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Public Opinion on the Impacts of Marine Dumping in India

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Abstract

The oxygen in the ocean may be depleted if garbage is dumped into it. As a result of the lack of oxygen, marine life suffers. Seals, dolphins, penguins, sharks, whales, and herring could all perish. Bottles and other plastics, including bags, have the potential to suffocate or choke sea creatures. Dumping waste at sea is estimated to contribute 10% of total pollutant input into the sea. Dredged material accounts for roughly 80-90% of all licenced materials dumped. Annually, 500 million tonnes of dredged material are dumped in London Convention and Protocol Contracting Parties' waters. With rising plastic production, low recycling rates, and ineffective waste management, between 4 and 12 million metric tonnes of plastic enter the ocean each year—enough to cover every foot of coastline on the planet! That figure is expected to triple in the next 20 years. Take a moment to absorb that. Plastic pollution in the ocean affects sea turtles, whales, seabirds, fish, coral reefs, and countless other marine species and habitats. In fact, scientists believe that more than half of the world's sea turtles and nearly every seabird have consumed plastic during their lives. Plastic pollution marries otherwise beautiful beaches, coastlines, and snorkel and dive sites all over the world, even in remote locations like Midway Atoll.

Keywords

Marine, ecosystem, ocean, dumping, health effects.

INTRODUCTION

The ocean is not a dumping ground. The deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms, or other man-made structures, as well as the deliberate disposal of these vessels or platforms themselves, has been defined as marine dumping. Marine dumping can destroy or degrade important habitats for aquatic species, as well as cause coastal erosion and salutation, all of which have an impact on the marine environment's health and productivity.The widespread use of plastics in India, combined with ineffective waste management practises, has resulted in plastic waste piling up on dump sites or being discovered in the open sea. Marine plastic pollution

endangers the health of marine creatures and humans, and it also has significant economic consequences. Dumping waste endangers not only the known ocean, but also the 80% of the ocean that has yet to be explored. While the 1972 London Convention, its 1996 Protocol, and some treaties regulated the dumping of certain wastes, inconsistent adherence to ocean dumping rules has resulted in a piecemeal approach to protecting the waters that connect us.

Objectives

- To describe a marine ecosystem and the environmental impact that its organisms suffer
- To examine the impacts of ocean dumping in India.

REVIEW OF LITERATURE

Ravi et.al (2021)(Cheela et al. 2021), To compare proposed municipal solid waste treatment systems with the existing system in Visakhapatnam, India, an environmental life cycle assessment was performed. The potential for global warming (GWP), terrestrial acidification (TA), freshwater eutrophication (FEW), human toxicity (HTP), and marine ecotoxicity (MET) were all calculated. **Kumar et.al (2016)**,("Preliminary Study on Marine Debris Pollution along Marina Beach, Chennai, India" 2016) Marine debris is a worldwide problem that has a negative impact on marine organisms, ecological processes, aesthetics, and economies. Debris was collected from 10 transects four times between March and April 2015. The most common types of debris are plastic, paper, and wood, followed by food waste and metal. **Jiang et.al (2001)**("Megacity Development: Managing Impacts on Marine Environments" 2001), The growth of coastal cities in Asia and the Pacific region has had an impact on marine and coastal environments. The paper focuses on the existing issues of coastal city land-based pollution. Solutions to the problems are proposed, as well as an overview of UNEP's proposed activities. **Veerasingam et.al (2020)**("Microplastics in Different Environmental Compartments in India: Analytical Methods, Distribution, Associated Contaminants and Research Needs" 2020),Microplastic (MP) pollution in various environmental matrices in India remains a mystery. This study emphasises the critical need for harmonised and standardised sampling and analytical methods in MP research. The study also identifies research gaps for future MP-related research priorities. **Kripa et.al (2019)**(Kripa 2019),One of the most serious threats to aquatic ecosystem sustainability is marine litter. Low-density polymers such as polyethene and polypropylene account for 50% of plastic marine litter. Microplastics have spread into various benthic realms of coastal and marine eco-systems.

Kaladharan et.al (2016)(Kripa et al. 2016),Any persistent, manufactured, or processed solid material discarded, disposed of, or abandoned in the marine and coastal environment is referred to as marine debris. Only 60 to 80% of the global litter found in coastal and marine ecosystems originated on land, with the remainder originating from sea-based activities. **Nagababu et.al (2017)**,("Application of Reanalysis Data to Estimate Offshore Wind Potential in EEZ of India Based on Marine Ecosystem Considerations" 2017) Wind energy is a good option for avoiding several pollution and climate change issues caused by the use of fossil fuels. Annual energy production (AEP) capacity in Indian EEZ was found to be between ten and six times that of current (Financial Year 2015-16) energy demand. **Woodall et.al (2015)**, (Woodall et al. 2015)Because of data scarcity and patchy coverage, there are no global estimates of benthic litter. Effective litter reduction policies require estimates of baseline abundance and composition. Litter abundance was found to be high in large-scale surveys of submarine geomorphological features in the Indian and Atlantic Oceans. **Bhattachaya et.al (2018)**(Bhattacharya et al. 2018), Every day, India generates 15,342 tonnes of plastic waste. A major concern is the lack of an organised mechanism to deal with this waste. The purpose of this paper is to assess and evaluate all aspects of plastic waste management and the development of a sustainable alternative to plastics. It also discusses legislation and policy implementation. **Edward et.al (2020)**,("Marine Debris

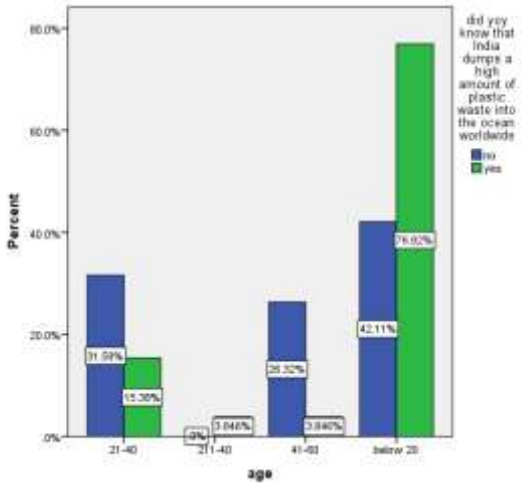
— An Emerging Threat to the Reef Areas of Gulf of Mannar, India" 2020) Marine debris has impacted an estimated total reef area of 1152 m2. The majority of the debris, 43.17 5.48%, is made up of abandoned fishing nets. With 39.11%, live corals were found to be the most common substrate for marine debris. **J B Jones (2010)**("[No Title]" n.d.),Bottom trawling has an impact on the environment both directly and indirectly. Scraping and ploughing of the substrate are examples of direct effects. Post-fishing mortality and long-term trawl-induced benthos changes are examples of indirect effects. The higher the frequency of gear impact, the more likely permanent change. **Easwar et.al (2018)**, ("Website," n.d.) Microplastic pollution of the marine environment has been documented all over the world. Because of its proximity to the Gulf of Mannar, the presence of microplastics on the Tuticorin coast is cause for concern. Fourier Transform Infrared Radiation analysis identified microplastics as Polyethylene and Polypropylene. **Nanthini et.al (2021)**("Assessment on Impact of Sewage in Coastal Pollution and Distribution of Fecal Pathogenic Bacteria with Reference to Antibiotic Resistance in the Coastal Area of Cape Comorin, India" 2022), The study's goal was to assess the impact of sewage on the quality of Kanyakumari's coastal water. A bacterial survey was conducted to determine the distribution and abundance of faecal indicators and human pathogenic bacteria. Using the Kirby Bauer method, the isolates were tested against ten antibiotics. **Shalidhul et.al (2003)**,("Impacts of Pollution on Coastal and Marine Ecosystems Including Coastal and Marine Fisheries and Approach for Management: A Review and Synthesis" 2004) Even though aquatic pollution has become a global concern, most developing countries continue to produce massive amounts of pollution. Knowledge of pollution sources and impacts on ecosystems is critical not only for a better understanding of how ecosystems respond to pollutants, but also for developing prevention strategies. **Vikas and Dwarakish (2015)**("Coastal Pollution: A Review" 2015),Many of the pollutants that enter the sea are caused by human activity, either directly or indirectly. Some of these substances degrade naturally, while others do not. Addressing the problem of ocean pollution is a difficult task that requires a variety of approaches. **Ajith et.al (2020)**,(Ajith et al. 2020) Microplastics are major environmental health hazards found in nearly all marine habitats and biota around the world. Only 22.9% (44) of the world's 192 countries have conducted research on microplastics. Quantifying research in this area would allow for the development of a microplastic threshold level. **Arun et.al (2019)**,(Arun Kumar et al. 2019) The methodology of the NOAA Marine Debris Program was used to collect and quantify various debris along two beaches in Chennai, India's east coast. The main source of beach debris is shoreline and recreational activities. The study emphasises the importance of establishing long-term monitoring protocols. **Karthick et.al (2018)**, Microplastic abundance was significantly higher in beach samples collected from 25 locations along the coast of India's Tamil Nadu state than at the low tide line. Plastic fragments accounted for the greatest proportion (47-50%), followed by line/fibres (24-27%) and foam (10-19%) materials. **Aramendia et.al (2020)**,("Environmental Consequences of Dredged-Material Disposal in a Recurrent Marine Dumping Area near to Guadalquivir Estuary, Spain" 2020) Heavy metal concentrations in organisms revealed some bioaccumulation in deposit feeders and predators, but no clear patterns or biomagnification through the food web were found. According to the authors, this increase could also explain the decreased amphipod survival in the ecotoxicology analysis. **Venkatraman et.al (2022)**,("Characteristics of Microplastics in the Beach Sediments of Marina Tourist Beach, Chennai, India" 2022) The Marina beach in Chennai serves as an important ecological habitat for a variety of life forms. Rapid urbanisation and industrial development have resulted in an overabundance of plastics. The authors argue that the government should first take an active role in addressing the problem of plastic waste. The research revealed new information about human activities and natural processes in these marine environments.

METHODOLOGY

The researcher used empirical research conducted through convenient sampling. 205 responses were collected from the general public in and around Chennai. Independent variables such as age, gender and their opinion on the challenges faced by small scale industries were collected. The data was analysed using the SPSS tool and interpreted using graphical representation.

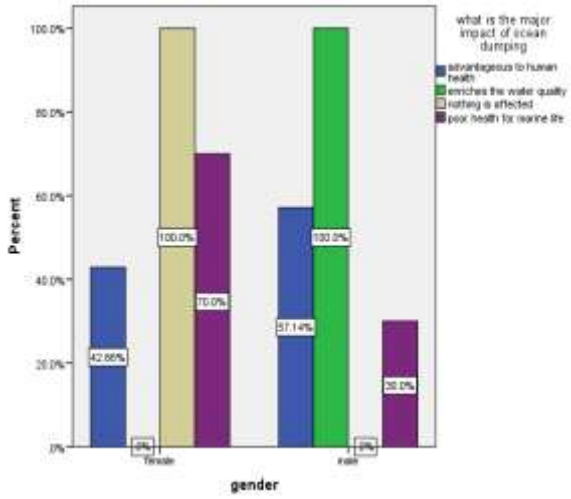
Data Analysis and Interpretation

FIGURE 1



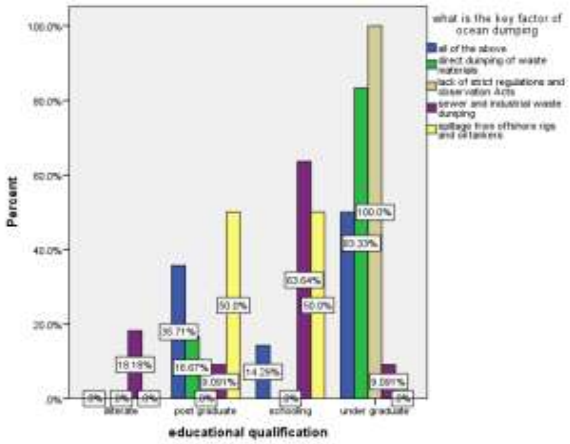
LEGEND 1: Figure 1 shows age and the respondent's knowledge on the high amount of plastic waste into the ocean

FIGURE 2



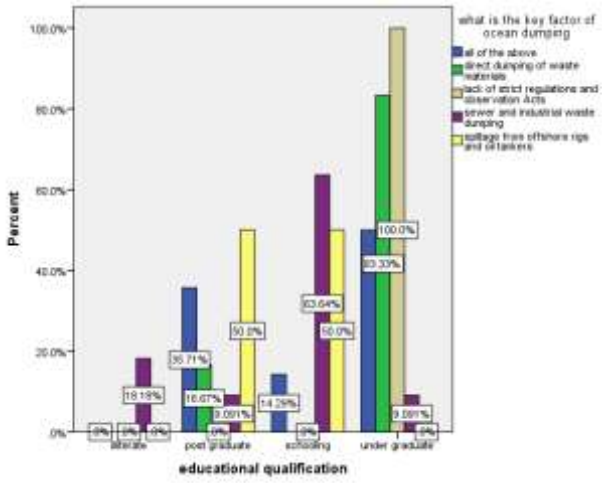
LEGEND 2: Figure 2 shows the gender and the major impacts of ocean dumping

FIGURE 3



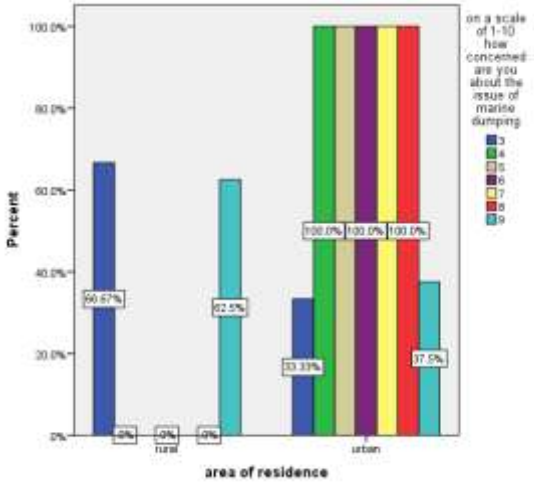
LEGEND 3: Figure 3 shows the educational qualification and the key factor of ocean dumping

FIGURE 4



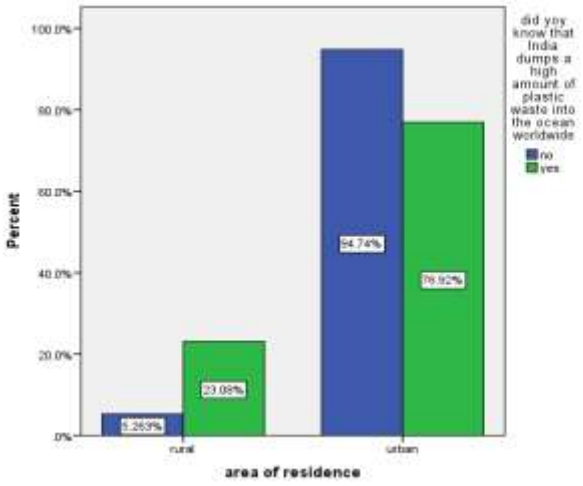
LEGEND 4: Figure 4 shows educational qualification and the key factor of ocean dumping

FIGURE 5



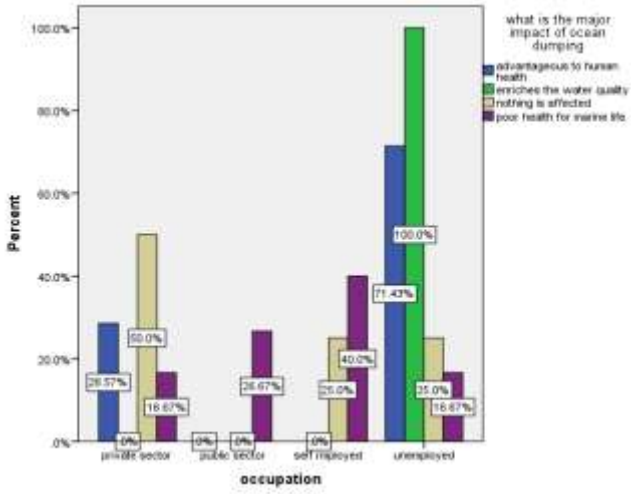
LEGEND 5: Figure 5 shows the area of residence and the respondents concern about the issue of marine dumping

FIGURE 6



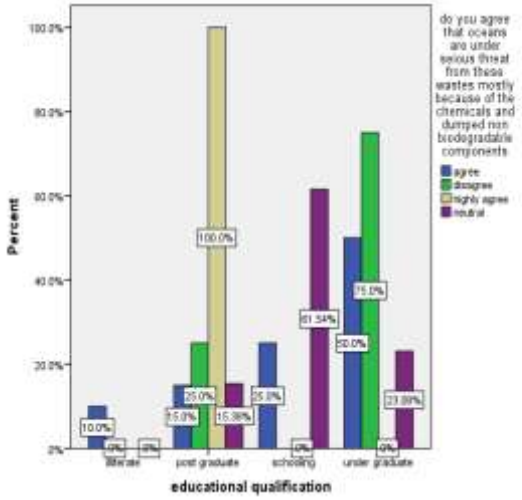
LEGEND 6: Figure 6 shows the area of residence and that India dumps a high amount of plastic waste into the ocean worldwidete into ocean worldwide.

FIGURE 7



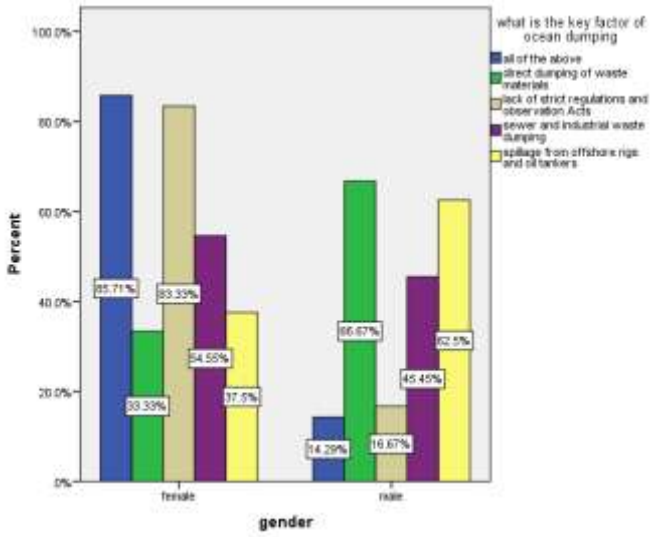
LEGEND 7: Figure 7 shows the occupation and the major impact of ocean dumping.

FIGURE 8



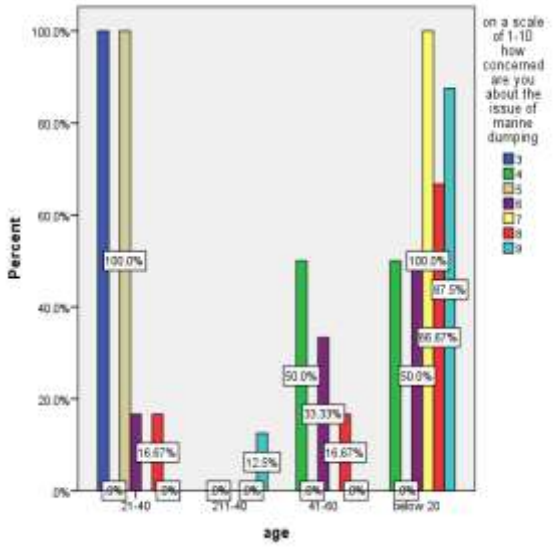
LEGEND 8: Figure 8 shows the educational qualification and the serious threat faced by oceans due to excessive marine dumping

FIGURE 9



LEGEND 9: Figure 9 shows the gender and the key factor of ocean dumping.

FIGURE 10



LEGEND 10: Figure 10 shows the age and the respondent's concern on the issue of marine dumping.

RESULT

Figure 1, a majority of the respondents know that India dumps a high amount of plastic waste into the ocean worldwide. **Figure 2**, a majority of the respondents think the major impact of ocean dumping is poor health of marine life. **Figure 3**, a majority of the respondents think the key factor of ocean dumping is sewer and industrial waste dumping. **Figure 4**, a majority of the respondents think the key factor of ocean dumping is direct dumping of waste materials. **Figure 5**, a majority of the respondents rate their concern on marine dumping 9 out of 10. **Figure 6**, a majority of the respondents know that India dumps a high amount of plastic waste into the ocean worldwide. **Figure 7**, a majority of the respondents think the major impact of ocean dumping enriches the water quality. **Figure 8**, a majority of the respondents highly agree that oceans are under serious threat. **Figure 9**, a majority of the respondents think the key factor of ocean dumping is spillage from offshore rigs and oil tankers. **Figure 10**, a majority of the respondents rate their concern on marine dumping 8 out of 10.

DISCUSSION

Figure 1, 31.58% of the respondents from the age group of 21-40 years did not know. 15.38% of the respondents from the age group of 21-40 years know. 3.846% of the respondents do not know. 26.32% of the respondents from the age group of 41-60% do not know. 76.92% of the respondents below 20 know. **Figure 2**, 42.86% of the respondents are female and they think it is advantageous to human health. 57.14% of the respondents who are males think it is bad for marine health. **Figure 3**, 18.18% of the illiterates think sewer and industrial waste. 35.71% of the respondents who are post graduates think all of the above. 50% of the respondents who finished schooling think of spillage from offshore rigs and oil tankers. 80% of the respondents think of direct dumping of waste materials. **Figure 4**, 18.18% of the illiterates think sewer and industrial waste. 35.71% of the respondents who are post graduates think all of the above. 50% of the respondents who finished schooling think of spillage from offshore rigs and oil tankers. 80% of the respondents think of direct dumping of waste materials. **Figure 5**, 66.67% of the respondents rate 3 out of 10. 63,5% of the respondents rate 9 out of 10. **Figure 6**, 5.263% of the respondents from rural areas think no. 23.08% of the respondents from rural areas think yes. 94.74% of the respondents from urban areas think no. 76.92% of the respondents from urban areas think yes. **Figure 7**, 28.57% of the respondents from the private sector think it is advantageous to human health. 26.67% of the respondents from the public sector think of poor health for marine life. 25% of the respondents who are self employed think nothing is affected. 100% of the respondents who are unemployed think it enriches the water quality. **Figure 8**, 10% of the illiterates agree. 25% of the respondents who are post graduates disagree. 61.54% of the respondents who finished schooling neither agree nor disagree. 75% of the undergraduates disagree. **Figure 9**, 85.71% of the female respondents think all of the above. 66.67% of the male respondents think of direct dumping of waste materials. 83.33% of the female respondents think lack of strict regulations and observation Acts. 62.5% of the male respondents think spillage from offshore rigs and oil tankers. **Figure 10**, 10z from 21-40 years rate 3 out of 10. 66.67% of the respondents rate 3 out of 10. 63,5% of the respondents rate 9 out of 10.

Limitation

The limitations of this study is the sample frame. The samples were only collected from one city. Thus the data collected and analysed might not be varied and only correspond to the preferences of the respondents within the city.

Suggestion

The government must bring about stricter laws to prohibit ocean dumping. The existing laws and initiatives must be implemented globally without exception. Campaigns and ocean cleanups must be organised to include community participation and spread awareness on the social menace of ocean dumping.

CONCLUSION

Ocean dumping is a worldwide issue. It arises from multiple sources and crosses national boundaries. It is the result of irresponsible, short-sighted, and unsustainable resource exploitation on Earth. It jeopardises marine ecosystems. It reduces atmospheric oxygen production. Its threats to human health are significant and growing, but they are still poorly understood. Its economic costs are only now being calculated. Ocean pollution is avoidable. Ocean pollution, like all other types of pollution, can be controlled by implementing data-driven strategies based on law, policy, technology, and enforcement that target priority pollution sources. Many countries have used these tools to combat air and water pollution, and they are now being used to combat ocean pollution. Successes to date demonstrate that greater control is possible. Polluted harbours have been cleaned, estuaries have been revitalised, and coral reefs have been restored. There are numerous advantages to preventing ocean pollution. It stimulates the economy, boosts tourism, aids in the restoration of fisheries, and improves human health and well-

being. It contributes to the achievement of the Sustainable Development Goals (SDG). These advantages will endure for centuries.

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