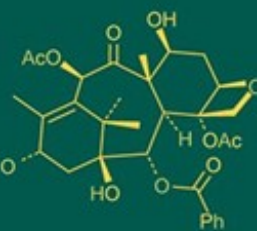
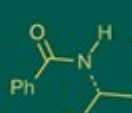
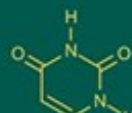
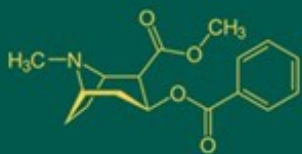


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Women empowerment in the fisheries sector of Karimnagar district, Telangana state

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ABSTRACT

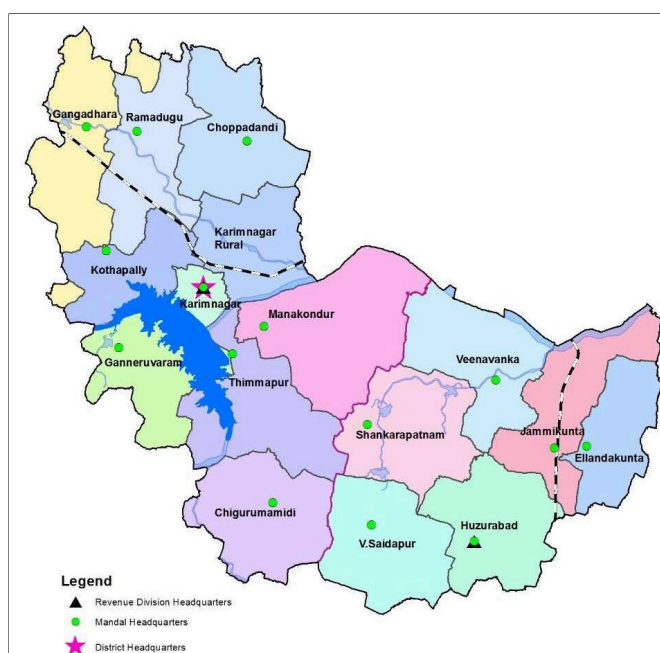
Women play an important but often overlooked role in the fisheries sector. In Karimnagar district of Telangana State, they take part in almost every stage of the fishery chain. This study examines the situation of women in fisheries in Karimnagar district, their contributions, challenges and empowerment programs. Data were collected through field visits, interviews and secondary sources. Results reveal that while women are actively engaged in fisheries, they face barriers such as limited access to resources, inadequate training, credit constraints and minimal participation in decision making. Government schemes, SHGs and training programs have positively impacted their income, skills and confidence. However, further policy interventions are essential to ensure gender-sensitive planning, expanded training and better market linkages to achieve sustainable empowerment.

Keywords: Women empowerment, Fisheries, Aquaculture, Gender-sensitive policies, Karimnagar, Telangana

Introduction

Fisheries and aquaculture are vital to rural livelihoods, food security, and economic growth in India. Despite contributing significantly, women's roles remain underrepresented in official data and policy frameworks. Globally, women comprise 19% of the total fishers and fish farmers (FAO, 2022) [1]. In India, the fisheries sector contributes over 1.24% to the GDP, positioning it as a sunrise sector. Women are central to this progress, engaging across the entire fisheries value chain—from aquaculture and processing to marketing and value addition (Sathiadhas *et al.*, 2003) [2]. Empowering women through equitable access to training, resources, and market participation enhances the sustainability of this sector.

Telangana has emerged as a leading inland fisheries state with a vast water spread area of 7.12 lakh hectares and 6,212 Fishermen Cooperative Societies covering 4.25 lakh inland fishers. Karimnagar district, with 20,069 ha of water bodies and 1,016 tanks, is a major hub of inland fisheries activity. Despite this potential, women's participation is often constrained by socio-economic, cultural and institutional barriers.

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Objectives

1. To assess the roles and contributions of women in the fisheries sector of Karimnagar district.
2. To identify socio-economic challenges faced by women fish workers.
3. To evaluate existing Government and NGO interventions for women empowerment.
4. To recommend strategies for enhancing women's participation and benefits in fisheries.

Materials and methods

A mixed-method approach was employed. Primary data were collected from 527 fisherwomen across 16 mandals of Karimnagar district through structured questionnaires. Information included socio-demographic details, occupation, marketing practices and socio-economic status. Focus group discussions and key informant interviews were conducted with SHG members, Fisheries Department officials, and NGO representatives. Secondary data were obtained from government reports, FAO publications, and relevant literature.

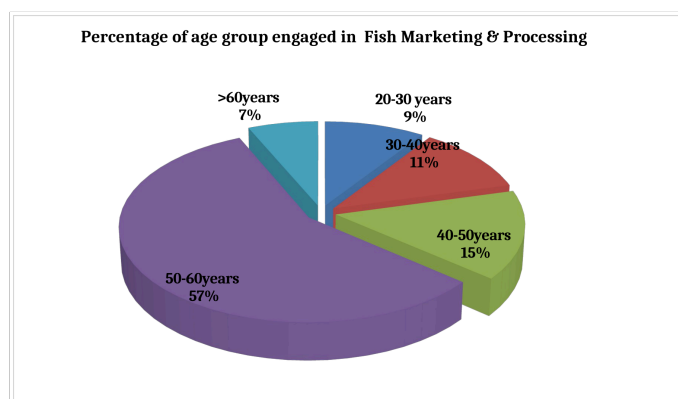
Results

Out of 527 fisherwomen surveyed, 235 were engaged in selling fresh and dry fish and 235 in cutting and dressing activities. An estimated 2.8 tons of fish are marketed daily in Karimnagar district, sourced locally during harvest and from Andhra Pradesh during lean periods. On average, fisherwomen earn Rs. 800–1000 per day from marketing and Rs. 500-800 from processing activities. Educationally, 74% have primary education, 16% secondary, 4% intermediate, 2% graduation and 2% are illiterate.

Most women belong to economically weaker sections and depend primarily on fisheries for income. Challenges identified include limited access to credit, poor market linkages, inadequate infrastructure and low literacy (Ganesh *et al.*, 2024; Hossain *et al.*, 2009) [3, 4]. The majority of fisherwomen fall in the 50-60 years age group (57%), indicating an aging workforce with fewer young entrants.

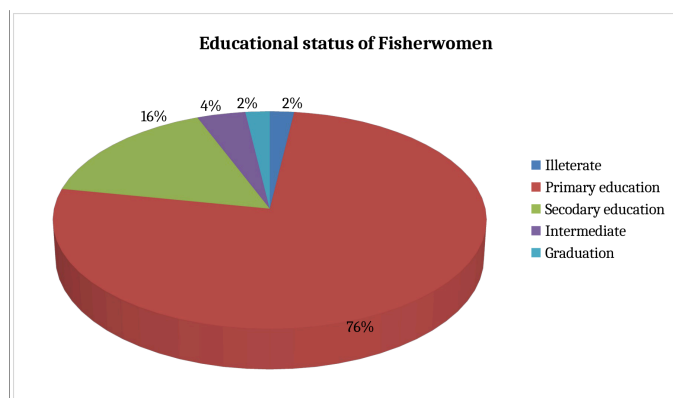
Age distribution of Fisherwomen engaged in Fish marketing & Processing

Age group	Percentage
20-30 years	9
30-40years	11
40-50years	15
50-60years	57
> 60years	7



Educational status of Fisherwomen engaged in Fish Marketing & Processing

Level of Education	Percentage
Illiterate	2
Primary education	74
Secondary education	16
Intermediate	4
Graduation	2



Socio-economic profile

Most surveyed fisherwomen were aged 25-60 years, with 76% having only primary education, 16% secondary, 4% intermediate, 2% graduation and 2% illiterate. All belonged to economically weaker sections, relying mainly on fisheries income, supplemented by agriculture or labour during the off-season. Socio-economic indicators highlight obstacles to women's full participation and potential in fisheries (Ganesh *et al.*, 2024) [3].

Major challenges

1. **Education & Training:** Low literacy and male dominated extension systems limit access to new skills.
2. **Health:** Poor nutrition causes malnutrition and reduced life expectancy.
3. **Mobility:** Social and cultural barriers restrict women's work opportunities.
4. **Credit Access:** Lack of assets and awareness hinders loan access.
5. **Marketing:** Poor storage, weak strategies and lack of linkages affect sales.
6. **Entrepreneurship:** Limited results from government programs due to resource and marketing issues.
7. **Technology:** Some advances have displaced women's traditional roles.

Key government interventions

1. **SHGs:** Facilitate microcredit, collective marketing and training.
2. **PMMSY:** Infrastructure, value chain, and capacity building support.
3. **Skill Development:** Training in seed production, hygienic handling and entrepreneurship.
4. **NGOs:** Promote women-led fish vending and processing units.
5. **Indira Mahila Shakthi Scheme:** Loans of Rs.2-20 lakh for individual and group fish retail enterprises.

Self-help groups (SHGs) and empowerment

SHGs voluntary, small groups of rural women promote saving, lending and collective growth. Among fisherwomen, SHGs have emerged as a major empowerment tool, improving access to finance, decision-making ability and social standing. They are not merely microcredit units but platforms for social and economic transformation.

Impact assessment

- Income increased by 15 -30% post-SHG participation or scheme benefits.
- Improved saving and credit management.
- Greater hygiene and quality awareness in fish handling.
- Enhanced self-confidence and community status.

Discussion

India ranks 3rd in global fish production and 2nd in aquaculture, where fisheries are emerging as a sunrise sector. Women constitute nearly half of the fisher folk population, contributing extensively to pre-harvest, harvest and post-harvest activities, though their roles often remain undervalued (Sathiadhas *et al.*, 2003; Tanuja *et al.*, 2024) [2, 5]. However, they face barriers such as inadequate training, cultural constraints, and limited institutional support (Reshma *et al.*, 2024) [6]. Self-Help Groups have emerged as critical agents of change by improving women's access to credit, entrepreneurship and collective decision-making. Schemes like PMMSY and Indira Mahila Shakthi have enhanced their financial inclusion and income levels by 15-30%. Across states such as Kerala, Odisha, West Bengal and Tamil Nadu, women actively engage in prawn seed collection, seaweed and bivalve harvesting, and small scale fishing, sustaining both income and nutrition. In aquaculture, they handle pond preparation, stocking, feeding, and marketing but face exclusion from technical roles due to low literacy, limited training and social barriers (Reshma *et al.*, 2024) [6].

Empowerment efforts like Self-Help Groups and Matsya Mitra Groups (MMGs) have promoted entrepreneurship, supported by credit schemes and NABARD initiatives (Shah *et al.*, 2019) [7]. Yet, wage disparities, poor digital access and lack of gender disaggregated data persist.

Studies highlight low income, poor working conditions and limited welfare access among women fish workers (Das *et al.*, 2024) [8]. To achieve gender equity, women-friendly technologies, capacity building, equal pay and inclusion in decision-making are essential. Mainstreaming gender in fisheries policy is vital for sustainable and inclusive growth (FAO, 2022; Gopal *et al.*, 2017) [1, 9].

Despite these gains, gender disparities persist in access to technology, training and market integration (Gopal *et al.*, 2017) [9]. For sustainable empowerment, policies must ensure equal access to aquaculture inputs, capacity building and formal recognition of women's roles within the fisheries value chain. In the present study, the results show that fisherwomen in Karimnagar district are vital to fish marketing and processing but face multiple challenges. Most belong to older age groups (50-60) and economically weaker sections, earning modest incomes with limited access to credit and infrastructure. Low literacy and lack of young entrants indicate declining interest among youth. Strengthening credit access, training and market facilities is essential for sustaining women's livelihoods in the fisheries sector.

Recommendations

The present study has revealed that certain improvements are needed to be focused on the livelihood and betterment of women in Karimnagar district, Telangana.

1. Strengthen gender-sensitive fisheries policies with measurable inclusion targets.
2. Expand women's involvement in aquaculture, seed production and feed manufacturing.
3. Facilitate direct market linkages and promote e-marketing platforms.
4. Introduce regular training in aquaculture technologies and fish value addition.
5. Encourage young women's leadership in cooperatives and producer organizations.

6. Integrate fisheries extension with women's development programs.
7. Provide educational and entrepreneurship support for fisherwomen.
8. Establish demonstration and ornamental fish rearing units.

Conclusion

Women in Karimnagar district play indispensable roles in the fisheries value chain, from processing and marketing to aquaculture. While government and NGO programs have improved skills and income, systemic barriers persist. Comprehensive gender-inclusive policies, enhanced capacity building, and market integration are essential to ensure sustainable empowerment and socio-economic upliftment of fisherwomen. Such efforts will strengthen both women's livelihoods and the overall resilience of the fisheries sector.

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Credit authorship contribution statement

Bharathi, T.V.: Conceptualization, investigation, data collection, methodology, field survey, data interpretation and preparation of the original manuscript.

Pamela Satpathy: Supervision, coordination, review of the study findings and critical revision of the manuscript.

I. Ashok: Field investigation, data collection, coordination of field-level information and review of the manuscript.

G. Ganesh: Scientific interpretation, literature review, data analysis, manuscript preparation, writing and critical revision of the manuscript.

All authors contributed to the preparation and revision of the manuscript and approved the final version for submission.

Conflict of interest

The authors declare that they have no known competing financial or personal interests that could have influenced the work reported in this manuscript.

Declaration of generative AI and AI-assisted technologies in the writing process

The authors declare that no generative artificial intelligence tool or AI-assisted technology was used to generate, analyse or interpret the research data reported in this manuscript. The study findings, data interpretation and scientific conclusions are based on the field survey, interviews, focus group discussions, key informant interactions and secondary information described in the manuscript. The authors take full responsibility for the accuracy, originality and integrity of the submitted work.

Data availability statement

The data supporting the findings of this study were collected through field level surveys, interviews, focus group discussions and secondary sources in Karimnagar District, Telangana State. The relevant aggregated information and results are presented within the manuscript. Additional underlying field-level data are not publicly deposited be-

cause they were collected from individual respondents during the field survey and may contain respondent related information. Further information may be made available from the corresponding author upon reasonable request, subject to applicable confidentiality and institutional considerations.

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