Unraveling the Multifaceted Dynamics of Healthcare Expenditure: Exploring the Interplay of Individual Health Status, Lifestyle Choices, and Socio-Economic Factors

ABSTRACT

This study investigates the relationships between demographic factors and health expenditure based on 387 households in Malappuram district between September 2021 and April 2022. Rigorous statistical methodologies, including ANOVA and t-tests, were applied to scrutinize and quantify these relationships. The findings indicate that health status variations across religious affiliations were present but not statistically significant. Similarly, the regression analysis showed limited predictive power of lifestyle factors (low R-squared, non-significant F-statistics) in explaining health expenditure variations. However, it did reveal a significant correlation between intoxicant use and increased healthcare costs, emphasizing the influence of specific behaviors on healthcare expenses. furthermore, the analysis emphasized the multifaceted nature of healthcare spending, influenced by socio-economic factors, healthcare accessibility, and unobservable variables, extending beyond individual lifestyle choices. With a Gini Coefficient of 0.92 indicating pronounced inequality in healthcare expenditure allocation, policymakers should prioritize equitable healthcare provision, address the complexity of healthcare spending, target interventions as necessary, reduce disparities, and continue relying on data-driven decision-making to enhance the healthcare system in the Malappuram district.

Keywords: health expenditure, demographic factors, life style factors, Socio-economic determinants

1. INTRODUCTION

One of the most important aspects affecting a nation's overall growth and development is its healthcare system. For a country to develop and compete on the international stage, its citizens must be educated and in good health. A population that is healthy is more productive and capable of working. Reducing the burden of disease and enhancing overall health outcomes require access to high-quality healthcare it is impossible to overstate the importance of health in a nation's development. It has an impact on social progress, educational achievement, and life quality in general. Sustainable development and prosperity are influenced by investments in healthcare systems, disease prevention, and public health. Good health enhances productivity and workforce participation, leading to increased economic output.

Healthier individuals are more likely to be engaged in the labor force, leading to higher overall productivity. This concept is well-explained in the Human Capital Theory.(Mankiw, N. G., Romer, D., & Weil, D. N. 1992).

A healthy population requires fewer healthcare resources and expenditures. This allows governments to allocate resources to other sectors, such as education and infrastructure, fostering overall development. (World Health Organization.2010). Good health is linked to higher educational attainment. Healthy children are more likely to attend school regularly and perform better academically, contributing to a more educated and skilled workforce (Currie, J. (2009).

In the early stages of economic theory, Gross Domestic Product (GDP) served as the standard metric for assessing a nation's economic progress. It was commonly believed that development and prosperity naturally increased with a rise in GDP per capita. However, this narrow focus on GDP as a development indicator overlooked the well-being of the population. High GDP alone does not guarantee greater prosperity among the people, as the equitable distribution of wealth and resources plays a pivotal role in the overall benefit to society. Esteemed economists like Paul Streeten, Frances Stewart, Mahbub Ul Haq, and Nobel Prize laureate Amartya Sen have criticized GDP as an inadequate proxy for development. Instead, they advocate the concept of human growth, which led to the emergence of Human Development (HD) in the late 1980s, championed by Drs. Amartya Sen and Mahbub ul Haq. The crux of development lies in creating an environment that fosters long, healthy, and productive lives for individuals. Although there has been a significant rise in government healthcare spending globally, increasing at approximately 6% in low and middle-income countries (LICs and MICs) and 4% in high-income countries (HICs), a concerning trend persists. Each year, approximately 100 million people are pushed into extreme poverty because they are compelled to allocate over 35% of their income to access healthcare services (WHO, 2019). Research has shown that simply increasing healthcare spending cannot guarantee universal healthcare and human development (Farag et al., 2013)

Banna Banik et al. (2022) examined how the quality of governance (QoG) influences the relationship between healthcare spending and human development. Their findings revealed that political stability and absence of terrorism (PSnAT) had the most significant net positive impact on health expenditure, contributing to the improvement of human welfare. Moreover, they observed that the interaction effect between expenditure and the Good Governance Index (GGI) was negative but not statistically significant for low-income countries (LICs), negative and statistically significant for sub-Saharan African (SSA) economies, and positive

but not statistically significant for South Asian nations..Esen and Kecili (2021) examined the relationship between health expenditure and economic growth (GDP per capita) in Turkey from 1975 to 2018. The study found evidence of a one-way causality running from health expenditure to economic growth in the short term. As a result, the study recommends that the government should prioritize increasing the allocation of health expenditure in the budget to enhance the overall health status of the population. Kaur (2020) investigated the relationship between health expenditure, health status (proxied by infant mortality rate), and economic growth in India from 1981-82 to 2015-16. The study confirmed a long-term relationship among these variables. It revealed that there was a one-way causality running from health expenditure to economic growth and from health expenditure to the infant mortality rate. The study also found that health expenditure significantly influenced both economic growth and infant mortality rate in India. Safitri (2016) employed panel data from 23 districts over the period 2008–2014 and found only the spending on health has a significant impact on the HDI improvement. Arun and Kumar (2015) investigated the relationship between per capita public health expenditure and GDP per capita in BRICS countries, including Brazil, Russia, India, China, and South Africa, from 1995 to 2013. The study revealed that causality ran from GDP to per capita public health expenditure, but no causality was observed from public health expenditure to GDP. Furthermore, the study concluded that economic growth played a crucial role in enhancing public health expenditure, leading to the provision of improved healthcare facilities. Rajeshkumar and Nalraj (2014) conducted a study to explore the relationship between healthcare expenditure and economic growth in four Indian states: Madhya Pradesh, Orissa, Kerala, and Tamil Nadu, covering the period from 1991 to 2010.. The findings revealed that healthcare expenditure and economic growth were co-integrated, indicating a long-term connection between these variables. Additionally, the study confirmed the presence of unidirectional causality, with health expenditure influencing economic growth in Madhya Pradesh, Orissa, Kerala, and Tamil Nadu.

Craigwell, Bynoe, and Lowe (2012) conducted a study using panel data from 19 Caribbean countries. Their findings from the Granger causality test indicated that public spending on healthcare positively influences life expectancy, leading to an improvement in people's longevity. However, the study did not find any significant impact of public spending on healthcare on the level of education among the population.

Razmi et al. (2012) found no bidirectional relationship between health spending and the Human Development Index (HDI) in Iran. However, their analysis using the Ordinary Least Square (OLS) approach demonstrated that public health expenditure positively contributed

to increasing the HDI. This was attributed to the allocation of funds for enhancing the healthcare system and promoting awareness among the population..

Kerala is the southern Indian state which has a notable achievement in human development, particularly in health and education, set it apart and define the Kerala Model. Despite its low per capita income and limited industrial production, the state's Physical Quality of Life Index (PQLI) surpasses the national average, reflecting the irony of its development. While health and education improvements are crucial, unlocking economic opportunities is equally vital for sustainable development. Kerala's case serves as a striking example of this paradox, showcasing remarkable human development amid perceived poverty due to limitations on expanding productive capacity and entrepreneurial activities. According to Mujeeb Rahman AP and Bassam K (2017) The Human Development Index of the Malappuram district in Kerala is lower than that of the state of Kerala, and in order to raise it, adequate steps must be taken in the areas of standard of living, health, and education. Provide more chances for income-generating activities to boost the per capita income.

Theoretical framework

The major theoretical innovation in the study of the demand for health care has come from Grossman (1972).Demand for healthcare is derived from a demand for health itself. Grossman's model assumes that individuals assess the benefits from outlays that will improve their health compared with expenditure on other goods and services in order to decide their optimal health state.Estimates provided by Grossman (1972),Rosett and Huang(1973) and Phelps and Newhouse(1974) all indicated a positive effect of income on health care expenditure. Grossman's results also indicate a negative relationship between income and the individual's number of healthy days per year. Education was found to be positively related to health stock (Grossman).Leander and Garcia-Gómez (2015) in their study examined the contributing determinants of inequity in healthcare utilization in South Africa. The results indicate that the rich are more likely to use inpatient care than the poor, given the same level of need. Other factors like race, gender, education and the consumption level also contribute to inequity.

Statement of the Problem

Kerala, a culturally diverse state marked by various religions and castes, includes Muslims as its second-largest religious minority. Within this context, Muslims are often recognized as a socioeconomically and educationally disadvantaged group in comparison to other religious categories. Despite Kerala's global recognition for significant achievements in social sectors,

notably education and healthcare, the region is now grappling with health challenges that were once controlled. Communicable diseases and lifestyle-related ailments are showing higher prevalence rates than in the past. According to Navaneethan et al. (2006), Kerala's health landscape presents a paradox of "low mortality and high morbidity." This study aims to bridge this knowledge gap by investigating the influence of household expenditure patterns on health status within Malappuram district.

OBJECTIVES

1. To study the overall health status of individuals in Malappuram district, with a focus on differences based on religious affiliations.
2. To assess the variations in medical expenditure patterns based on household income levels and socio-economic status.
3. To Assess the Relationship Between Lifestyle Factors and Health Expenditure Patterns

HYPOTHESIS

1. Null Hypothesis (H0): There is no significant relationship between lifestyle factors and health expenditure among individuals in the Malappuram district.
   Alternative Hypothesis (Ha): There is a significant relationship between lifestyle factors and health expenditure among individuals in the Malappuram district.
2. Null Hypothesis (H0): There is no significant difference in healthcare expenditure patterns among individuals within various categories of demographic factors (religion, income, place, marital status, job, age, gender, and nature of family) in the Malappuram district.

2. METHODOLOGY

This Section outlines the methodology employed to conduct the comprehensive analysis presented in this study, focusing on the relationship between individual health status, lifestyle factors, and healthcare expenditure patterns. The methodology encompasses data collection, variables selection, statistical techniques, and analytical frameworks adopted to address the research objectives.

Data Collection: Primary data was collected through a structured survey conducted in 2023 within the Malappuram district. A diverse sample of 386 individuals was selected, representing various demographic segments. The survey questionnaire comprised sections that captured demographic information, health status perceptions, lifestyle choices, and

healthcare expenditure patterns. The data collection process was carried out with a rigorous approach to ensure the accuracy and reliability of responses.

Variables Selection: The study analyzed a range of variables to address the research objectives comprehensively. These variables included religious affiliations, socio-economic factors (income levels, household composition), lifestyle choices (choice of food, timely food consumption, use of intoxicants, smoking), general health status perceptions, and healthcare expenditure patterns.

Analytical Techniques: Descriptive Analysis: The collected data was subjected to descriptive analysis, presenting frequencies, percentages, means, and standard deviations of different variables. This allowed for a preliminary overview of the dataset and highlighted initial trends. ANOVA and t-tests: Analysis of Variance (ANOVA) and t-tests were employed to explore disparities in health status and healthcare expenditure patterns across various categories, such as religious affiliations, income levels, age groups, and gender. These techniques facilitated the identification of statistically significant differences. Regression Analysis: Multiple Linear Regression was conducted to assess the relationship between lifestyle factors and healthcare expenditure patterns. The model aimed to explain the variance in health expenditure based on selected independent variables. Coefficients, significance levels, and goodness of fit measures were used to interpret and evaluate the model.

Ethical Considerations: Ethical standards were adhered to throughout the study. Informed consent was obtained from all participants, ensuring their willingness to participate. Data confidentiality and anonymity were maintained, and ethical guidelines were followed in data collection, storage, and analysis.

Limitations: The study is not without limitations. The cross-sectional nature of the data limits causal inferences. The self-reported nature of data introduces potential biases, and unobserved variables could impact the results.

3. RESULTS AND DISCUSSION

Within the following analysis section, we embark on a comprehensive journey to explore multiple facets of healthcare within Malappuram district. Our objectives encompass a range of factors that collectively contribute to the understanding of health dynamics and healthcare utilization patterns among the district's diverse population. Through rigorous examination, we aim to shed light on the intricate interplay between socio-economic variables, demographic characteristics, and healthcare outcomes, ultimately providing insights that can inform targeted interventions and policy enhancements.

The objectives guiding this analysis are as follows:

In this pursuit, we strive to unravel the health status of the district's inhabitants while carefully considering the potential influence of religious affiliations. By elucidating variations in health outcomes among different religious groups, we aim to contribute to a nuanced understanding of the interrelationship between cultural and religious factors and individual well-bein

Table 1. Religious wise Comparison of Health Status of People: Respondents Perspective

		N	Mean	Std. Deviation	Std. Error	ANOVA
General Health Status	Christian	12	3.0000	1.53741	.44381	F (2, 383) =2.258, p= 0.106
	Hindu	131	3.6870	1.02345	.08942	
	Muslim	243	3.6502	1.07808	.06916	
	Total	386	3.6425	1.07952	.05495	
Mental Health Status	Christian	12	3.2500	1.21543	.35086	F (2, 383) =2.070, p= 0.128
	Hindu	131	3.7939	1.01313	.08852	
	Muslim	243	3.8601	1.02700	.06588	
	Total	386	3.8187	1.03108	.05248	

Source: Primary Survey, 2023, Label: 1= Poor, 5= Excellent

The table presents a religious-wise comparison of the health status of respondents in terms of both general health and mental health. The health status is rated on a scale of 1 to 5, where 1 represents poor health and 5 represents excellent health. Upon analysis, several noteworthy observations emerge. Firstly, in terms of general health status, Christians exhibit a mean score of 3.0000, Hindus at 3.6870, and Muslims at 3.6502. The overall mean general health score for all respondents is 3.6425. The ANOVA results reveal an F-value of 2.258 with a corresponding p-value of 0.106. This non-significant p-value implies that the disparities in general health status scores across religious groups are not statistically significant. This might be attributed to the notion that general health status is influenced by a multitude of factors such as genetics, lifestyle, environment, and access to healthcare, which may not be strongly tied to religious affiliation. Turning to mental health status, the mean scores for Christians, Hindus, and Muslims are 3.2500, 3.7939, and 3.8601, respectively. The overall mean mental health score for all respondents is 3.8187. The ANOVA results for mental health status exhibit an F-value of 2.070 with a p-value of 0.128. Similarly, this non-significant p-value indicates that the differences in mental health status scores across religious groups are not statistically significant. This outcome aligns with the understanding

that mental health is influenced by a complex interplay of psychological, biological, and social factors, wherein religious affiliation might not be the sole determinant.

In summary, the statistical outcomes underscore that, within this dataset, religious affiliation does not seem to be a significant factor influencing health status perceptions in terms of both general health and mental health dimensions. Instead, other variables such as socio-economic status, access to healthcare, and individual lifestyle choices might play more substantial roles in shaping health outcomes.

Table 2. Religious wise Comparison of Frequency of Felt Nervous or Anxious over the Past Two Weeks

Frequency		Religion			Total
		Christian	Hindu	Muslim	
Frequently	N	5	32	58	95
	%	41.7	24.4	23.9	24.6
Nearly Everyday	N	2	6	18	26
	%	16.7	4.6	7.4	6.7
Several days	N	5	45	53	103
	%	41.7	34.4	21.8	26.7
Not at all	N	0	48	114	162
	%	0.0	36.6	46.9	42.0
Total	N	12	131	243	386
	%	100.0	100.0	100.0	100.0
Chi-Square Result		**Value= 17.694, df=6, p= 0.007**			

Source: Primary Survey, 2023

The table presents a comparative analysis of the frequency with which respondents from different religious affiliations experience feelings of nervousness or anxiety over the past two weeks. Upon examination, several key patterns emerge. Among Christian respondents, 41.7% report feeling nervous or anxious frequently, 16.7% nearly every day, and 41.7% for several days. None reported not feeling anxious at all. Within the Hindu group, 24.4% reported frequent feelings of anxiety, 4.6% nearly every day, and 34.4% for several days, with 36.6% reporting not feeling anxious at all. In the case of Muslim respondents, 23.9% indicated feeling nervous or anxious frequently, 7.4% nearly every day, and 21.8% for several days. Notably, the largest percentage (46.9%) reported not feeling anxious at all. The Chi-Square test is performed to ascertain whether the observed distribution of frequency categories among the religious groups is statistically significant. The Chi-Square result indicates a value of 17.694 with 6 degrees of freedom (df) and a p-value of 0.007. This p-value suggests that the differences in the distribution of anxiety frequencies among the religious groups are statistically significant at a conventional significance level of 0.05. The statistically significant Chi-Square result implies that there are significant differences in the

distribution of reported anxiety frequencies across religious groups. This divergence might arise from a combination of cultural, societal, and individual factors. It is possible that religious practices, social support systems, and coping mechanisms vary among the different religious groups, influencing how individuals experience and manage feelings of nervousness or anxiety. While the Chi-Square test identifies a significant association, it does not provide information about the nature of the association or causality.

Table 3. Religious wise Comparison of Frequency of Felt Depressed or Hopeless over the Past Two Weeks

Frequency		Religion			Total
		Christian	Hindu	Muslim	
Frequently	N	0	34	43	77
	%	0.0	26.0	17.7	19.9
Nearly Everyday	N	6	19	36	61
	%	50.0	14.5	14.8	15.8
Several days	N	3	24	117	144
	%	25.0	18.3	48.1	37.3
Not at all	N	3	54	47	104
	%	25.0	41.2	19.3	26.9
Total	N	12	131	243	386
	%	100.0	100.0	100.0	100.0
Chi-Square Result		**Value= 50.493, df=6, p= 0.000**			

Source: Primary Survey, 2023

Table 3 provides a comprehensive comparison of the frequency at which respondents across different religious affiliations experience feelings of depression or hopelessness over a two-week period. Examining the data reveals intriguing patterns. Among Christian respondents, none reported experiencing depression or hopelessness frequently, while 50% noted experiencing it nearly every day, 25% for several days, and the remaining 25% not at all. Within the Hindu group, 26% reported frequent feelings of depression, 14.5% nearly every day, 18.3% for several days, and 41.2% not at all. Among Muslim respondents, 17.7% reported feeling depressed or hopeless frequently, 14.8% nearly every day, 48.1% for several days, and 19.3% not at all. The Chi-Square test is conducted to ascertain whether the differences in the distribution of depression or hopelessness frequencies among religious groups are statistically significant. The Chi-Square result is 50.493 with 6 degrees of freedom (df) and a p-value of 0.000. This p-value indicates that the observed differences in the distribution of frequencies are statistically significant at a conventional significance level of 0.05. The statistically significant Chi-Square result suggests substantial variations in the distribution of reported frequencies of depression or hopelessness among religious groups. It is important to recognize that the prevalence of these feelings can be influenced by various

cultural, social, and individual factors. Factors such as religious beliefs, community support systems, and coping mechanisms may play a role in shaping individuals' experiences of depression and hopelessness.

Table 4. Religious wise Comparison of Frequency of Felt Interest or Pleasure in Doing Things over the Past Two Weeks

Frequency		Religion			Total
		Christian	Hindu	Muslim	
Frequently	N	5	71	72	148
	%	41.7	54.2	29.6	38.3
Nearly Everyday	N	5	46	145	196
	%	41.7	35.1	59.7	50.8
Several days	N	2	14	26	42
	%	16.7	10.7	10.7	10.9
Total	N	12	131	243	386
	%	100.0	100.0	100.0	100.0
Chi-Square Result		**Value= 24.127, df=4, p= 0.000**			

Source: Primary Survey, 2023

This table presents a comprehensive analysis of the frequency at which individuals from different religious affiliations experience feelings of interest or pleasure in activities over a two-week period. The table reveals distinctive patterns among respondents. Christian respondents reported feeling interested or finding pleasure in activities with a frequency of 41.7% frequently, 41.7% nearly every day, and 16.7% for several days. In the Hindu group, 54.2% experienced interest or pleasure frequently, 35.1% nearly every day, and 10.7% for several days. Among Muslim respondents, 29.6% felt interest or pleasure frequently, 59.7% nearly every day, and 10.7% for several days. The Chi-Square test is conducted to ascertain whether the differences in the distribution of interest or pleasure frequencies among religious groups are statistically significant. The Chi-Square result is 24.127 with 4 degrees of freedom (df) and a p-value of 0.000. This low p-value indicates that the differences in the distribution of frequencies are statistically significant at the conventional significance level of 0.05. The statistically significant Chi-Square result suggests substantial differences in the distribution of reported frequencies of feeling interest or pleasure among religious groups. These differences could be influenced by various factors, including cultural practices, social norms, and psychological well-being. It is possible that the ways in which individuals from different religious communities find enjoyment in activities may be shaped by their beliefs, traditions, and communal contexts. This table underscores the importance of considering not only negative mental health experiences but also positive emotions and well-being when examining mental health within religious contexts. The observed variations in interest and

pleasure frequencies can inform culturally sensitive mental health interventions that address the diverse needs of different religious communities.

Within the realm of healthcare analysis, the economic dimension stands as a pivotal focal point. Our mission revolves around unearthing the intricate ways in which medical expenditures are allocated across a spectrum of household income levels and socio-economic strata. Through an in-depth exploration of expenditure patterns, our objective is to illuminate potential disparities in healthcare service access. In doing so, we are dedicated to championing the cause of fostering a healthcare ecosystem characterized by equity and fairness. The objective of assessing variations in medical expenditure patterns based on household income levels or socio-economic status holds substantial significance within the realm of healthcare analysis and policy development. This objective addresses the vital issue of equity in healthcare access by unraveling how healthcare expenses are distributed across different economic strata. By scrutinizing expenditure patterns, we gain insights into potential disparities in accessing healthcare services. This knowledge is particularly crucial for identifying segments of the population that might face obstacles in affording necessary medical care, thereby exposing gaps in healthcare equity.

Table 5. Expenditure on Health

Variable		N	Mean	Std. Dev.	Std. Error	ANOVA /t-test
Religion	Christian	12	2650.00	1326.992	383.070	F (2, 370) =4.558, p= 0.011
	Hindu	126	3283.73	2078.305	185.150	
	Muslim	235	2631.91	1934.671	126.204	
Income	Below 20000	191	2139.53	1624.053	117.512	F (5, 367) =14.701, p= 0.000
	20000-40000	93	3318.28	1906.165	197.660	
	40000-60000	52	3823.08	2326.793	322.668	
	60000-80000	21	3333.33	2033.060	443.650	
	80000-100000	10	4300.00	1636.392	517.472	
	Above 100000	6	5833.33	1169.045	477.261	
Place	Rural	307	2931.76	1958.443	111.774	F (2, 370) =1.520, p= 0.220
	Semi urban	4	3000.00	2309.401	1154.70	
	Urban	62	2451.61	2099.394	266.623	
Marital Status	Married	291	3028.35	1985.863	116.413	F (3, 369) =4.705, p= 0.003
	Separated	6	3583.33	1497.220	611.237	
	Single	67	2071.64	1959.654	239.410	
	Widow	9	2500.00	1000.000	333.333	
Job	Casual labour	37	2636.49	1874.635	308.188	F (7, 365) =5.231, p= 0.000
	Domestic servant	3	5000.00	.000	.000	
	Government	25	4300.00	1903.943	380.789	
	No job	114	2705.26	1823.293	170.767	
	Private	59	3322.03	1949.276	253.774	
	Professional	10	2100.00	1197.219	378.594	
	Self employed	66	3037.88	2120.070	260.963	
	Student	59	2001.69	1955.672	254.607	
Age	Below 18	23	1621.74	780.417	162.728	F (3, 369)

	18-40	236	2877.54	2044.704	133.099	=3.533, p= 0.015
	41-60	103	3088.83	1980.071	195.102	
	61-80	11	2681.82	1834.022	552.978	
Gender	Female	42	2245.24	1715.525	264.711	t (371)= -2.112 p=0.035
	Male	331	2929.76	2009.349	110.444	
Nature of family	Joint	114	3443.86	2070.015	193.875	t (371)=3.881 p=0.000
	Nuclear	259	2592.47	1897.487	117.904	
Total		373	2852.68	1988.203	102.945	

Source: Primary Survey, 2023

Table 5 encapsulates a comprehensive analysis of health expenditures while scrutinizing a range of demographic variables. It assesses the impact of variables like Religion, Income, Place, Marital Status, Job, Age, and Gender on health expenditure patterns. A deeper understanding of the table's findings unveils several noteworthy insights:

Religion: The diverse religious groups exhibit varying mean health expenditures. Hindus register the highest mean expenditure at 3283.73, followed by Muslims at 2631.91, and Christians at 2650.00. The observed statistically significant result ($F = 4.558$, $p = 0.011$) highlights the impact of religious affiliation on expenditure patterns.

Income: The upward trajectory of health expenditure aligns with increasing income levels. Respondents with higher incomes tend to allocate more resources toward healthcare. The compelling statistical significance ($F = 14.701$, $p = 0.000$) of this relationship underscores the influence of income on health spending.

Place: While variations in health expenditures are evident across different places, the ANOVA result indicates that these differences are not statistically significant ($F = 1.520$, $p = 0.220$).

Marital Status: A revealing trend emerges, wherein married individuals have the highest mean expenditure at 3028.35, while separated individuals follow closely at 3583.33, and singles and widows display lower mean expenditures. The statistically significant ANOVA result ($F = 4.705$, $p = 0.003$) signals the impact of marital status on expenditure variations.

Job: Distinct job categories exhibit divergent mean health expenditures. The marked statistical significance ($F = 5.231$, $p = 0.000$) of this finding underscores the role of occupation in shaping health expenditure patterns.

Age: Varied health expenditure patterns are noted across different age groups. The statistically significant ANOVA result ($F = 3.533$, $p = 0.015$) accentuates age-related differences in expenditure trends.

Gender: Interestingly, the mean health expenditure for females is notably lower at 2245.24 compared to males at 2929.76. The statistically significant t-test result ($t = -2.112$, $p = 0.035$) emphasizes gender-based expenditure disparities.

Nature of Family: The substantial difference in mean health expenditures between joint and nuclear families, along with the statistically significant t-test result, suggests that family

structure plays a role in influencing health expenditure patterns. Individuals within joint families seem to allocate higher resources toward healthcare compared to those in nuclear families. This disparity could be attributed to factors such as shared financial responsibilities within joint families, which might lead to increased healthcare spending.

In sum, the table underscores the intricate interplay between demographic characteristics and health expenditures. These findings reinforce the need for nuanced policy responses aimed at promoting equitable access to healthcare services. Recognizing the differential impact of demographics on expenditure trends is pivotal for crafting targeted interventions that bridge potential gaps, ultimately ensuring healthcare affordability and accessibility for diverse populations.

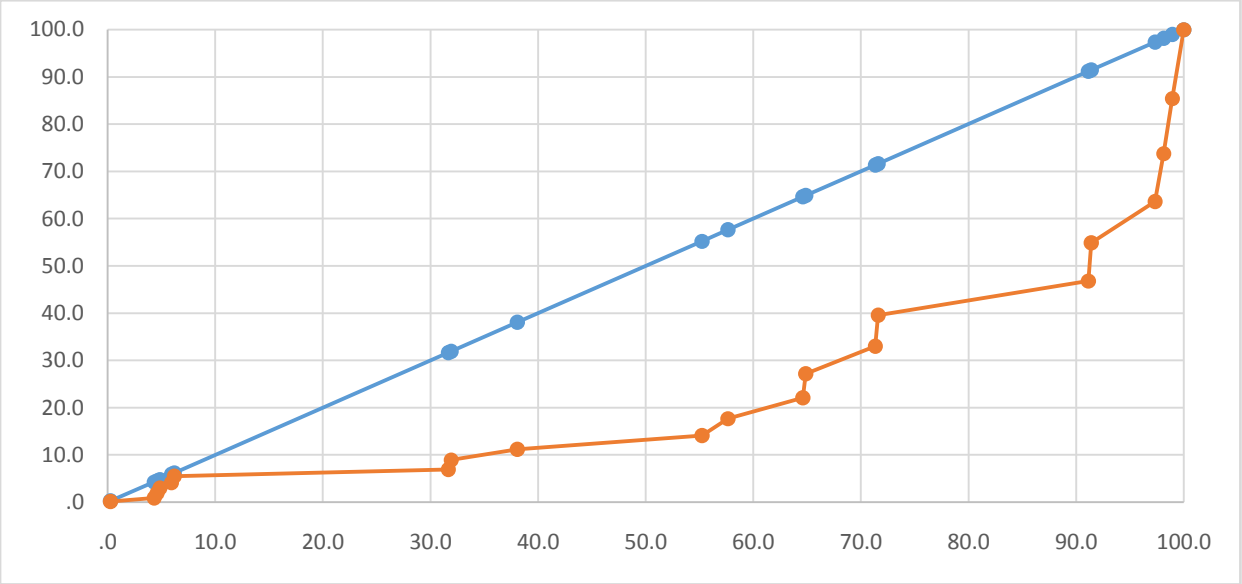

Figure 1 Lorenz Curve of Medical Expenditure.*Source: Primary Survey, 2023*

Table 6. Gini Coefficient of Expenditure on Health

Area Under A	46.12
Area Under B	3.88
Gini Coefficient	0.92

Source: Primary Survey, 2023

Table 6 encapsulates the Gini Coefficient, a measure used to quantify the inequality in the distribution of health expenditure across different segments of the population. The Gini Coefficient of 0.92 is indicative of a substantial level of inequality in the distribution of health expenditure. Such a high value signifies that there is significant disparity in how health expenditures are distributed among the surveyed population. The considerable gap between the Lorenz Curve and the line of perfect equality (as represented by the Area under B) points to pronounced disparities. This result highlights the need for focused policy interventions aimed at reducing the inequality in health expenditure distribution. It suggests that a relatively small portion of the population might be shouldering a disproportionately large

burden of health expenditure, while others have more equitable access to healthcare services. Addressing this imbalance could involve targeted measures to improve healthcare affordability for vulnerable and lower-income segments of the population, thereby working toward a fairer and more inclusive healthcare system.

The exploration of the connection between lifestyle factors and health expenditure patterns holds significant importance for healthcare analysis and policymaking. This objective seeks to uncover how choices such as diet, exercise, smoking, and alcohol consumption are associated with the financial implications of healthcare. By understanding these correlations, this analysis provides evidence-based insights that can guide individuals in making informed lifestyle choices, ultimately impacting their overall well-being and financial burden. Additionally, policymakers can utilize this knowledge to develop targeted interventions that encourage healthier behaviors, thereby potentially reducing healthcare expenditures related to preventable health issues. This objective addresses the economic efficiency of healthcare systems, promotes health equity, and underscores the importance of preventive measures in creating sustainable and effective healthcare frameworks.

Table 7 presents a comprehensive analysis of health expenditure patterns in relation to various lifestyle factors, derived from a primary survey conducted in 2023.

Choice of Food: The analysis reveals that individuals who consume fast food have a slightly higher mean health expenditure of 2916.67, compared to those who opt for homely cooked food with a mean expenditure of 2800.24. However, the t-test result demonstrates no statistical significance ($t = 0.562$, $p = 0.574$), suggesting that the choice of food might not strongly influence health expenditure patterns.

Timely Food Consumption: The data indicates that individuals who consume food on time exhibit a slightly higher mean expenditure of 2876.62, while those who do not consume food on time have a mean expenditure of 2606.06. The t-test result also reveals no statistical significance ($t = -0.746$, $p = 0.456$), indicating that the timing of food consumption might not be a significant driver of expenditure differences.

Use of Intoxicants: The analysis shows that individuals' not using intoxicants have a mean expenditure of 2699.06, while those using intoxicants have a notably higher mean expenditure of 3229.63. The t-test result indicates statistical significance ($t = -2.352$, $p = 0.019$), suggesting that the use of intoxicants can be associated with differences in health expenditure patterns.

Smoking: The data indicates that non-smokers have a mean expenditure of 2822.76, while smokers have a slightly higher mean expenditure of 2977.78. Similar to the other lifestyle factors, the t-test result demonstrates no statistical significance ($t = -0.594$, $p = 0.553$), suggesting that smoking might not be strongly correlated with expenditure differences.

The table's findings suggest that while some lifestyle factors exhibit associations with health expenditure variations, others may not have significant impacts. The results emphasize the complex interplay between lifestyle choices and health-related spending patterns. While certain behaviors, like using intoxicants, appear to be correlated with higher health expenditures, other factors, such as food choices and smoking, seem to have less pronounced relationships. These insights contribute to a nuanced understanding of how lifestyle factors can influence healthcare costs.

Table 7. Expenditure on Health and Lifestyle Factors

Variable		N	Mean	Std. Dev.	Std. Error	t-test
Choice of Food	Fast Food	168	2916.67	2170.699	167.473	t (371)=0.562 p=0.574
	Homely Cooked Food	205	2800.24	1828.897	127.736	
Timely Food Consumption	Not On Time	33	2606.06	2079.504	361.995	t (371)=-0.746 p=0.456
	On Time	340	2876.62	1980.671	107.417	
Use of intoxicants	Not Using	265	2699.06	1997.548	122.708	t (371)=-2.352 p=0.019
	Using	108	3229.63	1922.530	184.996	
Smoking	Not Smoking	301	2822.76	1972.829	113.712	t (371)=-0.594 p=0.553
	Smoking	72	2977.78	2060.645	242.849	
Total		373	2852.68	1988.203	102.945	

Source: Primary Survey, 2023

Table 8. General Health Status and Lifestyle Factors

Variable		N	Mean	Std. Dev.	Std. Error	t-test
Choice of Food	Fast Food	171	3.7836	.97918	.07488	t (384)=-0.595 p=0.552
	Homely Cooked Food	215	3.8465	1.07202	.07311	
Timely Food Consumption	Not On Time	33	4.1212	1.02340	.17815	t (384)=1.768 p=0.078
	On Time	353	3.7904	1.02869	.05475	
Use of intoxicants	Not Using	271	3.7970	1.02169	.06206	t (384)=-631 p=0.528
	Using	115	3.8696	1.05566	.09844	
Smoking	Not Smoking	313	3.8562	1.01988	.05765	t (384)=1.485 p=0.138
	Smoking	73	3.6575	1.07004	.12524	

Total	386	3.8187	1.03108	.05248	

Source: Primary Survey, 2023

This table presents a comprehensive analysis that explores the relationship between individuals' general health status and various lifestyle factors.

Choice of Food: Individuals who consume homely cooked food exhibit a slightly higher mean general health status of 3.8465, compared to those who opt for fast food with a mean health status of 3.7836. However, the t-test result indicates no statistical significance (t = -0.595, p = 0.552), suggesting that the choice of food might not strongly impact general health status.

Timely Food Consumption: Individuals who consume food on time have a mean general health status of 3.7904, while those who do not consume food on time have a slightly higher mean health status of 4.1212. The t-test result indicates no statistical significance (t = 1.768, p = 0.078), suggesting that the timing of food consumption may not significantly affect general health status.

Use of Intoxicants: Individuals not using intoxicants have a mean general health status of 3.7970, while those using intoxicants have a slightly higher mean health status of 3.8696. The t-test result indicates no statistical significance (t = -0.631, p = 0.528), suggesting that the use of intoxicants might not have a significant impact on general health status.

Smoking: Non-smokers have a mean general health status of 3.8562, while smokers have a slightly lower mean health status of 3.6575. The t-test result indicates no statistical significance (t = 1.485, p = 0.138), suggesting that smoking might not strongly correlate with general health status.

The table's findings indicate that there are limited statistically significant relationships between general health status and the examined lifestyle factors. While some lifestyle choices show slight variations in general health status, such as timely food consumption, these variations may not reach a level of significance. This suggests that other factors beyond those examined in the table, such as genetics, access to healthcare, and overall lifestyle, may also play a role in influencing general health status.

Table 9. Regression Result of Expenditure on Health and Lifestyle Factors

Model Summary				
R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.128	.016	.006	1982.659	1.296
ANOVA				

	Sum of Squares	df	Mean Square	F	Sig.
Regression	23913014	4	5978253.69	1.521	.195
Residual	144658430.	368	3930935.60		
Total	1470497319	372			

Coefficients

	Unstandardized Coefficients		Stand. Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2581.1	361.360		7.143	.000
Choice of Food[a]	-107.42	206.625	-.027	-.520	.603
Timely Food Consumption[a]	205.62	364.596	.029	.564	.573
Use of intoxicants[a]	529.52	239.287	.121	2.213	.028
Smoking[a]	-52.43	275.111	-.010	-.191	.849

Source: Primary Survey, 2023, a- Dummy Variable

Table 9 provided the outcomes of a regression analysis conducted to examine the relationship between health expenditure and various lifestyle factors. The Model Summary indicated a weak positive correlation (R = 0.128) between independent variables (lifestyle factors) and dependent variable (health expenditure), with a low coefficient of determination (R Square = 0.016). The ANOVA results showed that the regression model did not significantly explain the variance in health expenditure (F = 1.521, p = 0.195). In the Coefficients section, unstandardized coefficients, standardized coefficients (Beta), t-values, and significance levels were presented for each lifestyle factor. The results indicated that the choice of food, timely food consumption, and smoking were not statistically significant predictors of health expenditure, while the use of intoxicants showed a positive and statistically significant relationship (β = 0.121, t = 2.213, p = 0.028). The regression model demonstrated limited explanatory power in capturing the variation in health expenditure based on the examined lifestyle factors. The regression results suggest limited explanatory power of the selected lifestyle factors on health expenditure. The low R Square and insignificant ANOVA F-statistic indicate that the model as a whole does not significantly explain the variance in health expenditure. While the use of intoxicants appears to have a statistically significant positive relationship with health expenditure, the magnitudes of the coefficients are generally small. The lack of statistical significance for other lifestyle factors, like choice of food and smoking, suggests that these specific factors might not have strong predictive capabilities regarding health expenditure patterns.

The hypothesis tests were conducted to examine whether various demographic factors have a significant influence on health expenditure patterns among individuals in the Malappuram district. The results suggest that certain demographic factors, including religion, income, marital status, occupation, age, gender, and family structure, are associated with variations in health expenditure patterns among individuals in the Malappuram district. These findings provide valuable insights into how these demographic characteristics influence individuals' healthcare spending behaviors. Similarly, the analysis suggests that while the use of intoxicants shows a statistically significant relationship with health expenditure, the other examined lifestyle factors, namely the choice of food, timely food consumption, and smoking, do not exhibit a significant relationship with health expenditure patterns among individuals in the Malappuram district.

CONCULISON

In conclusion, the comprehensive analysis undertaken in this study has illuminated various aspects of the complex interplay between individual health status, lifestyle choices, and healthcare expenditure patterns. The study aimed to address a range of objectives, including studying the health status disparities across different religious affiliations, assessing variations in medical expenditure based on household income levels and socio-economic status, and exploring disparities in medical expenditure allocation based on age, gender, and family size. The analysis of health status across religious affiliations indicated that while slight variations existed, they were not statistically significant. However, this observation underscores the need for continued efforts to ensure equitable healthcare provisions across diverse religious communities. An important dimension of the study involved investigating the economic implications of lifestyle choices. While certain lifestyle factors displayed associations with health expenditure variations, the effects were often modest or statistically insignificant. This highlights the intricate nature of health-related spending patterns and the need to consider a broader range of determinants when addressing healthcare costs. Furthermore, the regression analyses conducted to understand the relationship between lifestyle factors and health expenditure provided valuable insights. The modest R-squared values and non-significant F-statistics indicated that the selected lifestyle factors might not have substantial predictive power in explaining variations in health expenditure. However, the statistically significant relationship between the use of intoxicants and higher health expenditure underlines the potential impact of certain behaviours on healthcare costs. Throughout this analysis, it became evident that healthcare expenditure patterns are influenced by a multitude of factors, extending beyond individual lifestyle choices. Socio-economic factors, access to healthcare, and other unobserved variables can significantly contribute to the observed expenditure patterns. As a result, these findings emphasize the

need for a holistic approach to healthcare policy and individual decision-making. Policymakers should consider not only lifestyle interventions but also broader systemic improvements to ensure equitable access to healthcare and effective cost management. Individual choices, while impactful, are just one facet of the intricate web of factors shaping healthcare expenditure patterns. In conclusion, this study underscores the complexity of healthcare expenditure, the multifaceted nature of individual health status, and the interplay of lifestyle choices with broader socio-economic and systemic dynamics.

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