

**BEYOND THE WAVES: ETHNIC SOCIO-CULTURAL LIFE AND TRANSFORMING
WOMEN'S ROLES IN THE ALAPPUZHA SEA FISHERMEN COMMUNITY**PRATHEESH PADATH
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ABSTRACT: Fishing communities, one of the oldest known to humankind, have lived along coasts for centuries, intertwined with the seas for daily and long-term needs (Venkataraman & Raghunathan, 2015). Kerala's sea fisher folk, particularly in Alappuzha, have distinct ethnic heritage and traditional knowledge of the sea and fisheries. Their livelihoods are ensured by using this knowledge to guide their fishing activities, understand weather patterns, manage resources, and handle post-harvest. The article discusses the value of fishing as a way of life and the distinctive cultural customs of the fishing community, such as ethnic as well as social customs. We shall draw attention to the difficulties the community faces, including dwindling fish stocks, deteriorating environmental conditions, and the effects of globalization on their means of subsistence. Through an ethnographic study, this research aims to understand the cultural practices, social relationships, and economic activities of the fishermen community. The experiences and roles of women are the main emphasis of this paper's sociocultural analysis of the sea fishing community in Alappuzha. The study also examines the ways in which cultural norms, economic pursuits, and conventions affect women's lives using a qualitative research technique. The findings emphasize the value of women's contributions to the community's way of life, and also draw attention to the difficulties women encounter in carrying out their responsibilities in a patriarchal society.

KEYWORDS: Ethnic Socio-Cultural Life, Fisherman Community, Cultural Norms, Traditional Fishing Practices, Women's Role, Patriarchal Culture

RESUMEN: *Más Allá de las Olas: Vida Étnica Sociocultural y la Transformación del Papel de la Mujer en la Industria Pesquera de Alappuzha*

La comunidad pesquera, una de las más antiguas del mundo, ha vivido cerca de las costas durante siglos, relacionándose con el mar para cubrir sus necesidades a corto y largo plazo (Venkataraman & Raghunathan, 2015). Los pescadores de Kerala, concretamente en Alappuzha, tienen una herencia étnica particular y un conocimiento tradicional del mar y de la pesca. Garantizan su sustento a través de su conocimiento de esta industria, siendo capaces de entender patrones climáticos, gestionar sus recursos y lidiar con la época posterior a la cosecha. Este artículo analiza el valor de la pesca como modo de vida y las costumbres culturales particulares de esta industria como las étnicas y sociales. Se centra en las dificultades que la comunidad afronta, incluyendo la disminución de las reservas pesqueras, las condiciones medioambientales en deterioro y las consecuencias de la globalización en sus modos de subsistencia. A través de un estudio etnográfico, esta investigación aspira a entender las costumbres culturales, relaciones sociales y actividades económicas de esta comunidad. El artículo tiene

como foco analítico sociocultural las experiencias y el papel de la mujer en la comunidad pesquera de Alappuzha. El estudio también examina, a través de una investigación cualitativa, la forma en la que las normas culturales, metas económicas y costumbres de esta comunidad afectan a la vida de las mujeres. Los resultados enfatizan la importancia del papel de las mujeres en la forma de vida de la comunidad, pero también destacan las dificultades que estas encuentran al llevar a cabo sus responsabilidades en una sociedad patriarcal.

PALABRAS CLAVE: Vida étnica sociocultural, comunidad pesquera, normas culturales, prácticas pesqueras tradicionales, papel de la mujer, cultura patriarcal

1. Introduction

Alappuzha's sea fishing history dates back to ancient times, with evidence of fishing activities prior to first century AD. The region's strategic location with the Arabian Sea and Vembanad Lake made it an ideal spot for fishing. Alappuzha (one of the fourteen districts in Kerala, the south Indian state) fishermen have been using traditional methods and techniques for generations, including the use of wooden boats, nets, and lines. These fisher folk have traditional knowledge about the seas and fishery resources, which guides their fishing operations, understanding potential dangers, resource management, and marketing. This knowledge is crucial for their livelihoods and has evolved from their close relationship with their habitual surroundings. The progress of science and technology have made information available through satellite technology and remote sensing know-how, such as Ocean State Forecast and Potential Fishing Zone, helping fishers go farther and fish deeper. However, the fishing effort has increased, leading to resource degradation and overfishing. Ethnic and ancestral fund of knowledge has its worth in the larger scheme of things, but it is slowly being lost as older generations pass away. Historicising this tradition of knowledge is significant for comprehending the evolution of the fishermen community's dependence on aquatic resources and identifying approaches for sustainable utilisation.

1.1 Methodology

This study is designed to explore the ethnic socio-cultural life of the fishermen community in Alappuzha, a coastal district in Kerala. Through an ethnographic study, this research aims to understand the ethnic background, cultural practices, social relationships, and economic activities of the fishermen community. The methodology includes focus groups, structured interviews, and ethnographic observation with fishermen, their families, and community leaders and elders. Six months of research allowed for a detailed grasp of the social

dynamics, cultural practices, and day-to-day activities of the community. The study reveals unique cultural traditions, such as traditional knowledge of sea fishing, ideas about the sea and ethical living for fishermen, festivals, women's roles and status, and the significance of fishing as a habitual practice. It also highlights the challenges faced by the community, including declining fish stocks, environmental degradation, and the impact of globalization on their livelihoods. We argue that the fishermen community in Alappuzha is a vibrant example of ethnic socio-cultural life, where traditional practices and modernity coexist.

The first part of our article discusses the sociocultural structures and historical underpinnings of the fishing community in Alappuzha. The next part looks at fishermen and their ethnic and traditional practices and beliefs. The following section discusses the traditional knowledge of the community about fishing methods, weather, and the sea, whilst the final section goes into greater detail about gender issues in the fishermen community, including how women's roles and status have changed throughout time.

2. Fishermen Community: The Socio-Cultural Chronicle

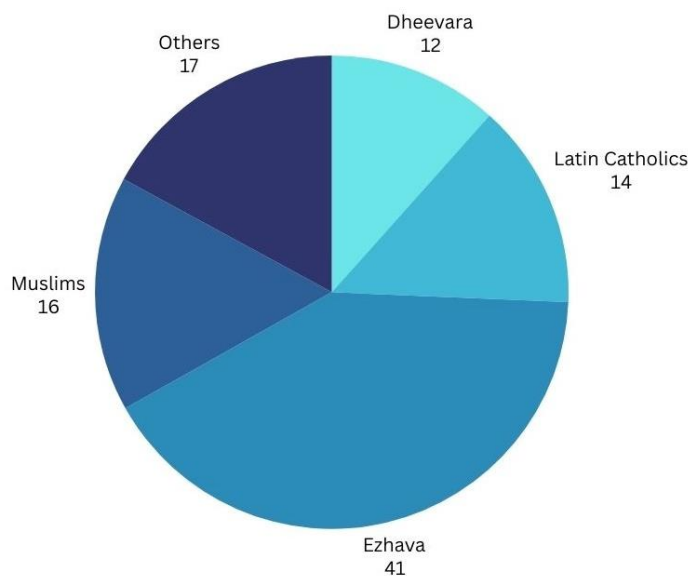
Kerala's fishermen and fishing have been the subject of in-depth academic studies for more than a century. They have also served as a key literary focus for numerous Malayalam works¹. The majority of scholarly research concentrates on a single topic, usually the fishing industry and studies that address sociological and techno-economic issues. Though in subjective representations, the literary works have depicted the ethnological and cultural characteristics to some extent. The fishermen of Alappuzha have been fishing in the Arabian Sea for generations, using traditional methods and techniques passed down through their ancestors. The fishing season, according to the traditional fishermen, in Alappuzha is from October to May in the marine sector and throughout the year in the inland backwaters. According to the state ministry of fisheries and reports from the department of fisheries development of Kerala state, the fisherman population in Alappuzha district was 25.93% as of 2020.

¹ The renowned Malayalam author Thakazhi (Thakazhi Sivasankara Pillai) wrote the realistic fictional tragedy "Chemmeen," which centers on the way of life of early Kerala fisherman, particularly in the coastal villages of Alappuzha. 'Meenpiduthakkar' by Chigozie Obioma, Unni Joseph's 'Thumboli Kadappuram', and Lohithadas's 'Amaram' are some of other literary works about fishermen. Among this, Chemmeen, focusing on the relationship between Karuthamma and Pareekutti, centres around a myth about chastity among fishermen in Kerala. This novel incorporates lyricism and romanticism, capturing the emotional detail of the fishermen's community. It was also included in the UNESCO collection of Representative Works - Indian series.

When the term 'caste' is used to refer to the fishermen, it erodes their religious identities. Numerous coastal social groups have long relied on religious identities to define themselves, with fishing serving as their primary source of income (Clement Lopez, 2012). Scholarly research has generally recognized the fishing community as distinct social entities, including the 'Dheevera' fishermen, the Mapila fisher folk, and the Latin Catholic fishermen (including fishing communities' constituent parts of the Latin Catholic communities, such as Mukkuva and Anjoottikkars). Nonetheless, there are various ambiguities caused by the terms "fisher folk," "fishermen," "coastal people," "Mapila fisherfolk," and "Latin Catholic" used to refer to the fishing communities in literary and academic works. Kerala's historic ethnic grouping of fishing castes is known as the "Dheevera" or "Araya." Dheevera, a Sanskrit term for fishermen, includes subcastes of Arayan, Valan, to be officially identified as fishermen (Alex, 2018). The ethnic group Dheeveras is divided into five endogamous clusters: Arayas, Mukkuvans, Mogeysers, Valans and Paravas, and Patannas (Udayabhanu, 1990). The Arayas, Mukkuvans, and Mogeysers are sea fishermen, while the Valans and Patannas are backwater-fishermen.

'Latin Catholic Mukkuva (LCM) Community is the other significant fishing group along the Keralan coast. The Latin Catholics of the Malabar Coast, a multiethnic religious community in Kerala, who are mostly a converted ethnic group and those who have settled there and traditionally practice fishing, observe Roman Rite liturgical rites (Koilparampil, 1979). Beginning with St. Francis Xavier in the sixteenth century, Portuguese and Spanish missionaries converted people in Kerala, and these people are today's Catholics (Ashni & Santhosh, 2019). As such, Kerala's Latin Catholic community is diverse, with members ranging from Dalits to upper castes (Fuller, 1976). Prior to the conversion period, all fishermen were referred to as Mukkuva. While Muslim fishermen were known as Pooislan or Marikkar, and Hindu fishermen as Dheevera, the term Mukkuva currently refers largely to Christian fishermen (Islam & Klausen, 1971). On the flip side, the Christian coastal fishermen are officially referred to as Latin Catholic Mukkuva in popular culture. It is noted that the religious identity of Latin Catholics is deeply ingrained in their social identity.

Figure 1: Population wise analysis of Fishing Community



The study deemed fishermen to be an ethnic group with unique sociocultural contexts. As a society, they centred their settlements in backwater inland and coastal regions, relying on one another to meet their daily requirements. They work in traditional occupations using ethnic knowledge, forming a local geographic and economic unit. Sangam literature provides the earliest account of the fishing community in ancient south Indian society. According to this Tamil text, there are five geo-cultural zones known as ‘ain-tinai’ (fivefold region), each which comprises distinct socio-cultural adaptations. It describes five distinct communities, the Marutalar/Uzhavar (agriculturalists), the Kurinchiyor (semi-agriculturists of hilly tracts), the Mullainar (pastoralists), the Palaikkar/Kalavar (desert nomads), and the Naithalmakkal/Umanar (seafarers), who are settled in sensitive geographic regions (Ferro-Luzzi & G. E., 1992). These communities differ in terms of social structure complexity and degree of autonomy, as well as location and profession. Treatises like the Valavisu Puranam, which concentrate on fishing tactics, have objectified fisheries and fishermen for millennia. Although the term "Mukkuvar"² refers to a group of immigrants from Ceylon (according to

² Mukkuvar is a maritime ethnic group in Kerala, Tamil Nadu, and Sri Lanka, primarily found on the Malabar Coast and Kanyakumari district. They were known for their diving skills during the Chera dynasty and were involved in naval activities, boatbuilding, and fishing. The Mukkuvars are divided into exogamous clans, with the Northern Malabar Mukkuvars known as Nalillakkar and the Southern Malabar Mukkuvars as Munillakar. They were brought to the Vizhinjam region by the Chera and Venad Kings to attack Raja Raja Cholan's navy ships. They had trade relations in Sri Lanka from the 12th century and migrated to and from Kerala, with some emigrating from South India under the rule of Kalinga Magha (Wikipedia contributors. -2024, December 9-*Mukkuvar (India)*. Wikipedia. https://en.wikipedia.org/wiki/Mukkuvar_India)

Mukkara Hatana" or "Fight of the Mukkaru' and the myth of 'Ravana's Musical Instrument'), its exact meaning is unclear. While some scholars propose that Mugayan or Mugavan were fisherman from northern Cannanore, others consider that Mogeres were porters and palanquin-bearers (Kurien, J. (1985).

Fishermen's caste-based social organizations have been influenced by the Church for over four centuries. These communities of fishermen lack a division of labour and have a work-specialization structure. Due to a lack of social mobility, the Arayars (Dheevara) are less ambitious and innovative than the Catholic community, making them more homogeneous. While the Catholics have created their own cultural customs and reject the Hindu caste system, they are ethnically similar to the Arayas in terms of fishing methods, beliefs, and marine fishing customs. However, there are few intra-rite marriages between various strata, and the Latin Catholic Mukkuvas have distinct social, economic, and political boundaries.

2.1 Fishing Villages and Customary Ethnic Beliefs

The list of fishing villages in Alappuzha includes Valiyazheekal, Tharayilkadavu, Kallikkadu, Arattupuzha, Pathiyankara, Thrikkunnapuzha, Pallana, Tuttappally, Punthala, Purukkadu, Ambalapuzha, Neerkkunnam, Punnapra, Vadakkal, Kanjiramchira, Thumboli, Chethy, Chennaveli, Arthunkal, Thaikkal, Ottamassery, Azheekkal, and Pallithodu (KSCADC, 2020). Generally, the fishing communities believe they are descended from primitive ethnic groups, sages, and gods from ancient times. This notion stems from allusions to fishing villages found in epics such as the Matsya-Purana, the Ramayana, and the Mahabharata (Mathur, 1995).

The Latin Catholic fishing community, on the other hand, has a history that can be traced back to the holy Bible, including Matthew 4:18-22, Mark 1:16-20, Luke 5:2-11, and John 1:40-42. One such legendary belief has the essence that Jesus foresaw them with their position of fishing, and all the fortunes and disasters that occur with fishing is the decision of holy soul, and the story is as follows. 'In the Gospel of Luke, Jesus instructs Simon Peter to let down his nets for a fish catch at the Lake of Galilee. Despite having no professional experience, Peter admires Jesus and his sermons. His inward tense and loving faith demonstrate his willingness to obey him. Jesus asks Peter for a pure act of faith, which transcends human limitations. The overflowing nets demonstrate Jesus' divine power, how to deal with Peter and others' (James, Martinez, & Herbers, 2015).

According to Nayak & Houtart (1988), the marine fishermen have distinct representations of the natural powers that oversee their lifecycle. They consider all kinds of nature to be alive and personify every type of nature they come into contact with, which has both beneficial and harmful effects on their life (Ram, 1990). The sea is referred to the fishermen (Dheevara and LCM) as 'Kadamma', where *Kadal* means sea and *amma* means mother, because they believe it to be sacred. They personify the sea as a mother goddess who gives them all of their resources and also preserves their lives when they go deep-sea fishing. They believe that when their ethnic customs are broken, the mother becomes enraged and causes deaths at sea. Seawater is used in numerous ceremonies by fishermen, who view it as holy and sacred. These rituals include those pertaining to illness, death, and birth. The Dheevara community's temples are near the beach, primarily dedicated to the goddess 'Kali', who represents the mother goddess. The LCM group viewed Mary as the saviour of their lives at sea and performed rituals to please her and church is the primary social structure among Christian fisherman, and religion is a way of life for them. For instance, when there was a lean season, and the fish catch was scarce, the Latin Christian fishermen brought in their priest for a religious ceremony in which the priest sprinkled water over the sea, which was believed to increase in the quantity of fish catch (Samuel, 1998).

Ponkala, an annual festival commemorating the sea goddess 'Kadamma', is celebrated by the Hindu fishing community. The event entails creating and offering rice pudding during a religious rite. Fisherwomen gather with prayer pots, rice, jaggery, banana, coconut, and firewood is used to prepare the Ponkala (normally of two types, one with jaggery, white rice, coconut, and plantain, the other using milk and sugar instead jaggery) and present them to the sea. Fishermen feel that their riches are in the sea, and they have faith in the sea goddess, as she meets their wants. The ethnic belief emphasizes the purity and chastity of married women in society, and tradition warns that unfaithful wives will drown their husbands, which results in the community punishing unfaithfulness (Lakshmi, 2019). In addition, the community believes in sea spirits and astrology, which can influence fishing success and safety. They also rely on omens, which predict certain stars and planets to influence their catch.

2.2 Fishermen Community and the Traditional Knowledge

Traditional knowledge is gathered over generations, passed down orally or through elders, and cannot be directly explained by science. It is sometimes used interchangeably with

indigenous and local knowledge, but there is no single accepted meaning. Fish species' fishing locations were generally defined by their distance from the coast and depth in the sea. Fishermen of all communities (social groups) continue to use most of these procedures and terms. The term 'maaru' is used to quantify both distance and depth in the water. Despite being associated with nautical miles and other standard distance measurements, its usage persists today. This term is widely used and recognized throughout Kerala's coastline. One maaru is roughly equivalent to 1.5 meters. To measure depths, a twine measuring tool with an iron block connected to one end was used. The term 'muduth' or 'murdh' is connected with it. Usually, the twine is roughly 30 meters long.

Because deep sea fishing necessitates crossing the ocean and hunting aquatic species—two activities for which winds and currents are crucial physical characteristics—traditional meteorological knowledge has significance to fishing (Agnew & Chipeta, 1979). Fishermen use these names to distinguish the winds according to their direction; different districts have different names for the winds. They also categorize winds based on their temperature or how they experience, and sometimes they even associate different aromas with particular gusts. They refer *karakkaattu* for easterly wind and *kadalkkaattu* for the westerly wind. Local names vary by location, with some adding additional names such as 'Thengarakattu', 'Vadakara/Vadarakattu', 'Thembrayikattu', 'Vadumelkattu', and 'Poramkattu' (Santha, 2008). The west wind is also known as *mekkaatt*, *puramkaattu*, or *purakattu*. They were also familiar with the regular winds that blow during various months (Malayalam calendar) and seasons. These winds are connected with fishing difficulties, as well as the convenience of fish catch. Certain seasonal winds are named after the months in which they blow. Eastern breezes are prevalent from Chingam to Thulam (mid-August to mid-November), whereas strong western winds should be avoided around the 10th of Kanni (late September). *Thulavaada* is a wind that blows from south to north and originates in the month of Thulam (mid-October to mid-November). The wind, known as *kachaankattu*, blows from north to south in the Malayalam months of Meenam, Medam, and Edavam (mid-March to mid-May), with Medam being the strongest. When these winds blow, fish availability decreases. Wind is also associated with marine erosion and *pollamaanthi* - the process of removing soil layer by layer (Noujas & Thomas, 2015).

Wind direction affects fish availability, with westerly winds increasing water levels and attracting fish. Westerly winds are more visible, while southerly brings difficulty in fishing. Kachamkattu winds in November-December provide good catches, while strong Kachaankattu winds make fishing difficult. Traditional fisherman can navigate the ocean more easily on westerly winds, and they can catch larger fish thanks to kondal and koda breezes. They also understand well how suspended and dissolved materials affect water clarity, and how wind energy increases mixing, which affects bottom sediment and water purity (Caddy & Bakun, 1994).

Similarly, knowledge of Astronomical events and lunar phases have long been connected to fishing and fisheries. Traditional fishermen forecast the availability of fish by looking at the moon's 'pakkam' appearance (Puthran & Pillai, 1974). Fish is low on full moon days and abundant on new moon days. More catch is caught when the moon is shining toward the west. Fishing days with colloquial names, such "Ashtami," "Amavasya," "Dashami," "Karichala," and "Mural," are used by fishermen. The water level rises on "Ekadasi," the eleventh day of the lunar cycle, forcing fishermen to fish 10 or 12 feet beneath the surface. Fish are abundant on Ashtami, when the water level dips after daybreak. This results in an increased fish catch during high tides, but a lower one during low tides. The appearance of the bombili worm on the water's surface at low tides is said to indicate that there are plenty of fish in that area.

Veteran fishermen have relied on celestial objects like stars and constellations to understand and calculate time, navigate, fish catch, and locate offshore mounds. Morning seafarers sightsee their route by trial and error, and their acquaintance of celestial bodies including star location helped them navigate (Raju, Rao, Rao, & Simhachalam, 2016). Stars such as Perumalayan, Kondotti, and Muzhakkol were used to fix direction, time and stretch when out at sea. Other names for these celestial objects include Naazhika Mani, Muzho Kol, and Kontha. Koottu Nakshathram, Kurisu Velli, Trimoothikal, and Saptarshikal were all utilized for navigation. Kurish Nakshathram is a constellation of four stars that resembles a cross, and fisherman regard it as a sign of danger (Nandakumar, 2004). Kottu, a bright star visible in the eastern sky from 8 p.m. to 2 a.m., is thought to be an indication of fish availability. The stars also govern time, with Muzhakol velli rising at 8 p.m. and Aarami rising at 10 p.m. A comet (vaal nakshatram) known as "velli chaamam" setting around 9.00 p.m. in the West

suggests a good abundance of fish. Other stars include "vadikottu" rising at 4.00 and 2.00 a.m., "veliunda kottu" rising at 9.00 p.m., and "panjorkalla" rising at 5.00 a.m.

Veteran fishermen have also developed weather-related coping tactics such as analysing wind speed, current, water mass movement, and anticipating fishing locations. Observations of cloud formations and aquatic animal behaviour have been utilized to forecast natural disasters, which can aid in disaster preparedness and warning systems (Stock et al., 2017). For example, when clouds form in the north-west, heavy rain is predicted, and the odour of seawater is comparable to that of a blazing fire. Many areas have reported large bubbles on the water's surface as well as sightings of sea snakes as a result of natural dangers. Sea snakes and bottom dwelling worms are additional indicators of disturbances on the sea floor. During the summer, the muddy sea bottom fractures and produces significantly larger bubbles, which could signify unfavourable marine weather conditions (Shyam & Antony, 2013).

Regarding their knowledge of fish and fish availability, the fishermen community uses a technique known as 'naadipidikkuka' (pulse checking) to predict the catch of fish. According to them, availability is often higher during the monsoon season, as sardines and mackerels migrate to shore to reproduce. Smaller fish are more plentiful inside 8 maaru. Rainy seasons bring more fish to the shore, and shrimp are particularly numerous during Kadalellakam. Fish catches are higher from June to August, and lower from November to February (Reiss et al., 2009). The Chakara mud bank structure is peculiar to the Kerala coast, with considerable fish availability from July to August. Gleaners catch sole fish, catfish, and crabs with ease in the mornings. Fishermen know the basic link between fishing seasons and resource conservation and use this knowledge to direct their livelihood activities connected to fishing (Joseph & Jayaprakash, 2003).

The presence of a bright light on the water's surface, known as "Kavaru" (locals refer to the fish shoal's nighttime appearance on new moon days as Kavaru), is what distinguishes the fish shoal in Alappuzha (Pradhan, 1956). Mackerel shoals resemble formations like wells, but sardine shoals resemble narrow lines. The term 'kamaru', also describes the abundance of fish that float on the water's surface and resembles the "bright light of a torch". The appearance of bubbles on the water's surface, kingfish, seabirds, and seagulls are all indicators that fish are present, according to the veterans. Light and fish availability have been related since the early days of fishing. Karippan is a phrase used when the light is almost about to dawn or set.

Traditional fishermen identify and make use of the marine creatures' bioluminescent mechanisms which attract and seize species. Planktonic and dinoflagellate creatures help locate feeding or attracting species, while sardines' shoals can be black or dark blue (Puthran & Pillai, 1974).

The study also analyses the traditional knowledge and beliefs of the Alappuzha fishermen community regarding fish processing, nutrition, and beliefs. Traditional methods of preserving fish, such as sun drying, dry salting, and wet salting, were mostly carried out by the women in the fishing community. Prior to the introduction of ice, these methods were commonly used, with extra fish being sun dried on beaches (Mahish, 2015). Other ways include rack drying ribbon fish, gutting and salting lizard fish, and wrapping fish in coconut tree leaves to prevent rotting (Bindu et al., 2010). Mackerel catch was stored in sand to preserve it for a limited period of time. Major fishes in the research area were anchovies, ribbon fish, sole fish, and lizard fish. Fish oil was preserved in brine in traditional 'chapa' or 'kudam' salt. The fish were preserved in salt at night and washed the next morning before being dried. Larger fish, such as shark, tuna, and mackerel, were sliced open, salted, and sun dried on coir mats known as 'padam'. Sun drying is one of the most cost-effective means of avoiding microbial development since it reduces water content and prevents spoiling (Teixeira et al., 2013). Fish is a highly perishable food, but it is also extremely healthy due to its high protein content. Spoilage begins within 12 hours in tropical environments with high ambient temperatures, and it occurs as a result of enzymatic, microbiological, and chemical action. Sun drying removes moisture from fish cells, preventing bacteria from spreading and spoiling the fish.

This fishing community has traditionally used several fish species to treat a variety of diseases, including asthma, coughing, and asthma-related problems. Chuma kurichi, a sun-dried seahorse, is widely used for asthma and cough treatment. Other fish species include sravu, veloori, kada poocha, and silver belly. Fishers also prescribe diets high in particular species, including maanthal, orathal, kathiran, ray fish, thalayan, mullan, and mathi. Sharks are highly nutritious and have been used for health, fever, and rheumatism. Sardini oil is believed to prevent heart diseases and heal heel cracks (Jayaprakash, 2004). However, fishers avoid certain species due to ill effects. Shark cartilage contains chondroitin and glucosamine, and fish oils are rich in PUFA. Sardini oil is also used for heel crack healing.

Even today, fishermen in Alappuzha from both Hindu and Christian groups perform numerous rituals and traditions before fishing, such as honoring the sea as a mother and avoiding negative omens. They say that fish in the sea are tastier than those in estuaries because of the lower wave movement. They also undertake a rite known as 'Kazhcha veppu', which involves touching the ocean and making a cross on their forehead. They also perform a religious practice known as "muttarukkal" before beginning a new craft. Fishing is prohibited during Karkidakkam due to adverse sea conditions. They also pray to stop the wicked wind and drink rice water to relieve weariness. In poor sea conditions, fisherman assembled at sea shore for special prayers.

3. Transforming Women's Role

Studies reveal that women in the Alappuzha Sea fishermen community are crucial in their community's livelihood, performing tasks like fish processing, marketing, and household management. They also preserve the community's cultural heritage. However, they face challenges such as patriarchal norms and gender-based discrimination, which restrict their access to education, employment, and decision-making power. The belief that fishermen returned home safe every day is based on subjugation of women, rather than religious sentiments. Women in fishing hamlets are treated as second-class citizens by conventional traditions, and their loss of virginity becomes the talk of the seashore, which breeds infidelity and social disdain. A woman's existence is directly dictated by custom and tradition, underscoring the seriousness of life in such societies. These ideas exacerbate inequality and perpetuate gender-based discrimination.

Traditional occupations for women included fish marketing (the door-to-door sale and market place sale of fish) and preserving fish, including sun drying, dry salting, and wet salting. The unpredictability of marine resources does not always provide fishing families with enough cash to live comfortably (Hapke, 2001). Poverty and economic constraints have led many women from poor rural households to labour outside the home, engaging in a variety of economic activities while performing traditional domestic tasks. In these fishing villages, women were traditionally viewed as men's subordinates, restricted to familial obligations, and prohibited from going fishing or operating fishing boats.

The well-known Malayalam novel *Chemmeen*, in which the protagonist Karuthamma falls in love with Pareekutty, the son of a wealthy merchant, effectively explores the myth and social realities surrounding Mukkuva (fishermen's wives). Chakki, her mother, cautions her against believing the myth of chastity, which is exclusive to women in cultures where men predominate. After internalizing this, Karuthamma weds Palani, an orphan, in spite of protests. But in her new coastal community, Karuthamma is not accepted, and Palani has unpleasant encounters and is not allowed to fish with fellow fishermen. Karuthamma's adulterous relationship resulted in the sea goddess casting Palani into the depths of the ocean as a punishment. By the time the book concludes, Palani has defeated the storm and both Karuthamma and Pareekutti are dead. This narrative describes the hardships that women from the fisherman section suffered in the past.

In short, from preharvest to harvesting, women are essential to all aspects of fishing. They create and repair nets, make hooks and baits, and engage in netting, clam and mussel harvesting, seaweed gathering, and pearl diving, among other tasks. However, women are typically only permitted to engage in household fishing activities and are not permitted to engage in actual fishing operations that require going out to sea. Women in fisheries confront significant challenges such as limited access to resources, limited influence on decision-making processes, and a lack of adequate marketing and processing infrastructure. The patriarchal restrictions in their daily lives include limited access to education, restricted mobility, limited economic opportunities, and gender-based discrimination (Kurien, 1985). Many drop out of school early to help with household chores and childcare. They often rely on their husbands or families for financial support and experience violence, harassment, and marginalization.

However, within the past few decades, there have been some changes to the cultural and socioeconomic contexts. This study reveals that women in Alappuzha's fishermen communities are increasingly taking on new roles in the fishing industry, including increased participation in fishing activities, emerging roles in the community, and economic empowerment. Factors driving this change include economic necessity, increased access to education and training, government initiatives promoting women's empowerment, and changing social norms. However, women still face challenges such as patriarchal norms, lack of infrastructure, and limited access to credit. Even though, K.C. Rekha, officially known as Rekha Karthikeyan, a 45-year-old fisherwoman from Kerala, became the first woman in the

country to be granted a license to fish in the deep sea. She started fishing when her husband's two employees quit and he couldn't afford to pay them. Rekha has faced obstacles such as community hostility, health concerns, and the prospect of an unproductive career. She has garnered hundreds of awards and has inspired students and peers.

The study collected quantitative data from structured surveys of Alappuzha fishermen women, including age, education level, marital status, number of children, income, occupations, changes in roles and attitudes, and challenges faced. Data further edited, coded, and transformed into numerical form. Variables will be analysed using univariate, bivariate, and multivariate methods.

- **Univariate Analysis:** This will involve the analysis of single variables such as age, education level, and income.
- **Bivariate Analysis:** This will involve the analysis of two variables, such as the relationship between education level and income.
- **Multivariate Analysis:** This will involve the analysis of several variables, such as the relationship between age, education level, and changes in roles and attitudes.

Education: As univariate analysis, the distribution of education levels among women of fishermen community in 1970 and 2020 (fifty years gap) is analysed and the tabulation table is presented below. The data (1970's) is accessed from the reports and statistics of district education office, Alappuzha.

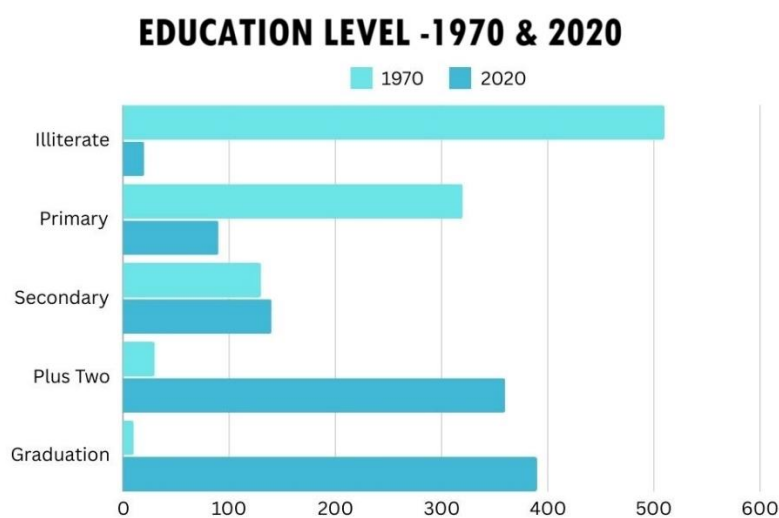
Table 1: Distribution of Education Levels

| Education Level | Frequency (1970) | Percentage (%) | Frequency (2020) | Percentage (%) | Direction of Change |
|-------------------------|-------------------------|-----------------------|-------------------------|-----------------------|----------------------------|
| Illiterate | 510 | 51.0 | 20 | 2.0 | -49% |
| Primary (1st to 5th) | 320 | 32.0 | 90 | 9.0 | -23% |
| Secondary (6th to 10th) | 130 | 13.0 | 140 | 14.0 | +1% |
| Higher Secondary | 30 | 3.0 | 360 | 36.0 | +33% |
| Graduate and above | 10 | 1.0 | 390 | 39.0 | +38% |
| Total | 1000 | 100.0 | 1000 | 100.0 | n=1000 |

In 1970, 51% of the fishermen women were illiterate, which significantly decreased to 2% in 2020. This represents a substantial decline of 49 percentage points. The reduction in illiteracy indicates successful educational interventions and increased access to primary

education over the past five decades. The percentage of women who completed only primary education (1st to 5th standard) decreased from 32% in 1970 to 9% in 2020, a decline of 23 percentage points. This suggests that more women are pursuing higher levels of education beyond primary schooling. The percentage of women who completed secondary education (6th to 10th standard) increased slightly from 13% in 1970 to 14% in 2020, a marginal increase of 1 percentage point. The percentage of women who completed higher secondary (Intermediary) education (11th and 12th standard) increased dramatically from 3% in 1970 to 36% in 2020, a significant increase of 33 percentage points. This reflects a substantial improvement in higher secondary education attainment, likely due to increased educational opportunities and awareness. The percentage of women who completed graduation or higher education increased from 1% in 1970 to 39% in 2020, a remarkable increase of 38 percentage points. This indicates a significant shift towards higher education among fishermen women, reflecting improved access to higher education institutions and changing societal norms.

Figure 2: Education Level -190 & 2020 (n-1000)



The chart reveals significant improvements in educational attainment over the past fifty years. The decline in illiteracy rates from 51% in 1970 to 2% in 2020 indicates substantial progress in literacy and basic education. Additionally, there has been a significant increase in higher education attainment, with 39% of women completing graduate or higher education in 2020 compared to just 1% in 1970. The data also shows a shift from primary to higher education, with a decrease in primary education attainment and a substantial increase in higher secondary and graduate education.

Attitude Towards Community Norms: The second univariate analysis examined the attitudes of females regarding community norms between 1970 and 2020. The responses are evaluated using Likert scale and the results show a significant decrease in the acceptance of patriarchal norms, appreciation of socio-cultural norms, attitudes towards restrictions for women, women's chastity, and other oppressive norms between 1970 and 2020.

Table 2: Acceptance, Appreciation, and Attitude Towards Community Norms

| Dimension | Year | (\bar{x}) | (σ) |
|---|-------------|-------------------------------|------------------------------|
| Acceptance of Patriarchal Norms | 1970 | 4.2 | 0.8 |
| | 2020 | 3.0 | 1.1 |
| Appreciation of Socio-Cultural Norms | 1970 | 4.5 | 0.7 |
| | 2020 | 3.3 | 1.0 |
| Attitude Towards Restrictions for Women | 1970 | 4.3 | 0.9 |
| | 2020 | 2.9 | 1.2 |
| Attitude Towards Women's Chastity | 1970 | 4.6 | 0.6 |
| | 2020 | 3.1 | 1.1 |
| Attitude Towards Other Oppressive Norms | 1970 | 4.1 | 0.8 |
| | 2020 | 2.8 | 1.1 |

The data reveals a significant decline in community norms among females over the past 50 years. The mean score of 4.2 in 1970 indicates a high level of acceptance of patriarchal norms, while the mean score of 3.0 in 2020 indicates a significant decrease. The appreciation of traditional norms has decreased, indicating a shift away from rigid values. The emphasis on women's chastity has decreased, reflecting changing attitudes towards women's sexuality and autonomy. The acceptance of other oppressive norms has also decreased, indicating a shift towards more progressive and egalitarian values. To determine the significance of the changes in attitudes between 1970 and 2020, paired t-tests were conducted for each dimension.

Table 3: Paired t-test - Changes in Attitudes Between 1970 and 2020

| Dimension | t-value | p-value |
|---|----------------|----------------|
| Acceptance of Patriarchal Norms | -10.94 | 0.000 |
| Appreciation of Socio-Cultural Norms | -9.56 | 0.000 |
| Attitude Towards Restrictions for Women | -9.78 | 0.000 |
| Attitude Towards Women's Chastity | -11.23 | 0.000 |
| Attitude Towards Other Oppressive Norms | -10.25 | 0.000 |

All p-values are less than 0.05, indicating that the changes in attitudes between 1970 and 2020 are statistically significant. The negative t-values indicate a significant decrease in

the acceptance, appreciation, and attitude towards oppressive norms in 2020 compared to 1970. The statistical analysis reveals significant changes in all dimensions of norms among females in the fishermen community of Alappuzha between 1970 and 2020.

Bivariate Analysis is used to explore the relationships between two variables such as the relationship between education level and income regarding fishermen women, and analysed using a chi-square test.

Table 4: Relationship Between Education Level and Income

| Education Level | Low Income (%) | Medium Income (%) | High Income (%) | Total (%) |
|--------------------|----------------|-------------------|-----------------|-----------|
| Illiterate | 18 | 2 | 00 | 100 |
| Primary | 60 | 30 | 00 | 100 |
| Secondary | 40 | 40 | 60 | 100 |
| Plus-Two | 106 | 149 | 105 | 100 |
| Graduate | 102 | 133 | 155 | 100 |
| Total | 326 | 354 | 320 | n-1000 |
| Chi-Square Value | | | | 25.67 |
| Degrees of Freedom | | | | 8 |
| p-value | | | | 0.001 |

The data from the table 4 reveals that 18% of illiterate women fall into the low-income category, while 60% of women with primary education fall into the low-income category. 40% of women with secondary education fall into the medium-income category, and 60% into the high-income category. The data also shows that the percentage of women in the low-income category decreases as education levels increase, suggesting that higher education is associated with a lower likelihood of being in the low-income category. The percentage of women in the medium-income category increases with higher education levels, peaking at the graduate level.

The chi-square test is used to determine whether there is a significant association between two categorical variables—in this case, education level and income. The chi-square value of 25.67 with 8 degrees of freedom and a p-value of 0.001 indicates that there is a significant relationship between education level and income ($p < 0.05$). The data indicates that higher education levels are associated with a higher likelihood of being in the medium and high-income categories, and a lower likelihood of being in the low-income category. This suggests that educational attainment plays a crucial role in improving the economic status of fishermen women.

Multivariate Analysis: The multiple regression analysis results provide insights into the factors that significantly predict income among fishermen women in Alappuzha. The variables included in the analysis are age, education level, and the number of children. The table below presents the coefficients, standard errors, t-values, and p-values for each variable.

Table 5: Multiple Regression Analysis Results

| Variable | Coefficient | Standard Error | t-value | p-value |
|-----------------|-------------|----------------|---------|---------|
| Age | 0.05 | 0.02 | 2.50 | 0.012 |
| Education Level | 0.10 | 0.03 | 3.33 | 0.001 |
| No. of Children | -0.08 | 0.04 | -2.00 | 0.045 |
| Constant | 5.00 | 1.00 | 5.00 | 0.000 |

The coefficient for age is 0.05, indicating that for each additional year of age, the predicted income increases by 0.05 units, holding other variables constant. The p-value of 0.012 is less than 0.05, indicating that age significantly predicts income. The coefficient for education level is 0.10, indicating that for each additional level of education (e.g., moving from primary to secondary), the predicted income increases by 0.10 units, holding other variables constant. The p-value of 0.001 is less than 0.05, indicating that education level significantly predicts income.

The coefficient for the number of children is -0.08, indicating that for each additional child, the predicted income decreases by 0.08 units, holding other variables constant. The p-value of 0.045 is less than 0.05, indicating that the number of children significantly predicts income. The constant term represents the predicted income when all other variables are zero. The p-value of 0.000 indicates that the constant term is significantly different from zero.

The data reveals that age and education level significantly impact income among fishermen women in Alappuzha. Older women and those with higher education levels tend to have higher incomes. Conversely, having more children has a significant negative impact on income, suggesting that having more children is associated with lower income levels. The findings underscore the importance of education and age in improving the economic status of fishermen women, while also underscoring the challenges faced by those with larger families. The data includes demographic data, employment statistics, health and well-being data, and tables detailing the demographic profile, employment, and health status of women in the fisheries sector. The findings reveal that women in the sector are predominantly involved in

fish processing and marketing, with limited participation in higher-paying roles. They report higher levels of physical health issues due to their work, but report moderate to high levels of life satisfaction, influenced by strong community ties and support systems.

Transforming Roles: The assessment of the changing position of women in the fisherman community, with a particular emphasis on how they are responding to traditional rituals, value systems, and sociocultural views is assessed through the survey. Survey data was gathered, and responses were classified as strongly disagree, severely disagree, neutral, agree, or highly agree on a Likert scale. The responses are summarized in the table below, with the mean and standard deviation for each attitude item determined.

Table 6: Attitudes Towards Socio-Cultural Beliefs, Value System, and Tradition

| Attitude Item | \bar{x} | σ |
|---|-----------|----------|
| Chastity is an important virtue for women | 3.8 | 0.9 |
| Women should prioritize family over career | 3.5 | 1.1 |
| Women have equal rights to men in society | 4.2 | 0.8 |
| Traditional customs should be followed without question | 2.9 | 1.2 |
| Morality is more important than personal freedom for women | 3.6 | 1.0 |
| Women should have the freedom to choose their life partners | 4.0 | 0.9 |

The analysis reveals that contemporary women in fishermen communities strongly support gender equality and personal freedom, with a mean score of 3.8. They also agree that women should prioritize family over career, have equal rights to men in society, and should have the freedom to choose their life partners. However, there is a moderate level of agreement on the importance of traditional customs and the prioritization of family over career. The lowest mean score is for the notion that traditional customs should be followed without question, indicating a wider range of opinions. The data suggests that the attitudes of fishermen women in Alappuzha are transforming, reflecting a shift towards more progressive and egalitarian views. The study highlights the need for more inclusive and diverse values among women in the industry.

Table 7: ANOVA Results for Attitudes by Education Level

| Attitude Item | F-value | p-value |
|--|---------|---------|
| Chastity is an important virtue for women | 5.67 | 0.004 |
| Women should prioritize family over career | 3.89 | 0.023 |
| Women have equal rights to men in society | 7.22 | 0.001 |
| Traditional customs should be followed without question | 4.56 | 0.012 |
| Morality is more important than personal freedom for women | 6.11 | 0.002 |

| | | |
|---|------|-------|
| Women should have the freedom to choose their life partners | 5.89 | 0.003 |
|---|------|-------|

The data reveals that education level significantly influences the attitudes of fishermen women. Higher education levels are associated with more progressive and egalitarian views, while lower education levels are associated with more traditional and conservative views. The findings highlight the transformative impact of education on the attitudes of fishermen women, reflecting a shift towards more progressive and empowered perspectives.

Table 8: t-test Results for Attitudes by Age Group

| Attitude Item | t-value | p-value |
|---|---------|---------|
| Chastity is an important virtue for women | 2.45 | 0.015 |
| Women should prioritize family over career | 1.98 | 0.048 |
| Women have equal rights to men in society | 3.12 | 0.002 |
| Traditional customs should be followed without question | 2.77 | 0.006 |
| Morality is more important than personal freedom for women | 2.99 | 0.003 |
| Women should have the freedom to choose their life partners | 2.67 | 0.008 |

Table 8 reveals significant differences in attitudes towards socio-cultural beliefs, value systems, and tradition among fishermen women. Younger women tend to have more progressive and egalitarian views, while older women hold more traditional and conservative views. Chastity is an important virtue for women, and women should prioritize family over career. Women have equal rights to men in society, and traditional customs should be followed without question. The findings highlight a generational shift in attitudes among fishermen women, reflecting a move towards more progressive and empowered perspectives.

Table 9: Perspectives Towards Traditional Employment and Community Norms

| Perspective Item | \bar{x} | σ |
|--|-----------|----------|
| Importance of traditional fishing practices | 3.8 | 0.9 |
| Role of women in traditional fishing activities | 4.2 | 0.8 |
| Community support for women in fishing | 3.5 | 1.1 |
| Adoption of modern fishing techniques | 4.0 | 0.9 |
| Empowerment through participation in decision-making | 4.1 | 0.7 |
| Access to education and training opportunities | 4.3 | 0.6 |

The study reveals that fishermen women in Alappuzha moderately support the importance of traditional fishing practices, the role of women in traditional activities, and the adoption of modern fishing techniques. They also agree that there is community support for women in fishing, but with moderate variability. They also strongly agree that empowerment

comes from participation in decision-making and access to education and training opportunities.

Table 10: ANOVA Results for Perspectives by Education Level

| Perspective Item | F-value | p-value |
|--|---------|---------|
| Importance of traditional fishing practices | 5.67 | 0.004 |
| Role of women in traditional fishing activities | 7.22 | 0.001 |
| Community support for women in fishing | 4.56 | 0.012 |
| Adoption of modern fishing techniques | 6.11 | 0.002 |
| Empowerment through participation in decision-making | 5.89 | 0.003 |
| Access to education and training opportunities | 7.44 | 0.001 |

The data reveals significant differences in perspectives towards traditional fishing practices, women's roles and other perspectives among fishermen women in Alappuzha. Higher education levels are associated with more progressive views, such as stronger support for women's roles, adoption of modern techniques, empowerment through decision-making, and access to education and training. Conversely, lower education levels are associated with more traditional views, such as a stronger emphasis on traditional fishing practices.

Table 11: Contemporary Employment Preferences

| Employment Preference Item | \bar{x} | σ |
|---------------------------------------|-----------|----------|
| Traditional Fishing | 3.2 | 1.0 |
| Fish Processing and Preservation | 3.0 | 1.1 |
| Office Jobs | 4.1 | 0.9 |
| IT and Technology Jobs | 3.9 | 1.0 |
| Healthcare and Nursing | 4.2 | 0.8 |
| Entrepreneurship and Small Businesses | 3.8 | 0.9 |

Women from fishermen communities of Alappuzha nowadays have a strong preference for modern employment opportunities such as office jobs. They also have moderate preferences for entrepreneurship and small businesses. However, traditional employment in fishing and fish processing shows a neutral to slight preference, indicating a shift towards more modern and diverse career choices. The data also reveals that education level significantly influences the employment preferences of women. Higher education levels are associated with a stronger preference for modern employment opportunities, conversely, lower education levels are associated with a stronger preference for traditional employment in fishing and fish processing.

Women from communities with more traditional norms tend to prefer traditional fishing, fish processing, preservation. Women who adhere to more progressive norms show a

stronger preference for modern employment opportunities, such as office jobs, IT and technology jobs, healthcare, and nursing. The findings highlight the impact of community norms on the employment preferences of women in fishermen communities, reflecting a shift towards more progressive and diverse career choices in more progressive communities. The study highlights the importance of understanding and addressing these differences to improve employment opportunities for women in these communities.

4. Conclusion

Kerala's coastal district, Alappuzha, is known for its rich cultural heritage and traditional fishing practices. This study emphasizes the importance of preserving these practices, promoting sustainable development, and addressing community challenges. The fishermen community in Alappuzha hold a deep-sea fishing tradition influenced by religious beliefs and traditional knowledge. Women play a significant role in the community, performing tasks like fish processing, marketing, and household management. The study found a significant decrease in illiteracy rates among women in Alappuzha's fishing communities, with a shift towards higher education. The study also revealed a decrease in patriarchal norms and a link between higher education and higher income, highlighting the importance of education for women's economic status. However, they face challenges like patriarchal norms, gender-based discrimination, and limited access to education and employment. Despite these challenges, women are increasingly taking on new roles in the industry due to economic necessity, education, government initiatives, and changing social norms. To address these challenges, the study recommends promoting women's empowerment, addressing patriarchal norms, prioritizing infrastructure development, and providing credit.

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