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A Comparative Study on BMI, Socio-Economic Status, Nutritional Knowledge, and Stress Level in Coastal Areas of Kerala

Dr. Divya S R,
Associate Professor of Physical Education,
All Saints' College

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ABSTRACT

This comparative study sought to evaluate the associations among populations in Kerala's coastal regions with regard to Body Mass Index (BMI), socioeconomic position, dietary awareness, and stress level. Alappuzha and Kollam, two carefully chosen coastal regions, accounted for 500 of the survey's participants. The findings indicated that these regions differed significantly in terms of stress level, dietary knowledge, BMI, and socioeconomic position. In order to prevent health inequities and advance well-being, the study emphasizes the necessity of focused dietary treatments and socioeconomic development initiatives in Kerala's coastal communities.

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Introduction

Kerala is a southern Indian coastal state with a vast coastline and a sizable population that depends on marine resources for their livelihood. Due in large part to socioeconomic inequality, restricted access to medical services, and food instability, coastal communities continue to be at risk for nutritional deficiencies despite improvements in healthcare. Environmental, occupational, and cultural factors unique to these coastal settings impact the complex link among BMI, stress levels, nutritional awareness, and socioeconomic position. This study compares these health factors in two of Kerala's most well-known coastal districts.

Hypothesis

Among people in Kerala's coastal regions, there is a statistically significant correlation between socioeconomic status (SES) and body mass index (BMI). As a result, differences in SES, as measured by indices of income, educational attainment, and occupational classification, are reliable indicators of the distribution of adiposity. It is specifically hypothesized that there may be an epidemiological gradient in nutritional status within these communities, with lower SES being associated with a greater propensity for departures from normative BMI values.

This theory is consistent with the social determinants of health theoretical framework, which postulates that differences in socioeconomic status have complex effects on physiological and behavioral outcomes. Diverse patterns in calorie intake, physical activity, and stress-related pathophysiological processes could result from the expected relationship, which could be mediated by variables like differences in health literacy, exposure to nutritional education, and unequal access to resources that promote health. Additionally, it is anticipated that this association's directional character would show a dose-response connection, meaning that small increases in SES are correlated with a corresponding normalization of BMI levels.

In order to separate the independent effects of SES from potential confounders, this hypothesis will be assessed methodologically utilizing multivariate statistical approaches, such as regression analysis and stratified models. The analysis intends to contribute to the larger conversation on health disparities in coastal populations by offering empirical support for the SES-BMI relationship by utilizing a wide range of sociodemographic and health-related factors.

Research Objectives

- To evaluate and contrast the distribution of body mass indexes (BMIs) among people in several Keralan coastal regions.
- To investigate the relationship between BMI and the socioeconomic status (SES) of the people living in the research locations.
- To assess participants' nutritional knowledge and examine how it relates to their current nutritional status.
- To determine and contrast the stress levels of the coastal population's various socioeconomic groupings.

- To investigate how stress levels, nutritional knowledge, socioeconomic position, and BMI are related to one another.
- To draw attention to any differences in health indicators and contributory factors that may exist between the chosen coastal areas.
- To offer suggestions for community-specific health interventions and awareness campaigns that are supported by research.

Literature Review

Numerous studies have shown how socioeconomic characteristics including money, education, and work have a substantial impact on people's physical and mental health, establishing the well-established link between socioeconomic status (SES) and health outcomes in the global health literature. SES has a significant impact on how people access resources and adopt healthy habits in coastal areas where livelihoods are frequently tied to resource-dependent sectors like fishing. According to studies, people in lower socioeconomic classes typically have worse health outcomes, such as greater rates of obesity, chronic diseases, and undernutrition. SES has been found to be a significant predictor impacting BMI trends and health risks in Kerala, where undernutrition and overnutrition coexist in a complex way (Soman & Gupta, 2018).

Health disparities are made worse for coastal people, particularly those living in economically deprived areas, who confront particular difficulties such as restricted access to nutrition education and health care. Another important element affecting health outcomes is nutritional awareness, especially when it comes to eating habits and weight status. Higher levels of nutritional awareness have been linked to healthier dietary choices, which can reduce the risk of obesity and malnutrition, according to a number of studies. Understanding nutrition is crucial to halting the growth of non-communicable diseases (NCDs) associated with poor dietary practices in Kerala, where dietary habits are quickly changing as a result of urbanization and globalization.

According to research, poor eating habits and a lack of nutritional understanding are frequently linked to unhealthy body weight and a higher risk of stress-related diseases (Nair et al., 2019). This emphasizes how crucial it is to include nutritional education in public health initiatives, particularly in coastal communities where traditional food systems are changing. Another important factor influencing health outcomes is stress, both acute and chronic, especially in those with socioeconomic vulnerabilities. Because stress can lead to poor eating habits, inactivity, and

the emergence of chronic illnesses, it has been demonstrated that high levels of stress have an impact on a number of health indicators, including BMI.

Another important factor influencing health outcomes is stress, both acute and chronic, especially in those with socioeconomic vulnerabilities. Because stress can lead to poor eating habits, inactivity, and the emergence of chronic illnesses, it has been demonstrated that high levels of stress have an impact on a number of health indicators, including BMI. According to research conducted in Kerala, people from lower socioeconomic backgrounds report higher levels of stress, which is frequently connected to unstable finances, insecure employment, and subpar living conditions (Kumar & Pradeep, 2017). Kerala's coastal populations are especially vulnerable to these pressures since they frequently work in physically demanding jobs like fishing.

Significance of the Study

Finding health inequities requires an understanding of how body mass index (BMI), socioeconomic position, nutritional awareness, and stress levels interact, particularly in susceptible areas like coastal Kerala. Due to environmental, occupational, and geographic factors that can affect both physical and mental health, these places frequently encounter particular difficulties. This study clarifies how these interrelated elements differ throughout communities and how they affect health outcomes collectively by comparing several districts. The results can direct the creation of focused interventions and assist in identifying populations that are at risk.

Given Kerala's twin burden of non-communicable illnesses and malnutrition, this study is very important. While undernutrition affects some segments of the population, overweight, obesity, and stress-related disorders are becoming more prevalent in others. By affecting access to wholesome food, medical care, and educational materials, socioeconomic inequalities frequently fuel these tendencies. This study offers important insights into the socioeconomic determinants of health in coastal populations by investigating the relationships between BMI and stress levels and income levels and nutritional awareness.

The study also highlights the necessity of region-specific health policies and awareness campaigns. Coastal populations are frequently dependent on jobs like fishing, which can lead to high levels of stress, erratic eating patterns, and physical hardship. It is essential to modify public health plans to take into account the unique lifestyles and health hazards in these regions. The findings of the study

can help community organizations, public health professionals, and policymakers create more locally tailored, efficient initiatives that support long-term health equity and holistic well-being throughout Kerala's coastal regions.

Methodology

500 adults, 250 from the districts of Kollam and 250 from Alappuzha, were chosen at random to participate in a cross-sectional, comparative study. Socioeconomic status, dietary knowledge, and perceived stress levels were evaluated using a standardized questionnaire. Standardized procedures were used to take anthropometric measurements. To identify significant differences between the groups, chi-square tests and descriptive statistics were used to evaluate the data.

There were 500 persons in the study's sample, 250 of whom were chosen at random from the coastal districts of Kollam and Alappuzha in Kerala, India. Because of their unique socioeconomic and cultural traits, which offer a comparative viewpoint on health and wellness results, these districts were selected. To reduce bias, the participants were chosen at random, guaranteeing that the sample was typical of the adult population in these regions. A cross-sectional study methodology was used, which made it possible to gather information at one particular moment and provide a picture of the stress levels, dietary knowledge, and present state of health in these communities.

The participants were assessed on a number of important variables, such as reported stress levels, nutritional knowledge, and socioeconomic status (SES). SES was measured using a collection of factors that are known to affect lifestyle choices and health outcomes, including occupation, income, and level of education. A standardized questionnaire was used to gauge participants' knowledge of nutrition, good eating practices, and the effects of dietary decisions on their health. A validated psychological scale that measures self-reported stress and accounts for both acute and chronic stressors that may have an impact on general well-being was used to measure perceived stress levels.

Anthropometric measures were made in accordance with established protocols in order to get objective health information. The Body Mass Index (BMI) and nutritional status were evaluated using the height, weight, and waist circumference measures that were included. To assess the prevalence of various weight status categories within the sample, the BMI data was divided into several ranges, including underweight, normal weight, overweight, and obese.

Following data collection, chi-square tests were used to assess whether SES, nutritional awareness, stress levels, and BMI differed statistically significantly between the two groups (Kollam and Alappuzha). By examining the independence of observed frequencies, the chi-square test aids in the identification of relationships between variables and is especially helpful for categorical data.

Descriptive statistics were also used to characterize and summarize the data's distribution, variability, and core patterns. This made it possible to clearly comprehend the study population's demographic and health-related traits, laying the groundwork for additional comparisons between the two districts. The combination of these analytical techniques yielded thorough insights into the relationship between BMI and stress levels, dietary knowledge, and SES in Kerala's coastal inhabitants. The results of this study could guide community-specific policies, specialized health education initiatives, and public health interventions meant to enhance the general health and wellbeing of Kerala's coastal people.

Results

Socio-Economic Status

The results showed significant differences in socio-economic status between the two areas ($p < 0.05$).

Area	Low-Income (%)	Middle-Income (%)	High-Income (%)
Area 1	60%	30%	10%
Area 2	40%	40%	20%

Nutritional Knowledge

The results showed significant differences in nutritional knowledge between the two areas ($p < 0.05$).

Area	Poor (%)	Fair (%)	Good (%)
Area 1	70%	20%	10%
Area 2	40%	30%	30%

BMI

The results showed significant differences in BMI between the two areas ($p < 0.05$).

Area	Underweight (%)	Normal Weight (%)	Overweight (%)	Obese (%)
Area 1	15%	40%	30%	15%
Area 2	10%	50%	25%	15%

Stress Level

The results showed significant differences in stress level between the two areas ($p < 0.05$).

Area	Low Stress (%)	Moderate Stress (%)	High Stress (%)
Area 1	40%	30%	30%
Area 2	60%	20%	20%

Discussion

The results show how Kerala's coastal residents' health outcomes are impacted by socioeconomic difficulties and educational inequalities. In addition to having a higher percentage of low-income households, Alappuzha also had higher levels of stress and less nutritional understanding. This implies that comprehensive health education programs emphasizing stress management, nutrition, and income-generating activities are necessary. Better access to community support networks and health services may be the reason for Kollam's improved results.

Suggestions

1. In vulnerable coastal areas, start community-based nutritional education and awareness initiatives.

2. Make coastal Kerala's healthcare system more accessible and well-equipped.

3. Create job openings and revenue-generating projects to improve socioeconomic standing.

4. To address stress-related problems, incorporate mental health services into primary care.

5. For a more comprehensive generalization, carry out more research encompassing additional coastal areas like as Ernakulam and Thiruvananthapuram.

Limitations

The fact that this study was limited to two districts may have limited the findings' applicability to larger populations. The research may not fully capture the range of environmental, cultural, and socioeconomic variables that exist across various locations due to its very limited emphasis. Furthermore, the study did not investigate differences based on gender or occupation, which may have had a substantial impact on the results. Because experiences, beliefs, and behaviors can differ greatly among various demographic and professional groups, ignoring these dimensions may have resulted in an insufficient knowledge of the topics being investigated.

Additionally, the study used a cross-sectional methodology, which collected data at one particular moment in time. Although connections can be found using this method, conclusions regarding causality or the evolution of trends over time are not supported. To identify causal linkages and monitor changes, trends, and long-term impacts, a longitudinal study design that involves repeated observations of the same variables over longer periods of time would be more appropriate. The results would be more reliable and applicable if the sample was more representative in terms of both geography and demographics. In order to offer a more thorough and sophisticated understanding of the subject, future studies should try to solve these shortcomings.

Conclusion

This study shows that Kerala's coastal populations differ significantly in terms of stress levels, nutritional awareness, BMI, and socioeconomic position. In areas like Alappuzha where vulnerabilities are more noticeable, efforts to enhance these indicators must be multifaceted and include healthcare, education, and socioeconomic support. Significant differences in stress levels, nutritional awareness, BMI, and socioeconomic status (SES) between the two districts of Kollam and Alappuzha are highlighted in this study, which offers important insights into the health and socioeconomic disparities within Kerala's coastal inhabitants. According to the findings, people in these coastal locations have a

range of health outcomes, which can be linked to variations in occupation, income, and level of education. It was discovered that Alappuzha in particular was more vulnerable, as shown by higher stress levels, worse nutritional awareness, and lower socioeconomic indicators. Together, these variables raise the prevalence of underweight and overweight people in the area, indicating a dual burden of malnutrition that presents significant public health issues.

It is evident from the discrepancies seen that improving health outcomes in these places calls for a multipronged strategy that goes beyond conventional medical interventions. Since the study shows that occupation, income, and education all have a direct impact on health habits and resource availability, improving socioeconomic conditions must be a top concern. People can be empowered to make healthier eating choices by working to increase nutritional awareness through focused education programs, particularly in low-income communities. When paired with stress-reduction techniques, these educational programs may help lessen the detrimental effects of socioeconomic disadvantage on general health. Interventions must therefore address the social determinants of health that contribute to these inequities in addition to physical health.

The results highlight the necessity of integrated public health approaches that take into account Kerala's coastal region's larger socioeconomic and cultural background. Reducing health disparities in places like Alappuzha requires specialized treatments, like as community-based health initiatives that address nutrition and stress. In order to create a better environment for Kerala's coastal communities, policymakers, healthcare professionals, and community leaders must collaborate to promote initiatives that enhance education, lower stress levels, and offer financial support. The general well-being of these populations can be greatly enhanced by using a comprehensive approach that incorporates socioeconomic upliftment, healthcare access, and nutritional education, opening the door for long-term health equity.

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