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Physiological Hazards of Deep-Sea Fisherman of Purba Medinipur District, West Bengal, India: An Overview

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Abstract

From July to March of each year, deep-sea fishermen harvest a variety of sea fish. Fishermen operate in challenging meteorological conditions, such as variations in the pH of saltwater, variations in the quantities of carbon dioxide and oxygen, salinity of the water, etc. Their eating habits differ from those of their home surroundings, and they tend to work a lot and have trouble sleeping. These individuals also routinely consume alcohol and nicotine as part of their hobbies. According to the literature review, there isn't a comprehensive, scientific database on the physiological risks that the people living in the coastal Purba Medinipur area of West Bengal face. Deep-sea fishermen may experience numerous physiological and nutritional alterations as a result of this dangerous employment. Thus, we make an effort to learn as much as we can about the physiological conditions and other details of the residents of this community. For the deep-sea fisherman health study, many physiological and anthropometric factors, haematological parameters, biochemical indicators of blood and urine, and dietary assessment are crucial. We read a tonne of research publications, review works, and newspapers about deep-sea fisherman in addition to using several search engines (Pub made, Google Scholars, etc.) to gather information. Following an investigation of various health-related data from multiple sources, it has been determined that deep-sea fisherman may experience changes in all of their nutritional and health-related indicators when fishing.

Keywords: Fishing trip, socio-economic status, food habits, physiological changes, anthropometric changes.

1. Introduction:

A significant aspect of the fisherman's job is capturing fish and other aquatic species from ponds, channels, rivers, seas, etc., which boosts the local economy. About 34 million people work in marine fisheries worldwide, and in 2009, they caught close to 80 million tonnes of fish (FAO, 2011). It was reported by Manasi et al. (2009) that about 60 million people work as fishermen. The majority of the fish was harvested from both coastal and inland waters. According to other data, fish farming is practiced on around 1.6 million hectares of land in India, which includes lakes, ponds, and marshes, as well as 64,000 kilometres of rivers and

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streams (Kumbhar, 2017). The Bay of Bengal's deep-sea region differs from the regular fishing zone in terms of its nature. There are two main zones in the deep sea where fishermen collect fish and other animals: permanent fishing zones and temporary fishing zones. The Bay of Bengal, which spans an area of over 21,72,000 km2 and has an average depth of 2,600 m with a maximum depth of 5,258 m, is the largest bay in the world (Sekhar et al., 2006).

There are seven major and seventy minor fishing harbors in India. The major ports are Vizag, Kochi, Calcutta, Mangalore, Pipavav, Krishnapatanam, and JNP. Similar to this, West Bengal has a number of fishing ports. The two main ones are the Digha coastline area of Purba Medinipur districts and the Kakdwip of South 24 Paraganas. Petuaghat Fishing Harbour was created in the Purba Medinipur district, close to the Rasulpur river's mouth. M. K. Narayanan founded this harbour in 2010, making it the seventh largest fishing port in India. The ice mill, ice house, fake fabric centre, trailer oil sales centre, trailer repair centre and other facilities that are crucial to the preservation of deep-sea fishing are located on this roughly 11.8-hectare portion of the port. 25 deep-sea and 300 mechanised fishing vessels were deployed into Petuaghatharbors at the beginning of the operation (The Indian Express Journalism of Courage, December 10, 2010). For the average person who fishes either directly or indirectly, all of these fishing harbours are their main source of income.

Large numbers of people, both male and female, have been engaged in this profession for generations in the coastal region of the Purba Medinipur district. When going on a deep-sea fishing excursion, a number of factors, including climate change, intense rains, lightning, strong storms, etc., might cause various problems for fisherman. In 2021, Amrutha and Krishnan estimated that 47.72% of fishing vessels in Kerala had accidents in various harbors. Due to their careless navigation, prolonged hard effort, lack of high contractions, and design with the stability of trawlers or machine boats, among other factors, fishermen in Britten have a significant fatality rate on fishing trips (Schilling, 1971). Numerous studies have demonstrated that working as a fisherman in deep-sea environments is riskier and that there are numerous physiological risks. Deep-sea fishermen experience mental strain as a result of their work. Working in uncomfortable conditions, the stress level on the fisherman's body and mind increases. Significant study indicates that fishermen will perform better if their stress levels are lowered (D' Souza et al., 2017).

Deep-sea fisherman do not receive higher monthly earnings. This is a seasonal occupation that is only allowed for six to nine months out of the year. They work at other jobs to make money throughout the remaining months. In the United States, deep-sea fishermen receive a range of incomes and compensation, including higher, medium, and lower pay of $48,170, $28,530, and $18,170, respectively (Gurvinder, 2019). The average yearly pay for Indian commercial fishermen is $311,614 (ERI Economic Research Institute, 2014). West Bengal state fishermen's salaries are broken down into three categories: low, average, and high. These categories are represented in Indian rupees and are 9,760.00, 24,500.00, and 57,400 per month, respectively (Salary explorer, 2024).

The aim of this review is to collect data regarding the frequency of physiological and psychological changes that occur during deep-sea fishing among fishermen in the Purba

Medinipur area of West Bengal state. Concurrently, we anticipate the development of the currently incomplete database of these fishermen.

2. Nature and Environmental Condition of Fishing Trip Area:

The International Council for Sea Explorations (ICSE) states that deep-sea fishermen harvest marine species at depths beyond 400–500 meters (Clarke et al., 2003). During fishing season, the seafarers employed a variety of fishing trawlers. David Allan created the first screw-propelled stem trawler in history in 1877. The Dogger fishing trawler was initially deployed in the North Sea. Based on the gear that is employed in the trawler, the Food and Agriculture Organisation of the United Nations (FAO) has classed fishing trawlers into ten categories. The aforementioned trawler kinds are: side trawler, stern trawler, freezer trawler, wet fish trawler, purse seiner trawler, outrigger trawler, beam trawler, otter trawler, pair trawler, and naval trawler. Modern fishing trawlers are utilized by sea fishermen these days. This kind of trawler has more advanced electronics and communication gear, as well as a fish detection gadget with more gear control capability. Radar, fish detecting devices, and other contemporary navigating tools are all utilized for distinct purposes. The navigational tools that are most frequently used to manage the boat during a fishing trip are the autopilot and GPS. The radar that keeps two trawlers apart in the ocean. To locate sea fish, devices such as sonar and echosounders are employed as fish detecting tools. Because they are going fishing, the fishermen carry ice in their trawlers to store the catch. To avoid destroying or damaging fish during a fishing expedition, processing or conservation of the fish is required. The ocean's depth is separated into the following five levels, or zones, from sea surface to depth:

- Epipelagic zone, also known as the Sunlight zone (200 meters below the sea's surface): This is the sea's surface layer, also known as the Sunlight zone. There is visible light here. Shark shoals can be found in this area, where dolphins can be seen in the wild and fish schools' function.
- Mesopelagic zone, also known as the Twilight zone (200–1000 meters): This zone is located beneath the epipelagic zone. There are many odd and exotic fish, squid, krill, and jellyfish living in this layer.
- The twilight zone is the stratum between 1000 and 4000 meters, known as the Bathypelagic or Midnight zone. Very low levels of sunlight can pass through this stratum. This is the nighttime or dark zone. The creatures that inhabit the area are either red or black in colour.
- Abyssopelagic or Abyss zone: The term "abyssal zone" refers to the 4000–6000 meter Abyssopelagic or Abyss zone. The layer's temperature is extremely low-almost frozen. There is no light in this layer.
- Hadalpelagic or Trenches zone: this layer, which extends from 6000 meters to the sea floor, has temperatures that are just above freezing. There is a lot of pressure in the zone. This stratum is home to several invertebrates, such as starfish and tube worms (Sea and Sky presents the sea, 1998 – 2016).

Although the ocean's main characteristics include high pressure, little sunshine, sharply dropping temperatures, and low oxygen levels, animals can still survive there. In contrast, certain parts of the ocean have no oxygen at all, which means that only anaerobic microorganisms can thrive there (Joelle, 2014). During fishing expeditions, the deep-sea fisherman employed six distinct methods (Clearias team, 2023). These are the following:

- Trolling: This method involves dragging a bait or lure behind a moving boat through the water.
- Bottom fishing: In this method, bait is lowered to the ocean's floor.
- Jigging: To draw fish, a lead-weighted bait is lowered to the ocean floor and raised and lowered again.
- Drifting: The boat is permitted to float with the tide in this scenario as the bait is lowered. the lure used to draw fish.
- Chumming: To draw fish, fish bait is strewn across the water. 6) Deep dropping: In this technique, bait is lowered to the ocean's floor.

The working hours of fishermen are erratic, and they perform dynamic work in demanding environments. Their work area is the fishing vessel's deck. For the fisherman's comfort and safety, wearing insulated and waterproof gear is crucial. Fishermen carry out a variety of tasks during their trips, such as operating or assisting the trawler, deploying nets, locating fishing grounds or fish schools using GPS, sonar, and other navigational aids, maintaining and repairing fishing equipment, sorting and properly storing different types of fish, keeping track of the volume of fish caught, and selling or marketing the fish to wholesalers or retailers, among other tasks (Career insights, 2014). Out of 14.5 million fishermen in India, there are 1.7 million full-time fishermen, 1.3 million part-timers, and 2.3 million sporadic fishermen (Shinvendra Kumar Singh, 2018). The following marine fish are caught by deep-sea fishermen: prickly lanternfish (Myctophum asperum), tripod spider fish (Bathypteroisgrallator), Pacific black dragon (Indiacanthusgrallator), viperfish (Chauliodussloani), and black ruff (Imants G Priede, 2017). The most well-known invertebrate, marine prawns, are saltwater creatures that pose a threat to human populations. The majority of marine prawn species are nocturnal crustaceans that eat algae, polyps, and other nighttime food sources like corals. The deep water is home to a variety of animal species, including cleaner shrimp, banded coral shrimp, peppermint shrimp, and camelback shrimp. There are roughly 53 fish landing centers in West Bengal, which are spread among the districts of Purba Medinipur, N-24 Parganas, and S-24 Parganas. The West Bengal Marine Fishing Regulations Act of 1993 and the Marine Fishing Regulations Act of 1995 are significant laws that protect the interests of underprivileged fishermen and make use of marine resources (Jiyaur Rahman, 2022).

3. Socio-economical condition of fisherman:

India is among the numerous nations whose economies have benefited from the fishing sector. The relationship between economic status and social behaviour is known as socio-economics. Since it dealt with the physiological changes of the people, the socioeconomic situation

measurement of fishermen is the most significant aspect of this review. The following elements make it feasible to conduct socioeconomic studies on fishermen:

3.1. Age:

Significant research conducted in 2015 by Kalita and Deka et al. demonstrates that the fishermen were aged 21 to 60 or older. Most fishermen are between the ages of 41 and 50. However, the number of fishermen between the ages of 51 and 60 is extremely small. According to another study, there are no fishermen in the Purba Medinipur district who are younger than 18 or older than 65. The district has 20% of fishermen who are 18 to 30 years old, 49% who are 31 to 45 years old, and 31% who are 46 to 65 years old (Sushil, 2023).

3.2. Sex:

There are both male and female fishers. According to research, of the 1100 fisherman population, 675 (61.3%) and 425 (38.5%) are male and female, respectively. (Kailash et al., 2014). The female fisherman worked in the market, made fishing tools, harvested fish, and handled fish. In this line of work, they conducted heard work (Nazibar et al., 2021). Males also fish in the deep sea. Information regarding female deep-sea fishermen is nonexistent.

3.3. Education:

As per the 2010 census conducted by the Central Marine Fisheries Research Institute (CMFRI), around 57.8% of fishermen have completed their education. In elementary school, there are 15.0% men and 13.9% women who fish. In the upper secondary school, there are 10.9% female and 13.2% male fisherman. Just 2.7% of people in the population-20% of women and 2.7% of men-have completed higher secondary education. According to this census, the percentage of illiterate fishermen is 42.2%; for males and females, it is 21.0% and 21.2%, respectively. According to a different Kadam study from 2015, the percentage of literate and illiterate fishermen is 45.16% and 54.73%, respectively. According to Shankar's 2010 study, there are relatively few highly educated fishermen. 46.66% of fishermen only have a primary education, 26% have a higher secondary education, and 13.33% are illiterate. Most fisherman lack formal education and are illiterate. The educational status of deep-sea fishermen in the Purba Medinipur area of West Bengal is not available.

3.4. Income:

Deep-sea fishermen put in a lot of overtime. They have a seasonal work schedule. The fisherman made between INR 2,500 and 3,000 a month, but they are impoverished. The fishermen in Andhra Pradesh's coastal communities also make money from agriculture (such as paddy, tobacco, coconut, etc.) and salt manufacturing (Jacob et al., 2016). According to a different 2014 survey by Panigrahi and Bakshi, the majority of fishermen make between INR 2,500 and INR 5,000 per month. Fishermen's monthly income in the Parbhani area of Maharashtra state varies according to age. The people's monthly salary ranges from INR 500 to 1000 for those in their 20s and 30s to INR 1500 to 4000 for those in their 50s and 60s. The fishermen do not receive any money during the off-season (Kadam MS, 2015). According to Sushil et al.'s research from 2023, 65% of West Bengal state's fishermen made between INR

45,000 and 65,000, while 30% made between INR 70,000 and INR 1, 00000 yearly. Just 5% of fisherman make more than INR 1,00000 each year.

3.5. Family Size:

The total number of family members is a significant socioeconomic evaluation element. The size of the family is directly correlated with the family's level of education and finances. According to a 2010 Shankar study, there are more join families than nuclear families-57.33 percent versus 42.666 percent, respectively. Less than five family members and more than five family members were the two main groups in the study, with outcomes of 30.66% and 69.34%, respectively. Another study about family size of fishermen reported that less than 5 members 18.75% and 5 to 6 members of family 37.50% and 7 or more numbers of family size is 43.75% (Kumar et al., 2018). Most important research of fishermen of West Bengal state shows that join family and nuclear family are 15% and 85% respectively. There is a greater number of nuclear family (Sushil et al., 2023).

3.6. Religion and Caste:

The socioeconomic description factors include caste and religion. In the Purba Medinipur district, Hindus make up the majority of the fisherman. According to Sushit et al. (2023), there are 5% of Muslims and 95% of Hindus who fish. Information regarding the percentage of deep-sea fisherman in the state of West Bengal who are divided based on caste and religion is not yet accessible. In India, 75.47% of fishermen are Hindu, 15.21% are Christian, and only 9.28% are Muslim, according to the CMFRI census conducted in 2010. The SC/ST fishermen's family is represented in this census at 16.6%. Goa, India does not have any SC/ST fishermen's families. There are extremely few SC/ST fishing households in Kerala, Daman, Diu, Andhra Pradesh, and Puducherry, India. The SC/ST families in the states of West Bengal and Orissa differ from one another by 54.8% and 59.3%, respectively.

4. Food habits of fisherman:

Sea fishing is a fisherman's main source of income. During the off-season, raising chickens, farming, driving, and other jobs are the secondary professions of fishermen (Sarker et al., 2017). Deep-sea fisherman have a distinct kind of eating pattern than people in other occupations. The length of each fishing excursion varies between eight and ten days. They are carrying local vegetables, various dry goods, etc. for this excursion. The fishermen frequently consume a variety of saltwater species while out fishing. The majority of marine fish are enhanced with minerals and proteins (Ramchandra, 2015). Increased levels of omega-3 fatty acids found in sea fish may help prevent heart disease (Andrea et al., 2023). Krynicki claims that the high-calorie diet and mental stress associated with the fishing industry cause hyperglycemia and diabetes mellitus. Micronutrients are inadequate in the diets of fishermen in Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu, according to significant research published in 2002 on the national status and socioeconomic empowerment of these women. When fishing, fishermen frequently eat a lot of fruits and vegetables, which can hasten the onset of diabetes mellitus (Cooper et al., 2012). Because fishing is not their primary occupation, fishermen can make a living by doing other jobs. During the off-season, fishermen's monthly revenue is quite low, making it difficult for them to purchase enough wholesome food for their

families. Fishermen habitually consume alcohol at an excessive level, in contrast to the general public (Lawrie, 2004). According to significant research, out of the 825 fishermen in the Karnataka community, 64.2% and 45.6%, respectively, are hooked to alcohol and tobacco (Rahaman et al., 2021).

5. Physiological Changes of fisherman:

The scientific study of a biological system's composition, functions, and mechanisms is known as physiology. The various physiological parameters-heart rate, blood pressure, pulse rate, respiration rate, etc.-can indicate whether an organism is in a normal or impaired physiological state. This review looks on the physiological changes that deep-sea fishermen experience after a pint.

5.1.General Sign and Symptoms:

Working as a deep-sea fisherman in the ancient marine environment is extremely risky. The folks that work are heavy workers. The sort of workforce typically exhibits signs and symptoms such as decompression sickness and hypothermia. Hypothermia can result from prolonged exposure to cold water, whereas decompression sickness can be caused by the development of nitrogen bubbles in a rapidly changing atmospheric deep-sea environment. Deep-sea fishermen frequently experience joint discomfort, exhaustion, dyspnea, and other symptoms (John Anderson, 2024).

5.2.Cardio-vascular changes:

The heart and blood vessels comprise the cardio-vascular system. The entire body receives blood from this system. Oxygen, nutrients, vitamins, and other substances are able to enter living cells, while waste materials and carbon dioxide are taken out of the body and eliminated through the excretory organ system. The cardiovascular system of the fisherman is compromised. One of the most prevalent symptoms of deep-sea fishermen is hypertension, or elevated blood pressure. According to research by Sk. Naziber Rahaman and his colleagues, the Indian fishing population suffers from obesity and hypertension, which may be related to a regular use of foods high in fat (Rahaman et al., 2024). According to another study, the community of fishermen is severely impacted by hypertension. Indian fishermen have a demanding lifestyle and frequently experience symptoms of high blood pressure due to a lack of knowledge about certain diseases (Balasundaram, 2018). Research by Gopal Muthukrishnan (2018) and his colleagues indicates that obesity and hypertension have a major impact on fishermen. The study team discovered that while smoking and hypertension are unrelated, alcohol consumption is linked to hypertension in the fishing population.

5.3.Respiratory or pulmonary changes:

The pharynx, nose, nasal cavity, diaphragm, bronchi, and lungs make up the respiratory system. The respiratory system purges the body of waste carbon dioxide and adds oxygen to the circulation. According to research conducted in 2015 by Gomathy Parasuraman and his team, three different types of respiratory disorders were discovered in 13.6% of fishermen who reported having them. The percentages of those suffering from lower respiratory tract infections, upper respiratory tract infections, and persistent cough with hemoptysis are 9.2%,

3.6%, and 0.1%, respectively. According to significant study, asthma, a protracted cough, dyspnea, and other symptoms are widespread among fishermen (Shiryaeva et al., 2015). Additional research by Lawrie et al. (2004) demonstrates that respiratory issues are a typical sign for deep-sea fishermen.

5.4.Muscular-skeletal problems:

Skeletal muscle, also known as voluntary muscle, bone, ligament, and tendon make up the muscular-skeletal system. This system is essential to an animal's ability to move its various bodily parts and to move around. The term "musculoskeletal disorders" refers to a group of conditions that include myalgia, pain in the muscles, bone, ligament, and tendon, joint, back, and chest discomfort, as well as pain from nerve compression. This illness is caused by damage to the tendons, muscles, joints, bones, etc. There are two types of muscular-skeletal pain: acute and chronic (Angela M. Bell, 2021). Because they go fishing in a maritime environment, fishermen perform labor-intensive tasks. Musculoskeletal diseases affect the majority of fishermen. Low back pain, shoulder pain, knee pain, and hand pain are frequent among laborers. Out of 110 fishermen, a cross-sectional study report reveals that the percentage of those with low back pain is high (92.4%) compared to those with shoulder 64.8%, knee 31%, and hand pain 25% (Tejashree et al., 2014). Several prevalent reasons for the issues faced by fishermen are recognized. These are:

- Repetitive movements of body.
- Upper limb’s forceful movement.
- Excessive force
- Long time for awkward postures.
- Long time for standing.
- Heavy working loads.

According to significant studies, ergonomic and organizational changes can reduce the incidence of this occupational musculoskeletal illness (Omar et al., 2024).

5.5.Hematological Changes:

The study of blood, including its origin, prognosis, treatment, and prevention, is known as hematology. This study examines a number of topics, including hemoglobin, blood proteins, coagulation, the spleen, hemophilia, anaemia, and bleeding diseases. The purpose of this review is to determine whether deep-sea fishermen's hematological alterations following fishing excursions.Data regarding the hematological alterations of Purba Medinipur district's deep-sea fisherman are not currently available. Gomathy et al. (2015) found that a small percentage of fisherman experience the hematological abnormalities listed below:

- Hypoglycemia: This is due to low level of blood glucose level than normal.
- Anemia: Anemia is noted due to lacking of blood hemoglobin level.

- Hypothyroidism: This is defined as while decreased level of thyroid hormone.
- Hypokalemia: Hypokalemia is due ti lacking of blood level of potassium.

5.6.Dermatological changes:

The skin is outermost covering protective layer of body. The skin performs several functions. These are:

- The skin protects the body from mechanical force or injure.
- The skin protects the body from UV rays.
- The skin helps synthesis of vitamin D in presence of sunlight.
- The skin helps to identify the nutritional status of an organism.
- From the view of skin, the different disease condition and immunity state can identification is possible.
- The sweat glands of the dermis layer of skin secrets sweat that plays role in thermolysis and maintain the normal body temperature in worm blooded animals include human.
- The sebaceous glands of skin secret the oily sebum that protect the microbial infection of skin and maintain the oily and flare of skin.

The area of medicine known as dermatology is dedicated to the detailed examination of skin, hair, and nail issues. In this review, we want to investigate the variations in deep-sea fishermen's usual dermatological conditions. A significant study conducted in 2023 by Zainab et al. identifies some dermatological issues that fishermen face. When fishing in the deep sea, the following issues come up. The fisherman handled fishing nets, hooks, ropes, gear, fish baskets, and other items among his many tasks. Long periods of direct exposure to marine organisms, equipment, and sea ambient conditions all contribute to the skin issues that fishermen face.

- Cuts and lacerations of hands and fingers due to utilization of sharps knives and fishing hooks.
- Abrasions and scrapes of skin due to use of fish scales, nets etc.
- Bacterial infection of skin may lead by fish spines, sea urchins and other marine creatures.
- Allergic reactions on skin of fisherman are noted from marine organisms like certain species of fish or jellyfish.
- Sunburn as well as redness, pain, peeling of skin of fisherman is noted. These problems can develop from long time exposed of sun light on skin without any protection for skin.
- Fungal infection on fisherman’ skin is developed by moist and humid sea environments.

- Parasitic infection on fisherman' skin is noted. This infection cause of sea lice and marine worms. This infection results skin irritation, itching and inflammation.

5.7.Digestive changes:

The human digestive system is responsible for breaking down and absorbing food ingredients. Abdominal discomfort, constipation, diarrhoea, bloating and gas, heartburn, chest pain, nausea, itching in the anal area, chills, and other symptoms are accelerated by impaired digestion and absorption (Angelica Bottaro, 2024). According to Gomathy et al.'s research from 2015, symptoms of alcoholic cirrhosis, peptic illness, vomiting, constipation, and abdominal pain are common among fishermen.

5.8.Renal changes:

The kidney is the principal organ of the renal system. Through the production and excretion of urine, the kidney eliminated waste products and excess water. A person's employment and way of life may affect their kidneys. Urinary tract infections, pyelonephritis, nephritic syndrome, renal calculi, and other uncommon symptoms are observed in fisherman (Gomathy et al., 2015). Research on the renal alterations seen by Purba Medinipur district's deep-sea fishermen following a year-long fishing season is lacking.

5.9.Development of disease:

Research has shown that fishermen experience a variety of physiological issues. Sengupta et al. (2011)'s research demonstrates that deep-sea fishermen may have a variety of illnesses, such as tuberculosis, lung infections, skin infections, AIDS, cancer, etc. A significant case study on the fishermen of Ennore Creek reveals that, out of 780 fishermen, the following percentages of problems were noted: respiratory diseases (13.6%), systemic disorders (11%), orthopaedic and musculoskeletal disorders (14.4%), gastrointestinal problems (10.9%), skin problems (9.7%), ENT problems (8.3%), gynaecological disorders (6.9%), eye problems (4.2%), cardio vascular problems (3.6%), central nervous system problems (3.5%), and genitor-urinary disorders problems (2.6%), etc. (Parasuraman et al., 2015)..

6. Anthropometric changes of fisherman:

The measuring of the human body is called anthropometry or anthropometric measurement. The Greek words "anthropos" and "metron," which signify "human," are the origin of the word "anthropometric." The weight machine, stadiometers, anthropometers, biocondylar, flexiable tape, skinfold calipers, and other tools are used in this measurement. Anthropometric measurements, such as those that measure physical activity and nutritional status, are more significant. Fishing is the fishermen's main source of income. Their anthropometric measurements taken after the fishing trip will be useful in determining their current state of health. As of right now, the Purba Medinipur district's deep-sea fisherman lacks information regarding the community's size. Fishermen had a normal waist-hip ratio and body mass index, according to a significant study (Kalapriya, 2019).

7. Conclusion

Deep-sea fishermen put in a lot of work and spend a lot of time fishing every day. Their labor may continue depending on the state of the ecosystem, the quantity of fish caught, etc. The majority of fishermen are illiterate or poorly educated, and all deep-sea fishermen are men whose ages range from roughly 20 to 55. A toxic atmosphere, strenuous labor, and a poor lifestyle brought on by fishing season can all lead to physiological risks. Fishermen in several counties have been found to be at risk from physiological dangers; however, information regarding fishermen in West Bengal's Purba Medinipur areas is currently lacking.

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