

# Understanding Women's Livelihood Struggles and Skill Aspirations in Hill Communities: A Case Study of Yercaud and Kolli Hills, Tamil Nadu

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## ABSTRACT

In Tamil Nadu's mountainous areas, women still confront socioeconomic and environmental obstacles like as poor infrastructure, few employment options and little participation in decision-making. These situations affect their desire for empowerment and increase their susceptibility. In order to identify patterns of stratification and shared goals, this study looked at the livelihood concerns and pressing needs of underprivileged women in Yercaud and Kolli Hills. It also looked at their choices for skill training and socioeconomic classifications. Quantitative analysis was used in conjunction with a qualitative descriptive method. Open-ended interviews with 200 women were used to collect data, which was then thematically categorized and supplemented with descriptive statistics. Chi-square testing, cross-tabulation and cluster analysis (using Ward's technique and K-means) were used. Digital literacy was the most desired skill training (44.5%), followed by animal husbandry (23.5%) and organic farming (21%). Three separate family groups with notable socioeconomic disparities were identified by cluster analysis ( $p < .05$ ). Despite these variations, their urgent requirements and training preferences were broadly in line, which highlighted the significance of offering universal livelihood and digital training as well as ecologically sustainable support.

**Key words:** Hill societies, Human ecology, Skill creation, Socio-economic issues, Women's livelihoods

## INTRODUCTION

Women in remote hill regions such as Yercaud and Kolli Hills in Tamil Nadu face intersecting social, economic and infrastructural disadvantages that undermine their well-being, as highlighted by Devi (2022) & Saikia et al., (2024). Geographic isolation limits access to healthcare, education, transportation and basic services, perpetuating marginalization, as noted by Itika & Singh, (2023); Monga, (2021).

Structural inequalities and patriarchal norms further restrict women's autonomy and participation in governance (Nigam, 2018; Pradha & Sethi, 2024; Paricha, 2018). Exclusion from decision-making bodies constrains their ability to secure essential resources (Itika, & Singh, 2023). The Malayali tribes in these hill regions endure inadequate roads, electricity, waste management and frequent landslides, intensifying vulnerabilities (Devi, 2022). Healthcare access is poor, contributing to adverse maternal and child health

outcomes (Akter et al., 2020; Mathias et al., 2020; Weerasekara et al., 2020).

Chronic food insecurity and poverty exacerbate malnutrition and poor health among women and children (Nepali & Pyakuryal 2011; Weerasekara et al. 2020). Employment discrimination and limited livelihood opportunities heighten economic dependency (Dhanaraju & Das 2019; Itika & Singh, 2023). Educational discontinuation and lack of skill development further impede women's empowerment (Monga, 2021; Saikia et al., 2024; Wongnuch et al., 2023).

This study builds on these concerns and uses open-ended questions with marginalized women in Salem and Namakkal districts, with data analyzed thematically to capture experiences related to daily struggles, resource scarcity, healthcare, education and community participation. Documenting these lived experiences provides insights into the entrenched vulnerabilities of hill communities and identifies pathways for sustainable development and empowerment, as emphasized by Akter et al., (2020); Monga, (2021); Saikia et al., (2024).

### **Objectives**

The research sought to identify the emerging needs and support priorities of marginalized women in hill communities, examine the relationship between their socio-economic background, skill development preferences and categorize households into socio-economic clusters to analyze differences in education, occupation, income, family size, livelihood issues and roles in decision-making.

## **MATERIALS AND METHODS**

### **Study Area**

The study was conducted in the hilly regions of Yercaud and Kolli Hills within Salem and Namakkal districts, Tamil Nadu. Data were gathered in Yercaud from Manjakuttai, Vellakadai, Semanatham, Nagalur, Karadiyur, Vazhavanthi, Maramangalam, Kottachchedu, Elavadi, Kondaiyanur, Kombaikkadu and Manjavadi. In Kolli Hills, the townlets comprised Valavanthi Nadu, Thinnanur Nadu, Devanur Nadu, Selur Nadu, Valappur Nadu and Ariyar Nadu. These spots were designedly named for their varied geographical and socio-profitable characteristics, which backed in reflecting the distinctions in women's immediate requirements, support preferences and bournes for skill training. Data collection passed from December 2024 to February 2025 exercising a semi-structured check.

## Sample Size

A stratified random sampling technique was utilized. Yercaud and Kolli Hills were regarded as main strata, with 100 participants selected from each. In each stratum, villages acted as additional strata and samples were allocated proportionally. Household lists were generated from local administrative records and confirmed with field verifications. Participants were subsequently chosen at random. If multiple eligible women were in a household, one was selected randomly. This guaranteed equal representation among locations while reflecting socio-economic differences. A total of 200 women took part in the study.

## Study Design

The research employed a qualitative descriptive framework enhanced by quantitative analysis. A semi-structured survey, incorporating both closed and open-ended questions, was carried out via in-person interviews conducted in the native language. Closed-ended questions collected demographic information including age, education, job, income and household size. Open-ended inquiries centered on women's personal experiences, challenges in making a living, immediate requirements, desired support networks and skill development goals. A preliminary survey involving 15 participants was carried out to assess clarity and practicality, leading to slight modifications. Qualified participants were women aged 18 or older, who lived permanently in the chosen villages. Consent was obtained from all participants.

## Data Analysis

A combination of methods was utilized. Quantitative data were analyzed with SPSS (Version 28) and Microsoft Excel. Frequency distributions summarized demographic and socio-economic factors, immediate requirements and support choices. Cross-tabulations and chi-square tests were performed to analyze connections among socio-economic background, urgent needs and training choices. Cluster analysis was conducted to uncover structural patterns, utilizing Ward's method along with k-means partitioning (Everitt et al., 2011). Clusters were analyzed concerning education, occupation, income, family size, livelihood challenges and decision-making roles using ANOVA and chi-square tests.

Qualitative responses were analyzed thematically following the six-step approach outlined by Braun and Clarke (2006). NVivo 15 software assisted in systematically organizing and coding responses, which aided in the development of themes from women's stories.

## Reliability Test

Given that the questionnaire contained open-ended questions, reliability was assessed using Inter-coder Reliability (ICR). Three researchers coded the qualitative data independently and Krippendorff's Alpha ( $\alpha = 0.79$ ) showed significant agreement, confirming the reliability of the thematic analysis (Krippendorff, 2018)

## RESULTS

With an emphasis on their urgent requirements, desired skill development and socioeconomic grouping, the study looked at the socio-demographic, economic and livelihood aspects of women in hill villages. Demographics, urgent needs, training preferences, cluster analysis and connections with socioeconomic characteristics are the categories under which the results are displayed.

### Demographic Characteristics

The majority of responders were middle-aged, with (29.5%) falling between the ages of 41 and 50 and (44%) between the ages of 31 and 40. Younger women may migrate for employment or education, as just 6% of them were between the ages of 18 and 30. While (36%) had completed higher secondary or a diploma and (19.5%) had a degree, 19% were ignorant and (25.5%) had just attended elementary school, indicating both improvement and gaps in educational attainment. While (15.5%) held private occupations and (19%) worked as daily wage or agricultural workers, the majority of employment was in small enterprises (28.5%) and MGNREGA work (35.5%). In general, incomes were low, with 35% earning between ₹5,001 and 10,000 and (46%) earning less than ₹5,000. Due to migration patterns and nuclear family structures, family sizes were often small. (Figure. 1)

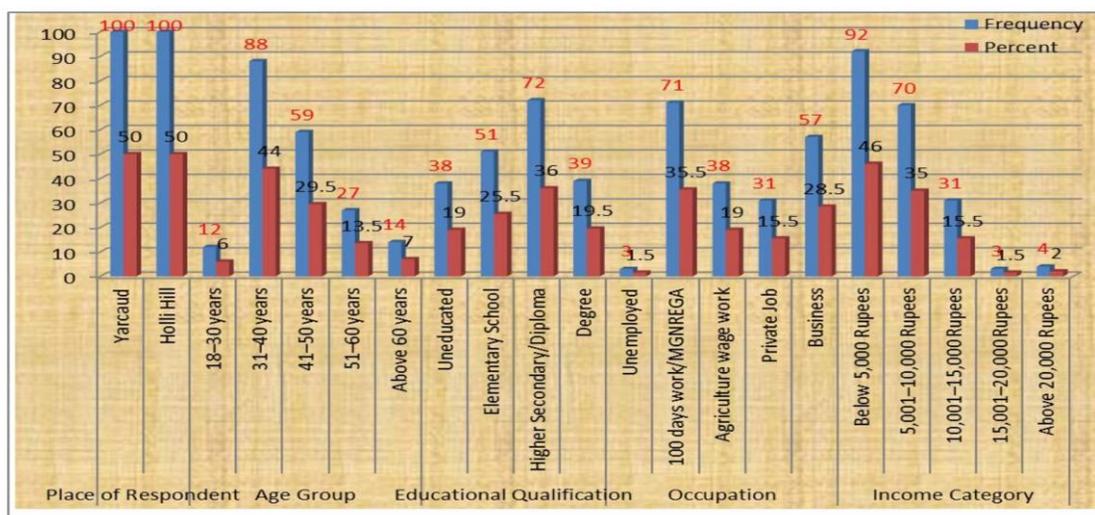


Fig. 1: Socio-demographics profile of the respondents

Source: The authors

## Place-Specific Challenges and Priorities

**Biggest Challenges:** Women in Yercaud cited inadequate roads (46.7%), limited employment (53.3%), water scarcity (56.5%), isolation and wildlife risks (72.2%) and electrical problems (53.3%) as the main challenges. The primary problems in Kolli Hills were inadequate roads (65.2%), power outages (46.7%), water scarcity (43.5%), employment opportunities (34.8%) and risks from wildlife (27.8%). Significant regional variations were revealed by statistical analysis ( $\chi^2 = 9.690$ ,  $p = 0.046$ ), with infrastructure/connectivity problems more prevalent in Kolli Hills and ecological risks predominating in Yercaud.

**Most Urgent Needs:** In Yercaud, women gave priority to housing (7%), transportation (16%), higher education (25%), healthcare (26%) and sanitation (26%). Transportation ranked first in Kolli Hills with 26%, followed by higher education (25%), sanitation (24%), healthcare (16%) and housing (9%). Healthcare was more important in Yercaud, whereas transportation and education were more important in Kolli Hills. This difference in location was significant ( $p = 0.046$ ).

**Preferred Support:** In Yercaud, women favored government programs (13%), loans (10%), nutrition kits (19%), health camps (27%) and water facilities (31%). In Kolli Hills, people preferred government programs (12%), loans (10%), water facilities (26%), nutrition kits (24%) and health camps (28%). Results indicated that practical services were preferred above government programs, with location and occupation influencing preferences ( $\chi^2 = 28.968$ ,  $p = 0.024$ ).

**Decision-Making Roles:** Women's engagement was frequently restricted in Yercaud: 34% reported having a limited voice, 27% made household decisions, 22% had a supportive role, 10% were excluded and 7% had informal influence. Kolli Hills residents reported restricted voice (29%), informal influence (9%), exclusion (7%), supportive roles (27%) and household decisions (28%). Place also had an impact on informal influence and exclusion ( $p = 0.046$ ) and occupation had a substantial impact on decision-making ( $\chi^2 = 28.968$ ,  $p = 0.024$ ).

**Other Factors:** There were no discernible relationships between problems, needs, or decision-making and family size, income, or education. (Table 1)

**Table 1: Comparative Overview of Women's Challenges, Needs, Supports, Decision-Making and Significant Associations**

<i>Category</i>	<i>Yercaud (Findings)</i>	<i>Kolli Hills (Findings)</i>	<i>Significant Associations / Interpretation</i>
<b><i>Biggest Challenges</i></b>	Isolation & wildlife threats: 72 (72.2%) Water scarcity: 56 (56.5%) Limited job opportunities: 53 (53.3%) Electricity issues: 53 (53.3%) Poor roads: 47 (46.7%)	Poor roads: 65 (65.2%) Electricity issues: 47 (46.7%) Water scarcity: 44 (43.5%) Limited job opportunities: 35 (34.8%) Isolation & wildlife threats: 28 (27.8%)	Place: $\chi^2 = 9.690$ , ( $p = 0.046$ ) Ecological threats dominate Yercaud; road/connectivity issues dominate Kolli Hills.
<b><i>Most Urgent Needs</i></b>	Healthcare: 26 (26%) Sanitation: 26 (26%) Higher education: 25 (25%) Transport: 16 (16%) Safe housing: 7 (7%)	Transport: 26 (26%) Higher education: 25 (25%) Sanitation: 24 (24%) Healthcare: 16 (16%) Safe housing: 9 (9%)	Place: Significant differences ( $p = 0.046$ ). Yercaud prioritizes healthcare; Kolli Hills prioritizes transport and education.
<b><i>Preferred Support</i></b>	Water facilities: 31 (31%) Health camps: 27 (27%) Nutrition kits: 19 (19%) Govt schemes: 13 (13%) Loans: 10 (10%)	Health camps: 28 (28%) Nutrition kits: 24 (24%) Water facilities: 26 (26%) Govt schemes: 12 (12%) Loans: 10 (10%)	Place and occupation significant ( $\chi^2 = 28.968$ , $p = 0.024$ ). Tangible services are preferred over formal schemes.
<b><i>Decision-Making Roles</i></b>	Limited voice: 34 (34%) Household decisions: 27 (27%) Supportive role: 22 (22%) Excluded: 10 (10%) Informal influence: 7 (7%)	Supportive role: 27 (27%) Household decisions: 28 (28%) Limited voice: 29 (29%) Informal influence: 9 (9%) Excluded: 7 (7%)	Occupation significantly affects roles ( $\chi^2 = 28.968$ , $p = 0.024$ ). Place also affects exclusion and informal influence ( $p = 0.046$ ).

### Skill Development Preferences

According to analysis (Table 2), among all income levels, digital skills were most popular (44.5%), followed by organic farming (21%) and animal keeping (23.5%). Tailoring (5%) and handicrafts (6%) were less common. Digital skills were most common among women making less than ₹5,000 (47.8%), followed by livestock (21.7%) and organic farming (18.5%). Individuals with incomes between ₹5,001 and ₹10,000

showed similar trends. Handicrafts and tailoring became somewhat popular among higher-income groups. Income and training type did not significantly correlate ( $\chi^2 = 15.78$ ,  $df = 16$ ,  $p = .468$ ).

**Table 2: Distribution of respondents by type of skill development training and monthly personal income**

Type of Skill Development Training	Below ₹5,000	₹5,001–10,000	₹10,001–15,000	₹15,001–20,000	Above ₹20,000	Total %
Digital skills	47.8	41.4	41.9	0.0	75.0	44.5
Livestock	21.7	25.7	25.8	0.0	25.0	23.5
Organic farming	18.5	24.3	22.6	33.3	0.0	21.0
Handicrafts	7.6	4.3	3.2	33.3	0.0	6.0
Tailoring	4.3	4.3	6.5	33.3	0.0	5.0

Source: The authors

Digital skills were most popular across all groups when examined by occupation (Table 3), particularly among businesswomen (45.6%) and those with private jobs (51.6%). While organic farming attracted MGNREGA (23.9%) and businesswomen (22.8%), livestock training was more prevalent among daily wage workers (23.7%) and MGNREGA participants (22.5%). Interest in tailoring and handicrafts was minimal ( $\leq 10.5\%$ ). Occupation and training preferences did not significantly correlate ( $\chi^2 = 10.75$ ,  $df = 16$ ,  $p = .824$ ). While livestock and organic farming continue to be essential for lower-income and labor-intensive communities, our findings emphasize digital skills as a widely appreciated instrument for economic mobility.

**Table 3: Distribution of respondents by type of skill development training and occupation**

Type of Skill Development Training	Unemployed	MGNREGA (100 days)	Daily wage / Agricultural labour	Private job	Business	Total %
Digital skills	66.7	40.8	42.1	51.6	45.6	44.5
Livestock	33.3	22.5	23.7	32.3	19.3	23.5
Organic farming	0.0	23.9	21.1	12.9	22.8	21.0
Handicrafts	0.0	8.5	2.6	3.2	7.0	6.0
Tailoring	0.0	4.2	10.5	0.0	5.3	5.0

Source: The authors

**Cluster Analysis of Socio-Economic Profiles-** Cluster analysis identified three household types (Table 4)

**Table 4: Characteristics of the Three Household Clusters (N = 200)**

<i>Cluster</i>	<i>Education</i>	<i>Occupation</i>	<i>Income</i>	<i>Family size</i>	<i>Challenges</i>	<i>Decision-making</i>	<i>Urgent needs</i>
<i>Cluster 1 – Relatively advantaged households (n = 67)</i>	Above average	Better occupational status	High	Average	Fewer	Moderate	Stable
<i>Cluster 2 – Moderate households with larger families (n = 74)</i>	Average/slightly below	Moderate	Moderate	Larger than average	Moderate	Lower	Moderate
<i>Cluster 3 – Vulnerable households (n = 59)</i>	Low	Weak	Low	Smaller than average	Higher	Higher	Similar across groups

Source: The authors

**Cluster 1 – Relatively advantaged (n = 67):** Women, who earn more money, have better occupations and have more education. They had steady pressing needs, moderate decision-making responsibilities and fewer obstacles to overcome.

**Cluster 2 – Moderate with Larger Families (n = 74):** Women in Cluster 2 who have middling employment, average or slightly below-average education and lower earnings. They had moderate livelihood obstacles, larger families and less influence over decisions.

**Cluster 3 – Vulnerable (n = 59):** women, who earn less money, have lesser vocations and have less education. Their urgent demands were similar to those of the other clusters, but they had smaller families, encountered more daily obstacles and took part in more decision-making.

While urgent demands did not differ substantially ( $p = 0.680$ ), ANOVA indicated significant differences among clusters in education, occupation, income, family size, livelihood problems and decision-making (all  $p < 0.05$ ). (Table 5)

**Table 5: Final Cluster Centers for Socio-Economic Variables**

<i>Variable</i>	<i>Cluster 1 (n = 67)</i>	<i>Cluster 2 (n = 74)</i>	<i>Cluster 3 (n = 59)</i>
<i>Educational Qualification</i>	0.86	-0.14	-0.81
<i>Occupation of the respondent</i>	1.14	-0.58	-0.57
<i>Monthly Personal Income</i>	0.98	-0.35	-0.68
<i>Total Members of the Family</i>	0.06	0.49	-0.68
<i>Biggest Challenges in daily life</i>	-0.01	-0.23	0.30
<i>Women's role in decision-making</i>	-0.09	-0.41	0.61
<i>Most urgent needs faced</i>	0.01	-0.07	0.08

Source: The authors

### Associations between Clusters and Socio-Economic Variables

Chi-square results showed significant associations between clusters and education ( $\chi^2 = 108.82$ ,  $p < .001$ ), occupation ( $\chi^2 = 140.60$ ,  $p < .001$ ), income ( $\chi^2 = 115.79$ ,  $p < .001$ ), family size ( $\chi^2 = 58.99$ ,  $p < .001$ ) and livelihood challenges ( $\chi^2 = 20.02$ ,  $p = .010$ ). However, residence ( $p = .134$ ), urgent needs ( $p = .607$ ) and training preferences ( $p = .991$ ) showed no significant links. This indicates that while socio-economic differences exist, immediate needs and training aspirations are largely shared across groups. (Table 6)

**Table 6: ANOVA Results for Differences across Clusters**

<i>Variable</i>	<i>F-value</i>	<i>p-value</i>
<i>Educational Qualification</i>	80.84	<0.001
<i>Occupation of the respondent</i>	191.93	<0.001
<i>Monthly Personal Income</i>	101.85	<0.001
<i>Total Members of the Family</i>	29.22	<0.001
<i>Biggest Challenges in daily life</i>	4.66	0.010
<i>Women's role in decision-making</i>	20.92	<0.001
<i>Most urgent needs faced</i>	0.39	0.680

Source: The authors

## DISCUSSION

The findings of this study reveal a complex socio-economic and ecological landscape shaping women's lives in the hill communities of Yercaud and Kolli Hills. The population mainly consists of middle-aged women because many younger people move out for education and jobs. This is due to the limited local opportunities. Such migration is common in other remote regions too (Nepali & Pyakuryal, 2011; Itika, & Singh, 2023). As a result, older women carry more household and community responsibilities and often depend on uncertain sources of income.

Although education levels have improved over time, many women still have low educational attainment. Nearly half of the women surveyed have only elementary education or none at all. This matches patterns seen in other rural and tribal areas where traditional gender roles and poor infrastructure limit access to education (Pradha & Sethi, 2024; Saikia et al., 2024). These findings show the need for special educational and skill training programs to close the literacy gap and improve job opportunities for marginalized women.

Work and income patterns in these hill communities depend mostly on informal or government-supported jobs such as MGNREGA, petty trade and farm labor. Most households earn less than ₹10,000 a month, showing how few earning options exist. This is because of difficult ecological conditions and weak infrastructure (Devi, 2022; Dhanaraju & Das, 2019). Studies (Shyamalie & Saini, 2010; Torri & Martinez, 2019) suggest that sustainable livelihoods for women in these regions need local, practical solutions that balance income generation with environmental protection.

Smaller households seen in this study are likely due to migration and the move toward nuclear families. While this reduces pressure on resources, it also increases workload and caregiving responsibilities, creating both benefits and challenges.

The differences between Yercaud and Kolli Hills show how ecology affects life. In Yercaud, isolation, wildlife threats and water scarcity are major issues. In Kolli Hills, poor roads, power cuts and limited transport are the main problems. This matches findings from the Chittagong Hill Tracts Commission (2014), which showed that geography strongly affects women's wellbeing in hill regions. Similar problems have been noted among Indigenous and tribal women in South and Southeast Asia (Akter et al., 2020; Wongnuch et al., 2023). The key point is that needs differ by location. Yercaud needs better health and sanitation, while Kolli Hills needs better transport and education. Development efforts must match local conditions instead of following a single model.

Women in both areas prefer practical help such as water facilities, health camps and nutrition kits, rather than formal government schemes. This shows a gap between policy design and actual community needs (Monga, 2021). Many development programs fail because they do not reflect local realities, which limit participation.

Research (Weerasekara et al., 2020) also shows that access to health and nutrition services is closely linked to women's empowerment and family wellbeing.

Decision-making in the hill areas is still mostly influenced by men's roles and traditional boundaries. Participation of women in formal governance is limited due to patriarchal norms, as noted by Agarwal (2018) and Paricha (2018). However, there are signs of change. Women are slowly gaining more voice at home and in informal discussions. Pradha and Sethi (2024) note that even small steps in local governance can strengthen women's confidence when supported by skill-based empowerment.

Skill development plays an important role in empowerment. The high demand for digital training across all groups shows that women see technology as a path to better income and independence (Saikia et al., 2024). Interest in livestock rearing and organic farming among low-income women shows that traditional livelihoods remain important, but there is also openness to modernization (Shyamalie & Saini, 2010; Nepali & Pyakuryal, 2011). The fact that income and education do not greatly affect skill training preferences means that training programs can include all women, regardless of background.

Cluster analysis divided the community into three groups: relatively advantaged, moderately positioned and the most vulnerable households. The most vulnerable group, though low in income and education, showed higher participation in family decisions. This reflects resilience, as Mathias et al. (2020) observed, where hardship pushes communities to find their own ways of adapting.

These findings show that one common solution will not work. While training in digital skills and livelihoods is important for all, the most vulnerable, especially those under ecological and economic stress, need special support.

From a human ecology perspective, women's livelihoods in hill regions are shaped by inequality, environmental challenges and gender-based traditions. Effective policy must combine efforts to improve digital literacy, promote women's participation in local governance, strengthen healthcare and sanitation and support climate-friendly livelihood options (Torri & Martinez, 2019; Akter et al., 2020). Such combined approaches can help women in marginalized hill regions move beyond survival, build resilience and achieve more inclusive rural development.

## CONCLUSION

With major distinctions between Yercaud and Kolli Hills, women in hill regions face a variety of socioeconomic and ecological obstacles. The most popular training choice was digital skills, which were followed by organic farming and animal husbandry. Handicrafts and tailoring, on the other hand, only drew a limited audience. The results indicate that multi-sectoral, context-specific interventions in infrastructure,

empowerment, healthcare and education are desperately needed. In the current digital age, teaching women digital literacy is particularly crucial since it fosters resilience, allows for the mixing of traditional livelihoods with contemporary options and encourages economic independence.

## **RECOMMENDATIONS**

This study highlights the value of context-sensitive, integrated approaches to women's empowerment in hill communities. Digital training and livelihood-focused choices including organic farming, livestock rearing and handicrafts should be combined in skill development programs to improve both traditional and modern economic opportunities, especially for low-income and educated women. Enhancing infrastructure is crucial to establishing settings that encourage skill development. This includes safe housing, dependable water and sanitation, healthcare access, nutrition and transportation.

At the same time, efforts must focus on raising awareness and improving women's access to government schemes, while encouraging their active participation in household and community decision-making to strengthen agency. Digital competency is especially crucial today, as it opens access to online markets, remote education and technology-based livelihoods, bridging traditional roles with modern economic participation. Tailoring initiatives to the ecological, occupational and social contexts of each community will ensure inclusivity, relevance and maximum impact, ultimately supporting women's sustainable independence and resilience.

## **LIMITATIONS**

The study focused on Yercaud and Kolli Hills, so its results may not apply to other areas. While participant bias and limited variables may affect accuracy, the findings still show the common needs and hopes of marginalized hill women.

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