

The Quality of Life of Fishermen in Mumbai, India: A Mixed-Methods Study

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Abstract

Fishery is an important sector in most of the developed and developing countries of the world from the generation. The present study aims to gain a comprehensive understanding of the quality of life (QOL) of fishermen and identify factors that impact their QOL. The study presents study on the quality of life (QOL) among fishermen in the coastal regions of Mumbai, India. The study adopts a mixed-method design, combining quantitative and qualitative data collection and analysis. The World Health Organization Quality of Life (WHOQOL) questionnaire was used to measure QOL in four domains: psychological, social, environmental, and physical. The findings revealed that fishermen reported relatively higher QOL in the physical health and social relationships domains, reflecting the physically demanding nature of their work and strong community bonds. However, the psychological and environmental domains showed lower QOL scores, indicating challenges related to stress, financial instability, pollution, and climate change. Even though fishing as an occupation has much importance, the conditions faced by fishermen often go unnoticed. The findings of the research study provide valuable insights into the factors that contribute to the QOL of fishermen. Therefore, interventions aimed at improving the QOL of fishermen must address these challenges and focus on improving physical and mental health, social support, and environmental sustainability.

Keywords: Fisherman, Quality of life, Mental health, Well-being

Introduction:

The fisheries industry has been acknowledged as a significant source of income and employment because it fosters the expansion of several related industries, provides access to low-cost, nutrient-rich food, and provides a means of subsistence for a sizable portion of the nation's economically disadvantaged population. The socioeconomic development of the nation's fisheries sector is significant. In addition to supplying more than 28 million people with income and jobs, India's fast-growing fishing industry also ensures the nutrition and food security of a huge portion of the nation's population. Despite the fact that India is developing promptly, many people who work in the small-scale fishing and dried fish industry sectors are marginalized and continue to be exposed to various risks and exploitation (Belton & Hossain, 2018). Managing and conserving small-scale fisheries for economic benefits is a key global concern (Birkeland 2017, Bundy et al. 2016, Campbell et al. 2016, Lynch et al. 2016). Research shows that small-scale fisheries production contributes a significant amount of key micronutrients to the diets of the poor and is an important source of livelihood and employment opportunities, even though fundamental problems like food insecurity and malnutrition continue to be major problems for those living in poverty (Black et al., 2013; see Beveridge et al., 2013; Kawarazuka & Béné, 2010). About 280 lakh people depend on the sector for their main source of income, and about twice as many depend on it more deeply in the value chain (Ministry of Fisheries, Animal Husbandry & Dairying, 2021).

While the fisheries industry in India plays a vital role in providing income, employment, and essential nutrition to millions of people, it is crucial to address the challenges and risks faced by those engaged in small-scale fishing and dried fish industries. Despite the rapid development in the country, these marginalized workers continue to endure various forms of exploitation and vulnerability (Belton & Hossain, 2018). According to a recent estimate from the International Labour Office (ILO), up to 24,000 fishermen and others involved in fishing activities and processing are killed each year, making fishing and related activities among the deadliest of all professions. Many fishing enterprises and fishermen are changing their working practices in response to challenges brought on by consumer expectations for fresh, high-quality products as well as pressures stemming from the decreases or abrupt disappearances of specific fish species due to overfishing and other factors. While many have seen improvements in their living and working conditions, the ILO report states that "many others still serve on vessels where conditions remain poor" and that "unfortunately, a significant number of fishermen suffer substandard conditions, and violations of basic human rights are not uncommon." Fishermen frequently work in hazardous and challenging situations at sea since fishing is a significant traditional occupation. Heavy workloads, restricted flexibility in decision-making, occupational dangers, and a lack of support from coworkers are just a few examples of the stressors at work that can have a severe impact on one's physical and mental health (Melchior et al., 2007; Meszaros et al., 2013; Fan et al., 2015).

Several research studies have focused on assessing the well-being and quality of life among fishermen worldwide. In a study conducted by Zaimah et al. (2015) in Sedili, Malaysia, the researchers aimed to explore the subjective well-being of fishermen in the region. Similarly, Jeżewska et al. (2013) conducted a study to evaluate the quality of life of seafarers, with a specific focus on their physical/climatic, biological, and psychosocial characteristics. The study aimed to investigate work-related stress in a sea environment, examining personality traits, temperament, and coping strategies. The findings indicated that fishermen exhibited specific personality characteristics and coping mechanisms in response to stressful work conditions, such as difficult duties and a sense of danger. Pickworth et al. (2015) found that individuals with higher health problems expressed lower job satisfaction, life satisfaction, and community satisfaction. Strong bonds with the local community and interpersonal relationships emerged as significant factors contributing to higher life satisfaction, while financial concerns stood out as a notable area of discontent.

During the COVID-19 pandemic, a research study examined the quality of life of fishermen along the Kenjeran coast in Surabaya. Paskarini et al. (2022) compared the fishermen's quality of life during the pandemic to the pre-pandemic period. They found a noticeable decrease in their perception of quality of life in various domains, with lifestyle changes likely being a significant contributing factor. In Greece, a study explored the relationship between environmental factors and the quality of life of fishermen. Gialamas et al. (2013) found that pollution and overfishing had negative associations with the quality of life of fishermen, emphasizing the need for sustainable fishing practices and measures to reduce environmental stressors.

However, the picture is not all gloomy. According to studies (Bernstein, 2001; Urquhart et al., 2014; Brookfield et al., 2005; Jacob et al., 2005; Garcia-Quijano et al., 2015), the social and cultural contexts of fishing are crucial and suggest that fishing is not only a job but also a very fulfilling way of life that shapes fishers' identities. As a result, fishermen have a deep-rooted place attachment since fishing can have a social value in addition to its economic value (Jentoft, 2000; Marsden and Hines, 2008). In addition to providing a living, fishing seems to cater to and satisfy a number of psychic needs. It transports one into an entirely different setting, away from shore-based activities, and enables those involved to experience the thrill of the hunt, pitting one's luck and ability against other competitors as well as against an elusive prey that is hidden beneath the water. Even when their catch drops to the point wherein switching to alternate sources of income would be financially advantageous, it has been found that fishermen resist doing so (Pollnac & Poggie 2006).

Methods:

The research was conducted in the fishing communities of Versova and Madh, located on the western coast of India. A mixed-method design was employed to analyze the quality of life of fishermen. This approach combined quantitative and qualitative data to gain a comprehensive understanding of the research problem. The sequential explanatory design was used, involving two phases. First, quantitative data was collected using a self-report questionnaire. Then, qualitative data was gathered through interviews to provide further insights. The participants were indigenous fishermen belonging to the Koli community, who have been engaged in fishing for the past 150-200 years. The total number of participants for the survey consisted of 172 fishermen (N = 172). The age range of the participants was between 22 to 60 years.

For the quantitative phase, fishermen aged 18 and above, exclusively engaged in fishing, and belonging to the Koli community were included. The primary variable of interest was the quality of life of the fishermen, measured using the World Health Organization Quality of Life (WHOQOL) questionnaire. For the qualitative interview, 10 participants were selected using the same criteria. Socio-demographic information such as age, marital status, tenure in the profession, duration spent at sea, and fishing equipment were also examined.

Data Analysis:

Amongst 172 participants, 64 (37.2%) were unmarried, whereas 108 (62.7%) were married. 27.4% of participants had completed schooling until the 10th grade, 2.7% of participants had completed their higher secondary studies, whereas 2.2% hadn't ever joined school. 43.60% of participants had experience of more than 10 years. 68.02% of participants spent 7-15 days in the sea fishing, whereas 31.97% of participants stayed in the sea for 1-3 days. 54.65% did not own their vessel and worked for someone else, whereas 45.34% of participants owned their own vessel. Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS), Version 22. Descriptive statistics including means, standard deviations, and frequencies were computed to summarize the Quality of life domains. Qualitative data were analyzed using a thematic analysis approach, with open coding, axial coding, and selective coding to identify emerging themes to develop a thematic narrative.

Questionnaires and demographic forms were administered to fishermen at various local docks in the Mumbai coastal region. Participants were given explanations of the study's purpose and assured of confidentiality. Interviews for the qualitative phase were conducted after obtaining informed consent, using a semi-structured format to explore participants' perspectives on mental health and well-being.

Results

Table 1:

Means and Standard Deviations of the Variable

	N	Minimum	Maximum	Mean	Std. deviation
Overall	172	4.00	10.00	7.3081	1.59434
Physical	172	19.00	31.00	25.7558	2.17877
Psychological	172	14.00	25.00	18.7093	2.19444
Environment	172	14.00	30.00	22.6395	2.99283

Social	172	6.00	15.00	11.0233	1.60392
Total	172	69.00	100.00	85.4360	6.32007

Descriptive statistical analyses were conducted for the WHO Quality of Life Scale-Brief, including the means and standard deviations for each domain of Quality of Life. The results found that similar scores were obtained on each domain of quality of life. The mean and standard deviation for the overall Quality of Life and general health ($M = 7.30$, $SD = 1.59$), Physical health ($M = 25.75$, $SD = 2.17$), Psychological ($M = 18.70$, $SD = 2.19$), Environmental ($M = 22.63$, $SD = 2.99$), and Social relationships ($M = 11.02$, $SD = 1.60$). A total score was calculated by adding the subscales together; the mean and standard deviation of the overall Quality of Life of the sample were ($M = 85.43$, $SD = 6.32$). Moreover, the total scores varied between 69 and 100, on a scale on which the possible minimum score is 26 and the possible maximum score is 130.

Table 2:
Bivariate correlation analysis

		Total	Age	Qual	Marri	Duration	Equipment	Tenure
Total	Pearson	1	-.878**	.460**	.617**	.794**	.384**	-.786**
	Correlation							
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	172	172	172	172	172	172	172
Age	Pearson	-.878**	1	-.492**	-.718**	-.717**	-.333**	.847**
	Correlation							
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	172	223	223	223	223	223	223
Qual	Pearson	.460**	-.492**	1	.336**	.349**	.208**	-.483**
	Correlation							
	Sig. (2-tailed)	.000	.000		.000	.000	.002	.000
	N	172	223	223	223	223	223	223
Marri	Pearson	.617**	-.718**	.336**	1	.518**	.214**	-.566**
	Correlation							

The correlational analysis showed that the main indicators that affect the QOL of the fishing community are age, duration, and tenure. Age ($r = -.87$, $p > .05$) has a significant negative correlation with QOL, indicating that as the fishermen get older, their QOL tends to decrease. This could be due to physical limitations, declining health, or reduced job satisfaction. In addition, the number of days spent in the sea (duration) ($r = .079$, $p > .05$) was found to be another significant indicator of QOL. Fishermen who spent more days at sea tended to have a slightly higher QOL. This could be because they may have a stronger connection with their profession and enjoy their work, or it could be because they have more opportunities to catch fish and earn a better income. Furthermore, tenure ($r = -.78$, $p > .05$) was found to be a significant factor in determining QOL, with a negative correlation indicating that as the tenure of the fishermen increased, their QOL decreased. This could be due to factors such as reduced job satisfaction or decreased physical abilities with age. Marital status ($r = .61$, $p > .05$) was also found to be a significant indicator of QOL, with a positive correlation indicating that married fishermen tend to have a higher QOL compared to their unmarried counterparts. This could be due to the emotional support and stability provided by a spouse, as well as the potential for shared responsibilities and financial support. Finally, education qualification ($r = .46$, $p > .05$) and equipment ($r = .38$, $p > .05$) were

found to have weaker correlations with QOL, indicating that they may have less impact on QOL than the other factors examined. Nonetheless, it is worth noting that these factors can still contribute to a fisherman's overall quality of life.

Table 3:
Themes, Sub-themes and codes generated by thematic analysis

Category	Properties	Dimension
Challenges Faced by Fishermen in Enhancing Quality of Life.	Economic	Income sources Market access Competition with larger fishing businesses: High operating costs
	Environment	Labour conditions, Pollution Climate change: Habitat degradation: Changes in the Fish Population
	Government	Limited representation in policy making Poor regulation and enforcement Insufficient subsidies Inadequate compensation for losses incurred due to natural disasters

Challenges Faced by Fishermen in Enhancing Quality of Life.

Fishermen face various challenges in enhancing their quality of life. In this category three themes were prominent, i.e., economic, environment and government. One of the significant challenges is the unpredictability of their income, which is influenced by factors such as weather, fish availability, and market demand. This unpredictability makes it difficult for them to plan for the future and invest in their livelihoods. Another challenge is the physical demands and risks associated with fishing, such as exposure to harsh weather conditions, accidents at sea, and health hazards from handling fish and equipment. Lack of government initiatives were also spoken by the majority of the participants.

1.1 Economic

Income sources are a crucial aspect for fishermen as their earnings are often unpredictable and subject to fluctuation. Fishing practices vary widely, with some fishermen engaging in subsistence fishing while others participate in commercial fishing for the market.

1.2 Environment

Labour conditions are a significant dimension that affects the quality of life of fishermen. The fishing industry is often characterized by long working hours, hazardous working conditions, and low wages, which can lead to health issues and a reduced quality of life.

1.3 Government

Limited representation in policy-making is a significant challenge faced by the fishing industry. Fishermen often have limited representation in the policy-making process, which can result in policies that do not adequately address their needs and concerns.

Discussion

The quantitative analysis of fishermen's quality of life (QOL) in four domains—psychological, social, environmental, and physical—revealed that participants had relatively higher QOL in the physical health and social relationships domains. This suggests that fishermen perceived their physical health and social interactions positively, possibly due to the physically demanding nature of their work and close-knit community bonds. However, the psychological and environmental domains showed lower QOL scores. The psychological domain indicated that fishermen faced challenges related to occupational stress, financial instability, and lack of job security, leading to possible mental health issues. These findings are in line with previous research studies that show fishermen experience high levels of stress and mental health issues, including depression and anxiety (e.g., Bortey-Sam et al., 2021; Lavoie et al., 2020). The environmental domain revealed dissatisfaction with physical surroundings due to climate change, pollution, and declining fish stocks, impacting their livelihoods and overall well-being. They are exposed to environmental hazards such as toxins and pollution, which can negatively impact their health and well-being (e.g., Ryan et al., 2018).

Bivariate correlation analysis highlighted that age, tenure, duration in the sea, and marital status were significant indicators affecting fishermen's QOL. Older age was associated with lower QOL. Similar findings are seen in a study that found the age of the fishermen was significantly associated with their quality of life, with older fishermen reporting lower levels of quality of life compared to younger fishermen. (Gomez et al., 2021). Along with this, longer duration in fishing correlated with reduced QOL. Younger, married fishermen tended to report higher QOL. However, there was no significant correlation between QOL and education or fishing equipment.

The qualitative analysis identified several themes impacting fishermen's QOL. Economic challenges, including declining fish stocks, rising equipment costs, and competition from large-scale fishing, were sources of stress and financial insecurity. Participants reported that their income was highly variable, with some seasons being more profitable than others. The uncertainty of income was a significant source of stress and anxiety for many fishermen. A research study suggests that financial insecurity can increase depressive symptoms in the fishing community, leading them to make use of substances (Jiang et al 2018). Environmental challenges, such as climate change and pollution, affect catch quality and market demand, which are of a great challenge. Participants reported that changes in weather patterns and ocean currents had affected the distribution and abundance of fish stocks, which has had a negative impact on their catch and income. Many participants reported that they had to travel further and stay out longer to catch the same amount of fish, which has led to increased fuel costs and time away from their families. Social isolation and lack of community support were reported due to irregular working hours, leading to feelings of disconnection and stigma.

Conclusion

The QOL of fishermen is a complex and multifaceted issue that requires a holistic approach to address. This study aimed to explore various dimensions of fishermen's QOL and the challenges and opportunities associated with enhancing it. The findings of this study highlight that enhancing fishermen's QOL requires interventions that address various factors such as economic, environmental, social, and cultural dimensions. The study also highlights the limitations of research in this field. The use of mixed methods was found to be a useful approach to capture both quantitative and qualitative data. However, the limitations of this approach include the potential for researcher bias, limited sample size, and the need for significant resources to carry out the research. Other limitations identified in this study include the lack of representation of fishermen in policy-making, poor regulation and enforcement, insufficient subsidies, and inadequate compensation for losses incurred due to natural disasters. Finally, a research study of the QOL of fishermen may be limited by the ethical considerations involved in working with vulnerable populations. Fishermen may be hesitant to participate in a study that involves personal or sensitive information, particularly if they feel that their

livelihoods or well-being may be affected. Additionally, researchers must consider the potential for harm, such as stigmatization or discrimination, and take steps to protect the participants' rights and privacy.

Therefore, future research studies should aim to address these limitations and provide more comprehensive and nuanced insights into the social consequences of fishing-related challenges on the QOL of fishermen and their communities. To overcome these limitations, researchers must carefully design their studies, use culturally appropriate instruments, control for confounding variables, and ensure that ethical considerations are addressed. By doing so, researchers can provide valuable insights into the QOL of fishermen and help inform policies and interventions that can improve their well-being.

Policymakers, researchers, and other stakeholders must work together to develop and implement strategies that enhance the livelihoods and well-being of fishermen. This study provides insights into the challenges and opportunities associated with enhancing fishermen's QOL and highlights the need for further research in this area to develop effective interventions that meet the needs of fishermen and their communities. This study on the QOL of fishermen can have significant social implications, including the potential to inform policy, contribute to community development, and promote social justice.

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