledge and skill deficits concerning clean milk production. With over 55% of respondents categorized under high information needs and more than 52% falling into the "less skilled" bracket, a clear operational gap exists between current farming methods and required hygienic standards. These insights underscore the urgent requirement for targeted educational programs, structural training initiatives, and robust extension services by veterinary departments and institutions like Krishi Vigyan Kendras (KVKs). Bridging these gaps will not only elevate regional milk quality and public health standards but also boost the economic success and livelihood of rural dairy farmers.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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