BEHAVIORAL HEALTH AND PERSONAL HYGIENE PRACTICES IN COASTAL AREAS: A LITERATURE-BASED ANALYSIS

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Abstract
Coastal communities face distinctive health challenges influenced by their geographical location and lifestyle. This scoping review aims to elucidate health problems, health behavior, and strategies to ameliorate health disparities among coastal residents within the last 5-10 years. A comprehensive search was conducted following the Arksey and O'Malley framework using databases such as PubMed, Google Scholar, and GARUDA (Indonesian Journal Database). Studies were included if they focused on human populations in coastal zones, addressed hygiene or behavioral health, and were published in English or Indonesian; purely clinical trials or non-peer-reviewed reports were excluded. A total of 10 articles were reviewed, encompassing diverse health aspects among coastal residents. The reviewed articles identified that sanitation-related issues (n=6) and skin infections (n=4) were the most prevalent health concerns. These encompassed high rates of open defecation, water-borne diseases, and infections prevalent in young children. Common factors contributing to these health challenges included harsh environmental salinity, limited access to clean drinking water, and cultural practices. Health behaviors of coastal residents were also highlighted, showcasing significant gaps in handwashing compliance and domestic waste management. Strategies to address these concerns involved multifaceted approaches, emphasizing education, sanitation improvements, and stakeholder engagement. Coastal residents face multifaceted health challenges influenced by their environment, socio-cultural practices, and limited access to resources. Addressing these issues necessitates holistic interventions that integrate community engagement, hygiene education, and infrastructure improvements, with active youth involvement to enhance sanitation. The findings underscore the urgency of tailored strategies to improve the health outcomes and well-being of coastal communities.
Keywords: Coastal residents, health behavior, health problems, sanitation, community engagement

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INTRODUCTION

Coastal communities are vulnerable to various health challenges because of their location and health behaviors. While environmental factors such as toxic waste pollution and ecosystem degradation significantly impact well-being, these conditions specifically constrain the capacity for optimal personal hygiene by limiting access to clean water and functional sanitation infrastructure (1,2)For socioeconomically marginalized and isolated coastal populations, the struggle for survival often necessitates a trade-off where immediate economic activities are prioritized over preventive hygiene practices. Consequently, behavioral health in these regions is frequently dictated by localized traditional knowledge and environmental constraints rather than standardized public health protocols (3,4). Despite the known environmental risks, there remains a lack of synthesized evidence focusing specifically on how these geographical limitations shape the personal hygiene behaviors and subsequent disease patterns unique to coastal residents.

Concerning lifestyle and health behavior, Lawrence Green's precede-proceed model theory states that individual and environmental factors influence health behavior. These factors

are related to health through two main factors, namely, behavioral causes and non-behavioral causes. This theory explains that personal hygiene can affect a person's health (5). One crucial and often overlooked health behavior is personal hygiene, which indirectly plays an essential role in causing health problems in coastal communities. Poor personal hygiene, parental education, and social life are associated with health problems in children living in coastal areas (6).

Residential areas in coastal areas also have a low level of environmental sanitation management and do not receive better attention; this can be seen from the scope of sanitation management, which includes personal hygiene, environmental sanitation, which consists of residential sanitation, waste management, and clean water. According to research (7–9), unsafe water, poor sanitation, and hygiene are particularly harmful and cause more than 10,000 deaths each year. To effectively address these challenges, it is imperative to move beyond purely clinical perspectives and consider the broader social determinants of health. This study aims to investigate the interplay of socioeconomic, cultural, and structural factors—such as infrastructure availability and stakeholder engagement—that dictate community-based sanitation behaviors. By synthesizing the existing literature, we can identify the specific determinants that facilitate or hinder hygienic practices in coastal environments. A comprehensive understanding of these factors is essential for designing targeted interventions that improve health outcomes and elevate the quality of life for these vulnerable populations.

While the unique health challenges of coastal populations are recognized, particularly in remote and underdeveloped regions, existing research often focuses on isolated clinical outcomes or specific environmental pollutants. There is currently a lack of synthesized evidence that maps how these specific geographical and socioeconomic contexts collectively shape personal hygiene practices and behavioral health outcomes across diverse coastal settings. Furthermore, a comprehensive overview of the strategies used to address these disparities remains elusive in current literature. Therefore, this scoping review aims to synthesize the available evidence regarding health behaviors and personal hygiene practices among coastal residents. By identifying prevalent health problems and documenting effective intervention strategies, this study seeks to provide a comprehensive evidence base to inform tailored public health policies and improve health outcomes for these vulnerable communities.

METHODS

This scoping review was conducted in accordance with the PRISMA Extension for Scoping Reviews (PRISMA-ScR) guidelines to ensure transparency and reproducibility (10). The review followed the five-stage framework outlined by Arksey and O'Malley (2005): (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data, and (5) collating, summarizing, and reporting the results. The literature search was conducted between January and March 2024 across three electronic databases: PubMed, Google Scholar, and GARUDA (Indonesian Journal Database). The search strategy employed a combination of Boolean operators and MeSH terms where applicable: ("Coastal area" OR "Coastal residents") AND ("health behaviour" OR "personal hygiene") AND ("health problem" OR "disease"). The search was limited to articles published in English and Indonesian between 2015 and 2024 to maintain contemporary relevance.

Studies were screened using a three-step process: (1) title screening, (2) abstract review, and (3) full-text assessment. Two independent reviewers evaluated the articles based on pre-defined inclusion criteria: (a) primary research focusing on coastal populations, (b) studies addressing hygiene behaviours or sanitation-related health outcomes, and (c) peer-reviewed publications. Articles were excluded if they were editorials, conference abstracts, or lacked full-text availability. Discrepancies between reviewers were resolved through consensus. The selection process is detailed in the PRISMA flow diagram (Figure 1). A standardized data extraction form was used to capture study characteristics (author, year, location, study design, and key findings). To ensure the integrity of the synthesized evidence, the quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT), evaluating the methodological rigor of qualitative, quantitative, and mixed-methods studies (11). Ten articles met the final eligibility criteria and were included in the narrative synthesis.

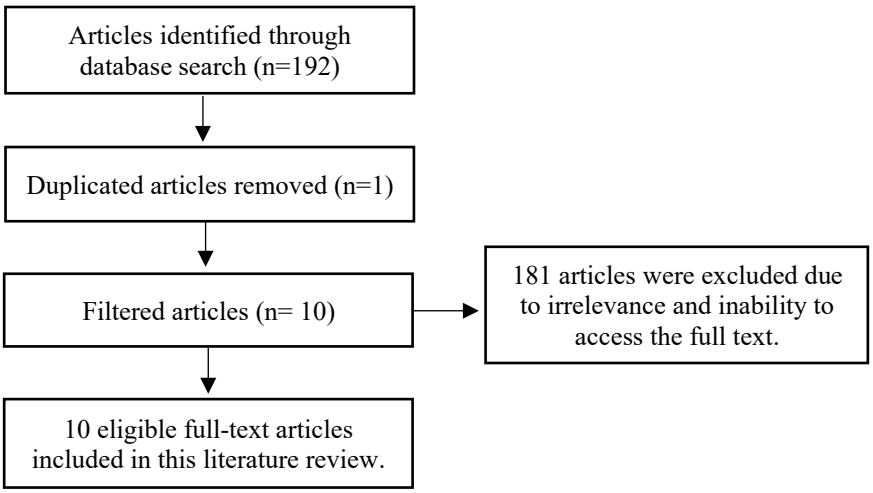

Figure 1. PRISMA flow of sorting journal articles included in the study

RESULTS

The journal article selection process can be seen in Table 1. A total of 10 national and international journal articles were selected for the 2015-2022 publication year.

Table 1. Journal articles included in the literature review

No	Author, Year of publication	Title	Research Objective	Research Methods	Research Result
1.	V R Roja, 2020	Living environment and health of under-five children in urban slums of a coastal region in South India	To determine the relationship between living environment and morbidity, nutritional status, immunization status, and personal hygiene of children under five living in urban slums in southern India.	The study included 224 mothers of children under five living in urban slums in Udupi Taluk, Karnataka. Seventeen urban slums were randomly selected using random cluster sampling.	Family characteristics, including parental education, occupation, and income, as well as the availability of safe drinking water, sanitation, and the use of mosquito nets to prevent vector-borne diseases, are basic needs that must be met immediately to improve child health.

No	Author, Year of publication	Title	Research Objective	Research Methods	Research Result
2.	Elpida Frantzesku, 2016	Health status and occupational risk factors in Greek small fisheries workers	This study aimed to examine the health status and health risk factors present in Greek fisheries, thus providing a current basis for documentation of the need for health prevention and promotion.	A questionnaire was administered in 2013 with a random sample of 172 small-scale professional fishermen in the Evros district of Northeast Greece.	Heavy smoking and daily alcohol consumption were seen in almost half of the fishermen. This relates to specific working conditions, culture, and education levels in small-scale fishing that need to be considered in prevention programs.
3.	Janet Masaku, 2017	Knowledge, practices and perceptions of geo-helminthes infection among parents of pre-school age children of coastal region, Kenya	to improve treatment intervention strategies among preschool-age children.	A total of 20 Focus Group Discussions (FGDs) were categorized by gender among parents of pre-school-aged children.	Most parents of preschool children are informed about helminth infections. However, some cultural beliefs and practices about pathology and modes of transmission can be a barrier to prevention and control efforts.
4.	Mashura Shammi, 2019	Impacts of Salinity Intrusion in Community Health: A Review of Experiences on Drinking Water Sodium from Coastal Areas of Bangladesh	Knowing the impact of Drinking Water Sodium (DWS) on the health perspective of Bangladeshis.	Review of published literature and case studies in coastal areas of Bangladesh.	Saltwater (DWS) can also expose women, especially pregnant women, to an increased risk of preeclampsia, hypertension, as well as infant mortality. Therefore, it is important to raise awareness of DWS intake.
5.	Rachel Ann Hauser-Davis, 2019	Vulnerability of small-scale fishers to benzene exposure and the current knowledge gap on benzene-exposure in Brazilian fishers	Discussed benzene exposure in small-scale fishers and reflected on the current knowledge gap on benzene exposure in Brazilian fishers.	The survey methodology applied here consists of searching using the scientific databases Web of Science, PubMed, Google Scholar, Scielo, and Scopus (Elsevier), from January to February 2019.	Fishers are a particularly vulnerable population, chronically exposed to many stresses, injuries, and health conditions directly related to their fishing activities. This includes exposure to benzene through gasoline and diesel exhaust that can causes cancer.
6.	Johan huliselan, 2019	Kondisi Sanitasi Rumah, Perilaku Kesehatan dan Kejadian Diare Masyarakat	Knowing the description of home sanitation conditions, health behavior, and the	A sample of 169 respondents was observed by observing existing home sanitation conditions in coastal	It is still important to pay attention to the requirements in making sewerage, and guidance on waste management and counseling on

No	Author, Year of publication	Title	Research Objective	Research Methods	Research Result
		Pesisir di Desa Piru	incidence of diarrhea in Piru coastal communities.	communities and then conducting interviews using a questionnaire.	diarrhea from related agencies.
7.	Khoirin Nida, et al, 2022	Perilaku Kesehatan Masyarakat Pesisir Desa Morodemak Kecamatan Bonang Kabupaten Demak	Describe and know the health behaviors carried out by the Morodemak coastal communities.	This research is qualitative with an emic perspective. Data collection techniques are carried out using participant observation methods and in-depth interviews.	The perception of the Morodemak coastal community towards health influences their health behavior. People who live in Morodemak have their own assessments of their health conditions, so the health behaviors carried out by Morodemak coastal communities are more based on what they believe and need.
8.	Susilawati, et al, 2022	Behavior model community-based sanitation management in coastal areas: confirmatory factors analysis	Analyze factors such as the social status of the population, gender roles, stakeholder roles, infrastructure, and sociocultural and socio-economic factors that influence community behavior in coastal sanitation management.	A cross-sectional design obtained 504,955 households in the Percut Sei Tuan sub-district. Data were analyzed using CFA (Confirmatory Factor Analysis) to assess the factors influencing community behavior in managing sanitation.	Sociocultural practices require various parties' motivation and support to create good regional sanitation. Therefore, support from stakeholders is needed to influence the achievement of specific goals. They have the authority and budget that can be allocated to support efforts and improve sanitation.
9.	Zainul Ikhwan, Novian Aldo 2020	The Relationship Between Personal Hygiene and Incidence of Diarrhea in The Coastal Area of Kampung Bugis, Tanjungpinang City	Knowing the relationship between personal hygiene factors and the incidence of diarrhea in the Bugis coastal area, Tanjung Pinang City.	Using an analytic survey with a cross-sectional design.	Puskesmas work together across sectors and communities to improve environmental health programs related to basic sanitation, a risk factor for diarrhea.
10.	Ottay, R.I. et al. 2015.	Coastal Area Public Health Problem (A Case Study in the City of Manado North	Exploring public health problems in Manado City, North Sulawesi, as one of the	Exploratory research through field observation and literature search.	Health problems in Manado City, one of the coastal cities in Indonesia, can be divided into three major parts: environmental, social,

No	Author, Year of publication	Title	Research Objective	Research Methods	Research Result
		Sulawesi Indonesia	coastal areas in Indonesia.		and behavioral determinants. This shows that government participation and community empowerment are needed to overcome public health problems.

Research by Huliselan et al. (2019) and Ikhwan and Aldo (2020) indicates that sanitation, personal hygiene, and health behavior are directly linked to the prevalence of diarrhea in coastal communities. These studies highlight the critical importance of clean water supplies and effective waste management in preventing the disease. Furthermore, the findings of Nida et al. (2022) emphasize the role of puskesmas (community health centers) in raising public awareness of health programs designed to reduce diarrhea rates. These conclusions further reinforced by Roja et al. (2020), who note that the living environment, specifically the availability of safe drinking water and proper sanitation, profoundly impacts the health of children under five.

Health behavior is also a proven determinant factor of coastal community health. Masaku et al. (2017) discuss the influence of parental knowledge, practices, and perceptions on the prevalence of geo-helminth infections. Furthermore, a review by Shammi et al. (2019) demonstrates the detrimental impact of consuming saline water on public health. The daily consumption of drinking water with high salinity is linked to hypertension, an increased risk of preeclampsia during pregnancy, and higher infant mortality rates. Beyond domestic habits, research by Hauser et al. (2019) and Frantzescu et al. (2016) explores the occupational risks faced by fishermen. Daily exposure to high stress, physical injuries, and chronic benzene exposure can lead to musculoskeletal and cardiovascular diseases, vision or hearing impairment, respiratory issues, and even cancer.

Government support is a critical factor influencing the daily lives and well-being of the community. Ottay et al. (2015) argue that, alongside community empowerment, active government participation is essential to addressing public health challenges. This perspective is supported by Susilawati et al. (2022), who state that stakeholder engagement significantly influences the adoption of healthy behaviors within a population. Ultimately, these governing bodies possess the necessary authority and budgetary resources to facilitate personal hygiene and improve sanitation infrastructure.

DISCUSSION

Behavior Causes in Coastal Area

In terms of behavioral factors, CFA (Confirmatory Factor Analysis) proved that coastal communities still have insufficient knowledge, poor attitudes towards environmental hygiene, and low behavior. Gender-specific roles, stakeholder roles, facilities, infrastructure, and socio-culture are variables that simultaneously affect the sanitation behavior of coastal communities.

Only two factors, population and socio-economic status, had no real impact on the way coastal communities maintain their hygiene (7).

Health behavior is a person's reaction to stimuli or substances associated with illness, food and drink, health care systems, and the environment. Research has also shown that health resilience of a community including the use of groundwater and good sanitation to lower the risk of waterborne diseases will eventually be impacted by job possibilities and education. However, despite having greater understanding of the value of health, coastal communities typically lack access to proper sanitary infrastructure and health services. Furthermore, socioeconomic factor frequently affects the community perceptions of health, although there are initiatives to embrace healthy lifestyle. Healthy behaviors should constantly be adhered to, from avoiding risks to preserving health and fostering a healthy atmosphere (12,13).

Diseases that are Prevalent in Coastal Areas

Analysis of the causes of disease in coastal areas can be reviewed from an environmental aspect. Research on the morbidity of toddlers based on age groups in urban slums in Udupi Taluk, Karnataka (6) obtained the results that the diseases with the highest frequency suffered by toddlers in these coastal areas were skin infections and coughs (45.1% and 44.6%, respectively), then fever (30.8%), pneumonia (27.7%), diarrhea (24.1%), injury (22.8%), angular stomatitis (21.9%), ear infections (21.4%), and the disease with the lowest frequency was eye infection (7.6%). A similar study was also conducted on people in coastal areas where the majority of their livelihoods are working as fishermen, this study was conducted on fishermen who were more than 50 years old, and the results showed that they suffered from cardiovascular, dermatological, musculoskeletal, respiratory diseases, and hearing problems. The study states that these diseases are related to poor nutrition and lifestyle including smoking, alcohol consumption, insomnia, depression, and low physical activity (14).

Research by Shammi, et al (2019) and Scheelbeek, et al (2017) states that in addition to environmental and occupational aspects, diseases that occur in communities in coastal areas can also be triggered by the high frequency of consumption of seawater or drinking water sodium (DWS). The impact of saltwater salinity on public health in Chittagong, Southeast coastal region. Among other things, they suffer from various types of diseases, including skin diseases, hair loss, diarrhea, indigestion, and high blood pressure. The negligible presence of salt in drinking water leads to risky levels of salt consumption among the community, hence it is imperative that coastal communities raise awareness regarding DWS (15,16).

Sanitation, Water Needs, and Personal Hygiene

Sanitation is one of the most important health support factors and is still experiencing many challenges among coastal communities. Several studies (2,17–19) reveal the relationship between sanitation and the health of a group of people show that there is a relationship between the behavior of latrine use, clean water utilization, waste management, and vector control with the incidence of diarrhea. Furthermore, proper sanitation facilities can reduce morbidity and mortality rates due to diarrhea and hookworm infection. Similarly, for Soil-transmitted helminths (STHs), hygiene practices such as hand washing before meals and proper disposal of human waste will reduce helminth infections in PSAC and community members.

Enhancements in additional healthy habits, including water purification and/or domestic sanitation methods might also positively influence the overall spread of diseases.

However, conversely, culture plays a significant role in shaping sanitary practices and offers a type of experience for members of society. This stems from communal habits that are accustomed to defecating in random place and throwing garbage into the river. Such behavior arises as groups with distinct cultural identities form their own systems. The findings indicate that cultures lacking in positive values, beliefs, and norms contribute to knowledge, attitudes, and behaviors that negatively impact environmental cleanliness. Most individuals continue to adopt practices that are passed down from one generation to the next, often overlooking the necessity for proper and efficient environmental hygiene, which ultimately heightens the risk of various illnesses (7,20).

In addition to sanitation conditions, the provision of basic needs such as adequate drinking water supply is important for improving lives, especially in areas that represent certain vulnerable groups such as children. Some unqualified clean water sources generally come from river water or dug wells that are used for washing foodstuffs as well as for drinking water (6,17). Clean water supply can also be influenced by the natural conditions of coastal areas, drought conditions sometimes force some communities to consume widely available seawater or drinking water sodium (DWS). While seawater is known to have high salt content, it often causes health problems if consumed continuously. Some of them include infant mortality, hypertension in adults, (pre)eclampsia in pregnant women, and can trigger cardiovascular disorders in many community groups (15,16).

Environmental sanitation is also inseparable from the daily life of coastal communities. Public awareness regarding environmental sanitation remains limited due to insufficient information regarding clean water resources, latrine facilities, wastewater disposal and management, waste management, and criteria for healthy housing. Besides, family income could also affect the possibility to promote changes in behavior within the community, the higher the income, the higher possibility to increase health behavior on daily basis (20). One condition that illustrates inadequate housing and sanitation is the large number of trashes can that do not meet the requirements due to the absence of trash can covers, so that wet garbage thrown into the place remains a source of disease transmission because of the many disease vectors that can settle. Furthermore, the accumulation of garbage that occurs can also cause unpleasant odors (7,17).

Lifestyle and Health Behavior

Health cannot be separated from the lifestyle and health behavior of a community. Community behavior related to Community-Based Total Sanitation (STBM) according to Ottay, et al (2015) is based on output indicators, namely, access to basic sanitation (latrines); implementing safe drinking water and food management; maintaining hand washing facilities (water, soap, hand washing stations); and; conduct a proper waste management (21). The results of the study showed that the perception of the Morodemak Village community towards health has an influence on the health behaviors that are carried out daily. However, because it is influenced by economic factors and the need to continue to make a living through work, the people of Morodemak Village take their health conditions lightly (3). Another related research

(4) states that low economic conditions lead to low levels of hand-washing soap use to maintain the hygiene of Bangladeshi coastal residents.

Beside the influence of economic factors, education tends to affect basic knowledge on health behavior. Individuals with lower education often have restricted access to knowledge concerning the detrimental effects of waste on aquatic ecosystems, personal health, and overall quality of life. Thus, they depend more on traditional practices rather than evidence-based information or established guidelines. Consequently, it will influence the development of behaviors and lifestyles that disregard environmental concerns. This highlights the necessity for educational initiatives within the community, environmental guidance, and the enhancement of stakeholder influence to boost public consciousness regarding more accountable waste disposal practices (22).

Furthermore, an individual characteristic that may influence a risk of illness is the higher frequency of a behavioral element in coastal community. However, these behaviors may also be linked to widespread unemployment, the history of jobs along the coast, and possibly harmful behaviors (23). Further observation of the lifestyle of fishermen in the Evros district of Northeast Greece (14) revealed an unhealthy lifestyle, associated with smoking, alcohol consumption and overexertion, which when explored further has an impact on the risk of accidents and CVD. This is also supported by a statement regarding fishermen in Brazil who are in daily contact with benzene, due to the combustion of fuel used in fishing activities, thus resulting in chronic exposure to the carcinogenic pollutant (24).

Environmental factors, including fluctuations in climate, pollution along coastlines, and workplace dangers linked to fishing and marine-related jobs, contribute to ongoing physical strain that increases the likelihood of long-term health issues. Typically, these environmental challenges are connected with social vulnerabilities, such as unstable income, inadequate education, and informal work situations, all of which influence health choices and restrict participation in preventive healthcare. In several seaside communities, dietary habits are greatly influenced by traditional food preservation and limited availability of fresh fruits and vegetables, leading to high consumption of salt. When paired with a sedentary lifestyle and increased psychological stress, these habits further increase the chances of developing non-communicable disease. Given that lifestyle significantly impacts the likelihood of poor self-rated health in coastal regions, it is theoretically feasible to improve the health of the coastal community by implementing strategies that affect health behaviors on daily basis (23).

Role of Health Facilities & Stakeholders

On the contrary, the health condition of an area is also related to the availability of adequate health facilities (25). Furthermore, one of the important factors behind social inequality is limited access to health services. Lack of funding, long queues, long distances to public health facilities, poor road conditions, lack of transportation and medicines, incomplete laboratories and lack of interest of health workers to conduct laboratory tests are inhibiting factors for the treatment of infections amongst pre-school children (16).

The availability of health facilities and public health behavior cannot be separated from the role of stakeholders or local government. Poor environmental sanitation behavior is also influenced by stakeholders who are less supportive, requiring cooperation between the community and stakeholders in managing environmental sanitation and good maintenance of

available health facilities. In an effort to reduce the incidence of diseases caused by poor hygiene and sanitation, the government in Kampung Bugis, Tanjung Pinang City encourages community initiatives related to environmental health related to basic sanitation. Moreover, the community health center collaborates with cross-sectors and communities to increase community awareness through STBM trigger initiatives, specifically waste management (waste reduction and management) starting from the source, the use of healthy latrine facilities for defecation purposes, and consistently inviting the community to wash their hands with soap and running water (18).

The Influence of Youth on health behavior and personal hygiene Practices

The role of young people as agents of social change is an important factor in addressing health challenges in coastal areas, including poor hygiene practices and a lack of understanding about personal hygiene. Several studies have demonstrated the important role of youth in addressing health issues. According to Yarmaliza et al. (2020) , youth involvement in health education activities has proven effective in increasing awareness of the importance of maintaining personal and environmental health. As a result, there was an 80% increase in knowledge regarding the importance of maintaining environmental health (26).

Furthermore, empowering youth as health cadres through the delivery of educational materials and training in daily hygiene practices can increase knowledge and skills regarding clean and healthy living behaviors by more than 60%. As a result, youth not only understand but also become agents of change in promoting clean living habits among peers, family, and the surrounding community (27). Thus, youth possess strategic potential to serve as agents of education and community empowerment in efforts to improve environmental and individual health.

CONCLUSION AND RECOMMENDATION

Coastal communities face multiple health challenges influenced by the environment, socio-cultural practices, and limited access to resources. Addressing these issues requires the role of local government as well as holistic interventions that integrate community engagement, education on hygiene practices, and infrastructure improvements to improve sanitation. Raising awareness of personal hygiene among coastal communities is necessary to prevent the outbreak of various diseases. Notably, empowering youth to take on key roles can accelerate positive change, as they can serve as pivotal educators and advocates, driving community-wide adoption of healthier practices and environmental stewardship. These findings underscore the importance of tailored strategies to improve health outcomes and well-being of coastal communities.

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