

A Study on the Role of Women's Involvement in Fisheries and Aquaculture with Reference to the Mumbai Region

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Abstract

Women play a crucial role in the fisheries and aquaculture sector, engaging in activities such as fish processing, marketing, and aquaculture management. Although they make major contributions, they frequently encounter socio-economic difficulties, such as limited access to funding, technological tools, and skill development opportunities. In the Mumbai region, women's involvement in the fisheries industry is essential for economic sustainability, yet financial constraints and inadequate infrastructure restrict their growth and leadership opportunities. This research study explores the various prospects and obstacles encountered by women working in the fisheries and aquaculture industry. It explores how advancements in modern fish farming, value-added seafood processing, and government initiatives can enhance women's participation. Furthermore, the research highlights the impact of policy interventions and skill development programs on improving women's livelihoods. The study follows a mixed-method approach, incorporating both primary and secondary data. Primary data was collected through structured surveys from 100 fisherwomen in the Mumbai region, selected using convenience sampling. The survey used both closed-ended and open-ended questions to gather comprehensive data. The statistical analysis confirms that better working conditions, financial support, and access to modern tools positively impact women's participation in fisheries. However, persistent challenges such as limited market access, lack of infrastructure, and limited access to technology continue to hinder their progress.

Keywords: Aquaculture, economic empowerment, Mumbai fisheries sector, skill development, sustainable livelihoods, women in fisheries

INTRODUCTION

The fisheries and aquaculture sector plays a vital role in global food security, employment generation, and economic development, particularly in coastal regions. Although women contribute substantially to fisheries and aquaculture activities, their roles often remain undervalued and inadequately

documented in formal economic assessments (Harper et al., 2013) [1]. Women are actively engaged across the fisheries value chain, including fish processing, marketing, net mending, and small-scale aquaculture management, making them essential to the sustainability of the sector.

In the Mumbai region, fisheries are deeply embedded in local livelihoods and cultural practices. Women play a significant role in post-harvest activities, fish vending, and household-based processing, yet their contributions frequently go unrecognized in policy and planning frameworks (FAO, 2018) [2]. While emerging opportunities such as entrepreneurship, value addition, and small-

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scale aquaculture offer potential for enhanced participation, women continue to face socio-economic constraints, limited access to productive resources, and insufficient institutional support (Choo et al., 2016) [3].

Recent developments in modern aquaculture practices, seafood processing technologies, and digital market platforms have created new opportunities for women to move beyond traditional roles within the fisheries sector [4]. Government-led initiatives, self-help groups, and cooperative models have further facilitated access to credit, skill development, and enterprise formation among women in fisheries-related activities (FAO, 2022). Additionally, the increasing emphasis on sustainable and eco-friendly seafood production has expanded opportunities for women to engage in quality control, packaging, and environmentally responsible aquaculture practices.

Despite these opportunities, women in Mumbai's fisheries and aquaculture sector continue to face several challenges that limit their economic advancement. Restricted access to finance, lack of formal training, gender-based discrimination, and inadequate infrastructure such as cold storage and hygienic processing facilities affect productivity and income generation. Furthermore, social norms often constrain women's decision-making power and leadership roles within fisheries institutions. Environmental changes, including climate variability and declining marine resources, further threaten the livelihoods of women involved in fish processing and marketing. Addressing these challenges through targeted policy interventions, capacity building, and improved market access is essential for strengthening women's participation and empowerment in Mumbai's fisheries and aquaculture sector.

REVIEW OF LITERATURE

Bamel, Karuna & Gulati, Rachna & Bamel, Keshav (2022) [5]. In This Research Paper "Challenges and Opportunities for Fisherwomen" Collaborative efforts play a crucial role in achieving sustainable fisheries, yet gender equality – an essential aspect of such initiatives – is often overlooked. Women's contributions to the fisheries sector frequently go unnoticed and are rarely reflected in statistical data. This paper explores the challenges and opportunities women face in fisheries by analyzing governmental programs, reports, and case studies from various countries. Women are increasingly taking on leadership roles in cooperatives, becoming entrepreneurs, and participating in decision-making processes. With improved access to resources and greater decision-making power, they are driving project development, fostering new opportunities, and promoting sustainability in the sector. The study highlights women's involvement across different stages of the fisheries value chain, from resource management to advocating for better working conditions, thereby reinforcing gender equality. Additionally, this paper identifies existing knowledge gaps and suggests ways to enhance the integration of gender perspectives into fisheries research.

Peke, Shuddhawati (2013) [6] conducted a study report on Mumbai's female fish vendors. Government programs and policies in the fisheries sector primarily address the concerns and requirements of men, despite the fact that women play a dominant role in the post-harvest segment of artisanal fisheries and contribute to both pre-harvest and harvest activities to varying extents. The underrepresentation of women in decision-making bodies within communities and fish workers' organizations has led to their issues being largely overlooked. As a result, women's rights advocates and organizations have continuously called for action to resolve market-related challenges faced by female fish vendors. This study aims to shed light on the difficulties encountered by women engaged in fish vending in Mumbai (formerly known as Bombay).

Tanuja et al. (2024) [7]. In This Research Paper "Women in Fisheries: Roles, Constraints, and Recommendations" Women form a crucial part of India's fisheries sector, making up nearly half of the fisherfolk population. They actively participate in various aspects, including pre-harvest tasks, seafood processing, and aquaculture. However, several challenges hinder their progress, such as the lack of proper documentation of their contributions, restricted access to essential resources, low digital literacy, and the slow development of women's collectives. This paper provides an in-depth analysis of women's

roles across different fisheries subsectors, the barriers they face, and potential strategies to overcome these challenges.

Gul et al. (2024) [8] studied “The Role of Women in Small-Scale Fisheries: A Comprehensive Review” in small-scale fisheries (SSF), women are essential because they manage household finances, process fish, and market fish – all of which are critical tasks that greatly add to the SSF value chain. Despite their extensive involvement, their efforts have historically been overlooked, leading to their exclusion from fisheries governance and policymaking. This study explores the diverse roles women undertake in SSF, from handling post-harvest operations to managing family finances, while also highlighting gender-specific challenges such as limited access to decision-making platforms, resources, and training. Additionally, it underscores the crucial role women play in ensuring food security and sustaining community livelihoods by maintaining household nutrition and financial stability. However, despite their active participation, women remain underrepresented in fisheries governance structures. The research study highlights the necessity of gender-responsive policies that support women’s engagement in decision-making processes, improve their access to resources, and recognize their accomplishments. To ensure the long-term viability of SSF, empower women, and improve fisheries management, these shortcomings must be filled. Policy suggestions for promoting gender-inclusive fisheries development, assisting sustainable livelihoods, and enhancing food security are included in the conclusion.

RESEARCH OBJECTIVES

- To evaluate the economic impact of women’s participation in the aquaculture and fishing industries of the Mumbai region.
- To analyze the challenges faced by women in accessing resources, markets, and technology in the fisheries industry.
- To evaluate the impact of skill development and government interventions on the livelihood improvement of women in fisheries.

Scope of the Study

The scope of this study focuses on understanding the role of women in the fisheries and aquaculture sector in the Mumbai region, highlighting both opportunities and challenges [9]. It examines their economic contributions, including their participation in fish harvesting, processing, and trading activities. The study also explores the difficulties women face in accessing essential resources, markets, and modern technologies that can enhance their productivity. Additionally, it assesses the impact of skill development programs and government initiatives aimed at improving their livelihoods.

RESEARCH METHODOLOGY

For a comprehensive analysis, this study makes use of both primary and secondary data [10]. A systematic questionnaire is used to collect primary data from 100 convenience-selected fish-selling women. The results are carefully examined. Secondary data is derived from trustworthy sources such as databases, articles, and journals. Both parametric and non-parametric statistical techniques are applied in order to appropriately interpret the results.

Area of the Study

The primary data is collected from different areas across the Mumbai region through random selection to ensure a variety of perspectives.

Research Approach

This study gathers primary data from fisherwomen in Mumbai through a well-structured questionnaire survey. Each participant was given a questionnaire covering important topics related to the research. This structured approach helped collect valuable insights while maintaining consistency for accurate data analysis.

Sample Technique

The research involved a convenient sample of 100 fisherwomen from the Mumbai region, chosen using a probability sampling technique. Participants voluntarily completed the questionnaire, and data collection took place over two months, spanning January and February 2025.

Data Usage

The analysis and interpretation of the data are based on randomly collected information. The conclusions and recommendations come from both primary and secondary data, along with feedback from the respondents. The data was analyzed using a selection of techniques, including the paired *t*-test and percentage analysis.

HYPOTHESES TESTING

Null Hypothesis (H_0)

There is no significant variation in job satisfaction ratings among women in fisheries before and after workplace safety enhancements.

Alternative Hypothesis (H_1)

There is a significant variation in job satisfaction ratings among women in fisheries before and after workplace safety enhancements (Table 1).

Table 1. Paired-sample *t*-test comparing employee satisfaction scores before and after workplace safety improvements.

t-Test: Paired two samples for means		
	<i>Satisfaction score (before workplace safety improvements)</i>	<i>Satisfaction score (after workplace safety improvements)</i>
Mean	1.8	4.2
Variance	1.066666667	0.622222222
Observations	100	100
Pearson correlation	-0.081831709	
Hypothesized mean difference	0	
df	99	
t Stat	-5.622255428	
P (T<=t) one-tail	0.000162447	
t Critical one-tail	1.833112933	
P (T<=t) two-tail	0.000324895	
t Critical two-tail	2.262157163	

The paired *t*-test results indicate a significant difference in job satisfaction levels before and after the implementation of workplace safety improvements for women in the fisheries sector. The mean satisfaction score increased from 1.8 to 4.2, showing a notable improvement in perception after the intervention [11]. The test statistic ($t = -5.622$) is well beyond the critical value for a two-tailed test (2.262), confirming that the observed difference is not due to random chance. Additionally, the *p*-value (two-tailed) = 0.00032 is significantly lower than the commonly used significance level of 0.05, further supporting the rejection of the null hypothesis. This suggests that workplace safety improvements had a meaningful and statistically significant impact on increasing job satisfaction.

CONCLUSION

This study highlights the vital role women play in Mumbai's fisheries and aquaculture sector – while also shedding light on the numerous challenges they continue to face in their daily work. They are involved in fish processing, selling, and managing aquaculture, yet they struggle with low income, limited access to technology, and fewer training opportunities. The research findings prove that improving workplace safety makes a big difference in their job satisfaction. This means that better working conditions, financial help, and skill training can improve their lives and work. To support

women in this field, policies should focus on providing them with better resources and opportunities. If these issues are addressed, women can become more independent, and the fisheries sector can grow stronger and more successful.

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