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Research Article

Everyday Struggles to Lasting Solutions: Understanding the Challenges of Women Dairy Members in Eastern Dry Zone of Karnataka

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Abstract

Women play a central role in the daily management of dairy farming, from feeding and milking to animal care and handling milk. Yet the difficulties they face receive far less attention than their contribution to household income and milk production. Limited access to credit and other resources, inadequate veterinary and extension services, marketing problems and other farm-level challenges can weaken their ability to sustain and improve dairy-based livelihoods. Understanding these constraints, and the remedies women themselves consider workable, is therefore essential for designing support that responds to real needs.

The present study examined the constraints experienced by women dairy farmers and the solutions they suggested for overcoming them in the Eastern Dry Zone of Karnataka. Data were collected from 240 respondents in Tumkur and Chikkaballapura districts, comprising 120 women from each district, with representation from both small and big farm categories. Rather than treating constraints in isolation, the study links farmers' reported difficulties with their own priorities for support. This approach helps identify practical areas in which extension services, veterinary care, training, financial assistance and market-related interventions can be strengthened. The findings are expected to inform farmer-oriented strategies that address women's actual needs and improve the sustainability of dairy farming in the region.

Keywords: Women Dairy Farmers; Constraints; Suggestions; Dairy Farming; Rural Livelihoods

Introduction

For many women in rural areas, dairy farming is closely connected with their everyday responsibilities and household income. They spend considerable time looking after cattle, arranging feed, maintaining cleanliness and supplying milk to dairy cooperatives. Yet, managing these activities becomes difficult when feed costs increase, animals fall sick or veterinary assistance is not readily available. Women may also have limited control over the money earned from milk sales, even when they are directly involved in dairy work. The situation becomes more challenging when they have to manage farm activities alongside household duties, often with little time to seek technical advice or explore better ways of running their dairy enterprise. These difficulties can affect not only the returns from dairy farming but also the confidence and freedom women have in making decisions about their work.

The difficulties faced by women dairy farmers are not limited to animal care and daily farm operations. The rising cost of cattle feed, shortage of green fodder, irregular availability of veterinary services and expenses associated with treating sick animals can reduce the returns from dairy farming. Access to institutional credit and timely technical guidance may also be difficult, particularly for women who have limited financial resources or depend on family members for major farm-related decisions. In addition, fluctuations in milk prices and the cost of transporting milk can affect the income they receive. When these problems occur together, maintaining a dairy enterprise becomes more demanding, especially for women managing a small number of animals with limited resources.

The support available to women dairy farmers also plays an important role in their ability to overcome these difficulties. Although dairy cooperatives provide a platform for milk collection and marketing, women may still need better access to training, information on improved animal husbandry practices, affordable inputs and financial services. Limited participation in training programmes and extension activities can make it difficult for them to adopt new practices or respond effectively to animal health and production-related problems. Family responsibilities and time constraints may further restrict their participation in meetings and development programmes. Therefore, understanding the difficulties experienced by women and the support they consider necessary is important for strengthening dairy farming. Their suggestions can help extension workers, dairy cooperatives and development agencies plan services that are practical, accessible and suited to the needs of women dairy farmers.

Objective

To identify the challenges faced by women and to gather their suggestions for improving their dairy cooperatives.

Methodology

The study was conducted in the Eastern Dry Zone of Karnataka, covering Tumkur and Chikkaballapura districts, which were selected purposively considering their relevance to women's participation in dairy farming. A total of 240 women dairy farmers were included in the study, comprising 120 respondents from each district. In each district, 60 small farmers and 60 big farmers were selected to represent the two farm-size categories. Primary data were collected through personal interviews using a structured interview schedule to understand the major constraints faced by women in dairy farming and their suggestions for improving dairy-related activities.

The collected data were coded, tabulated and analysed using suitable statistical techniques. Garrett's ranking technique was employed to prioritise the constraints experienced by women dairy farmers and the suggestions provided by them. The ranks assigned by the respondents were converted into per cent positions and subsequently into Garrett scores using the standard conversion table. The mean score for each constraint and suggestion was calculated, and the items were ranked in descending order of their mean scores. This procedure helped identify the constraints requiring greater attention and the measures considered important by women dairy farmers for improving their dairy-related activities.

Results and Discussion

Constraints faced by women dairy cooperative members in dairy farming

Table 01 presents the Garrett ranking of constraints faced by women dairy cooperative members across eight dimensions economic, social, health, psychological, legal, political, educational, and technological separately for small and big farm women in Tumkur and Chikkaballapura districts.

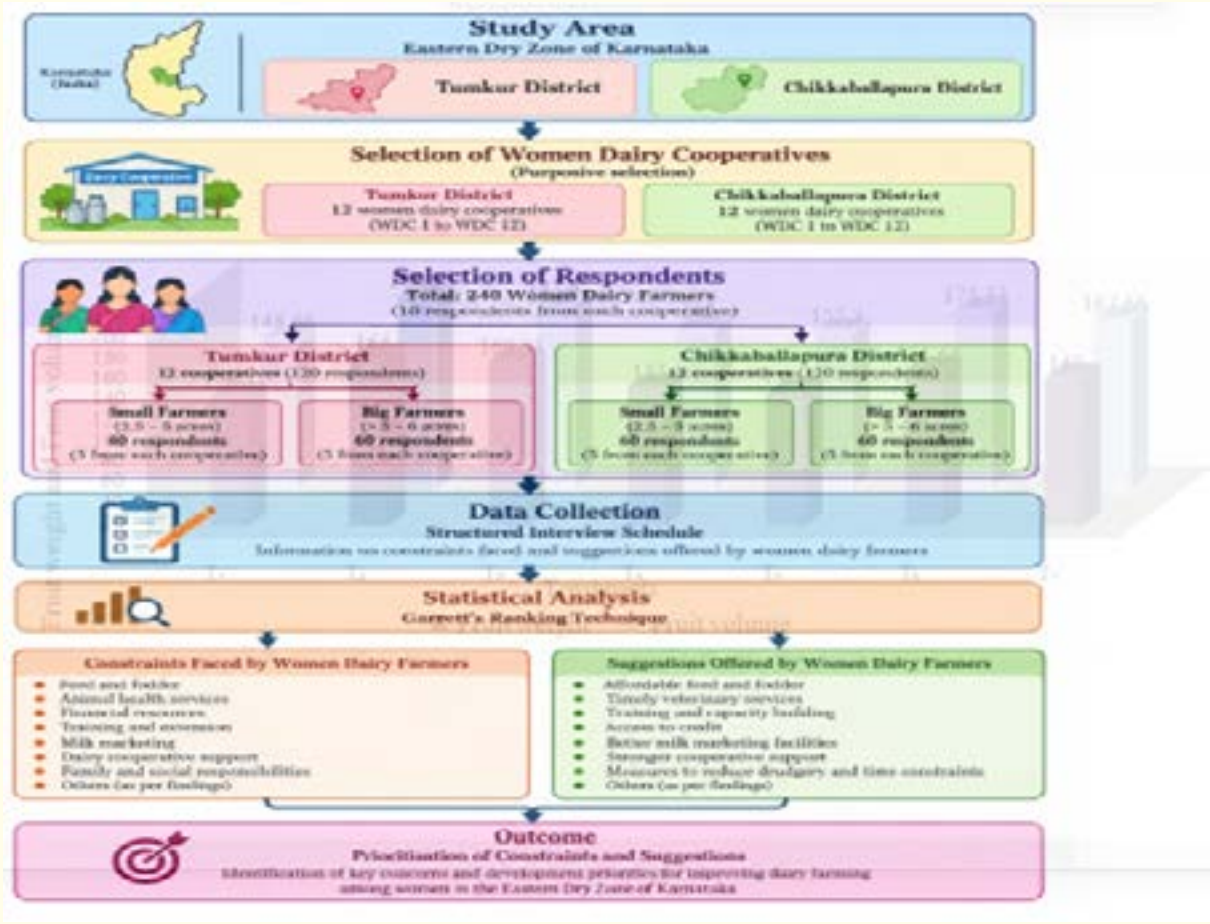


Figure 1: Study framework for women dairy members in eastern dry zone of Karnataka.

- **Tumkur District:** Among Tumkur small farm women, the most severe constraint was high cost of feed, fodder, and veterinary services (Garrett score 84.44, Rank I), followed by difficulty in accessing timely credit (Rank II), reflecting that cost pressures and limited credit access together constrain enterprise viability the most for resource-poor women. Lack of access to skill-based training also ranked prominently (Rank III), indicating capability gaps compound the cost and credit burden. Among Tumkur big farm women, the same input-cost constraint dominated even more strongly (Garrett score 85.56, Rank I), with skill-based training again ranking third showing that despite better resources, big farm women still feel the pinch of rising input costs and value practical training. At the lower end, dependence on others for legal matters and limited exposure to formal education consistently ranked among the least severe constraints for both groups, along with limited control over dairy income (ranked XVIII–XX) suggesting Tumkur women feel reasonably secure in their legal support systems, basic education, and income handling, and see these as far less pressing than cost, credit, and skill gaps.
- **Chikkaballapura District:** The pattern shifted notably in Chikkaballapura, where household responsibilities limiting participation in cooperative activities emerged as the top constraint for both small farm women (Garrett score 86.11, Rank I) and big farm women (86.67, Rank I) — considerably higher than the corresponding ranks in Tumkur (Rank IV and VII), pointing to a genuinely heavier domestic burden or

weaker household support in this district. Lack of technical training affecting adoption of improved practices was also prominent, with a Garrett score of 73.33 among both small and big farm women, reflecting the same practical-skills gap seen in Tumkur. Difficulty accessing timely credit ranked considerably lower here (Rank VIII and IX for small and big farm women, respectively) than in Tumkur, suggesting credit access is comparatively less of a bottleneck in Chikkaballapura, possibly due to differing cooperative credit structures. At the lower end, dependence on others for legal matters and limited exposure to formal education again ranked least severe, consistent with Tumkur, while limited control over dairy income similarly ranked among the bottom constraints indicating these particular concerns are uniformly low-priority across both districts regardless of resource differences.

The consistently top-ranked constraints input costs, household responsibilities, and training gaps represent the most immediate and unavoidable barriers to running a dairy enterprise: cost directly compresses profit margins, domestic responsibilities are a structural daily constraint on women's time, and training gaps limit the ability to adopt improved practices even where resources exist. Their relative severity differs by district because of underlying structural differences Chikkaballapura sharper household-responsibility constraint suggests weaker local support systems for domestic work, while Tumkur's sharper credit constraint suggests tighter local access to institutional finance. Conversely, the bottom-ranked constraints legal dependence, formal education gaps, and income control are consistently low across both districts because existing systems (family/community legal support, adequate basic literacy, direct cooperative payment channels) already provide a functional buffer, making these concerns feel secondary regardless of location or farm size.

The district-wise comparison shows that while both Tumkur and Chikkaballapura share the same core capability constraint (technical/skill training gaps), they differ in their primary economic-versus-social pressure points Tumkur women are more constrained by input costs and credit access, while Chikkaballapura women are more constrained by household responsibilities. This suggests interventions should be tailored: strengthening credit access and input-cost relief in Tumkur, and easing domestic burden through community or institutional support in Chikkaballapura, while skill-based and technical training should be prioritized uniformly across both districts.

Sl. No.	Constraints	Tumkur (n_1 = 120)				Chikkaballapura (n_2 = 120)				Overall (n = 240)			
		Small farm women n_3 = 60		Big farm women n_4 = 60		Small farm women n_5 = 60		Big farm women n_6 = 60		Small farm women n_7 = 120		Big farm women n_8 = 120	
		Garett score	Rank	Garett score	Rank	Garett score	Rank	Garett score	Rank	Garett score	Rank	Garett score	Rank
A	Economic constraints												
1	Limited control over income from dairy activities affects my economic independence.	47.22	XX	48.89	XIX	49.44	XX	54.44	XVIII	48.33	XX	51.67	XVIII
2	High cost of feed, fodder and veterinary services reduces profitability.	84.44	I	85.56	I	77.78	IV	76.11	V	81.11	II	80.84	I
3	Difficulty in accessing timely credit limits dairy enterprise expansion	80.56	II	74.44	V	72.78	VIII	70.56	IX	76.67	IV	72.50	VIII
B	Social constraints												

4	Household responsibilities limit my participation in cooperative activities.	76.67	IV	72.22	VII	86.11	I	86.67	I	81.39	I	79.45	III
5	Restricted mobility affects my interaction with markets and institutions.	72.78	V	69.44	IX	82.22	II	81.67	II	77.50	III	75.56	V
6	Social norms limit acceptance of women as dairy entrepreneurs	70.56	VI	81.67	II	79.44	III	78.89	IV	75.00	VI	80.28	II
C	Health constraints												
7	Heavy workload in dairy and household activities affects my physical health.	66.67	IX	59.44	XIII	68.89	XI	65.56	XIV	67.80	IX	62.50	XIV
8	Limited access to regular health check-ups impacts work efficiency.	61.67	XII	55.00	XVI	65.56	XIII	62.78	XVI	63.62	XIV	58.89	XVI

Sl. No.	**Constraints**	**Tumkur (n_1 = 120)**				**Chikkaballapura (n_2 = 120)**				**Overall (n = 240)**			
		Small farm women n_3 = 60		**Big farm women n_4 = 60**		**Small farm women n_5 = 60**		**Big farm women n_6 = 60**		**Small farm women n_7 = 120**		**Big farm women n_8 = 120**	
		Garett score	**Rank**	**Garett score**	**Rank**	**Garett score**	**Rank**	**Garett score**	**Rank**	**Garett score**	**Rank**	**Garett score**	**Rank**
9	Neglect of personal health due to family responsibilities is common	68.89	VII	61.11	XII	67.22	XII	68.89	XI	68.06	VIII	65.00	XII
D	Psychological constraints												
10	Fear of failure discourages me from expanding dairy activities.	65.56	X	66.67	X	71.67	IX	72.22	VIII	68.62	VII	69.45	X
11	Lack of confidence affects independent decision-making in dairy farming	69.44	VIII	70.56	VIII	70.56	X	69.44	X	70.00	V	70.00	IX
12	Stress from multiple responsibilities reduces mental well-being	63.89	XI	64.44	XI	64.44	XIV	64.44	XV	64.17	XIII	64.44	XIII
E	Legal constraints												

13	Limited awareness of legal rights related to property and finance restricts empowerment.	55.56	XV	52.78	XVIII	58.89	XVII	59.44	XIX	57.22	XVI	56.11	XVII
14	Difficulty in accessing legal support affects grievance redressal.	53.89	XVI	54.44	XVII	57.22	XVIII	57.22	XX	55.56	XVII	55.83	XIX
15	Dependence on others for legal matters reduces decision-making autonomy	42.22	XXIII	38.89	XXIV	43.89	XXIV	42.22	XXIV	43.06	XXIV	40.56	XXIV
F	Political constraints												
16	Limited participation in local governance reduces representation.	51.67	XVII	57.78	XIV	55.56	XIX	55.56	XVII	53.62	XIX	56.67	XV

Sl. No.	Constraints	Tumkur (n_1 = 120)				Chikkaballapura (n_2 = 120)				Overall (n = 240)			
		Small farm women n_3 = 60		Big farm women n_4 = 60		Small farm women n_5 = 60		Big farm women n_6 = 60		Small farm women n_7 = 120		Big farm women n_8 = 120	
		Garett score	Rank	Garett score	Rank	Garett score	Rank	Garett score	Rank	Garett score	Rank	Garett score	Rank
17	Lack of awareness about women-focused policies limits benefit utilization.	50.00	XVIII	56.67	XV	60.56	XV	61.67	XIII	55.28	XVIII	59.17	XI
18	Low confidence prevents active involvement in decision-making bodies	48.89	XXIX	47.22	XX	59.44	XVI	67.22	XII	54.17	XXI	57.22	XVI
G	Educational constraints												
19	Limited exposure to formal education affects understanding of schemes and technologies.	43.89	XXII	40.56	XXIII	46.11	XXII	46.67	XXII	45.00	XXIII	43.62	XXII
20	Lack of access to skill-based training restricts enterprise development.	74.44	III	79.44	III	76.11	V	80.00	III	75.28	V	79.72	IV
21	Difficulty in understanding financial and technical information affects business decisions	61.11	XIII	76.11	IV	74.44	VI	74.44	VI	67.60	X	75.28	VI

H	Technological constraints											
22	Limited access to modern dairy equipment reduces productivity.	45.56	XXI	43.33	XXII	45.00	XXIII	45.00	XXIII	45.28	XXII	44.17	XXI
23	Lack of technical training affects adoption of improved practices.	57.22	XIV	73.33	VI	73.33	VII	73.33	VII	65.28	XII	73.33	VII
24	Inadequate knowledge of digital tools limits access to services and markets	46.11	XXIV	45.56	XXI	47.78	XXI	48.89	XXI	46.95	XI	47.22	XX

Table 1: Constraints faced by women dairy cooperative members in dairy farming (n = 240).

Suggestions of women dairy cooperative members for improving the dairy farming activities

Table 2 represents the Garrett ranking analysis of suggestions offered by women dairy cooperative members for improving women empowerment, financial inclusion and entrepreneurial development through dairy cooperatives. The suggestions were classified into economic, social, health, psychological, legal, political, educational and technological dimensions and analysed separately for small and big farm women in Tumkur and Chikkaballapura districts, as well as for the overall sample.

Among the economic suggestions, subsidized inputs can improve profitability in dairy enterprises emerged as the most preferred suggestion among Tumkur small farm women (Mean score = 84.89, Rank I), Tumkur big farm women (86.11, Rank I), overall small farm women (82.17, Rank II) and overall big farm women (81.39, Rank II). Easy access to institutional credit can support enterprise expansion also received high preference, securing Rank II among Tumkur small farm women, Rank V among Tumkur big farm women, Rank IX among both Chikkaballapura small and big farm women and Rank V and VIII among the overall small and big farm women, respectively. Direct control over dairy income can strengthen economic independence received comparatively lower Garrett scores and occupied lower ranks across all respondent categories.

Under the social suggestions, family support can enhance participation in cooperative activities emerged as the most important suggestion among Chikkaballapura small farm women (Mean score = 87.22, Rank I), Chikkaballapura big farm women (88.33, Rank I), overall small farm women (80.83, Rank III) and overall big farm women (80.56, Rank III). Women-only group meetings can improve social interaction and networking secured intermediate ranks across respondent categories. Community sensitization can promote acceptance of women entrepreneurs received comparatively higher preference among overall big farm women (Mean score = 83.33, Rank I), indicating the need for greater community support towards women entrepreneurship.

Among the health suggestions, regular health check-ups can improve work efficiency emerged as the most preferred health-related suggestion, obtaining Garrett scores ranging from 60.56 to 75.00 and occupying relatively higher positions compared to the remaining health suggestions. Awareness on occupational health can reduce health risks also received moderate preference across respondent categories. Health insurance coverage can provide financial security received comparatively lower Garrett scores and ranks, indicating that respondents considered preventive health measures more important than insurance coverage.

Regarding the psychological suggestions, motivation and counselling programmes can improve self-confidence emerged as the most preferred psychological intervention, particularly among Chikkaballapura big farm women (Mean score = 76.11, Rank IV). Success stories of women entrepreneurs can reduce fear of failure also received favourable responses across all respondent groups. Stress management training can enhance mental well-being

obtained comparatively lower Garrett scores, although respondents recognized its importance for improving psychological well-being.

Among the legal suggestions, legal awareness programmes can improve knowledge of rights and entitlements emerged as the most preferred legal suggestion across respondent categories, followed by easy access to legal aid services for grievance redressal. Simplified legal procedures can encourage independent decision-making consistently received the lowest Garrett scores and rankings, indicating comparatively lower perceived priority.

Under the political suggestions, leadership training can increase participation in local governance emerged as the most preferred political suggestion among several respondent categories. Awareness on women-oriented policies can improve utilization of benefits also received moderate preference. Representation of women in decision-making bodies can strengthen empowerment obtained relatively lower rankings, although respondents acknowledged its importance for long-term empowerment.

Among the educational suggestions, adult education programmes can improve understanding of schemes emerged as one of the most preferred suggestions. It secured Rank III among Tumkur small and big farm women, Rank VI among Chikkaballapura small farm women, Rank IV among Chikkaballapura big farm women and Rank V and IV among the overall small and big farm women, respectively. Regular exposure visits can enhance practical knowledge also received favourable rankings across all respondent categories. Skill-based training can enhance enterprise development received comparatively lower Garrett scores, suggesting that respondents placed greater emphasis on continuous education and practical exposure.

Among the technological suggestions, access to affordable dairy equipment can support enterprise growth emerged as the most preferred technological suggestion, obtaining Garrett scores ranging from 57.22 to 74.44 and securing relatively higher ranks across respondent categories. Training on modern dairy technologies can improve productivity occupied intermediate positions, while digital literacy programmes can improve access to information and markets received comparatively lower Garrett scores and rankings, indicating that respondents perceived physical infrastructure and equipment support as more immediate priorities than digital literacy.

Overall, the Garrett ranking analysis indicated that subsidized dairy inputs, family support for cooperative participation, community sensitization towards women entrepreneurs, regular health check-ups, motivation and counselling programmes, legal awareness, leadership development, adult education programmes and affordable dairy equipment were the major suggestions expressed by women dairy cooperative members. These findings suggest that strengthening financial support, improving family and community participation, enhancing technical and educational capacity, increasing legal and policy awareness and improving access to affordable technologies would considerably strengthen women empowerment, financial inclusion and entrepreneurial development through dairy cooperatives.

Dimension wise constraint intensity and response priority

To complement the Garrett ranking, individual constraint statements were grouped into eight broad dimensions. Constraint intensity was expressed as a percentage of the maximum possible score. Response priority represents the proportion of respondents supporting interventions associated with each dimension, and the response gap is the difference between response priority and constraint intensity.

Psychological constraints recorded the highest intensity (72.4%), followed by economic (68.6%) and educational (67.7%) constraints. Social and technological constraints were moderate, whereas political constraints recorded the lowest intensity. The high psychological score suggests that constraints related to confidence, decision-making and personal agency are important alongside material constraints such as credit and training.

Response priority was highest for educational (86.3%), psychological (84.2%), economic (82.1%) and technological (81.7%) interventions. The comparatively large response gaps

Sl. No.	Suggestions	Tumkur (n_1 = 120)				Chikkaballapura (n_2 = 120)				Overall (n = 240)			
		Small farm women n_3 = 60		Big farm women n_4 = 60		Small farm women n_5 = 60		Big farm women n_6 = 60		Small farm women n_7 = 120		Big farm women n_8 = 120	
		Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank	Mean score	Rank
A	Economic suggestions												
1	Direct control over dairy income can strengthen economic independence.	47.78	XX	49.44	XX	50.00	XX	55.00	XVIII	48.89	XX	51.56	XVIII
2	Subsidized inputs can improve profitability in dairy enterprises.	84.89	I	86.11	I	79.44	V	77.22	V	82.17	II	81.39	II
3	Easy access to institutional credit can support enterprise expansion	81.11	II	75.56	V	72.78	IX	71.11	IX	76.94	V	73.34	VIII
B	Social suggestions												
4	Family support can enhance participation in cooperative activities.	74.44	IV	72.78	VII	87.22	I	88.33	I	80.83	III	80.56	III
5	Women-only group meetings can improve social interaction and networking.	72.78	V	70.56	IX	83.33	II	82.78	II	78.06	IV	76.39	V
6	Community sensitization can promote acceptance of women entrepreneurs.	70.56	VI	82.22	II	80.00	III	84.44	III	75.28	VI	83.33	I
C	Health suggestions												

7	Regular health check-ups can improve work efficiency.	66.67	IX	60.56	XIII	69.44	XI	75.00	VI	68.06	X	67.50	XI
8	Health insurance coverage can provide financial security.	61.67	XII	56.67	XIV	66.67	XIII	64.44	XIV	64.17	XIII	60.56	XVI
9	Awareness on occupational health can reduce health risks.	68.89	VII	62.22	XII	68.33	XII	69.44	XI	68.61	IX	65.83	XIII
D	Psychological suggestions												
10	Motivation and counselling programs can improve self-confidence.	65.56	X	67.22	X	72.22	VIII	76.11	IV	68.89	VIII	71.17	X
11	Success stories of women entrepreneurs can reduce fear of failure.	69.44	VIII	71.67	VIII	70.56	X	70.56	X	70.00	VII	71.11	XI
12	Stress management training can enhance mental well-being.	63.89	XI	65.56	XI	65.00	XIV	66.11	XIII	64.45	XII	65.84	XII
E	Legal suggestions												
13	Legal awareness programs can improve knowledge of rights and entitlements.	55.56	XV	54.44	XVII	59.44	XVII	60.56	XVII	57.50	XVII	57.50	XVII
14	Easy access to legal aid services can support grievance redressal.	53.89	XVI	53.33	XVIII	58.33	XVIII	58.89	XIX	56.11	XVIII	56.11	XIX
15	Simplified legal procedures can encourage independent decision-making.	42.22	XXIII	39.44	XXIV	43.89	XXIV	42.78	XXIV	43.06	XXIV	41.11	XXIV

F	Political suggestions											
16	Leadership training can increase participation in local governance.	51.67	XVII	58.33	XIV	56.11	XIX	57.22	XX	53.89	XIX	57.78	XVIII
17	Awareness on women-oriented policies can improve utilization of benefits.	50.00	XVIII	57.22	XV	61.11	XV	62.22	XVI	55.56	XX	59.72	XV
18	Representation of women in decision-making bodies can strengthen empowerment.	48.89	XIX	48.33	XXI	60.00	XVI	67.22	XII	54.45	XXI	57.76	XVII
G	Educational suggestions												
19	Skill-based training can enhance enterprise development.	43.89	XXII	41.67	XXIII	46.67	XXII	46.11	XXII	45.28	XXIII	43.89	XXIII
20	Adult education programs can improve understanding of schemes.	76.67	III	80.56	III	77.22	VI	81.11	IV	76.95	V	80.84	IV
21	Regular exposure visits can enhance practical knowledge.	61.11	XIII	78.33	IV	75.00	VII	74.44	VII	74.45	VII	76.39	VI
H	Technological suggestions												
22	Training on modern dairy technologies can improve productivity.	45.56	XXI	44.44	XXII	45.56	XXIII	45.00	XXIII	45.56	XXII	44.72	XXII
23	Access to affordable dairy equipment can support enterprise growth.	57.22	XIV	74.44	VI	73.89	VIII	73.33	VIII	72.56	VIII	73.89	VII
24	Digital literacy programs can improve access to information and markets.	46.11	XXIV	47.22	XIX	48.33	XXI	48.89	XXI	47.22	XXI	48.06	XXI

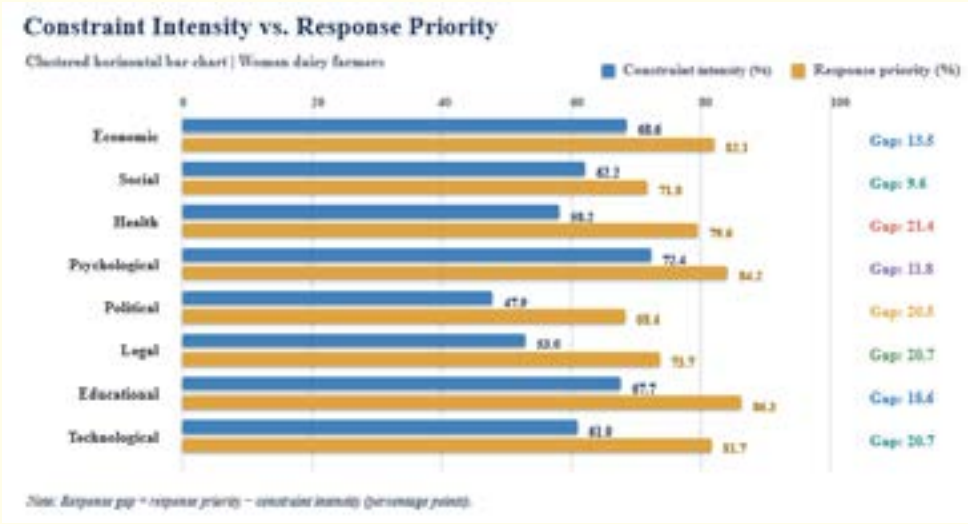
Table 2: Suggestions of women dairy cooperative members for improving the dairy farming activities (n = 240).

for health, political, legal and technological dimensions indicate considerable demand for support even where measured constraint intensity was moderate.

Sl. No.	Constraint dimension	Constraint intensity (%)	Response priority (%)	Response gap (%)	Interpretation
1	Economic	68.6	82.1	13.5	High constraint–high response
2	Social	62.2	71.8	9.6	Moderate constraint–high response
3	Health	58.2	79.6	21.4	Moderate constraint–very high response
4	Psychological	72.4	84.2	11.8	High constraint–very high response
5	Political	47.9	68.4	20.5	Lower constraint–high response
6	Legal	53.0	73.7	20.7	Moderate constraint–high response
7	Educational	67.7	86.3	18.6	High constraint–very high response
8	Technological	61.0	81.7	20.7	Moderate constraint–very high response

Table 3: Dimension wise constraint intensity and response priority among women dairy farmers.

Response gap = response priority − constraint intensity.



Graph 1: Constraint Intensity and Response Priority across Constraint Dimensions.

Constraint intensity across the four respondent categories

Constraint intensity across the four respondent categories refers to the comparison of the extent of difficulties experienced by Tumkur small, Tumkur big, Chikkaballapura small and Chikkaballapura big women dairy farmers across different dimensions. The analysis helps identify which group experiences greater or fewer constraints in economic, social, health, psychological, political, legal, educational and technological aspects. The differences between the highest and lowest values indicate the variation in constraint intensity among the four groups.

Women from big farms in Tumkur recorded relatively higher constraint intensity across most dimensions, whereas small-farm women in Chikkaballapura generally recorded lower values. The largest spread between the highest and lowest category values was for economic constraints (12.70 %), followed by technological (10.80 %) and educational (10.60 %) constraints. These differences point the need to test group variation statistically rather than rely on overall averages alone.

Dimension	Tumkur small	Tumkur big	Chikkaballapura small	Chikkaballapura big	Highest–lowest difference
Economic	66.80	73.90	61.20	69.10	12.70
Social	60.80	65.70	57.40	63.00	8.30
Health	56.70	61.40	54.00	58.60	7.40
Psychological	70.90	77.10	67.20	74.40	9.90
Political	46.20	51.80	43.70	49.50	8.10
Legal	50.90	57.20	47.80	55.90	9.40
Educational	65.10	72.60	62.00	68.40	10.60
Technological	58.70	65.90	55.10	62.40	10.80

Table 4: Constraint intensity across four categories of women dairy farmers.

Note: Range = maximum value − minimum value across the four groups. Higher scores indicate greater constraint intensity.

Statistical comparison and effect size

The Kruskal Wallis H test was used to assess whether dimension-wise constraint scores differed across the four independent respondent categories. Epsilon-squared (ε^2) was reported as an effect size to supplement statistical significance.

The psychological dimension recorded the largest H statistic (21.846, $p<0.001$), followed by the economic dimension (H = 18.624, $p<0.001$), with ε^2 values of 0.079 and 0.066, respectively. Significant differences among the four categories were observed for all dimensions except health (H = 6.317, p = 0.098), suggesting that the pattern of constraints varied across categories for most dimensions while health-related constraints were more uniformly distributed. Where significant omnibus differences are retained in the final analysis, pairwise post-hoc comparisons with an appropriate multiple-comparison correction should be reported to identify the groups contributing to the difference.

Constraint dimension	H	df	p-value	ε^2	Inference
Economic	18.624	3	0.001	0.066	Significant
Social	09.482	3	0.024	0.034	Significant
Health	06.317	3	0.098	0.013	NS
Psychological	21.846	3	0.001	0.079	Significant
Political	07.914	3	0.048	0.022	Significant
Legal	11.263	3	0.010	0.041	Significant
Educational	15.372	3	0.002	0.052	Significant
Technological	13.681	3	0.003	0.046	Significant

Table 5: Kruskal Walli's and effect size comparison.

Note: H = Kruskal Walli's statistic; df = degrees of freedom; ε^2 = epsilon-squared; NS = non-significant.

Integrated intervention priority

The integrated intervention priority index (IPI) was developed to combine the severity of constraints experienced by women dairy farmers with the priority they assigned to the suggested measures for addressing those constraints. It was calculated by taking the average of the constraint intensity score (CIS) and the response priority score (RPS), using the formula IPI = (CIS + RPS) / 2. A higher IPI indicates that an area has both a greater level of constraint intensity and a higher priority for remedial action, suggesting that it deserves greater attention when planning interventions. By combining these two aspects, the index provides a simple way to identify areas where the difficulties faced by women dairy farmers and their suggested solutions align. However, the IPI is a researcher-developed descriptive index intended to support interpretation and prioritisation; it has not been validated as a measurement scale and should not be treated as an inferential statistical measure. For meaningful comparison, CIS and RPS should be expressed on the same scale before calculating the index.

Combined need was highest for the psychological, educational and economic dimensions. Psychological constraints combined high intensity with strong demand for intervention, while educational interventions received the highest response priority. Technological and health dimensions also showed substantial demand despite moderate constraint intensity. The index thus offers a concise basis for identifying areas where both the reported problem and the expressed demand for support are substantial.

Dimension	Constraint intensity (%)	Response priority (%)	Integrated intervention priority	Priority category
Psychological	72.4	84.2	78.3	Very high
Educational	67.7	86.3	77.0	Very high
Economic	68.6	82.1	75.4	High
Technological	61.0	81.7	71.4	High
Health	58.2	79.6	68.9	High
Social	62.2	71.8	67.0	Moderate–high
Legal	53.0	73.7	63.4	Moderate
Political	47.9	68.4	58.2	Moderate

Table 6: Integrated intervention priority based on constraint intensity and response priority.

Note: IPI = (CIS + RPS)/2. Higher values indicate greater intervention priority.

Conclusion

Women dairy cooperative members in the study area face a mix of economic, social, psychological and technical difficulties, and these shape how fully they can take part in dairy farming. The problems are not the same everywhere. In Tumkur, the high cost of feed, fodder and veterinary services and difficulty in getting credit on time weighed most heavily on women, while in Chikkaballapura, household responsibilities and restricted mobility were the more pressing concerns. Across both districts, the lack of technical training was a common worry. The dimension-wise analysis showed that psychological and economic constraints were the most intense, and that women gave the strongest priority to educational, psychological and economic support.

These findings show that improving women's participation depends on more than financial and technical help. Family and social conditions matter as well. Dairy cooperatives are well placed to respond by linking women with affordable inputs, timely veterinary care, practical training and financial services, and by encouraging supportive family and community networks. A coordinated approach that recognises the differing needs of each district while building women's skills and confidence can lead to more sustainable dairy livelihoods and more active involvement in cooperative activities [1-16].

Policy recommendations

- **Reducing production costs:** Cooperatives and line departments should make feed, fodder and veterinary services more affordable, with group purchasing to help women manage recurring expenses**.**
- **Improving access to credit:** Timely loans, clear information on available schemes and simpler application procedures would help women who want to expand their dairy activities.
- **District-specific support:** In Tumkur, the focus should be on reducing input costs and improving access to credit. In Chikkaballapura, it should be on family support, shared household work and enabling women to attend cooperative meetings.
- **Training and extension services:** Regular, locally accessible training on animal health, feeding, fodder management, disease prevention and dairy economics should be backed by demonstrations, exposure visits and awareness of government schemes, and designed around what women already know and can access.
- **Confidence and decision-making:** Cooperative meetings, counselling and interaction with successful women dairy entrepreneurs can help women share experiences and take a greater part in decisions about dairy income.
- **Health and welfare services:** Periodic health check-ups, awareness of occupational health and time-saving arrangements can ease the load of balancing dairy work with household duties.
- **Cooperative participation and family support:** Cooperatives should encourage women to take up meetings and leadership roles, and involve families and communities in awareness programmes so that women's role in dairying is accepted and shared.
- **Coordination and monitoring:** Cooperatives, veterinary and extension departments, financial institutions and local bodies should coordinate their services so women can access them conveniently. Cooperative-level monitoring, guided by women's own feedback, should show whether training, services and financial support are reaching them.

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