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ARE “KEEP LEARNING” HABITS IMPROVE FISHERMEN WELLBEING AND LITERACY LEVEL? A REVIEW

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ABSTRACT

The fishing industry is vital for the blue economy as it strongly supports a range of sustainable development goals (SDGs). However, fishermen -particularly small/middle-scale fishers in de- face government policy, climate changes, well-being, and literacy challenges. Literacy could be one of the opportunities for small-scale fishers to promote their well-being. This study aims to review third teen scholarly articles on the current literacy landscape and fishermen’s well-being by following the PRISMA standard. A systematic literature review was determined to described the two decades (2004 – 2024) of research related to literacy on fishermen’s economic well-being as a robust methodological framework guiding the procedures. As a result, the most studies were focused on the well-being of Small-Scale Fishers (SSF) or general fishermen rather than subsets like part-time fishermen, seasonal fishermen, or individuals who work as fishermen on a temporary basis. Research suggests that fishermen derive satisfaction from their profession, contributing to their happiness and overall well-being. The limited focus on continuous learning among fishermen is associated with widespread illiteracy, perpetuating a cycle of poverty. Specific types of literacy, such as financial, digital, and computer literacy, offer potential benefits for fishermen and should be further explored in future research to advance the achievement of SDGs.

KEYWORDS

Adult literacy, education, economic resource, poverty, environmental education, policy.

The terminology of "blue economy" (BE) encompasses a range of economic sectors and policies that collectively determine the sustainability of oceanic resource utilization. Addressing the various aspects of marine sustainability, such as sustainable fisheries, ecosystem health, and pollution control, climate change mitigation, and tourism, represents a major challenge for the blue economy (Pauly, 2018). Another significant challenge is acknowledging that sustainable management of ocean resources requires extraordinary cooperation between governmental and non-governmental organizations (Midlen, 2021). This recognition highlights the immense challenge developed archipelago countries face as they strive to effectively manage their blue economies (World Bank and United Nations Department of Economic and Social Affairs, 2017).

The key aspect of the BE revolves around goals like sustainable fisheries, marine energy, and tourism, which could promote social equity, improve human well-being, and mitigate climate change and ocean pollution (Ababouch & Carolu, 2015; Bennett et al., 2021; Pauly, 2018; Santos et al., 2021; World Bank and United Nations Department of Economic and Social Affairs, 2017). It has garnered significant support as a means to advance sustainable development goals, particularly those related to poverty alleviation (Coulthard et al., 2011), health and well-being (Wheaton et al., 2021), food security (Garlock et al., 2023), gender equality (Biswal & Johnson, 2023), reduced inequalities (Hendriks, 2022), economic growth (Cohen et al., 2019), and marine conservation (Keen et al., 2018). Additionally, the



BE framework explores methodologies for expanding the economy by emphasizing the economic value of marine resources, thereby contributing directly or indirectly to the overall supply chain.

Scientific evidence strongly indicates that the resources in our oceans are not infinite and have been significantly depleted due to various human activities, including overfishing issues (Schutter et al., 2021). This situation has led to a significant decline in the ocean's health, with far-reaching implications for the ecosystem and, consequently, the well-being of communities. On the other hand, adopting business ethics among small-scale fishers, particularly, poses a trade-off due to global phenomena such as overfishing, non-sustainable fishing practices, exposure to pollution, and climate change, all of which significantly impact their well-being (Arai et al., 2022; Stacey et al., 2021). It is important to note that fishermen are significantly underrepresented in the fish capture data from member countries of the Food and Agriculture Organization (FAO). This suggests a lack of attention from policymakers and a feeling of powerlessness in decision-making autonomy (Koomson et al., 2020). In addition, fishermen bear the blame for the fishery's condition, which negatively impacts their sense of well-being and resilience (Weeratunge et al., 2014a). Consequently, updating small-scale fishers on BE information and knowledge is essential. It serves as an initial step towards maximizing the sustainable use of marine resources' long-term advantages and improving their quality of life.

Prior studies suggest that many small-scale fishermen have low education levels and may be illiterate. Additionally, the combination of poverty and open access to fisheries leads to overfishing and further impoverishment of fishing communities (Anna et al., 2019; Maddox, 2007; Putri et al., 2024). This situation is exacerbated by the perception of fisheries as easily accessible to those lacking other livelihood options. This study focuses on the literacy of fishermen, as long-term improvements in human resource investment require specific attention to ensure the well-being of fishermen (Anna et al., 2019; Bhowmik et al., 2021). The researcher's primary aim was to explore the significance and applicability of literacy within the context of well-being, both as an analytical and normative concept, and its potential as a comprehensive framework for enhancing our understanding of fishermen.

METHODS OF RESEARCH

Guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), a systematic literature review was conducted to map the two decades (2004 – 2024) of research related to literacy on fishermen's economic well-being as a robust methodological framework guiding the procedures. The study progresses through various stages, including (1) elucidating the necessity for a review, (2) delineating the research objectives, (3) establishing a review protocol, (4) screening and identifying pertinent literature, (5) evaluating the feasibility of selected papers, and (6) synthesizing the gathered data. It identified relevant keywords associated with the concept, including "literacy," "fishermen areas," and "economic well-being." A series of search strings were developed by combining the identified keywords (see Table 1) and used to retrieve scholarly articles in reputable databases: Web of Science and Scopus. The searches were precisely adjusted to generate the most targeted results based on the title, abstract, and keywords. All the search processes took place in May – June 2024.

Guided by the PRISMA procedure, the following criteria were applied to filter the search results:

- Articles on literacy, education, or implications of knowledge within marine or coastal economics domains were included;
- Social sciences, psychology, fisheries, and economics articles were included;
- Articles had to be either empirical or conceptual research;
- Articles published in journals and conferences were included;
- Articles were written in the English language.

Using this strategy, the initial search retrieved 1,156 articles. Thereafter, title and abstract screening helped identify 92 relevant articles. The number of articles retrieved from



each database is as follows: Web of Science (n=30) and Scopus (n=62). Of these articles, 2 duplicates were found and removed. Thus, a total of 39 full-text articles were downloaded.

Table 1 – Search strategy

Search strategy	#1 AND #2 AND #3
Concepts	Keywords
#1 Literacy	"literacy" OR "education OR knowledge OR financial literacy" OR "digital financial literacy"
#2 Area of fishermen	"fishermen" OR "small-scale fishers" OR "coastal" OR "marine"
#3 Economic well-being	"economic well-being" OR "financial well-being" OR "material well-being" OR "financial resilience" OR "economic resilience"

Thereafter, twenty-six articles were excluded for one of two reasons: the literacy or knowledge discussed did not relate to well-being aspects, or they were outside of the fisheries context. Finally, this elimination resulted in the remaining thirteen articles being included in this systematic review. Figure 1 presents the PRISMA flow chart, depicting how information progresses across various stages of the review. Table 2 contains the compilation of all chosen articles. It's crucial to acknowledge that some pertinent articles might not be discovered during the search phase due to certain limitations in methodology.

Table 2 – Overview of the included articles

No.	Author (year)	Area	Research context and actors (inc. data and/or object of the study)	Keywords of literacy and well-being	Results
1.	Kpanou et al. (2021)	Southern Benin	Quantitative with ordered logistic regression for examining factors that affect small-scale fisher's well-being (N=205) in the social-ecological system framework (SESF)	Education to subjective well-being (life satisfaction)	Ban on fishing gear, due to fishermen's lack of knowledge, which leads to overexploitation and harm to biodiversity, has a negative effect on small-scale fishers' life satisfaction and reduce their income
2.	Mackay et al. (2019)	New Zealand	Quantitative: The Sovereign Wellbeing Index (SWI) (N=10,012 adults) in analyzing the five way to well-being practices and well-being	Keep learning practices identified with the question about the spirit to learn new things in their life and life satisfaction	Keep learning is strongly associated with higher levels of wellbeing
3.	Onumah et al. (2023)	Ghana	Quantitative: PCA and SEM analysis (N=119) to analyze the small-scale fishers' well-being	.Yeas of formal education takes by small-scale fishers, informal education and skills, and perception of material condition, quality of life, and sustainability	Despite having a low level of education, most small-scale fishers perceive skill as important, as it directly relates to their life satisfaction.
4.	Hoque et al. (2021)	Bangladesh	Quantitative (N=250) to determine the socio-demographic and knowledge of coastal fishers to improve livelihood	Knowledge and practice of coastal fishers about COVID-19 and its impact, wellbeing reflected by income and livelihood status	Improving education is connected to increased awareness and the adoption of preventive measures against COVID-19 or any other public health risks. Additionally, it is linked to the use of new financial technology (such as mobile banking) during fishing bans to avoid physical contact. Enhanced health literacy can help fishers build community health resilience, while improved digital financial literacy can help prevent income reduction.
5.	Satumanatpan and Pollnac (2022)	Thailand	Quantitative: PCA analysis to examines factors affecting perceptions of small-scale fishers' resilience (N=632)	Education as a length of formal education (year) and well-being represent with fishing income, perception of job satisfaction and well-being	Educated small-scale fishers are more likely to have higher resilience and pursue jobs outside of fishing, leading to greater job satisfaction and well-being.
6.	Arai et al. (2022)	Thailand	Mixed method to explore the impact of COVID-19 and the coping strategy among small-scale fishers (N=205)	Adaptive capacity (new knowledge) and sustainable livelihood (income)	The capability to learn new knowledge (digital literacy and digital financial literacy) as part of human capital offers alternative income sources and flexibility to change livelihood.
7.	Maddox and Overá (2009)	Bangladesh and Ghana	Qualitative: Case study to examine the changing uses of literacy in fishing communities	Literacy practices, ICT, and livelihood	The use of mobile phone technology, marketing practices, governance, and environmental protection has created new opportunities and demands for literacy and technical knowledge among fishers. The emergence of 'new literacies' could give an opportunity avoid simple 'trade-off' between fishing livelihoods and schooling.
8.	Lucrezi et al. (2019)	Mozambique	Qualitative: Case study of stakeholder's (governance, tourism, and education sectors) point of view about marine protected area (MPA) management	Education and capacity building, and sustainable livelihood	Participation in workshop about ocean literacy had a positive effect on stakeholder's view of conservation, community, and sustainable livelihood. Participant also expressed happiness and hope relating to educating future generation.



Table 2 Continue

9.	Koomson et al. (2020)	Ghana	Quantitative: using household survey data from fishing community to identify their vulnerability and enhance fishers' household quality of live. (N=45 household)	Education as a part of human capital; and quality of life	Investment in education as part of human capital, could enhance the households and community's adaptive capacity, could be used as a starting point to promote the rural coastal fishing communities' quality of live.
10.	Braga et al. (2022)	Portugal	Quantitative: in-depth interview questionnaire about the local ecological knowledge during covid-19 and its effect on fishers' income	Local ecological knowledge (LEK), education level, income, and fisher's satisfaction about political and local norms during pandemic	During the pandemic, dissatisfaction grew among fishers due to stagnant prices and increasing costs in the cockle fishing industry, leading those with less education to earn near minimum wage. Meanwhile, those with digital skills could access and share information on better markets and cockle harvesting locations.
11.	Arzaman et al. (2021)	Malaysia	Qualitative (N=26) to explore the potential of traditional marine knowledge in Terengganu for sustainable economic and community well-being.	Traditional knowledge of marine resources and economic well-being	The research shows that in Terengganu, traditional knowledge about marine resources (seafood supply chain management) significantly contributes to the economic and health improvement of coastal communities.
12.	Pomeroy et al. (2020)		Qualitative, to review the way small-scale fishers deal with the barrier in accessing financial services to strengthen the economic resilience	Education and financial literacy, and economic resilience	Developing the financial capability and literacy of small-scale fishers will enable them to access financial services, thereby reducing vulnerabilities and enhancing economic resilience within poor fishing households.
13.	Lopez-Ercilla et al. (2021)	Mexico	Descriptive analysis and qualitative to understand the small-scale fishers and coastal communities coping strategies during pandemic and digital divide	Adaptive capacity, digital literacy and economic resilience	Enhancing digital literacy through community learning will empower small-scale fishers to leverage social media platforms to expand their market reach for seafood products and develop new seafood processing techniques. This capability will enable them to engage in online sales, facilitate home delivery, initiate crowdfunding for emergency funds, and enhance networking with other fishing groups. Ultimately, this will boost their ability to attain economic resilience during the pandemic-related ban period.

REVIEW OF FISHERMEN'S WELLBEING FRAMEWORK

The economic and social aspects of fisheries are carefully evaluated based on the understanding that fisheries serve multiple purposes and operate at different scales, allowing for a more comprehensive and beneficial approach. In order to develop a more thorough understanding of small-scale fisheries and to create well-suited policies, it is essential to comprehensively consider all three dimensions of well-being – material, relational, and subjective (Voukelatou et al., 2021; Weeratunge et al., 2014a). However, there is room for improvement in ensuring that these three components are consistently integrated and systematically examined within existing fisheries research. This emphasizes the vital importance of delving into the concept of well-being, its diverse expressions, and its potential as a comprehensive framework for enhancing our understanding and evaluation of small-scale fishers. This section comprehensively explores the various perspectives and scholarly works on well-being, highlighting the promising contemporary conceptual approach to social well-being. Additionally, it sheds light on the crucial role of identities in influencing the relational and subjective aspects of well-being, as emphasized by alternative viewpoints on happiness.

Per capita income is a widely used measure of a country's development by institutions like the World Bank to classify nations into income groups. However, it is essential to recognize that the exclusive focus on monetary measures, as captured by Gross National Income, may undervalue non-market elements crucial to people's well-being. Despite this, prevailing economic policies continue to uphold per capita income as a definitive measure of prosperity and sustenance without critical examination. The rise in per capita income, often synonymous with economic growth, is frequently assumed to correlate with an overall improvement in welfare. It's essential to acknowledge the often-neglected role of small-scale fisheries (SSF) communities, as they represent the largest group of stakeholders in the ocean in worldwide debates shaping the future of marine ecosystems. These communities, comprising both men and women engaged in fishing and trade, receive minimal attention from policymakers, as evidenced by the conspicuous absence of their catch data in submissions to the Food and Agriculture Organization (FAO). This oversight has been linked to adverse effects on the well-being of these fishermen and the marine ecosystem.



Furthermore, removing financial, legal, and fiscal impediments to promote new activities, such as mariculture, holds significance. It is imperative to account for regional and local variations and households' motivations for diversifying their income sources, contributing to the low well-being within these communities. Moreover, it is posited that there is an indirect link between a person's job situation and their perceived happiness or SWB, as this aspect significantly impacts their earnings and financial stability.

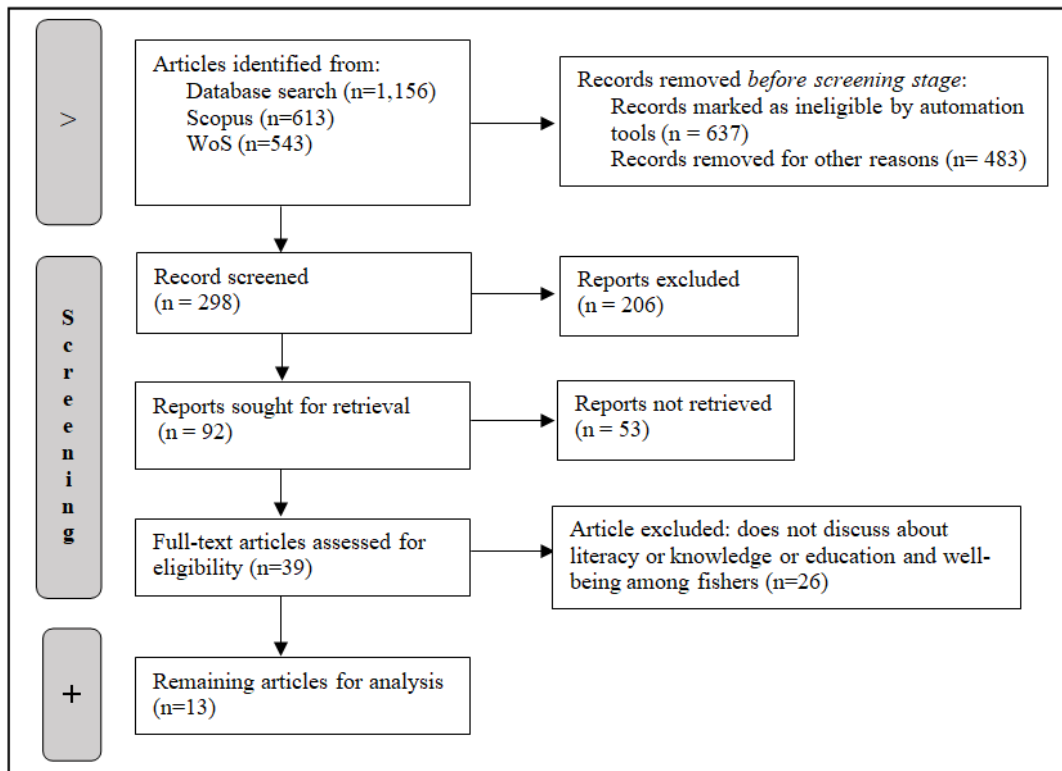


Figure 1 – Inclusion Strategy using PRISMA-Based Flow

An individual's health status is a significant contributing factor to their subjective well-being (SWB). People who are dealing with a particular illness tend to be less satisfied and happy with their lives. Previous studies have demonstrated a strong positive relationship between an individual's health and their SWB. Numerous studies have indicated that better health leads to higher levels of life satisfaction and overall happiness (Anna et al., 2019; Azizan et al., 2018; Mackay et al., 2019; Weeratunge et al., 2014a). Health status, life satisfaction, happiness, and productivity are all significant aspects of well-being. Individuals with higher well-being tend to have better health, longer lives, improved resilience, higher productivity, and stronger social relationships, while those with low well-being often report lower overall quality of life and experience slower recovery when ill or injured. A population or workforce's well-being significantly impacts healthcare costs, social care expenditure, and the overall economic productivity of a nation or organization (Mackay et al., 2019; Satumanatpan & Pollnac, 2020).

Religious commitment and spirituality can significantly affect someone's well-being. Previous studies have shown that spirituality can help people maintain their life satisfaction when they are facing stress. Furthermore, research has highlighted that in Eastern Muslim cultures, SWB is strongly influenced by various factors such as religious affiliation, work satisfaction, social support, socio-economic status, income level, and marital status, indicating the potential for targeted interventions to enhance well-being in these communities. Older adults who find meaning in life through religious activities tend to have higher levels of life satisfaction. It's also important to note that religious commitment significantly influences people's subjective well-being in addition to income and wealth. This



shows that religious commitment and spirituality are important factors that can help people feel good about their lives (Azizan et al., 2018; Mackay et al., 2019).

The analysis of well-being has historically involved the disciplines of social psychology and welfare economics (Weeratunge et al., 2014a). Psychology has utilized cognitive components of well-being, such as experiential and perceptual aspects, and techniques based on universal human needs. There have been discussions concerning that economists and policy planners truly understand and prioritize people's well-being. There have been reflections on the challenge of objectively defining and assessing a "happy life" and the importance of considering both immediate satisfaction and long-term fulfillment of personal goals and aspirations. Additionally, there is a growing realization of the need to refocus on more accurate indicators of well-being, steering away from traditional methods that may not fully capture individuals' true preferences and decision-making processes. Critics of the mainstream utilitarian paradigm have advocated for a more comprehensive and interdisciplinary understanding of human behavior, rational choice, and action. The intersection of social psychology and applied economics has sparked increased interest in terms such as "happiness," "life satisfaction," and "quality of life," which are frequently used interchangeably with "subjective well-being," contributing to a more nuanced understanding of these concepts (Anna et al., 2019; Mackay et al., 2019; Weeratunge et al., 2014a). The 'economics of happiness' field has seen a convergence of material and socio-psychological well-being.

The terms "happiness" and "well-being" hold varied interpretations within different disciplines. Some researchers define happiness as the emotional aspect of subjective well-being, while 'life satisfaction' relates to the cognitive element, reflecting our assessments of our life circumstances (Putri et al., 2024; Voukelatou et al., 2021). Objective well-being indicators include financial status, material wealth, political liberties, communal relationships, and physical health (Chan et al., 2002). Happiness is essentially individual contentment, closely linked to the concept of utility in utilitarian economics (Frey & Stutzer, 2002). Economists commonly measure the well-being of individuals by using monetary indicators such as income per capita or assets. Building on this method, the Quality of Life (QoL) framework aims to incorporate a broader range of measures and indicators that extend beyond financial considerations (Anna et al., 2019; Collomb et al., 2012; Smith & Clay, 2010; Weeratunge et al., 2014b, 2014a).

Subjective Well-being (SWB) is a valuable self-reported measure of well-being that contributes to our understanding of Quality of Life (QoL). It encompasses important aspects such as life satisfaction, the presence of positive emotions, and the absence of negative emotions. An individual's SWB is affected by various factors such as personality traits (Librán, 2006), socioeconomic status (Kpanou et al., 2021), physical health (Piumatti, 2017), religious commitment, and spirituality (Ugur & Aydin, 2023), contributing to their overall sense of happiness and life satisfaction.

Current literature consistently highlights a robust association between personality and well-being (Joshnloo, 2022; Sehrawat et al., 2021). Nevertheless, it is essential to recognize that the results of these studies are influenced by the specific contextual factors inherent in each investigation. Varied research undertakings have yielded divergent findings, including variations in the nature of the relationship between personality traits and SWB, whether positive or negative. Furthermore, there is an evident lack of emphasis on pertinent factors such as the literacy level and proclivity for continued learning among respondents, which are likely to influence the impact of personality traits on SWB. Future research endeavors ought to expand the breadth of examination by exploring how literacy levels mediate the connection between personality characteristics and individuals' subjective well-being.

REVIEW OF FISHERMEN'S LITERACY

Mariculture needs to be tailored for the unique challenges of fishing communities, often marked by poverty, isolation, heavy dependence on fishing, vulnerability to climate hazards, and limited access to crucial services like education and training (Salayo et al., 2012). Most



all studies reveal that fishermen use their own perception and knowledge from society to do their activities (Anna et al., 2019; Satumanatpan & Pollnac, 2020; Weeratunge et al., 2014b). People build their perceptions about their life and their capabilities during their life. The knowledge resources they have been practicing are from a culture in which every member of the family gives first knowledge. Fishermen also can get knowledge from formal or non-formal institutions. Although their face many boundaries to access the educational level. Many studies explore the educational level of fishermen or small-scale fishers to explain their capabilities. Numerous studies provide perspectives on functionalities, including aspects like educational achievements and literacy rates (Kpanou et al., 2021; Maddox, 2007; Onumah et al., 2023; Satumanatpan et al., 2022; Weeratunge et al., 2014a). Maddox and Overa (2009) and Weeratunge et al. (2014a) explore an ethnographic method for researching literacy among fishing communities, questioning the notion that these groups possess lower literacy rates because of their marginal status. It indicates that when it comes to practical literacy skills such as list-keeping, informal accounting, and mobile phone use, fishing communities may possess similar or even greater literacy levels than nearby farming communities. (Maddox & Overå, 2009).

Like other rural areas, fishing communities have lower education and literacy rates than urban regions. This situation highlights a widespread issue of education disparity in rural parts of the world. According to the UNESCO Global Monitoring Report on Education (2005), most women lack the basic literacy skills necessary for complete social participation. Fishing communities share structural similarities that can lead to educational disadvantages, such as migratory lifestyles, social marginalization, child labor, and common post-catch processing and marketing activities (Maddox, 2007; Maddox & Overå, 2009). These challenges may be amplified in nomadic communities, necessitating innovative educational delivery methods to accommodate their culture and lifestyles. Notably, children's active involvement in fishing can lead to irregular school attendance and reduced educational aspirations. The occupational pride and identity in fishing communities may also limit career goals and school completion rates. However, integrating practical learning and vocational skills could help balance traditional roles and academic achievement (Anna et al., 2019; Bhowmik et al., 2021; Mackay et al., 2019; Maddox, 2007; Messias et al., 2019; Midlen, 2021).

Creating a local learning environment that taps into the well of local knowledge (Arzaman et al., 2021; Braga et al., 2022) while incorporating the advancements in science and information technology offers a promising alternative to addressing the educational challenges faced by the children of fishermen (Arai et al., 2022; Lopez-Ercilla et al., 2021; Maddox & Overå, 2009). Integrating digital learning opportunities sourced from within the community opens avenues for these children to acquire new knowledge and skills (Koomson et al., 2020; Lucrezi et al., 2019). This prepares them more effectively for roles within the fisheries sector, including fish processing (Arzaman et al., 2021; Lopez-Ercilla et al., 2021), and equips them for opportunities beyond it. Furthermore, empowering these small-scale fishers with financial literacy and capabilities is a pivotal strategy. This could enable them to make informed financial and accounting decisions, paving the way for enhanced living standards and overall well-being (Ahmed et al., 2021; Pomeroy et al., 2020).

Many studies use education levels to measure well-being, but higher education does not guarantee the same literacy level. People's functional literacy depends on context and practice. Fishermen parents feel that education is too rigid but are willing to send their children to school if the program allows them to assist in fishing. Educational disadvantages include poor quality education and factors that draw children to fisheries-related work. A strong gender-based division in work often impacts people's access to education and their successes. Traditional views on this issue typically focus on the negatives, using a 'deficit model' that highlights what's lacking instead of the positives. It's important not to oversimplify or stereotype when discussing literacy and educational difficulties but to acknowledge the diverse literacies and learning backgrounds.

A constructive viewpoint emphasizes positive attributes, such as acknowledging many fishing communities' economic and cultural vitality. These communities have the potential to support and nurture literacy traditions and educational aspirations. Some fishing communities



have strong literacy traditions and a focus on educating their children despite common portrayals of illiteracy. This phenomenon often reflects regional disparities in educational access and quality (Ahmed et al., 2021; Erokhin et al., 2021; Maddox, 2007; Maddox & Overå, 2009; Smith & Clay, 2010). Evidence indicates that there are differences in education and literacy rates among fishing communities.

There has been an increasing focus on literacy and education within fishing communities. Research findings on literacy are often part of comprehensive projects and typically lack in-depth analysis or methodological complexity (Ahmed et al., 2021; Anna et al., 2019; Bhowmik et al., 2021; Mackay et al., 2019; Satumanatpan & Pollnac, 2020; Smith & Clay, 2010). The existing literature on literacy within the sphere of development underscores literacy's social and functional applications among individuals across a diverse range of developmental sectors and activities (Maddox, 2007; Maddox & Overå, 2009). This underscores the interconnections among literacy learning tasks, their practical implementation, and their pertinence in real-world social environments. Definitions of 'functional literacy' emphasize the kinds of literacy and numeracy necessary for everyday life, allowing for adaptability in delineating literacy based on local circumstances.

The attention to how literacy is used in social settings has been incorporated into conversations about 'literacy and employment' (DFID, 2002; Maddox, 2005). This approach emphasizes the practical application of literacy and numeracy in people's lives, particularly in their interactions with government institutions and development agencies (Maddox, 2007). It also underscores the integrated use of literacy and numeracy rather than viewing them as separate disciplines. This approach can be beneficial in understanding the literacy needs of fishing communities and can inform the design of effective literacy interventions.

Artisanal fishing communities in developing nations face educational challenges similar to those of other occupational groups, including low enrollment, inadequate teaching, and gender disparities. Educational providers should consider these influences when working with fishing communities (Ahmed et al., 2021; Anna et al., 2019; Bhowmik et al., 2021; Maddox, 2007; Satumanatpan & Pollnac, 2020; Smith & Clay, 2010).

There is a concept of a 'vicious cycle of poverty' in fishing communities, where poverty perpetuates itself. This theory suggests that individuals take up fishing due to economic challenges, and these challenges persist due to their involvement in fishing. This creates a circular reasoning that connects fishing with economic hardship (Kpanou et al., 2021). The conventional use of literacy rates to gauge education levels omits a crucial aspect: educational access. This paper posits that educational access should be distinguished from literacy, especially since informal literacy acquisition occurs within certain communities, such as those reliant on fishing. The accuracy of literacy rates is often called into question due to challenges in defining literacy, as well as tendencies to either overstate or understate true rates. Furthermore, these rates typically focus on individuals, neglecting the vital role of literacy sharing within households and communities.

The connection between educational level, literacy, and numerical skills in the fishing community may impact the accuracy of well-being measurements for fishermen. Numerous studies have shown that low educational levels are linked to low literacy and numerical skills among fishermen. This lack of skills can make it challenging for fishing communities to adapt to changes and may perpetuate low well-being across generations. Mackay (2019) suggests that adult workers can improve their well-being and indirectly benefit their families and communities by practicing the "Five Ways to Wellbeing": Connect, Be Active, Take Notice, Keep Learning, and Give. The study found that the habits of "take notice" and "keep learning" are strongly linked to higher levels of well-being and predict overall well-being.

The study highlights the significant benefits of embracing lifelong learning on overall well-being. Different forms of learning have the potential to positively influence various aspects of well-being. For example, work-related learning has the capacity to enhance economic well-being (Arai et al., 2022; Braga et al., 2022; Hoque et al., 2021; Lopez-Ercilla et al., 2021), while learning driven by personal interests can contribute to improved social well-being (Cooper et al., 2013). Lifelong learning has been found to play a supportive role in overcoming mental health challenges and effectively managing stressful situations, such as



chronic illness and disability (Braga et al., 2022; Hoque et al., 2021; Nieman et al., 2021). Although academic learning may not directly impact health behaviors, depression, or civic engagement, it does have an influence on social and political attitudes (Temesgen et al., 2019). Moreover, employer-provided learning opportunities are associated with higher life satisfaction and greater tolerance while displaying a negative correlation with authoritarian attitudes. On the other hand, leisure learning can lead to an increased likelihood of quitting smoking, participating in community activities, and engaging in regular exercise (Kekalainen et al., 2017).

The study explicitly states that the habit of 'keep learning' is related to the well-being of fishermen through their literacy level. It is suggested that fishermen's willingness to acquire new knowledge beyond their industry can provide them with additional or enhanced skills. This habit can also increase their value in society. According to Maddox (2007), fishermen's communities sometimes take note of their trade and track the income they generate from selling a certain amount of fish/seafood. This indicates that some fishermen with lower educational levels have limited financial literacy and capability.

Acquiring specific literacies is crucial for fishermen to navigate the challenges of the forthcoming decades. Of particular significance are financial, digital, and computer literacy. These literacies should be imparted through non-formal educational interventions tailored to the unique needs of the fishermen, employing responsive and non-antagonistic approaches. Such strategies should be flexible and accommodating, presenting information in a simplified format that is accessible to the community and promoting the direct application of newly acquired knowledge and skills. This approach emphasizes the contextual relevance of literacy instruction, aligning it with the practical activities undertaken by fishermen, instead of adhering to the standardized format characteristic of conventional literacy programs. The completion of further studies is essential to gain a thorough comprehension of the social dynamics and perspectives within the fishing community. It is also crucial to assess the positive impact of these literacy initiatives on the well-being of fishermen after their implementation.

CONCLUSION

Many studies have simply correlated literacy levels and educational attainment (number of years of schooling) as indicators of fishermen's well-being. Another study aims to measure fishermen's resilience by examining their willingness to learn new skills, which is one aspect that contributes to their well-being. Most studies focus on the well-being of Small-Scale Fishers (SSF) or general fishermen rather than subsets like part-time fishermen, seasonal fishermen, or individuals who work as fishermen on a temporary basis. In the literature, fishermen are only compared against non-fishers, not ship owners, captains, or crews. Additionally, religious commitment and spirituality have been shown to significantly affect subjective well-being (SWB), and future researchers may want to investigate whether these factors can mediate the effects of socioeconomic status, personality traits, and health on SWB to gain more insight. These findings support the Five Ways to Wellbeing, but further study should be conducted to determine their efficacy in enhancing well-being, with special attention to the socio-demographic environment linked to a unique culture that could impact the fishermen's well-being.

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