HEALTH STATUS AND HEALTH FINANCING AMONG GERIATRIC POPULATION IN KERALA

Thesis
submitted to the University of Calicut
for the award of the Degree of
DOCTOR OF PHILOSOPHY IN ECONOMICS

By

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August 2025

DECLARATION

I hereby affirm that the work for this thesis titled **'Health Status and Health Financing Among Geriatric Population of Kerala'** submitted to the University of Calicut for the award of the Degree of Doctor of Philosophy in Economics is an original record of research work carried out by me under the guidance and supervision of Dr. Shabeer K. P , Associate Professor, Government Arts and Science College, Kozhikode. I also declare that no part of this thesis has been presented for the award of any degree, diploma, fellowship, or other similar title or recognition of any University/Institution before. I declare that the thesis has undergone plagiarism check using iThenticate software at CHMK Library, University of Calicut and the similarity index is found within the permissible limit. I also declare that the thesis is free from AI generated contents.

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This is to certify that this thesis titled **'Health Status and Health Financing Among Geriatric Population of Kerala'** prepared by **Mrs. Niranjana Govind** for the award of the Degree of Doctor of Philosophy in Economics of the University of Calicut, is a record of bonafide research work carried out by her under my guidance and supervision. No part of this thesis has been submitted for the award of any degree, diploma, fellowship, or other similar title or recognition before.

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ABSTRACT

Population ageing is a growing phenomenon worldwide. The geriatric population, generally defined as individuals aged 60 years and above in the Indian context, represents a demographic group with distinctive health needs and vulnerabilities. Kerala, with one of the highest proportions of elderly in India, faces unique challenges in ensuring adequate health care access and financial protection for this age group. Against this backdrop, the present study investigates the health status, health care financing, and demand for health care among the elderly in Kerala, using the Minimum Standard approach popularised by the World Health Organization as its conceptual framework.

This study adopts a mixed-method approach, using both primary and secondary data. Primary data were collected directly from elderly individuals across diverse districts of Kerala to capture variations in demographic, socioeconomic, and health-related characteristics. Secondary data were sourced from established databases and surveys, including the Building a Knowledge Base on Population Ageing in India (BKPAI) survey, the Longitudinal Ageing Study in India (LASI), and the Kerala Ageing Survey (KAS). This combination of data sources enabled a comprehensive analysis of health conditions, patterns of healthcare utilisation, financial burdens, and coping mechanisms.

The findings reveal a complex picture of elderly health in Kerala. Patterns of physical activity vary considerably between rural and urban areas, reflecting lifestyle differences rather than a simple absence of exercise. While many elderly individuals report no unhealthy habits, chronic illnesses—particularly hypertension, diabetes, and high cholesterol—are highly prevalent, outweighing acute ailments in frequency. Self-rated health assessments are generally positive, yet a substantial proportion live with diagnosed health conditions.

A key contribution of the study lies in identifying the major determinants of healthcare demand. Among the various socio-demographic factors examined, location (rural versus urban residence) and educational attainment (particularly higher secondary and degree-level education) emerged as statistically significant. These variables influence not only the propensity to seek care but also the type and frequency of services

accessed. This suggests that physical proximity to facilities, health awareness, and information access play central roles in shaping healthcare demand among the elderly.

From a financing perspective, the study highlights a high reliance on out-of-pocket (OOP) expenditure, with medicines constituting the largest share of household spending on health. The use of private health care facilities, the presence of chronic diseases, and the number of elderly in a household are important predictors of higher OOP costs. A considerable proportion of households face catastrophic health payments, particularly at lower expenditure thresholds, underscoring the inadequacy of financial protection mechanisms.

Health insurance coverage among the elderly is moderately widespread, with a combination of public and private schemes in operation. The Rashtriya Swasthya Bima Yojana (RSBY) covers a significant proportion of the elderly, while employer-linked schemes remain rare. Private health insurance is increasingly adopted by middle- and higher-income households. Nevertheless, insurance and social security benefits cover only a fraction of actual costs, leading many elderly to rely on personal income and savings to meet health expenses.

Overall, the study underscores the interlinked nature of health status, demand for health care, and financing arrangements within Kerala's ageing population. The evidence points to an urgent need for policy interventions aimed at strengthening preventive health measures, improving health literacy, enhancing financial protection through expanded and effective insurance coverage, and ensuring equitable service delivery across both rural and urban areas. By recognising location and education as pivotal determinants, strategies can be more effectively targeted to bridge disparities and promote healthy ageing in the state.

Keywords: Geriatric Health, Health Financing, Health status, Health care Demand, Out-of-Pocket Health Expenditure, Catastrophic Health Expenditure

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സംഗ്രഹം

ലോകമെമ്പാടും വളരുന്ന ഒരു പ്രതിഭാസമാണ് ജനസംഖ്യാ വാർദ്ധക്യം. ഇന്ത്യൻ സാഹചര്യത്തിൽ 60 വയസ്സും അതിൽ കൂടുതലുമുള്ള വ്യക്തികൾ എന്ന് പൊതുവെ നിർവചിക്കപ്പെടുന്ന വയോജന ജനസംഖ്യ, വ്യതിരിക്തമായ ആരോഗ്യ ആവശ്യങ്ങളും ദുർബലതകളും ഉള്ള ഒരു ജനസംഖ്യാ ഗ്രൂപ്പിനെ പ്രതിനിധീകരിക്കുന്നു. ഇന്ത്യയിലെ ഏറ്റവും ഉയർന്ന പ്രായമായ അനുപാതങ്ങളിലൊന്നായ കേരളം, ഈ പ്രായക്കാർക്ക് മതിയായ ആരോഗ്യ പരിരക്ഷയും സാമ്പത്തിക പരിരക്ഷയും ഉറപ്പാക്കുന്നതിൽ അതുല്യമായ വെല്ലുവിളികൾ നേരിടുന്നു. ഈ പശ്ചാത്തലത്തിൽ, ലോകാരോഗ്യ സംഘടന അതിന്റെ ആശയപരമായ ചട്ടക്കൂടായി ജനപ്രിയമാക്കിയ മിനിമം സ്റ്റാൻഡേർഡ് സമീപനം ഉപയോഗിച്ച്, കേരളത്തിലെ പ്രായമായവർക്കിടയിലെ ആരോഗ്യ നില, ആരോഗ്യ സംരക്ഷണ ധനസഹായം, ആരോഗ്യ സംരക്ഷണത്തിനുള്ള ആവശ്യം എന്നിവ ഇപ്പോഴത്തെ പഠനം അന്വേഷിക്കുന്നു.

പ്രാഥമിക, ദ്വിതീയ ഡാറ്റകളെ അടിസ്ഥാനമാക്കിയുള്ള ഒരു മിക്സ്ഡ്-മെത്തേഡ് സമീപനമാണ് പഠനം സ്വീകരിക്കുന്നത്. ജനസംഖ്യാ, സാമൂഹിക സാമ്പത്തിക, ആരോഗ്യ സംബന്ധിയായ സ്വഭാവസവിശേഷതകളിലെ വ്യതിയാനങ്ങൾ പിടിച്ചെടുക്കുന്നതിനായി കേരളത്തിലെ വിവിധ ജില്ലകളിലെ പ്രായമായ വ്യക്തികളിൽ നിന്ന് നേരിട്ട് പ്രാഥമിക ഡാറ്റ ശേഖരിച്ചു. ബിൽഡിംഗ് എ നോളജ് ബേസ് ഓൺ പോപ്പുലേഷൻ ഏജിംഗ് ഇൻ ഇന്ത്യ (BKPAI) സർവേ, ലോഞ്ചിറ്റ്യൂഡിനൽ ഏജിംഗ് സ്റ്റഡി ഇൻ ഇന്ത്യ (LASI), കേരള ഏജിംഗ് സർവേ (KAS) എന്നിവയുൾപ്പെടെ സ്ഥാപിതമായ ഡാറ്റാബേസുകളിൽ നിന്നും സർവേകളിൽ നിന്നും ദ്വിതീയ ഡാറ്റ ശേഖരിച്ചു. ഡാറ്റാ സ്രോതസ്സുകളുടെ ഈ സംയോജനം ആരോഗ്യസ്ഥിതികൾ, ആരോഗ്യ സംരക്ഷണ ഉപയോഗ രീതികൾ, സാമ്പത്തിക ബാധ്യതകൾ, നേരിടാനുള്ള സംവിധാനങ്ങൾ എന്നിവയുടെ സമഗ്രമായ വിശകലനം സാധ്യമാക്കി.

കേരളത്തിലെ പ്രായമായവരുടെ ആരോഗ്യത്തിന്റെ സങ്കീർണ്ണമായ ഒരു ചിത്രം വെളിപ്പെടുത്തുന്നു. വ്യായാമത്തിന്റെ ലളിതമായ അഭാവത്തേക്കാൾ ജീവിതശൈലി വ്യത്യാസങ്ങൾ പ്രതിഫലിപ്പിക്കുന്ന ഗ്രാമപ്രദേശങ്ങളിലും നഗരപ്രദേശങ്ങളിലും ശാരീരിക പ്രവർത്തനങ്ങളുടെ രീതികൾ ഗണ്യമായി വ്യത്യാസപ്പെട്ടിരിക്കുന്നു. പല പ്രായമായ വ്യക്തികളും അനാരോഗ്യകരമായ ശീലങ്ങളൊന്നും റിപ്പോർട്ട് ചെയ്യുന്നില്ലെങ്കിലും, വിട്ടുമാറാത്ത രോഗങ്ങൾ - പ്രത്യേകിച്ച് രക്താതിമർദ്ദം, പ്രമേഹം, ഉയർന്ന കൊളസ്ട്രോൾ - വളരെ വ്യാപകമാണ്, ആവൃത്തിയിൽ ഗുരുതരമായ രോഗങ്ങളെ മറികടക്കുന്നു. സ്വയം വിലയിരുത്തിയ ആരോഗ്യ വിലയിരുത്തലുകൾ പൊതുവെ പോസിറ്റീവ് ആണ്, എന്നിരുന്നാലും ധാരാളം വയോജനങ്ങൾ രോഗനിർണയം നടത്തിയ ആരോഗ്യ അവസ്ഥകളുമായി ജീവിക്കുന്നു.

ആരോഗ്യ സംരക്ഷണ ആവശ്യകതയുടെ പ്രധാന നിർണ്ണായക ഘടകങ്ങളെ തിരിച്ചറിയുക എന്നതാണ് പഠനത്തിന്റെ പ്രധാന സംഭാവന. പരിശോധിച്ച വിവിധ സാമൂഹിക-ജനസംഖ്യാ ഘടകങ്ങളിൽ, സ്ഥാനം (ഗ്രാമീണ വസതിയും നഗരവാസവും) വിദ്യാഭ്യാസ നേട്ടവും (പ്രത്യേകിച്ച് ഹയർ സെക്കൻഡറി, ബിരുദതല വിദ്യാഭ്യാസം)

സ്ഥിതിവിവരക്കണക്കനുസരിച്ച് പ്രാധാന്യമർഹിക്കുന്നു. ഈ വേരിയബിളുകൾ പരിചരണം തേടാനുള്ള പ്രവണതയെ മാത്രമല്ല, സേവനങ്ങളുടെ തരത്തെയും ആവൃത്തിയെയും സ്വാധീനിക്കുന്നു. സൗകര്യങ്ങളോടുള്ള ഭൗതിക സാമീപ്യം, ആരോഗ്യ അവബോധം, വിവര ലഭ്യത എന്നിവ പ്രായമായവരിൽ ആരോഗ്യ സംരക്ഷണ ആവശ്യകത രൂപപ്പെടുത്തുന്നതിൽ കേന്ദ്ര പങ്ക് വഹിക്കുന്നുണ്ടെന്ന് ഇത് സൂചിപ്പിക്കുന്നു.

ധനസഹായ വീക്ഷണകോണിൽ നിന്ന്, ആരോഗ്യത്തിനായുള്ള ഗാർഹിക ചെലവിന്റെ ഏറ്റവും വലിയ പങ്ക് മരുന്നുകളുടേതായതിനാൽ, പോക്കറ്റിൽ നിന്ന് വാങ്ങുന്ന (OOP) ചെലവുകളെ ഉയർന്ന തോതിൽ ആശ്രയിക്കുന്നതായി പഠനം എടുത്തുകാണിക്കുന്നു. സ്വകാര്യ ആരോഗ്യ സംരക്ഷണ സൗകര്യങ്ങളുടെ ഉപയോഗം, വിട്ടുമാറാത്ത രോഗങ്ങളുടെ സാന്നിധ്യം, ഒരു വീട്ടിലെ പ്രായമായവരുടെ എണ്ണം എന്നിവ ഉയർന്ന OOP ചെലവുകളുടെ പ്രധാന പ്രവചനങ്ങളാണ്. ഗണ്യമായ അനുപാതം കുടുംബങ്ങൾ വിനാശകരമായ ആരോഗ്യ പേയ്മെന്റുകൾ നേരിടുന്നു, പ്രത്യേകിച്ച് കുറഞ്ഞ ചെലവ് പരിധികളിൽ, ഇത് സാമ്പത്തിക സംരക്ഷണ സംവിധാനങ്ങളുടെ അപര്യാപ്തതയെ അടിവരയിടുന്നു.

പൊതു, സ്വകാര്യ പദ്ധതികളുടെ മിശ്രിതത്തോടെ, പ്രായമായവരിൽ ആരോഗ്യ ഇൻഷുറൻസ് പരിരക്ഷ മിതമായ തോതിൽ വ്യാപകമാണ്. രാഷ്ട്രീയ സ്വാസ്ഥ്യ ബീമാ യോജന (RSBY) പ്രായമായവരിൽ ഒരു പ്രധാന ഭാഗത്തെ ഉൾക്കൊള്ളുന്നു, അതേസമയം തൊഴിലുടമയുമായി ബന്ധപ്പെട്ട പദ്ധതികൾ അപൂർവമായി തുടരുന്നു. ഇടത്തരം, ഉയർന്ന വരുമാനമുള്ള കുടുംബങ്ങൾ സ്വകാര്യ ആരോഗ്യ ഇൻഷുറൻസ് കൂടുതലായി സ്വീകരിക്കുന്നു. എന്നിരുന്നാലും, ഇൻഷുറൻസും സാമൂഹിക സുരക്ഷാ ആനുകൂല്യങ്ങളും യഥാർത്ഥ ചെലവുകളുടെ ഒരു ഭാഗം മാത്രമേ ഉൾക്കൊള്ളുന്നുള്ളൂ, ഇത് പല പ്രായമായവരെയും ആരോഗ്യ ചെലവുകൾ നിറവേറ്റുന്നതിന് വ്യക്തിഗത വരുമാനത്തെയും സമ്പാദ്യത്തെയും ആശ്രയിക്കാൻ പ്രേരിപ്പിക്കുന്നു.

മൊത്തത്തിൽ, കേരളത്തിലെ പ്രായമാകുന്ന ജനസംഖ്യയിലെ ആരോഗ്യ നില, ആരോഗ്യ സംരക്ഷണത്തിനായുള്ള ആവശ്യം, ധനസഹായ ക്രമീകരണങ്ങൾ എന്നിവയുടെ പരസ്പരബന്ധിതമായ സ്വഭാവം പഠനം അടിവരയിടുന്നു. പ്രതിരോധ ആരോഗ്യ നടപടികൾ ശക്തിപ്പെടുത്തുക, ആരോഗ്യ സാക്ഷരത മെച്ചപ്പെടുത്തുക, വിപുലീകരിച്ചതും ഫലപ്രദവുമായ ഇൻഷുറൻസ് പരിരക്ഷയിലൂടെ സാമ്പത്തിക സംരക്ഷണം വർദ്ധിപ്പിക്കുക, ഗ്രാമപ്രദേശങ്ങളിലും നഗരപ്രദേശങ്ങളിലും തുല്യമായ സേവന വിതരണം ഉറപ്പാക്കുക എന്നിവ ലക്ഷ്യമിട്ടുള്ള നയ ഇടപെടലുകളുടെ അടിയന്തിര ആവശ്യത്തിലേക്ക് തെളിവുകൾ വിരൽ ചൂണ്ടുന്നു. സ്ഥലവും വിദ്യാഭ്യാസവും നിർണായക നിർണ്ണായക ഘടകങ്ങളായി തിരിച്ചറിയുന്നതിലൂടെ, സംസ്ഥാനത്തെ അസമത്വങ്ങൾ നികത്തുന്നതിനും ആരോഗ്യകരമായ വാർദ്ധക്യത്തെ പ്രോത്സാഹിപ്പിക്കുന്നതിനും തന്ത്രങ്ങൾ കൂടുതൽ ഫലപ്രദമായി ലക്ഷ്യമിടുന്നു.

സൂചകപദങ്ങൾ: വയോജന ആരോഗ്യം, ആരോഗ്യ ധനസഹായം, ആരോഗ്യ സ്ഥിതി, ആരോഗ്യ സംരക്ഷണ ആവശ്യം, സ്വന്തം ചെലവിൽ ലഭിക്കുന്ന ആരോഗ്യ ചെലവ്, ദുരന്തകരമായ ആരോഗ്യ ചെലവ്

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CHAPTER 1
INTRODUCTION

1.1 The Context

World population is rising considerably and has reached about 8.2 billion in 2024 (United Nations., 2024). Alteration in an nation's population occurs over the years through a phenomenon recognized as demographic transition, wherein the structure of population changes along with the age distribution. Decline in both mortality and fertility rates results in reduced births and extended life spans. The process of demographic transition involves initial acceleration and subsequent decrease in population and thereby shift in the age distribution of population. This results in a progressive increase in the proportion of older population. Since 1950, the geriatric population has been rising and people above 60 years is expected to reach 2.1 billion by 2050 and those above 80 years is expected to triple and reach 426 million (United Nations., 2022). The old age dependency ratio has been rising over the years according to United Nations and is expected to increase further in the coming years. It was observed to be 11.3 in 2005 and 11.7 in 2010. This ratio is expected to touch 18 by 2030. It has been observed that since 1950 the geriatric population has tripled. This process is high in the developed nations and is growing faster in developing nations. Although ageing may be considered as a worldwide issue with certain countries being identified as 'demographic outliers' by UN, Europe and Asia are identified as regions with more nations experiencing later phases of demographic ageing. Asia is in the fifth stage of demographic transition characterized by low fertility rate and low death rate. Improvement in health care facilities and overall quality of life has contributed to this phenomenon. UN observes fertility, mortality and migration as the determinants of size and age composition of population (United Nations., 2017). A decline in fertility and increase in longevity contributes to population ageing whereas immigration slows down the process as migrant population is generally younger people. But eventually they get added to older population.

1.1.1 The Indian Scenario

India, as a developing country, is experiencing rapid ageing. According to “India Ageing Report” by United Nations Population Fund (UNFPA), the share of population above 60 years of age was 8 percent in 2005, 10.5% in 2022 and is anticipated to reach 20.8 % by the year 2050. The decadal growth rate is estimated to be 41% (UNFPA 2023). The World Health Organization expects the proportion of people aged 60 and above to rise from 12% to 22% (WHO, 2018). This means that one, in every five individuals globally falls into this age group (United Nations., 2017). Termed as the "century of the elderly " the current century is followed by an era known as the "ageing of the aged" (Help Age India., 2014; Irudaya Rajan et al., 2020). Estimates suggest that by 2018, about 80% of the ageing population will be found in low and middle-income countries (WHO, 2018). In India, the process of aging is progressing swiftly resulting in a surge in the percentage of adults within the nation. The number of individuals is increasing by 2.7% annually with their count escalating from 77 million during the census conducted in 2001 to reaching up to about 153 million by 2023 (Rajan and Mishra., 2020).

The trend of growth is expected to continue at a rate of 3.6%, per year as noted by the Government of Kerala in 2009 and research by Irudaya Rajan and others in 2020. In India the proportion of elderly people compared to the working age population was documented at 14.2% during the 2011 Census, with Kerala showing a ratio of 19.6% mainly due to an increase in life expectancy from birth (Government of Kerala, 2017). This points towards an increase, in the number of individuals residing in the state.

1.1.2 An Overview of Kerala

Since there is difference in socio economic development, cultural norms and political context, different states are at different levels of demographic transition in the country. This results in unevenness and complexities in framing policies for the authorities. Out of the twenty-nine states in the country, Kerala is one of the most aging states and achieved below replacement level fertility much before other states. The elderly population in Kerala is growing faster than the rest of the nation. As per the Census of 2011, Kerala had a total population of nearly 3.36 crores with 12.6 percent

individuals aged 60 years and higher. Since 1981, every year one million elderly people are added to Kerala's population (Economic Review., 2017). Old age dependency ratio was 26.1 in 2021 and expected to increase to 34.3 percent in 2031(India Ageing Report; 2023). Studies suggest that population ageing in Kerala is leading to increased health care demand and expenditures, particularly for long-term care, and is necessitating improvements in social and health infrastructure to address the health issues prevalent among the elderly (Kutty., 2000).

1.2 Significance of the Study

Ageing population become a burden on the resources of a country as they are considered to be dependent. A fall in demographic dividend poses challenges to a nation's growth. In addition to that they face several medical, sociological, financial and economic issues. The aging population faces high rates of morbidity and mortality due to infectious diseases. All the more majority of them are succumbed to life style diseases like diabetes, high blood pressure, cholesterol and non-communicable diseases like cancer, arthritis, hypertension, cataract and are on the rise in the recent years. Several studies have identified various types of disabilities associated with ageing relating to vision, speech, hearing, mobility and mental health that limits the daily functioning of elderly. Studies have been conducted based on surveys like SAGE[1], LASI[2], BKPAI[3] that revealed men in a much better off position compared to women in case of self-rated health (UNFPA, 2017).

Kerala's achievements referred to as 'Kerala Model of Development' is characterized by high social indicators despite moderate economic growth. The State's health success story is rooted in a combination of historical, social and policy-driven factors.

Kerala has one of the highest literacy rates in India, particularly among women. Individuals could make more precise decisions on health and hygiene as a result of high educational attainments. The State has a well-focused public health care system which ensures access to basic health services to all sections of the society. Maternal and child health have been prioritized in the state, which in turn resulted in decline in maternal and infant mortality rates. Programs promoting institutional deliveries, immunization drives, and nutrition interventions have been successful.

Kerala's healthcare system involves strong community participation. Initiatives like the Kudumbashree program, a women-centric self-help group, and the Asha worker network under the National Health Mission have mobilized grassroots efforts for better health outcomes (BKPAI, 2013).

Kerala's robust healthcare system has demonstrated resilience during epidemics such as the Nipah virus and COVID-19 (Government of Kerala ,2023). Kerala's health situation is characterized by high health indicators and achievements and its health success story is a testament to the power of public investment in education and healthcare, combined with a strong focus on social equity. While challenges such as rising lifestyle diseases and an aging population remain, the state continues to set an example for others to emulate in achieving comprehensive health and social development (Simon. T.D., 2007).

There has been an increased demand for health care services due to the prevalence of chronic illnesses and improved accessibility to medical services in Kerala (V.R. Kutty 2000). Age, occupation, level of education and marital status play an important role in the health seeking behaviour of elderly in rural Kerala and most of them seek medical assistance for chronic conditions (Rajeev. K et al., 2023). The higher proportion of elderly and the associated health issues and problems they face emphasizes the need to look into the demand for health care among the elderly population of the state. In order to cater to the demand requirements there exist a need for a well-developed and maintained health care system.

With almost the entire elderly population facing health problems in one way or the other, it becomes important to look into the health status of the elderly people, who forms a significant share of the state's population. Elderly in Kerala exhibit higher well-being compared to other regions in India, attributed to strong social and emotional well-being along with high development levels in the state (Bhaswati Das et al., 2018). The health and well-being of nonagenarian individuals in Kerala are relatively better due to improved livelihood, food security, and healthcare, emphasizing the importance of social and family support for this age group (K.R Nayar et al., 2023).

Yet another issue that needs to be discussed is financing of health care among the elderly. Almost half of the elderly people have a monthly income below 1000 rupees and more than half of them face the problem of inadequate income and depends on family members for their expenses (S.S Mini & U. Anuja, 2017). Findings from The Building a Knowledge Base on Population Ageing in India (BKPAI) survey, conducted in 2011, revealed that one in every four elderly person faced financial constraint as the primary reason for not taking treatment for heart diseases. Furthermore, there might exist differences in methods of financing health care among the elderly based on their socio-economic status. As elderly people are considered as mostly dependent and do not fall in the working group the ways and methods of financing health care and its determinants needs attention.

Numerous research studies have been carried out to explore the socioeconomic challenges and healthcare concerns faced by the elderly population. The term geriatric refers to anything related to the healthcare of elderly people. WHO observes the health issues faced by elderly population as geriatric syndromes (WHO, 2018) and hence the primary focus of this specific research is on the examination of health concerns among geriatric population in Kerala, as well as the financial mechanisms that facilitate healthcare provisions. Emphasis is placed on the demand for and supply of health care systems and the status of health along with the methods of financing health care and its determinants, an aspect that has been notably overlooked in previous scholarly inquiries.

1.3 Statement of the problem and Research gap

The socio-economic challenges and health care concerns of the elderly have been studied extensively. But there exist a significant gap in research when it comes to analysing health issues specific to the elderly population of the State. Old age is characterized by both psychological and physiological issues and disabilities and hence the need for health care is obvious and inevitable. Thus, demand for health services among the elderly need to be analysed. But there exists deficiency in academic investigations regarding intricacies of health care demand. While, prevailing literature focuses into the health conditions, care giving and psycho-social

aspects of ageing, this study aims to enrich the knowledge of demand, provision and health care financing mechanism by narrowing down its scope to the context of Kerala.

1.4 Objectives of the Study

The study progresses with the following objectives:

1. To assess the status of health and health problems of the elderly population of Kerala.
2. To verify the methods of financing of health care among the elderly.
3. To examine the economics of health care among elderly population.
4. To examine the determinants of health care financing among the elderly population.

1.5 Methodology

The study employs both primary and secondary data. Primary data was collected through a sample survey among the elderly households of the State. Multistage random sampling technique has been used. Statistics on the elderly population of Kerala was obtained from Census 2011. For the purpose of sampling, the State has been divided into three major regions North, Central & South. Based on the density of elderly population, one district from each region has been selected. A taluk from each district was selected and an urban and rural ward have been selected from each taluk. Households with at least one member exceeding 60 years of age, have been considered as primary sampling unit. Given the total households of selected wards, sample size has been determined using probability proportional to size method. The sample size obtained was 400 households. District wise division of samples is based on the percentage share of elderly population of each district in total elderly population. Total elderly in the three districts, was observed to be 12,50,478 according to Census 2011. Share of each district obtained was Kozhikode 29%, Ernakulam 36% and Thiruvananthapuram 35%. Accordingly, number of households from each district calculated were 116 households from Kozhikode, 144 from Ernakulam and 140 from

Thiruvananthapuram district respectively. A structured interview schedule has been made use of to gather information on the socio-economic conditions, health status and conditions, employment history and preferences, health care utilization, health expenditure incurred and health insurance coverage. Studies conducted by NSSO, SAGE (Study on Global AGEing and Adult Health) by WHO, LASI (Longitudinal Ageing Study in India) survey by Ministry of Health and Family Welfare, Government of India and Kerala Aging Survey conducted by Centre for Development Studies were the major sources of secondary data.

1.5.1 Major Definitions

Geriatric problems

These are health conditions specific to elderly population, which are unavoidable and worsens with age. They include geriatric conditions like bone/joint diseases, neurological problems, hearing and eye related illnesses, oral health problems.

Self-rated health

Self-rated health refers to an individual's perspective or assessment of their own health status. This is measured in rating scales that ranges from excellent to poor.

Out-of-pocket health expenditure

These are direct payments made by individuals or households at the time of availing health care services, without reimbursement from any insurance or government health programme.

Catastrophic health expenditure

Catastrophic health expenditure occurs when the amount an individual or household pays out of pocket for health care is very high and exceeds a predefined share of their income/capacity to pay, which forces them into poverty or indebtedness.

1.6 Tools of Analysis

Minimum Standard Approach popularized by Wagstaff and Doorslaer (2000;2003) has been used as theoretical framework for obtaining insights into the intensity of health spending and catastrophism in out-of-pocket health spending. In order to get a detailed insight into the demand for health care, health status of the aged, the health preferences and health expenditure, various analytical tools have been used in the study. Along with the descriptive statistics, tools of inferential statistics used in the study are:

1.6.1 Analysis of Covariance (ANCOVA)

ANCOVA is an extension of Analysis of variance (ANOVA) and is used when independent variables are both quantitative and qualitative. The ANCOVA equation used in the study is:

OOPE= f (Social Security Benefit, Health Insurance, Income, Location)

1.6.2 Logistic Regression

For the purpose of analysing demand for healthcare among the elderly, logistic regression has been engaged. It is employed in cases where dependent variable is categorical. Logistic Regression can be binary, multinomial or ordinal. Since the dependent variable is binary, the logistic regression function becomes:

$$P(x) = \frac{e^{a+bx}}{1 + e^{a+bx}}$$

1.6.3 Multinomial Logit Model

Multinomial Logit Model is a case of Multinomial Regression Model for chooser specific data. MLM is used for determining the factors affecting health care financing methods. The equation used for calculation is:

$$\pi_{ij} = \frac{e^{aj+\beta_j x_i}}{\sum_{j=1}^{n} e^{a_j+\beta_j x_i}}$$

Where π_{ij} refers to the probability that individual i chooses j^{th} alternative, and are called response probabilities (Gujarati., 2011). X refers to the vector of explanatory variables and β vector of coefficients.

1.6.4 Ordered Logit Model

Factors influencing the status of health of the elderly population has been analysed using Ordered Logit model (OLM). When the dependent variable is ordinal, ordered logit is used. The equation of OLM is,

$$Y_i^* = \sum_{n=1}^{k} B_n X_{in} + u_i$$

Where Y_i^* is unobserved, Xs are regressors and u_i is the error term.

1.7 Limitations of the Study

The following are the limitations of the study:

- The scope of the study is confined to the state of Kerala and take into consideration only three districts based on the regional division of the state. The selection of districts is based on the concentration of elderly population.
- The sample size for primary data is calculated using Census 2011. The number of elderly might vary as only estimated data is available.
- The scope of the study is confined to households with at least one elderly member. Other facilities like care-homes are not considered due to the difficulty in attaining unbiased and authentic data and the procedures involved in conducting data collection.
- Geriatric issues and health problems are multifaceted and varied in nature. The study could have surpassed some of them.
- The study considers health financing and is mainly quantitative in nature and does not deal with all qualitative aspects of the elderly conditions.
- In certain cases the respondents were hesitant in disclosing health issues clearly.

- As the respondents are older people, some of them found difficulty in recalling the exact expenditure incurred for specific purposes.
- Multi-stage random sampling technique has been used and thereby all the limitations of random sampling applies to the study.
- Response bias could not be ignored. The fact that respondents are aged enhances the likelihood of such bias.
- The study takes into consideration one year recall period only. So the information may not accurately portray the actual condition.

1.8 Chapter Scheme

The study advances through eight chapters. After this Introduction chapter, that presents briefly the issue of population ageing in global and regional perspective, the significance of the problem, scope and research gap, objectives of the study, methodology and limitations, the second chapter reviews relevant literature related to the topic, including cross country studies on health status, behaviour, health spending, health care demand, choices, health care services in the region and elderly health. The next chapter discusses the theories and concepts based on the objectives and explains the conceptual framework engaged in the study. Population Ageing all through the years in general and the historical overview of ageing in Kerala along with the profile of the elderly population of the State is presented in the following chapter. Data provided by various secondary sources have been used in this chapter. The fifth chapter delves into the status of health and health issues faced by the aged in Kerala. The chapter makes use of primary data and the self-rated health status of the elderly has been analyzed using Ordered logit model. Subsequent chapter deals with the demand for and supply of health care and health care financing of the elderly. The factors affecting demand for health care has been examined using analytical tools like logistic regression. Sources and determinants of health care financing and out of pocket expenditure along with coping mechanism has been discussed in detail. Minimum standard approach is employed and measures of financial catastrophe have been used. Factors affecting health financing methods have been analysed using

multinomial logit model. The last chapter involves the summary and conclusion of the study along with the recommendations and scope for further research.

Notes:

1. Study on Global AGEing and Adult Health (SAGE) is a longitudinal study by WHO collecting data on adults aged 50 years and above, along with a smaller comparison sample of adults 18-49 years. The aim is to compile data on health and well being of adult population and ageing process across different countries.
2. Longitudinal Ageing Study in India (LASI) is a survey by Ministry of Health and Family Welfare, Government of India, in partnership with International Institute of Population Sciences (IIPS), Harvard T.H. Chan School of Public Health (HSPH) and University of Southern California (USC) and aims to provide information on India's Ageing Population.
3. Building a Knowledge Base on Population Ageing in India (BKPAI) is a survey in 2011-12, by UNFPA and Indian Research Institutes on elderly population of seven Indian states (Kerala, Tamil Nadu, West Bengal, Odisha, Maharashtra, Punjab and Himachal Pradesh) to understand their socio-economic status, health, living conditions and social security awareness.

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CHAPTER 2
REVIEW OF LITERATURE

2.1 Introduction

The chapter provides a comprehensive examination of the existing body of knowledge related to health status, health expenditure, health care utilisation and demand. It critically analyses previous studies and identifies gaps, contradictions, and opportunities for further inquiry. The chapter is schemed in line with the objectives of the research. Accordingly, the chapter has been divided into five sections. The following section discusses literature on health status, including conceptualisation and definition, measurement and elderly health status in particular. This section is followed by discussion on studies regarding health expenditure, which is followed by analysing literature on demand for health care and ultilisation of health care. The last section gives the conclusion.

2.2 Health Status

A multidimensional evaluation of the overall wellbeing of the study population is contained in the concept of health status. Studies devoted to physical, mental and social wellness discusses factors influencing health status, implications of public health policies, health care delivery, disease prevalence, quality of life, disability and effectiveness of health interventions.

2.2.1 Conceptualization and Definition of Health Status

There are several dimensions to the concept of health status attributed by various researches. World Health Organization's definition describes health as a state of complete physical, mental, and social well-being, rather than merely the absence of disease or infirmity. Health status has been aligned with social status by Twaddle, C.A (1974), who argued that health and wellness should be conceptualized within a social framework as they are not mere biological phenomenon but are also influenced by

social factors and perceptions. He examines social stratification and ethnicity and develops a model for status designation, highlighting situations under which individuals are defined as well or ill. Defining status of health is highly personal and a negotiated process. Social networks like family and friends influence the assessment of health status.

Contrary to this opinion, definitions of health in terms like "social well-being" and "balance" are challenging to define clearly as observed by Seth. B. Goldsmith (1972). Different perspectives of health exists but definitions of health often suffer from ambiguity and abstraction, making it difficult to translate these concepts into operational language. This ambiguity in clearly defining health leads to challenges in measuring health status, making it difficult to develop and use health status indicators. Thus, there exists the necessity of clear definitions and reliable indicators in the field of public health to effectively measure and improve health outcomes.

2.2.2 Measurement of Health Status

Different approaches and methodologies in measuring health status, both at the individual and population levels have been developed through these years. There exists several unresolved issues in health status measurement as identified by Patrick and Bergner (1990). These include conceptual and methodological challenges, need to improve the quality of health care, addressing health inequities, limitations in availability and quality of health data and need for a more holistic view of health including positive wellness.

The selection of measures need to be made according to the need and resources of the study, as there is no perfect measure for health status. For this process, the intention behind measuring health status need to be identified along with specification of the aspect of health to be measured and suitability concerns addressed. In that case there is a strong possibility of finding the correct method of measuring health status from the currently available measures (Ware et al.,1981)

Choosing an appropriate health measure involves clearly delineating the purpose and objectives of assessing, examining the existing measures considering the level of

health assessed, evaluating reliability and validity and other practical aspects like ease of administration, time and training required (Bergner & Rothman., 1987). Measurement of health status during early years, especially in the nineties, faced issues like challenges in the conceptualization and criteria of measurement, need for measures that can improve quality of health care, equity in health, limitations in the availability and quality of health status data and difficulties in developing a health measure distinct from illness measure. Improving quality of health care and reducing inequities were the need of the hour. However, in later years, advancement in health measurement tools like development of health-related quality of life index and other assessment tools, development of more integrated data sources, efforts to standardize definitions and metrics used in health assessment, technological advancements including data analytics and informatics and emphasis on patient-centered care have improved the situation to a great extent (Patrick and Bergner., 1990).

Incorporating perceived health status into health assessments gained attention in later years as individual's self-assessment of health could provide insights into their health needs and utilization of health services. It further reflects the complex interaction between physical, emotional and social factors that contribute to overall well-being (Hunt et al.,1980). The study observed that factors such as age, gender and marital status did not significantly influence the health profile, indicating perceived health status as a more reliable indicator of actual health conditions and should be incorporated into health assessments.

People aged sixty or above tend to perceive their health more positively and mostly have a more favourable assessment of their health. This might be due to their life experiences or coping mechanism. Education, symptoms, age and comparative health assessment might be considered as the predictors of perceived health status. Higher levels of education in older adults may enable them in evaluating and assessing symptoms and thereby might view their health positively. Similar to this is the impact of symptoms. The more symptoms reported, the less likely that they have positive view of their health. There exist a tendency that people rate their health relative to others in their age group. Thus comparative health status become a predictor of

perceived health status. Thus there exist a need to compare health perceptions across different age groups to obtain a clear understanding on how perceptions emerge with age (Cockerham et al.,1983).

2.2.3 Geriatric-specific Health Status

The percentage of elderly population in India has shown a significant increase through the years. The elderly population constituted approximately 7.4% of the total population in 2001, which has risen to 10.7% in 2022 (India Ageing Report.,2023). As there has been shift from joint family systems to nuclear family set-ups, elderly are increasingly exposed to emotional and financial insecurities and lack family support. They are subjected to mounting socio-economic pressures ranging from health care needs to financial and basic needs (Government of India.,2023).

Elderly people often bear increased responsibility compared to younger persons. This along with financial difficulties, especially for those with low savings, lead them to physical and mental illnesses. As they age, the elderly suffer from chronic ailments which increases their health care expenditure and thereby accelerating their socio-economic challenges. Moreover lack of emotional connection and respect from other family members affects their mental health status. Thus both physical and mental health issues tend to escalate as individuals grow older, and the busy lives of family members often leave little time for the care of the elderly. While many elderly people have a positive attitude towards social and religious gatherings, their ability to participate diminishes with age . Lower-income elderly individuals reported being happier than those in higher income brackets, suggesting that financial status does not always correlate with emotional well-being (Neelankavil, M. F.,2012).

Growing old involves emerging illnesses and discomforts. Majority of the elderly in our country faces multiple health problems. These include acute illnesses like joint pains, sleep disorders, digestive issues, lack of appetite. Whereas chronic conditions include hypertension, cardiovascular diseases, diabetes mellitus and asthma (Sharma, R.,2014).

A study conducted by Arup Jana and Aparajitha Chattopadhyay(2022) observes that elderly are affected by chronic diseases with hypertension and diabetes accounting for 68 percent of all chronic diseases. The probability of having chronic diseases increases significantly with age, particularly among those aged 70 and above. Urban residents have a higher probability of chronic diseases compared to rural residents. However, the gender dynamics differ. In urban areas, men are more likely to have chronic diseases, whereas in rural areas, women are more likely to suffer from them. In urban settings, chronic diseases were more prevalent among elderly who were unmarried, and among those who were widowed and divorced. Higher levels of education and wealth are associated with increased presence of chronic diseases in urban areas and this has contributed to increase in urban-rural gap. Use of tobacco, alcohol consumption, obesity and sedentary lifestyle, which are seen more in urban areas, have contributed to higher rates of chronic diseases. Elderly individuals living without family support may have different health outcomes compared to those living with family members, which may affect their health status (Jana A & Chattopadhyay A.,2022).

Wolf et al (2005) observed that individuals with lower health literacy reported having significantly poor physical health compared to those with higher health literacy. The study observed that the magnitude of the association between inadequate health literacy and physical function is comparable to that of having a diagnosis of cancer. This was more than twice that of having a diagnosis of heart failure. These findings underscore the critical role that health literacy plays in the physical health and functioning of older adults. The study proposes a measure for health literacy which includes ability to read and understand a passage, appointment slips and other documents, ability to interpret numerical information on prescription bottles.

The health and socio-economic status of elderly in Nepal has been studied by Gupta et al (2016), which reveals that chronic health problems accounted for majority of the reported health issues. In addition, mental health issues, dental and oral health problems also were notably prevalent. Visual difficulties, memory and hearing issues were observed among the elderly. Certain life-style factors like smoking were

observed among the elderly and a statistical association was observed between smoking and chronic respiratory diseases. The system of joint family is prevalent in Nepal which contributed positively to the social support and overall well-being of the family. Hence loneliness or misbehaviour from the part of family were not reported.

Elderly women in general faces issues regarding health compared to their male counterparts (Singh & Yesudian.,2007; Lena et al., 2009; Kaur. M & Kaur. J., 2019). They report higher perceived morbidity compared to men, although the actual medical expenditure is greater for men. This suggests that while women may feel less healthy, they may not seek medical help as frequently as men due to various biases or barriers. Women score lower in activities of daily living, indicating a greater need for assistance and a lower functional status. The leading diagnosed illnesses among the elderly include hypertension, arthritis, chronic bronchitis, and diabetes. Hypertension is more prevalent among women, while chronic bronchitis and diabetes are more common in men. Women generally have a lower socioeconomic status compared to men. A higher proportion of elderly women are widowed compared to men leading to increased social isolation and economic challenges for women who often outlive their spouses. Many elderly women report inadequate financial resources for their livelihood (Vijaya Kumar et al.,1994) One of the factors contributing to this discrepancy being the unequal income distribution among men and women. Women, as majority of them do not fall in labour force, are observed to be in the middle-income or lower income group. A high illiteracy rate among elderly women can be linked to limited awareness or negligence regarding their health issues. Limited access to old-age pension and other sources of income indicates high level of economic dependency on family members and others. Living conditions together with the domestic responsibilities of running a household contributes to their health conditions in the old age. There exist an increased vulnerability to psychological and social morbidity as elderly women faces widowhood and this poses a significant mental health burden. Elderly women, especially in Kerala are succumbed to chronic and acute diseases, and there exist a gap between the health care utilization and awareness ((Kumar, K.V et al.,1994; Kumari, S.,2001).

Social support plays a significant role in the lives of elderly women. Various forms of social support available to elderly women, including economic support from family members (spouses, children, and in-laws), physical support, and emotional support from relatives, friends, and neighbours. Most of elderly women reported receiving economic support from their families, indicating the importance of familial relationships in their lives. Social support is crucial for the psychological and emotional well-being of elderly women. Those with strong social networks experience less loneliness and depression, which are common issues among this demographic, particularly among widows. A significant portion is reported not receiving any assistance from government programs. This suggests that family and community support are primary sources of assistance, underscoring the reliance on personal networks for economic and emotional support. Social interactions and relationships significantly affect the quality of life for elderly women. Those who participated in social gatherings and had regular visits from family members reported better social support and overall satisfaction. Social support is a vital component of the lives of elderly women, influencing their economic stability, mental health, and overall quality of life (Kumari, S.2001). Health problems and negative health perceptions increase with age and is observed more in older elderly especially among those aged above seventy-five years, than younger elderly. The feeling of deterioration of health becomes more pronounced as one ages and reaches the category of older aged and they show a decrease in the habit of taking medicines. This might be due to the fact that as one ages, they may struggle with medication adherence, which could be due to several factors such as cognitive decline, polypharmacy or lack of understanding of their health needs as they age (Mathew A.K.,2013).

According to Kumar et al (1994), who studied the health status of elderly individuals in Thiruvananthapuram City, the elderly population experiences a high prevalence of chronic illnesses. Common health issues include hypertension, arthritis, chronic bronchitis, and diabetes. Hypertension is more prevalent among elderly women, while chronic bronchitis and diabetes are more common in men. The ability to perform Activities of Daily Living (ADLs) is an important measure of health status. The study

found that elderly women scored lower in ADL compared to men. This indicates a greater need for assistance and a lower functional capacity among women.

Significant gender disparities in health status were observed. For instance, a higher percentage of elderly women report feeling unwell and have a greater burden of morbidity compared to men. Women have a higher life expectancy, but often face more health challenges in their later years.

The financial status of elderly individuals significantly affects their health outcomes. Many elderly individuals, particularly women, report inadequate financial resources for healthcare. This may lead to underutilization of medical services and poorer health outcomes.

The breakdown of traditional support systems due to urbanization and changing family structures has negatively impacted the health and well-being of the elderly. This is particularly more for those from lower socioeconomic backgrounds, who may lack access to necessary resources and support.

The quality of life for the elderly is influenced by various factors, including health, social relations, and family structure. The study indicates that those with better socioeconomic status enjoy a significantly higher quality of life compared to their poorer counterparts.

The study summarized that, socioeconomic status plays a major role in determining the quality of life for the elderly in Kerala. These factors influence their health outcomes, financial security, social participation, living conditions, and overall well-being. Addressing these disparities is essential for improving the quality of life for the elderly population in the region (Kumar, K.V. et al.,1994).

2.3 Health Expenditure

Health status and health expenditure are closely related. The impact and extent of health expenditure on income and wealth, ways of financing and catastrophic nature of health expenditure have been topics of discussion. The studies reviewed in this particular session focuses on health expenditure, out-of-pocket payments and

catastrophic health spending. Research on healthcare financing are more concentrated on the financial impact of healthcare payments, especially when these payments are made out-of-pocket (OOP). Many of these studies have employed proxy variables to examine issues such as catastrophic health expenditures and healthcare-related impoverishment.

Damme et al. (2004) investigated OOP expenditures during a dengue outbreak in the impoverished rural region of Banteay Meanchey, Cambodia. The study observed how health-seeking behaviours influenced healthcare costs, how families managed these expenses and the strategies they employed to cope with debts that arise. Data were collected through three surveys involving 72 households with dengue patients, providing both qualitative and quantitative information on OOP expenditure.

The findings revealed that OOP costs for individuals using private healthcare were extremely high, often exceeding 50% of per capita income. Expenditures were significantly lower for those who combine public hospital services with private care, and even lower for individuals relying solely on public hospitals. Post-treatment, 63% of households were found to be in debt. Families seeking care from private hospitals often had to resort to borrowing money or selling assets to cover the expenses. The households relied on various strategies to cope with OOP healthcare costs, such as utilizing savings, selling consumable goods and borrowing money. Thus, in the absence of strong national healthcare systems or social welfare programs, catastrophic health expenditures could become widespread, driving many households into financial hardship.

The scale and distribution of OOP healthcare expenditures across 14 countries and territories, representing 81% of Asia's population has been investigated by Doorslaer et al (2007). The study focused on catastrophic health expenditures that severely disrupt household living standards. The analysis revealed that OOP payments were widely used method of healthcare financing throughout Asia, accounting for more than three fourth of total health expenditures in countries like Nepal, India, and Vietnam. Significant variations in OOP spending were observed across regions, with a higher proportion allocated to medicines in poorer nations. In Bangladesh, India,

and Vietnam, medicine expenditures constituted 70% or more of total OOP payments. In India, wealthier households were better positioned to face health issues by purchasing medical care and medicines, while poorer households struggled to redirect their limited resources from other essential needs.

The study also found that reliance on OOP payments was inversely correlated with national income, highlighting the adverse effects on household living standards. To meet these healthcare costs, households often diverted resources from current consumption, incurred debts, or depleted their savings and assets, leading to long-term negative consequences in their welfare. A study by Krishna (2007) in three villages of Andhra Pradesh, Rajasthan and Gujarat also confirms that ill-health and healthcare expenses play an important role in pushing households into impoverishment.

Xu et al. (2007) analyzed the financial impact of healthcare payments using household data from 89 countries from 1990 to 2003. The study assessed the prevalence of catastrophic health expenditures and the impoverishment caused by out-of-pocket (OOP) payments for healthcare services. The findings revealed significant variation in the occurrence of financial catastrophes across countries. Financial catastrophes were observed across all income levels but were most prevalent in low-income countries and more common in middle-income countries compared to high-income ones. Each year, approximately 150 million people experienced financial catastrophe, and 100 million were driven below the poverty line solely due to healthcare costs. Notably, over 90% of those impoverished lived in low-income nations.

In middle-income countries, an increase in the proportion of the population aged over 60 was associated with a higher incidence of financial catastrophe, while the proportion of children under five had no significant impact across any income group. The study highlighted that the incidence of financial catastrophe was inversely related to the degree to which countries used prepayment mechanisms to fund their healthcare systems. Conversely, it was positively correlated with the reliance on OOP payments as a share of total health expenditures.

Wilkies et al. (2008) investigated how rural Chinese households managed the financial burden and high medical costs. Their study was based on a 1994 household health

expenditure survey of 2722 households and revealed that most households could finance healthcare without catastrophic consequences. A key finding was the significant role of social networks in providing labour and financial support. This external assistance, combined with internal resources, enabled many households to meet unexpected expenses and maintain their financial stability. However, households with limited access to credit were more vulnerable. They were forced to sell their assets, to cover medical costs, risking their future income.

The study highlighted different strategies employed by households, such as using savings and borrowing. While these strategies provided some relief, they were not sufficient to fully protect against the financial impact of catastrophic illness. The researchers concluded that a combination of strategies, including social safety nets and improved access to credit, is necessary to remove the financial burden of illness and ensure long-term well-being.

The World Bank (2002) conducted a study on India's healthcare system which highlighted the financial burden faced by individuals seeking medical treatment. Over 40% of people hospitalized within a year resorted to borrowing money or selling assets to meet the associated costs. Those who accessed medical care often spent a substantial portion of their annual income on healthcare. The study revealed that hospitalized individuals allocated approximately 58% of their total expenditure to medical expenses. This high financial burden had severe consequences, with many families being pushed into long-term poverty. Nearly one-quarter of hospitalized individuals in India fell below the poverty line annually due to the out-of-pocket costs associated with hospitalization.

Health Expenditure in India has risen over the years indicating greater utilisation of health care services. OOP expenditure has pushed around 2.2 percent of Indian population into poverty during 1995-96 (Joe, W and Mishra, U.S.,2009). Mohanty et al (2022) studied the estimates of household health spending and out-of-pocket expenditure in India from 2004-2018. The study observed that medical expenditure and OOP payments increased from 2004-2014 but declined from 2014-2018, consistent across inpatient and outpatient care. OOP payments remained high as a

share of household health spending throughout the period. Inpatient care costs were higher than outpatient care costs, with a strong economic gradient indicating wealthier households incurred more OOP payments. Households in rural areas and those with health insurance were significantly less likely to incur medical expenditures, highlighting the importance of insurance coverage in reducing financial burdens.

Management of OOP health expenditure has been investigated by Leive et al (2008), by examining households from 15 African countries, using WHO 2002-2003 survey data. Their study revealed that approximately 30% of households resorted to borrowing and selling assets to finance OOP health payments. Households with recent hospitalization experiences were more likely to employ these strategies.

The study further highlighted disparities across wealth quartiles and urban-rural areas. In most countries, wealthier households were less likely to sell assets or borrow money to cover health costs. Additionally, urban households were generally less reliant on these coping mechanisms compared to their rural counterparts.

These findings underscore the significant financial burden that OOP health payments can impose on households, particularly those in vulnerable socioeconomic groups. The study emphasizes the need for policies and interventions to mitigate the adverse impact of OOP payments on household well-being.

According to Garg, C.C and Karen, A.K (2009), there exists disparity in health care costs and thereby financial burden among households in different regions of India. OOP health spending was observed to be 7 percent of total household expenditure in Kerala whereas Assam reported a lower rate of 2 percent.

Another paper by Mohanty et al (2022), based on NSSO health surveys of 2004,2014 and 2018, observed that over the years , demographic and epidemiological transition has brought changes to disease burden and non-communicable diseases have become the major reason for disability, death and hospitalization. This change has affected the working adults and the elderly, forcing the families into medical poverty. Despite changes in disease burden and insurance coverage, the pattern of health expenditure has not undergone significant changes (Mohanty et al .,2022).

OOP expenditure accounted for a major share in total health expenditure according to Joe,W and Mishra, U.S (2009). Their observations reveal that wealthier states spend more, with Kerala having highest OOP expenditure. Health spending has increased in the state over the years which can be attributed to greater health care utilization, chronic ailments and aging population. Along with the unique health achievements like greater access to health services showcased by the state, there appear challenges of increased cost, connected with such attainments. The study revealed that, Kerala's scenario highlights a balance between achieving positive health outcomes and maintaining financial stability in health sector. A significant portion of OOP health expenditure (about 65-70%) is spent on drugs, while the remaining 30-35% is allocated to inpatient and outpatient care. In rural areas, the average share of expenditure on inpatient and outpatient care is lower, but spending on medicines is observed to be higher (Garg, C.C and Karan, A.K.,2009).

A significant correlation exists between the share of out-of-pocket (OOP) payments in total health expenditures and the incidence of catastrophic health spending. Countries where health financing heavily relies on OOP payments lack financial risk pooling, leading to higher catastrophic expenditures. The combination of poverty and insufficient risk pooling means that many households, especially in poor countries, face financial catastrophe due to health costs. Catastrophic health spending is prevalent in middle-income and developing countries, as well as in some low-income regions. Poorer households and those without adequate financial protection, incur a larger burden of these expenses. Catastrophic health spending may lead households to impoverishment (Xu et al.,2003).

Catastrophic health expenditure occurs when out-of-pocket healthcare payments exceed a specific portion of a household's total spending, which is set at 10% in India. It was observed by Pandey.A et al (2018) that, the proportion of households experiencing such expenditures rose by 1.47 times between 1993-1994 and 2011-2012 surveys. This increase was especially notable among lower-income households, where catastrophic spending grew threefold, compared to a 1.74-fold increase among wealthier households. Households consisting solely of older adults (aged 60 and

above) reported the highest levels of catastrophic expenses, while those led by women also showed an elevated risk. Additionally, rural households faced a higher likelihood of incurring catastrophic health expenses than their urban counterparts. These trends highlight substantial challenges within India's health financing system, especially for vulnerable groups, emphasizing the need for immediate policy action to alleviate the financial strain associated with healthcare (Pandey, A.,2018; Garg, C.C and Karan, A.K., 2009).

Kei Kawabata et al (2002), studied income and expenditure survey data from 60 countries, which reveals that lower-income households are more likely to experience catastrophic health expenditures compared to higher-income households. However, the highest incidence of such spending is not exclusively observed among the lowest income groups. Further regional analysis supports this observation, indicating that the poorest areas do not consistently report the highest levels of catastrophic health spending. Deeper investigation into the factors contributing to catastrophic health expenditures highlights key determinants such as household income, the age of members, and whether the head of the household is employed or unemployed. Households with elderly, disabled, or chronically ill members face a higher risk due to increased healthcare needs coupled with limited financial resources. In contrast, households composed of younger and healthier individuals are more likely to avoid catastrophic health expenses.

Berman et al. (2010) investigated the impoverishing impact of healthcare expenses using data from the 60th round of the National Sample Survey Organization's (NSSO) morbidity and healthcare survey conducted in 2004. Their findings revealed that 6.2% of households nationwide (6.6% in rural areas and 5% in urban areas) were pushed below the poverty line due to healthcare expenditures that year. Outpatient care contributed significantly to this impoverishment, accounting for 79.3% of the total financial burden. Although outpatient services involved smaller but more frequent payments, their impact on households was greater compared to inpatient care, which contributed 20.7% despite being more expensive per service.

The study highlighted that rural areas bear much of this burden, with 76.5% of affected households and 77.4% of impoverished individuals residing in these regions. Health expenditure-related impoverishment was found to be notably high in India, with significant disparities among states. Kerala experienced the most severe impact, while Kerala, Uttar Pradesh, Maharashtra, West Bengal, and Andhra Pradesh collectively accounted for over 50% of the impoverishment caused by healthcare costs.

The study emphasized the heavy reliance on out-of-pocket (OOP) spending in private healthcare, which placed a considerable financial strain on households. Healthcare expenses have become a major contributor to poverty in the country. The study examined coping mechanisms for healthcare costs, revealing that insurance coverage was limited and existing insurance schemes were neither well-targeted nor effectively designed to alleviate health-related impoverishment.

The factors influencing out-of-pocket (OOP) healthcare expenditures among adults and the elderly, have been observed by Brinda et al. (2014) using data from the Tanzania National Panel Survey. The study explored various social and economic determinants of OOP expenditure, and revealed that higher OOP expenditures were associated with female gender, specific occupations, hearing impairments, and functional disabilities for adult participants. Visits to traditional healers elevated healthcare costs. Women over the age of 45 had notably lower OOP expenditures than men, suggesting that the higher healthcare spending observed among women could be attributed to reproductive health needs.

Among the older population, factors such as visual impairments, functional disabilities, and visits to traditional healers were linked to increased OOP healthcare spending. However, older participants engaged in unskilled manual labour, despite a higher prevalence of disabilities, incurred lower health expenditures. Similarly, those without formal education also spent less on healthcare.

The analysis revealed that 18% of households in Tanzania faced catastrophic health expenditures. Multivariate analysis identified several factors that increased the likelihood of catastrophic spending, including the presence of household members

with chronic illnesses, the presence of a manual labourer as head of the household, visits to traditional healers, and the overall size of the household.

A comparative analysis of the growing burden of public health expenditures on households, using evidence from various rounds of NSSO data on healthcare and consumption spending for the pre-liberalization period (1986–1995) and the post-liberalization period (1996–2004), has been carried out by Selvaraj et al. (2009). The study observed a significant rise in the role of the private sector in healthcare delivery. Public sector outpatient services declined from 26% in 1987–88 to 20% in 2004. Similarly, the share of public hospitals in inpatient care fell sharply from approximately 60% in 1987–88 to 40% in 2004.

The cost of treatment for both inpatients and outpatients rose substantially over the years, with private healthcare costs increasing at a faster pace than those in the public sector. A higher portion of households were found to be spending on healthcare, beyond their financial capacity, resulting in expenditures of a catastrophic nature. Out-of-pocket (OOP) payments emerged as a major strain on household resources, accounting for 5% of total consumption expenditure in 1993–94 and increasing to 7% by 2004–05.

Approximately 14% of rural households and 12% of urban households were spending over 10% of their total consumption on healthcare. For these households, OOP expenses constituted a significant share of their non-food expenditure, highlighting the severe financial impact. The study noted a rising poverty impact of OOP payments, both in terms of proportion and the absolute number of affected households. The additional number of people pushed into poverty due to OOP spending reflected a long-term, persistent challenge for Indian households.

Although per capita OOP expenditures were lower in rural areas compared to urban areas, the poverty headcount due to OOP payments was higher in rural regions in 2004–05. This trend underscores the increasing impoverishment caused by OOP expenses in rural India, revealing a concerning shift in financial vulnerability.

Thus, households with larger number of elderly are exposed to irregular health expenditure, which emphasises the need for improvement in health of elderly population. (Joe. W and Mishra U.S., 2009; Pandey. A et al.,2018). The prevalence and factors influencing catastrophic health expenditures among urban elderly households in Nigeria has been explored by Adisa (2015). The study revealed that 9.6% of the households surveyed experienced catastrophic health expenditures. Significant variations were observed across income quintiles when using a 10% threshold to define catastrophe.

The analysis found a negative correlation between household size and the likelihood of facing catastrophic health expenditures. Additionally, households with higher levels of education were more prone to incurring such expenditures compared to less educated households. Non-enrolment in health insurance was identified as a significant factor increasing the risk of catastrophic spending, while access to informal health financing mechanisms helped mitigate this risk. Furthermore, households with a greater number of working-age members were less likely to encounter catastrophic health expenditures. The study also reported that gender had a significant negative marginal effect on the probability of experiencing catastrophic health expenditures.

The perceived healthcare needs and the financial risks associated with illness have been studied by Dror et al (2007). The study observed the cost of illness in five resource-limited regions, comprising two locations each in Maharashtra and Tamil Nadu and one in Bihar. The study found that direct costs constituted over 60% of total treatment expenses. Among the reported illness episodes, 63.6% were acute, predominantly parasitic in nature, 18.5% were chronic, with cardiovascular diseases being the most common, 3.6% were due to accidents, and 14.3% were categorized as undetermined diseases. Notable differences in morbidity patterns were observed across age groups. Acute illnesses accounted for 85% of cases among the youth but dropped to less than 30% among the elderly. Conversely, chronic illnesses represented only 6% of cases among children and adolescents but exceeded 50% in older adults.

The cost breakdown varied by illness type: tests and drugs were the primary cost components for acute illnesses; hospitalizations and drugs dominated expenses for

chronic conditions; and hospitalizations were the most significant cost factor for accidents. Chronic illnesses and accidents were found to be more expensive than acute illnesses, with hospitalizations driving up overall costs regardless of the illness type. Hospitalization imposed a substantial financial burden, with half of the hospitalized respondents spending an average of 23% of their annual income on healthcare. Additionally, the study noted that healthcare costs increased in correlation with household income levels.

More than one-fourth of the households in India has older adults according to Panda, B.K and Mohanty, S.K(2022). The magnitude of multiple deprived households (deprivation in social, economic, health and household environment) was the major concern put forward by them. They found that one fifth of the households faced the issue of catastrophic health spending in the country. The study emphasises the need for reducing deprivation and providing economic assistance to elderly population.

Economic constraints can limit the ability of elderly individuals to seek timely medical care, exacerbating health issues. As observed by Sumathi. R (2007), majority of homebound elderly individuals prefer to visit private hospitals for treatment, which may reflect their financial capability and social status. Those with lower social status may have limited access to healthcare services, leading to poorer health outcomes. economic, social, and environmental factors, has a profound impact on the health conditions of homebound elderly individuals.

Financing of health needs and the role of distress financing have been analysed by Pandey. P et al (2016). The study observed that a significant proportion of the elderly reported avoiding one or more types of healthcare needs due to financial constraints. The most commonly avoided needs were purchasing medicines followed by surgeries and medical tests or investigations. Methods of financing health care included contributions from children and distressed financing. Various forms of distressed financing identified by the study included loans, borrowings and selling of assets. It was also observed that significant portion of borrowed amounts was not fully repaid, indicating ongoing financial strain. The financial constraints significantly impact the

health care-seeking behaviour of the elderly leading to deferred care and potential worsening of health conditions (Pandey. P et al.,2022).

Health Status is considered as a predictor of household's portfolio choices. Along with variables like income and wealth, health plays a crucial role as a factor influencing financial behaviour. Households experiencing poor health conditions and are less inclined to invest in high-risk assets and tend to allocate a larger share of their financial wealth to safer assets. Thus, improvements in health status could lead to changes in investment behaviours, particularly as the population ages (Rosen H.S. and Wu. S.,2004).

The study by Sunilkumar M.J(2017) on the Kerala model of health care found that the level of living, educational status of the head of the household, and household size significantly influence the probability of incurring catastrophic health expenditures. Households with lower socio-economic status are more likely to experience financial distress due to healthcare costs . A major portion of OOP expenditure on health is being financed from income and savings thus increasing reliance on personal financial resources for covering health care costs. He comments that borrowing is not a popular strategy for meeting health care needs. A significant portion of the households do not possess health insurance, which further aggravate the burden of OOP expenditure. Only a small fraction of those enrolled in government-sponsored community health insurance schemes like Rashtriya Swasthya Bima Yojana (RSBY) and Comprehensive Health Insurance Schemes (CHIS) could avail insurance benefits for inpatient treatments.

The role of health spending is emphasized in many studies. Kaushik K.K et al (2006) observed the relationship between health status and health care expenditure and observed that increased health spending leads to better health outcomes. It highlights the significant role of education expenditure in influencing health outcomes, suggesting that investments in education may be as crucial as health spending itself. This adds a new dimension to the discussion on determinants of health status, emphasizing the interconnectedness of health and education.

Another reason for alleviated health expenditure might be increased use of private health care facility. Availing of private health facilities due to unsatisfactory government health services has raised the cost of health in majority of the households (Sharma.R.,2014). Growth of unregulated private sector and insufficient coverage and services of public sector has aggravated the share of spending on health in the State (George A.T.,2005). Public health facilities faces challenges like shortage of staff and inefficiencies which pushes many patients to seek private care (Arumugam.K.,2013).

2.4 Health Care Demand and Utilisation

Demand for health care in the state has increased over the years as per records. Several factors have fuelled the rapid growth in healthcare demand in Kerala. Education, especially among women, has played a significant role by raising awareness about modern medical treatments. Despite having low per capita income, the state has achieved high literacy and health indices. In addition, investment in health and education has been consistent across political regimes. Enhanced access to healthcare facilities has resulted from favourable settlement patterns and advancements in infrastructure. Higher disposable incomes among lower-income households, along with an aging population and a growing incidence of chronic diseases, have increased the willingness to invest in healthcare services (Kutty. V.R.,2000).

Healthcare facilities in Kerala have evolved significantly in response to the demands of the population. This evolution has been influenced by various socio-economic factors, government initiatives, and changing public health needs. The organization of health services in Kerala can be traced back to the British rule, where the princely states of Travancore, Cochin, and Malabar recognized the need for public health initiatives. The utilization of healthcare services in Kerala has been heavily influenced by public awareness of available programs. Studies indicate that awareness and participation levels among different demographic groups, including age and educational background, significantly impact the effective use of health programs. Historical perceptions towards health and medicine, possibly influenced by traditional practices and the colonial legacy, have shaped the public's engagement with modern healthcare services. (Pillai.M.R.,2006).

Health care facilities in Kerala have developed significantly since the state's formation in 1956, with a major expansion phase occurring until the early 1980s. Both Government hospital beds and private sector beds grew, with latter increasing at a much faster rate, indicating a shift towards private health care. The initial public sector dominance in health care has gradually transitioned to a more substantial private sector presence, particularly in advanced medical technologies and services (Kutty. V.R.,2000).

According to Sankar D(2001),the choice of health care providers among patients in Kerala is influenced by several factors, including cost considerations, accessibility, quality of care and type of illness. Patients often prefer government sector providers when costs are a significant factor. The physical availability of providers in rural versus urban areas affects patient choices. Perceived quality, including waiting times and consultation duration, plays a crucial role in provider selection. The nature of the ailment (acute vs. chronic) influences whether patients seek general practitioners or specialists.

2.5 Conclusion

The reviewed literature gives a comprehensive summary of the prevailing studies on health status , health expenditure, demand for and supply of health care services, health care utilisation by the elderly population. The observations of the studies reviewed are summarised below.

Health status is multidimensional, encompassing physical, mental, and social well-being. It is influenced by social factors, and definitions can be vague and abstract, making measurement challenging. Researchers emphasize the need for precise definitions and reliable indicators to capture a complete picture of health outcomes. Over time, advances have been made in health measurement tools, such as health-related quality of life indices, although challenges in data quality and conceptual clarity persist. Self-assessed health has become an important measure, due to its reliability in assessing perceived health needs.

The elderly population in India is rising. This has led to increased health demands, because of chronic conditions like hypertension, diabetes, and cardiovascular diseases. Social changes, such as the shift from joint families to nuclear families, have contributed to increased emotional and financial insecurity among the elderly. Factors such as lack of family support, chronic illnesses, and socio-economic challenges accelerates their health problems. Additionally, social isolation and financial dependency are prominent issues for elderly women, who often have lower socioeconomic status and report higher morbidity rates than men.

Economic status affects health outcomes for the elderly, with financial limitations leading to reduced access to medical services. Elderly women, face greater health challenges and are more likely to experience social isolation due to widowhood and lower incomes. They tend to report higher perceived morbidity and their functional capacity, which is measured through activities of daily living, is lower than that of men. This disparity explains the importance of socio-economic support and financial resources for improving health outcomes.

Social networks play a crucial role in the well-being of the elderly women. Those with strong family and community connections experience better mental health and life satisfaction. However, changing family structures and urbanization have weakened traditional support systems. This has left many elderly, especially those from lower socioeconomic backgrounds, with limited resources and social support.

Health literacy is critical for older adults in understanding and managing their health. Low health literacy correlates with poorer physical health outcomes. This necessitates the need for accessible information and support to enable elderly individuals to make healthcare decisions.

Numerous studies have examined the effects of healthcare costs, particularly catastrophic health spending that occurs when households have to pay a significant portion of their income for healthcare. In summary, health expenditure in India is a multifaceted issue with significant implications for household income, poverty levels,

and overall economic well-being. High OOP costs, especially among the elderly and low-income households, underscore the need for more robust health insurance coverage and improvements in public healthcare infrastructure. Addressing these challenges will be essential for achieving more equitable healthcare access and reducing financial strain on households across the country.

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CHAPTER 3
THEORETICAL FRAMEWORK

3.1 Introduction

Sound health is a prerequisite for individuals in their social and personal lives. But health shocks arrive unexpectedly. In that sense, health financing gains attention as these shocks may affect the financial stability and thereby purchasing power of a household. Households spend a huge proportion of the income available to them while accessing health care services, which may ultimately push them into poverty. Whereas some of them may be ready to forgo health care services and thereby opt to suffer illness (Xu., 2005). An ideal health care system is the one that enables people to access health services without much trouble and difficulty. Households in developing countries have been lacking sufficient health insurance coverage which has become a reason for out-of-pocket expenditure to dominate in health care financing.

If health expenditure comparatively exceeds a household's income or available resources, their living standard gets distorted and may be considered catastrophic. In this chapter, various approaches and theoretical underpinnings on measuring the demand for and supply of health care, health status, and health care payment have been discussed. The initial section of the chapter looks into several popular approaches discussed in various studies regarding health care expenditure and focuses on those that are emphasized in the study. Measures that capture the financial catastrophe of health care payment are discussed in the following section. The subsequent section addresses the coping mechanism which provides vital information on the way households respond to health shocks. The effect of health care payments on household's future welfare is elaborated in the section, followed by the conclusion.

3.2 Theoretical Background

Health is a widely accepted and extremely essential concept, especially in this post-covid era. The importance of health has been recognized and discussed in economics in the early years by various economists. From the vast scope of the subject, this particular section focuses on the various important theoretical models regarding health care services and different approaches to measuring health care payments on the basis of the objectives of the study.

3.2.1 Demand for and Supply of Health Care

Health economics as a subject emerged in the 1960s with the seminal articles of various economists including Arrow, Grossman and Fusch. The socio-economic development of a nation depends upon the health and system of health care in any region. Arrow (1963) connects the demand and supply of health care to irregularity and uncertainty. He also discusses the relation between health care and insurance and speaks of the information asymmetry among buyers and sellers of insurance market. According to him, demand for health care directly affects people's integrity and unlike other demands, the impact cannot be reduced with adequate income. Income plays a pivotal role in medical care and the traditional theories of Grossman (1972) and Muurinen (1982) establish these concepts. These theories suggest that while patients primarily determine the demand for health care, it is also influenced by the health care delivery system (Grossman, M. 1972)

Several scholars, including Huang and Koropecky (1976), Rice (1984), Christensen, Long, and Rodgers (1987), as well as Cartwright, Hu, and Huang (1992), through their one-step and two-step models, have underscored the existence of a strong correlation that individuals with more extensive health insurance coverage tend to utilize medical care more than those with less generous coverage (P. Deb and P. K. Trivedi, 1997).

Grossman (1972) and Rosenzweig and Schultz (1982) introduced the unified model of health-care demand. According to this model, health production is integrated into the utility-maximizing behaviour of household members, who exhibit preferences for both health-neutral, health-related goods and health status. The theory also assumes

that members of a household have the same preferences regarding goods and health care and hence act as a single unit while demanding these services (Germano Mwabu., 2017). Furthermore, an economic framework has been developed by Grossman (1972) for studying the demand for health care, wherein he describes health care as only one among the several factors in creating good health. He posited health as an outcome influenced by various factors including income, education, genetics, and public health measures. Grossman's model portrays health both as a consumption good, contributing to overall satisfaction, and as an investment good affecting income and wealth accumulation. He defines health expansively, encompassing longevity and the number of illness-free days per year, both of which are demanded and produced by individuals. According to Grossman, individuals make lifestyle choices impacting their health, thereby viewing health as a choice variable. Wealth is essential for individuals as both a consumption and investment good, affecting their preferences and the time available for various activities. The demand for health-related inputs, including medical care, stems from this broader demand for health, influenced by income, prices, preferences, production efficiency, and health endowments. This approach enables the analysis of differences in desired health outcomes among individuals and over time, as well as the examination of medical care utilization within the context of broader health demand (Mattam, 2015).

Furthermore, several studies have mentioned theories connecting health with externalities and information asymmetry (Nisha T.A., 2021). Principal-agent models considers physicians as the agents of patients, responsible for evaluating the utilization of medical services (Winfried Pohlmeier & Volker Ulrich., 1995). Among them, the most discussed are those that considers health as human capital, popularised by Mushkin (1962), which was looked into by Becker (1964) and further by Fusch (1966).

3.2.2 Health as Human Capital

The theory has been used in framing economic policies since its formation and considers human health as an important part of human capital formation by assuming that sound health improves productivity of population.

Mushkin (1962), Becker (1964), and Fuchs (1966), emphasised that health plays a vital role in the process of human capital development. It assumes that better health improves the productive capacity of the population. The human capital theory highlights the need for the allocation of resources for the expansion of health care systems. The human capital theory was used to frame economic policies. Mushkin's theory emphasizes the impact of health on productivity and economic development. He argues that investing in health leads to higher levels of human capital, as healthy individuals are better able to learn, work, and contribute to society.

Becker's theory of human capital extends this concept by highlighting the role of education and training in building human capital. He asserts that individuals should make investments in their own health and education, leading to increased productivity and economic growth. This approach recognizes health as a fundamental component of human capital formation.

Fuchs' theory adds another dimension and emphasizes the importance of preventive health measures and the economic implications of healthcare investments. By considering the long-term effects of health on labour productivity and population dynamics, Fuchs' theory contributes to a more comprehensive understanding of the relationship between health and human capital.

Understanding the relationship between health and human capital is thus crucial for shaping public policy and improving overall well-being. By integrating these theories, strategies that prioritize healthcare access, education, and preventive measures to enhance human capital and promote sustainable economic development, can be developed.

3.2.3 Status of Health and Geriatric Health

Fundamental cause theory by Link and Phelan (1995) aims to elucidate the connection between socio-economic status (SES) and health across different eras. The theory suggests that socioeconomic status functions as a fundamental determinant of disease. It not only ensures access to essential resources that protect individuals from illness and its consequences, but also shapes a range of risk factors and health outcomes that

change over time. These essential resources include wealth, knowledge, skills, power, and social connections, which are versatile and adaptable to changing conditions. Over the past two centuries, human health has undergone significant shifts, with dramatic changes in the most prominent and infectious diseases. In the United States, chronic illnesses such as lung cancer and cardiovascular disease have replaced tuberculosis and other infectious diseases as the leading causes of death (WHO, 2023). The significance of other risk factors has also shifted, with sanitation becoming less critical while smoking, blood pressure, and cholesterol have gained prominence. As certain diseases are controlled, new illnesses and causal mechanisms emerge, necessitating ongoing research to identify risk factors and develop new diagnostic tools and treatments. Individuals with the most resources are best positioned to benefit from these advancements because social and economic resources are generally transferable across different contexts. Irrespective of the risks and diseases, individuals with greater advantages will tend to experience better outcomes, leading to persistent social disparities in health over the long run.

The aging process is intricate and multifaceted, encompassing substantial decline in certain physiological functions while showing minimal change in others. Researchers have endeavoured to unravel the underlying causes of this phenomenon. According to some theories, aging is suggested to be inherent within the genetic makeup of each species .

Theories on ageing accrues to a wide range of categorisation as biological theories , psychological theories, sociological theories and so on (Ann Kavitha Mathew., 2013; Jean Lange and Sheila Grossman.,2018). Since the present study focuses on the sociological and economic aspects, only theories related to the same are discussed in the following section.

3.2.3.1 Psychological Theories of Aging

Psychological theories focus on individual aspects of aging, including cognitive and emotional changes. They explore how individuals perceive and adapt to aging-related changes in themselves and their environments. Some key psychological theories are:

- **Human Needs Theory:** Developed by Abraham Maslow (1954), this theory posits that individuals have a hierarchy of needs, ranging from basic physiological needs to higher-level needs such as self-actualization. It suggests that fulfilling these needs is essential for healthy aging, emphasizing the importance of personal growth and fulfilment in later life.

- **Theory of Individualism:** Rooted in the work of Carl Jung (1960), this theory emphasizes the development of personality over a lifetime. It highlights introspection and acceptance of one's past and physical decline as crucial aspects of successful aging. The theory suggests that individuals who can adapt to these changes and find meaning in their lives age more healthily.

- **Stages of Personality Development Theory:** Proposed by Erik Erikson (1963), this theory delineates eight stages of psychosocial development throughout the lifespan, with the final stage focusing on integrity versus despair in old age. It suggests that older adults reflect on their lives, evaluating their accomplishments and finding meaning, which can lead to a sense of integrity or despair.

3.2.3.2 Sociological Theories of Aging

Sociological theories looks into how societal structures, norms, and institutions influence the aging process. They focus on the social aspects of aging, including changes in roles, relationships, and societal expectations. Some key sociological theories are listed below:

- **Activity Theory:** This theory suggests that staying active and engaged in society is essential for a satisfying late life. It emphasizes the importance of maintaining social connections and participating in meaningful activities to promote well-being in old age.

- **Disengagement Theory:** In contrast to the activity theory, the disengagement theory proposes that aging involves a gradual withdrawal from society. It suggests that this disengagement is a natural and mutually beneficial process for both individuals and society, allowing older adults to reflect on their lives and maintain social equilibrium.

- **Continuity Theory:** This theory posits that individuals maintain a consistent sense of self and identity throughout life, even as they adapt to changing roles and circumstances. It emphasizes the importance of continuity in personality and behaviour across the lifespan and suggests that older adults continue to pursue activities and roles that align with their self-concept.

3.2.3.3 Psychosocial Theories of Aging:

Psychosocial theories combine psychological and sociological perspectives to understand the ageing process. They examine how individual psychological factors combine with social influences to shape the experience of ageing. Certain psychosocial theories are:

- **Human Needs Theory and Societal Expectations:** Psychosocial theories consider how individual needs for autonomy, connection, and meaning intersect with societal expectations and norms regarding aging. They explore how individuals navigate these dynamics to achieve a sense of fulfilment and well-being in later life.
- **Interplay of Personality and Social Environment:** Psychosocial theories highlight the interplay between individual personality traits and the social environment in shaping the experience of ageing. They examine how factors such as resilience, coping strategies, and social support influence adaptation to age-related changes and challenges.
- **Role Transitions and Life Satisfaction:** Psychosocial theories emphasize the significance of major life transitions, such as retirement or widowhood, in shaping individuals' experiences of ageing. They explore how these transitions impact identity, social roles, and overall life satisfaction in later life.

In summary, psychological theories focus on individual cognitive and emotional processes, sociological theories examine societal influences on aging, and psychosocial theories combine both perspectives to understand the multidimensional nature of the aging process. Each theory offers valuable insights into how individuals and societies overcome the challenges and opportunities of aging. Understanding

these theories helps healthcare providers in supporting older adults in various ways, such as addressing psychosocial challenges, encouraging social engagement, and promoting healthy behaviours to reduce the effects of aging (Everitt et al., 2023).

3.2.4 Health Care Access and Utilization

For ensuring equitable and effective delivery of healthcare, it is essential to understanding the factors influencing individuals' decisions to seek medical care and the mechanisms through which healthcare services are accessed. Thus theories on health care access and utilisation become important to understand how access to healthcare services can be optimized and disparities in healthcare utilization can be addressed.

The health service model by Kohn and White (1976), emphasizes the macro level of health services systems in determining the probabilities associated with the healthcare process

Ronald M. Anderson's Health Care Utilization Model, developed in 1968, seeks to explain the factors influencing the use of health services. It identifies three dynamic factors such as predisposing, enabling, and need for care, which influence the utilization of health services, including physical visits and inpatient care. Predisposing factors include characteristics such as age and health beliefs, while enabling factors cover aspects like community support and health insurance. The concept of need refers to both actual and perceived requirements of health care services. The model has evolved over time, incorporating various iterations and considering health outcomes.

Later in 1974, Aday and Andersen in their health behaviour model, observed the variations in health services utilization resulting from the interaction between predisposing, enabling, and need-for-care factors. This model states that these factors directly or indirectly impact the decision-making process related to demanding medical care and subsequent utilization patterns. It takes into account perceptions about access to and attitudes towards medical care and how these perceptions influence delay behaviours.

The equity of access model was developed by Adey and Anderson in 1981 and it defines equity as the distribution of services based on people's need for them. Inequity arises when services are distributed based on demographic variables (race, family income, or place of residence) rather than need.

These models provide valuable frameworks for understanding the complexities of healthcare access and utilization. They incorporate factors ranging from individual beliefs and behaviors to systemic structures and societal values (T.D. Simon, 2007; Kohn & White, 1976; Aday & Andersen, 1974; Anderson, 1968).

3.2.5 Health Care Financing

Health care financing plays a crucial role in ensuring access to quality healthcare services. Various approaches have been proposed to determine how healthcare costs should be distributed among individuals and households. Two prominent frameworks in health care financing are Egalitarian Approach and Minimum Standard Approach, popularized by World Health Organization and widely accepted by researchers

Egalitarian approach, emphasizes fairness in health care payments based on ability to pay, and the minimum standard approach, focuses on preventing households from experiencing catastrophic health care expenditures.

3.2.5.1 Egalitarian Approach

Egalitarian/agnostic approach as observed by K.P Shabeer (2017), is rooted in the principle of fairness, where payments for health care are linked not to usage of services but to individuals' ability to pay. Central to this approach is the concept of vertical equity, which examines how individuals with different income levels should contribute to health care costs relative to their income. The egalitarian approach sets a minimum threshold in terms of absolute income to ensure that health care spending does not push the households into poverty (Wagstaff et al., 2001).While the egalitarian approach prioritizes vertical equity, it does not address horizontal inequities in health care payments, where households with similar incomes may end up paying significantly different amounts due to the randomness of ill health. As a result, the

egalitarian approach may overlook the core issue of horizontal inequities, especially in contexts where out-of-pocket payments predominate (K.P. Shabeer,2017).

3.2.5.2 Minimum Standard Approach

The minimum standard approach focuses on quantifying inequalities in health care payments to prevent households from experiencing catastrophic expenditures (WHO,2000). This approach requires that health care payments do not exceed a pre-specified share of household income or drive households into poverty. The minimum standard approach covers two sub-strands: one based on the proportionality of income and the other based on the absolute level of income. The first sub-strand sets a threshold in terms of the proportion of household income that should be allocated to health care expenditures. It ensuring that households do not spend more than a specified fraction of their income on health care (Wagstaff et al.,1999). The second sub-strand defines catastrophic health care expenditures as those that exceed a critical limit relative to household income (Lu et al.,2009). However, the choice of threshold values for defining catastrophic expenditures is subjective and varies across studies (K.P. Shabeer,2017).

This study uses Minimum Standard approach. The methods of measuring catastrophic expenditure is explained in detail in the following session.

3.3 Methodologies for Measuring Catastrophic Expenditures

Various methodologies have been proposed for measuring catastrophic health care expenditures within the minimum standard approach. These methodologies include defining catastrophic expenditures based on fixed proportions of total household expenditure, income remaining after subsistence needs have been met, or capacity to pay (Wagstaff et al, 2003;Xu et al,2007). The choice of threshold values for defining catastrophic expenditures varies across studies. A threshold limit of 10% of household income being a widely accepted standard.

Catastrophic expenditure refers to the high out-of-pocket costs incurred by individuals or households for necessary healthcare services (Rezapour et al., 2017). These costs can pose a significant threat to the financial stability and well-being of individuals and families and has the potential to push them into poverty. Therefore, it is essential to accurately measure catastrophic expenditure to understand the extent of this problem and create effective strategies to alleviate its impact (Onwujekwe et al., 2012). Accurately measuring catastrophic expenditure is important in order to assess the magnitude of financial burdens faced by individuals and households due to healthcare costs. Various measures used for this in the works of Hsu et al (2018), K.P Shabeer (2017), Garg and Karan (2009) are elaborated and discussed below.

3.3.1 Catastrophic Payment Headcount (H_{cat})

The Catastrophic Payment Headcount (H_{cat}) is a fundamental measure used to determine the proportion of households experiencing catastrophic health expenditure relative to their income. It is calculated as follows:

$$H_{cat} = \frac{1}{N} \sum_{i=1}^{N} Ei$$

Where:

- N is the sample size.
- Ei is an indicator equal to one if $\frac{Xi}{Yi} > Z$ (where Xi is the out-of-pocket expenditure by household i, Yi is the income of household i, and Z is the catastrophic threshold), and zero otherwise.

This measure is widely used in health economics studies to assess the incidence of catastrophic health spending (Bhojani et al., 2012).

3.3.2 Catastrophic Payment Gap (G_{cat})

H_{cat} provides insight into the incidence of catastrophic health expenditure and the Catastrophic Payment Gap (G_{cat}) measures the average excess expenditure incurred by households crossing the catastrophic threshold. It is calculated as:

$$G_{cat} = \frac{1}{N} \sum_{i=1}^{N} Oi$$

Where:

- O_i is the catastrophic overshoot, equal to $\frac{Xi}{Yi} - Z$ if $\frac{Xi}{Yi} > Z$, and zero otherwise.

This measure was introduced by Wagstaff et al. (2003) as a means to calculate the intensity of financial burden associated with catastrophic health spending. Recent studies by Chen et al. (2019) have emphasized the significance of G_{cat} in understanding the economic impact of catastrophic health expenditure on households in developing countries.

3.3.3 Mean Positive Gap (MPG_{cat})

The Mean Positive Gap (MPG_{cat}) focuses on households that have actually experienced catastrophic health expenditure. It measures the average excess expenditure among these households and is calculated as:

$$MPG_{cat} = \frac{\sum_{i=1}^{n} Oi}{n}$$

Where:

- n is the number of households that have experienced catastrophic health expenditure.
- Oi is the catastrophic overshoot for household i.

This measure provides an understanding of the financial strain faced by affected individuals and households (Wagstaff et al., 2003).

3.3.4 Concentration Index (CE)

To understand the distribution of catastrophic health expenditure across income groups, the Concentration Index (CE) is utilized. It examines how the proportion of households exceeding the catastrophic threshold varies across income quintiles. The formula for CE is obtained from O'Donnell et al. (2008) and is as follows:

$$CE=(P1L2-P2L1)+(P2L3-P3L2)+(P3L4-P4L3)+(P4L5-P5L4)$$

Where:

- *P* represents the cumulative share of households arranged in order, based on their monthly income.
- *L* is the cumulative percentage of households experiencing catastrophe for the corresponding *P*.
- Numbers 1 to 5 represent the relevant income quintiles.

This index helps in identifying income-related inequalities in the distribution of catastrophic health expenditure (Ghosh, 2011).

3.4 Conclusion

This chapter looks into the intricacies of measuring catastrophic health expenditure, focusing on its incidence, intensity, and distributional fairness. Various theoretical frameworks and models related to health economics, emphasizing the importance of understanding the demand for and supply of healthcare, health as human capital, and health care financing are explored in the chapter. The chapter categorizes theories based on the objectives of the study and advances to those used in the study. Methods and measures of catastrophic expenditure employed are elaborated in the subsequent section which is then followed by conclusion.

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CHAPTER 4

POPULATION AGEING AND ELDERLY POPULATION OF KERALA

4.1 Introduction

Population ageing has become a demographic trend worldwide. Population growth is determined by mortality and fertility rates and a remarkable transformation in world population dynamics has been observed over the past several years, characterized by a shift from high fertility and mortality rates to lower levels, leading to population ageing (United Nations, 2017). Socioeconomic development, improved healthcare, and advancements in medical technology has contributed tremendously to this demographic transition (Lutz et al., 2008). The demographic transition model delineates the stages through which population progresses as they undergo this transition. The process has evolved through four stages as demographers observe. Initially in the first stage, societies experience high birth and death rates, resulting in minimal population growth. Subsequently, death rates decline due to advancements in healthcare with birth rates remaining high, leading to rapid population growth. In the next stage, birth rates also decline, leading to stabilized population growth with a higher proportion of elderly individuals. Afterwards birth rates become too low as that of death rates and finally birth rates fall below death rates leading to negative growth in population (Caldwell, 1976). What happens after stage IV at very high levels of development cannot be answered with certainty because not many countries have reached that stage of development, but a few. Different countries have reached different stages of demographic transition with developed and high-income countries reaching fourth stage. There are variations in the rate of population ageing across different regions, with some areas experiencing faster increases in the old-age dependency ratio compared to others.

4.2 Demographic Dividend and Dependency Ratio

As population undergoes demographic transition, increased focus is placed on the concept of demographic dividend. Demographic dividend indicates to the economic growth potential that rises as the share of working population in the total population increases (UNFPA, 2017). During the transitional phase of demographic transition, countries experience a demographic dividend, characterized by a period of rapid economic growth due to a relatively high proportion of working-age individuals compared to dependent populations (Bloom et al., 2014). However, as populations age, the dependency ratio, representing the proportion of dependent individuals (typically children and the elderly) to the working-age population, increases. It refers to the ratio of economically dependent population which is calculated as the ratio of those aged 65 or above to those aged from 15 to 64 (Lee, 2003).

4.3 Consequences of Population Ageing in an Economy

Increased healthcare expenditures, labor market disruptions, and strain on pension systems are the challenges for economies posed by ageing population (Bloom et al., 2014). Moreover, rising number of elderly individuals has resulted in a higher demand for medical services that are tailored to age-related conditions like the management of chronic illnesses, long-term care, and palliative care. Healthcare systems are facing challenges in adjusting and enhancing their capabilities to meet the requirements of the elderly population. Additionally, population aging brings about certain economic consequences. With a diminishing proportion of the working-age population in comparison to retirees, there are concerns about the sustainability of pension and social security systems. Authorities and policymakers are investigating approaches to tackle these issues. These approaches include raising retirement ages, promoting active aging, and advocating for private savings and investments. It might become necessary for the communities to modify their infrastructures, housing options, and transportation networks to cater to the specific needs of older individuals, to ensure their active involvement and integration within society. Thus, population aging poses a multi-faceted obstacle that demands unified action from the part of governments, healthcare providers, social service entities, and non-governmental organizations. It

is important to formulate effective policies and strategies to address the varied requirements of aging population by encouraging active and healthy aging, upholding economic stability, and nurturing inclusive and age-friendly communities. Labour force participation rates among older adults are declining and may affect economic productivity and innovation (Borsch-Supan et al., 2016). Thus, ageing is an issue of concern and addressing these challenges requires comprehensive policies and interventions to support active and healthy ageing and ensuring intergenerational equity (World Health Organization, 2015).

4.4 Population Ageing in India: Historical Overview and Current Status

India's demographic transition has been characterized by evident shifts in birth and death rates over the past century. According to Dyson and Visaria (2004) during the early twentieth century, India experienced high birth and death rates, resulting in relatively stable population growth. However, improvements in healthcare, sanitation, and living standards led to a decline in mortality rates, particularly infant and child mortality, and contributed to an increase in life expectancy. Efforts to address public health challenges and improve healthcare infrastructure were witnessed after India's independence in 1947. These initiatives, coupled with advancements in medical technology and sanitation, further extended life expectancy and reduced mortality rates (Bhat & Dhruvarajan, 2001).

India, like many other developing countries, is experiencing rapid population ageing driven by declining fertility rates and increasing life expectancy (United Nations, 2019). India's population is currently experiencing a demographic transition marked by a growing proportion of elderly individuals. According to the Census of India 2011 (Government of India, 2011), the percentage of elderly individuals (aged 60 years and above) increased from 5.6% in 1961 to 8.6% in 2011, and it is expected to rise to 19% by the year 2050. Godfrey and Julien (2005) argue that several factors contribute to population ageing in India, including declining fertility rates, increasing life expectancy, and changes in family structure and dynamics. Urbanization, migration, and changing social norms also influence demographic patterns and contribute to the ageing population.

4.5 Population Ageing in Kerala and Current Profile of Elderly Population

Kerala stands out from rest of the states in various aspects. Both social and economic development of the state is attributed to its history and geography. Economic advancement of the state is also attributed to its location, climate and topography. Through the years Kerala has evolved in a rapid pace and many of the attainments can be compared to that of developed countries. Along with these achievements Kerala resonates some of the problems faced by these countries. Kerala faces 'second generation problems' whereas the rest of the nation still encounters first generation issues. Thus, the State's issues are unique and receives less attention (K.K George 2011).

Kerala's journey, through changes has been quite remarkable starting early and progressing to mature stages. Kerala has a unique demographic profile compared to other states in India, characterized by high literacy rates, better healthcare infrastructure, and social development indicators. These factors have contributed to Kerala's demographic transition, including population ageing. The state has seen a decrease in fertility rates an increase in life expectancy and a shift towards ageing population. This shift has caused a migration of workers from other states creating a multicultural society. Various historical and socio-political factors such as policies, labor laws, investments in education and healthcare and poverty related issues have all influenced the demographic changes in Kerala significantly. The state's investment in capital like health and education has brought about social changes that cut across different economic classes. The state's emphasis on public health initiatives, such as the Kerala Model of Development, played a crucial role in improving healthcare access and reducing mortality rates (Krishnakumar, 2013). The progress of Kerala's population also reflects the effectiveness of community investments and societal perspectives, on marriage, family dynamics and child rearing. This transformation in the state brings about challenges as chances, for long term progress and broad-based prosperity.

According to Govindan and Arokiasamy (2015), Kerala witnessed a decline in fertility rates and a rise in life expectancy as early as the mid-20th century, owing to

improvements in healthcare, education, and social welfare programs. Recent statistics indicate that Kerala is approaching the later stages of global patterns in mortality and fertility shifts. The fertility rate remains relatively stable at 1.7 to 1.9 children per woman showing slight signs of decline after reaching replacement levels. The age structure of Kerala is shifting towards elderly population, which will have implications, on workforce dynamics and societal progress (Baishali Goswamy ,2021).

Kerala is currently experiencing the consequences of population ageing, with a significant proportion of its population comprising elderly individuals. According to the Census of India 2011, Kerala has the highest proportion of elderly individuals among all states in India, with approximately 12.6% of the population aged 60 years and above (Government of India, 2011).

Kerala's unique demographic situation presents challenges that need attention to navigate changes effectively. This demographic shift has significant implications for Kerala's social and economic landscape. Although progress has been made in reducing mortality and fertility rates there is still potential for improvement. The state's healthcare system is under pressure to cater to the healthcare needs of its ageing population which included chronic disease management, long-term care, and palliative care services (WHO., 2025). In addition, there is a growing demand for social support systems, elder-friendly infrastructure, and age-appropriate housing options to ensure the well-being and inclusion of older adults in society (Rajan & Soman, 2017).

4.6 Challenges and Opportunities

Like any other nation India also faces the challenge of population ageing. This imposes pressure on policy makers, healthcare providers and society at large. This transition has implications on various sectors, including healthcare, social security, and labor markets. Dey.S et al (2012) observes that there is a growing need for age-friendly healthcare services, social support systems, and infrastructure to address the diverse needs of older adults. Economically, population ageing poses challenges to India's workforce and social security systems (Ghosh, 2022).

With Kerala being the state with highest share of elderly, it presents both challenges and opportunities for policymakers, healthcare providers, and society at large. On one hand, the increasing burden on healthcare and social welfare systems requires innovative strategies and interventions to address the diverse needs of older adults (Arokiasamy, 2015). On the other hand, population ageing also presents opportunities for economic growth and social development, particularly in sectors such as elder care services, tourism, and leisure industries (Alen et al., 2016).

4.7 Problems of the elderly

While considering the outcomes of ageing, the problems faced by the elderly in general needs to be discussed. These are more or less similar all through the nations. Economic challenges involve issues such as limited or inadequate income, unemployment, poverty, insufficient savings, absence or inadequacy of pension funds, and declining interest rates, resulting in fluctuating prices and the dilemma of retirement amidst potential productivity.

Infrastructure-related obstacles involve deficiencies in transportation, communication, housing, technological expertise, healthcare services, charitable elderly care facilities, recreational opportunities, quality of life, breakdown of traditional family structures, and migration patterns.

Health-related challenges, psychological distress, nutritional deficiencies, and gender-specific differences contribute to chronic diseases, sudden health emergencies, accidents, falls, limited healthcare access due to economic and social limitations, reduced mobility due to illnesses, lack of health insurance coverage, dependence on others, aging-related obstacles, social isolation, emotional distress, widowhood, negligence, insecurity, frustration, strained family relationships, evolving roles of offspring in old age, fear of physical harm or mistreatment, depression, and a feeling of insignificance.

Among the several challenges faced, the most prominent and inevitable is the deterioration of health as one ages. Health determines quality of life and ability to perform social and economic activities (Sumathi,2007).The process of ageing is

accompanied by health problems but it does not mean that elderly have poor health. With improved medical facilities, the elderly of the State are better off than past years (United Nations, 2000).

To acquire a detailed understanding about the elderly of Kerala, profile of the study population needs to be elaborated.

4.8 Geriatric Population of Kerala

The share of elderly in total population in Indian states in 2011 is given in table 4.1.

Table 4.1

Percentage of elderly in total population in India (2011)

States/ U.T.s	Percentage
Kerala	12.6
Goa	11.2
Tamil Nadu	10.4
Punjab	10.3
Himachal Pradesh	10.2
Maharashtra	9.9
Andhra Pradesh	9.8
Odisha	9.5
Karnataka	9.5
Uttaranchal	8.9
Haryana	8.7
West Bengal	8.5
Gujarat	7.9
Madhya Pradesh	7.9
Chhattisgarh	7.8
Uttar Pradesh	7.7
Rajasthan	7.5
Bihar	7.4
Jammu & Kashmir	7.4
Jharkhand	7.1
Delhi	6.8
Assam	6.7
India	8.6

Source : Office of the Registrar General & Census Commissioner, India

According to data, Kerala has the highest proportion of elderly population in the country followed by Goa, Tamil Nadu, Punjab and Himachal Pradesh. From table, percentage of elderly in Kerala is 12.6 whereas that of India is only 8.6.

Census statistics on elderly population in Kerala (in absolute numbers), has been given in table 4.2, which summarizes census data from 1991 onwards.

Table 4.2

Elderly Population in Kerala

Age Category	1991	2001	2011
60+	2,567,365	3,335,675	4,193,393
70+	997,059	1,401,524	1,776,588
80+	288,847	389,013	541,849
90+	37,273	-*	-*
100+	1,713	-*	-*

Source : Office of the Registrar General & Census Commissioner, India

**Separate data not available in Census.*

According to UN a country is 'ageing' when the proportion of people over 60 reaches 7 percent. India crossed this stage in 2001 whereas Kerala much earlier in 1971 (table 4.3).

Table 4.3

Proportion of elderly population to total population in India and Kerala.

Year	India (%)	Kerala (%)
1971	5.5	7.1
1981	5.7	7.9
1991	6.3	9.3
2001	7.4	10.4
2011	8.6	12.6

Source : *Office of the Registrar General & Census Commissioner, India*

According to BKPAI report on Status of elderly population of the state, 60 percent of the elderly are, below the age of 70 while another 12 percent are aged 80 or above. In all age groups there is a number of women than men. Notably the highest ratio of women to men was seen among those 80 and above with 1656 women for every 1000 elderly men. Due to widowed women they outnumber their male counterparts in the older age groups indicating a need for special attention in Kerala (UNFPA, 2012)

As for education attainments, one fifth of the population in Kerala has not received formal education with a higher percentage observed among older women (29%). Conversely more than eight years of education have been completed by 45 percent of men and 24 percent of elderly women. The economic status and work force participation of the elderly in Kerala observes that around one-fourth of elderly men in Kerala were found to be still working, primarily due to economic compulsions. They were often engaged in unskilled, informal, and low-paying occupations. Around half of the elderly earn a personal income but whether the income earned is sufficient to meet their basic needs is a matter of concern. Thus, economic dependency become important. As elderly women do not participate in workforce, they are more dependent than elderly men. Economically independent women constitute 10 percent whereas men constitute 23 per cent (UNFPA, 2012).

Asset ownership in the form of land, house, gold & jewelry, bank deposits and savings indicate the financial status of the elderly and act as income source and collateral. Most of the elderly of Kerala own land and house compared to other assets. Asset holdings are higher for men to that of women. An analysis of marital status shows that married individuals constitute 89 percent of elderly men but only 33 percent of elderly women. Additionally, there is a high percentage of widows, among elderly women (61%) compared to elderly men (10%). The living arrangement of elderly when analysed reveals that the elderly of the state follow traditional pattern of co-residence. Moreover, elderly living alone is less compared to other states of the country. Major reason for living alone was either no children or children who live somewhere else. Majority of the elderly are satisfied by the current living arrangement (UNFPA, 2012).

4.9 Conclusion

The phenomenon of population ageing is a worldwide demographic shift that has significant consequences for societies, economies, and public health systems. Throughout the last hundred years, the world has witnessed a remarkable transformation from elevated birth and death rates to significantly reduced levels, resulting in a steadily growing elderly population. This transition, driven by socioeconomic development, improved healthcare, and advancements in medical technology, has led to various challenges and opportunities across different regions.

The demographic transition model provides a framework for understanding the stages through which populations progress as they undergo this transition. The process of demographic transition ultimately leads to an ageing population with a higher proportion of elderly individuals. The process includes high birth and death rates in the initial stages to falling birth rates and stabilized population growth in later stages.

The concept of demographic dividend, characterized by rapid economic growth due to a relatively high proportion of working-age individuals, gains importance. However, as populations age, the dependency ratio increases, posing challenges for economic sustainability, healthcare systems, and social welfare policies.

Population ageing presents several challenges for economies like increased healthcare expenditures, labour market disruptions, and burden on pension systems. Furthermore, as the number of elderly individuals rise, they demand specialized medical services and social support systems that are tailored to age-related conditions.

India is experiencing rapid population ageing, like many other developing countries. This process is driven by declining fertility rates and increasing life expectancy. Kerala, in particular, stands out with its unique demographic profile characterized by high literacy rates, better healthcare infrastructure, and social development indicators. The state has witnessed a decline in fertility rates, an increase in life expectancy, and a shift towards an ageing population.

However, population ageing also presents opportunities for economic growth and social development. Due to population ageing, opportunities arise in sectors such as

elder care services, tourism, and leisure industries. Policymakers, healthcare providers, and society at large must address the diverse needs of older adults like healthcare, social support, and infrastructure.

Apart from the challenges posed by population ageing, the contributions and potential of the elderly population need to be recognized. Addressing the economic, social, and health-related needs of older adults requires comprehensive policies and interventions that promote active and healthy ageing.

In conclusion, population ageing is a diverse phenomenon that demands attention and unified action from governments, healthcare providers, social service entities, and non-governmental organizations. By addressing the challenges posed by population ageing, societies can foster inclusive and age-friendly communities and ensure sustainable economic growth and social progress.

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CHAPTER 5

HEALTH STATUS AND PROBLEMS OF THE ELDERLY

5.1 Introduction

This chapter examines the health status of the elderly in Kerala and proceeds with a primary survey among the elderly population of rural and urban areas in three districts of the State. The chapter is categorized into eight sections. The next section discusses the concept of health status discussed in the literature, in detail. The subsequent section focuses on the sampling framework of the study, which is then followed by the socio-demographic features of the study population. Socio-economic profile of the elderly is discussed in the later section, followed by the health status of the elderly. The next section deals with self-perceived health status, which in turn is followed by conclusion.

5.2 Health Status

Health Status is a crucial term in the field of Health Economics, and grasping its significance is crucial for accurately assessing the health conditions of the elderly population. The concept demands comprehensive understanding and is fundamental in evaluating the well-being and quality of life of individuals, especially those in their later years. World Health Organization (WHO) defines health as a "state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity" (WHO, 1948) The concept of health is intricate and heterogenous. Thus, measuring health lures around physical, mental and social well-being as highlighted by the definition of WHO. Health can be assessed using positive or negative indicators. Positive indicators include measures such as age and gender-specific norms of height or weight, or scales of positive mental health, whereas negative indicators reflect the absence of health, such as disease-specific mortality rates. Morbidity concepts occupy the middle range of a continuum, and lies between the

extremes of complete health and its total absence. Poor health risks are situated towards the negative end of this multidimensional health continuum. Physical Health refers to the physiological or physical condition of one's body whereas mental health pertains to the condition of mind including memory and emotions. Physical and mental health indicators are typically limited to the individual's body, whereas social health indicators extend beyond the individual, encompassing the quantity and quality of social interactions. According to Ware & Davies (1981) individual health status refers to efficient and proper functioning of body and mind, more than just the absence of disease and thereby indicating well-being. Based on their definitions and measurements the extent of individual or community health needs in these dimensions varies. Community health needs assessments usually focus on aggregate, statistical indicators of morbidity or mortality rates such as infant mortality rates, the percentage of elderly individuals with limitations in daily activities etc., whereas individual health needs assessments evaluate the health status of specific people, based on symptoms or diagnoses. Public health policies and programs primarily target the community health needs assessment, while personal medical care services focus on the latter (Lu Ann Aday., 1994).

The purpose of studying health status need to be understood while discussing about the measures of health status. The efficiency or effectiveness of medical interventions can be evaluated by assessing the health status. Moreover, health status measures are crucial in assessing the quality of care received and provided. The information on health levels of population is essential in evaluating health planning efforts and acts as a guide in allocating health resources among various programs or region. Health status measures helps in understanding changes in health over time and explores association between health and other variables such as attitude towards seeking medical care or pattern of consumption of medical care, which in turn helps in developing and testing theories aimed at improving the overall health status of the population.

Apart from physical and mental components social component requires attention, in defining health. Social functioning, however, extends beyond the individual,

encompassing the quantity and quality of social interactions and resources. But including social factors as part of the definition can complicate the health models. Thus, social circumstances are considered as external factors affecting health status (Ware & Davies.,1981). Contrary to the above stated study, Hunt et al (1980) observes that social elements are crucial and measures that overlook these aspects can be misleading. Moreover, traditional measures like mortality, consultation rates, morbidity and service usage have notable limitations and measures like socio-medical indicators that assess health in terms of quality of life is gaining attention. Health measures should be straightforward to be easily acquired and interpreted (Hunt et al.,1980). This points to the fact that an individual's perception of own health status is increasingly recognized as essential in assessing health needs. Likewise, Cockerham, Sharp & Wilcox (1983) observes that self-rated health status is an indicator of how elderly relate to their social environment. Self-assessment of health is the strongest predictor of life satisfaction in older people, and this relationship strengthens with age (Spreitzer & Snyder., 1974). Even those over 75 years of age maintain a particularly optimistic view of their health. (Ferraro, 1980). Hence by focusing on the self- rated health status of the elderly, the present study acknowledges the role of social factors and the individuals' perception in comprehensively evaluating health needs.

5.3 Sample Framework

The study employs stratified random sampling method for primary survey and advances through data collected from households with elderly members in North, Central and Southern part of Kerala. The districts of Kozhikode, Ernakulam and Thiruvananthapuram, from each zone, have been selected based on elderly population density from Census 2011 data. A rural and urban taluk from each district has been selected using lottery method. Households with one elderly member (above 60 years of age) or more, have been selected as primary sampling unit. Given the total households of selected wards, sample size has been determined using probability proportional to size method. Thus a total of 400 households have been surveyed from the three districts. Table 5.1 gives details on sampling frame work.

Table 5.1

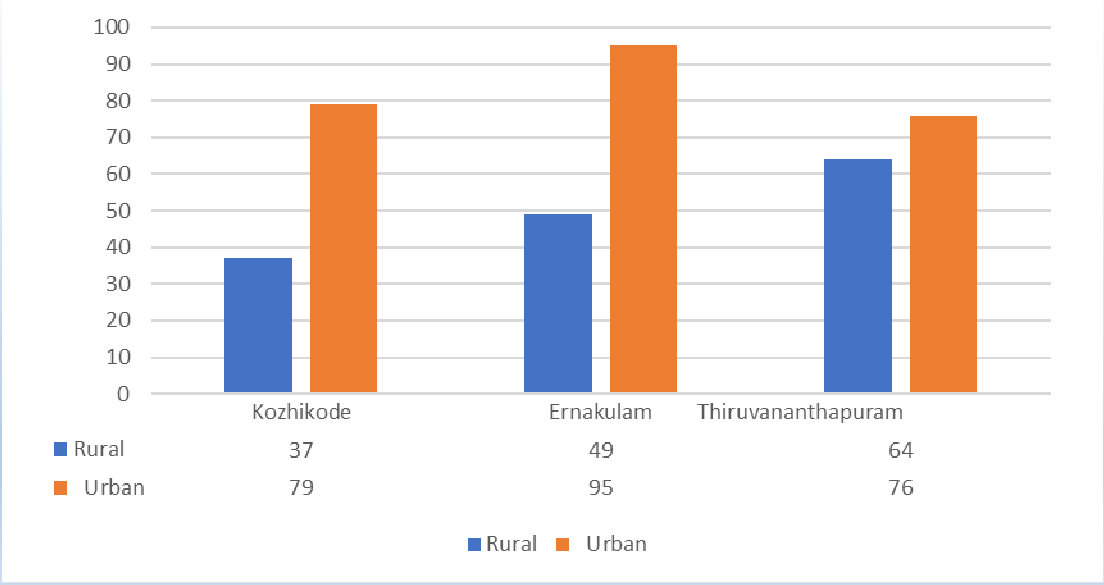
Sample Framework

District	Elderly Population	Percentage share of elderly in total population	Number of samples taken
Kozhikode	3,63,839	29	116
Ernakulam	4,53,484	36	144
Thiruvananthapuram	4,33,155	35	140
Total	12,50,478	100	400

Source: Compiled from Census 2011

Figure 5.1

Sample size



Source: Compiled from Census 2011

Number of elderly households in each district has been collected and rural-urban share has been obtained, according to which the rural-urban share of samples has been decided. The number of samples from rural and urban areas from the three selected districts are depicted in Figure 5.1.

A structured interview schedule has been prepared for gathering information from the households, which was divided into three major sections and sub-sections as follows:

1. General Household Profile
2. Household Income- Consumption/ Saving- Investment
3. Elderly Specific Schedule
    a) general financial status
    b) health & morbidity
    c) health care utilization & health financing

The survey was conducted from September-December 2023. The head of the household was the respondent for questions related to the household, whereas elderly specific questions were answered by the elderly themselves. In cases where the elderly were not in a position to respond, any adult member who has a close acquaintance with the elderly was selected as the respondent.

5.4 General Household Profile

A description of the general characteristics of elderly households surveyed is detailed in this section. Table 5.2 gives a general picture of the surveyed households.

Table 5.2

General Household Profile

Gender of the head	Male	321	80.25%
	Female	79	19.75%
Highest educational Qualification	Illiterate	4	1%
	Primary	30	7.5%
	High School	58	14.5%
	Higher Secondary	50	12.5%
	Degree	130	32.5%
	P.G/Professional & above	128	32%
Number of elderly	1	247	61.75%
	2	144	36%
	3 & above	9	2.25%

Source: Primary Survey

Majority of the households have degree as the highest educational qualification, implying that elderly households have educated members to cater to the health needs of the elderly in their house. Households with one elderly member is the most common type among the surveyed households.

Housing conditions of the surveyed households in rural and urban areas play a crucial role in assessing the health status, as living conditions significantly impact the prevalence of various diseases such as asthma, cold, bronchitis, dengue, and rat fever. Individuals residing in roofed, mud, or thatched houses are often exposed to pollen, dust, and smoke, which can trigger respiratory issues. Additionally, the challenge of controlling disease-carrying vectors within homes, contaminated water sources and unhygienic sanitation facilities contributes to the spread of illnesses (Mathew.J.Mattam.,2015). Thus, data on roofing, drinking water source, sanitation and hygiene are elaborated in table 5.3.

Table 5.3

Housing Conditions

Type of House	Pucca	338
	Semi-pucca	44
	Serviceable Kucha	18
Ownership	Own	356
	Rental	25
	Government provided	4
	Partially Government provided	12
	Others	3
Electrified	Yes	398
	No	2
Source of drinking water	Own well/tube well	164
	Public tap	3
	Public water connection	232
	Rivers/lakes	1
Sanitary latrine	With roof & door, no water connection	4
	With roof, door & water connection	396

Source: Primary Survey

From the table, it becomes evident that 85.5 percent of the surveyed households were pucca, with 11 percent semi-pucca and 4.5 percent serviceable kucha. It was observed that none of the households used public wells/ tube wells as a drinking water source. Majority of the households relied on public water connection as a source of drinking water in spite of the presence of open/tube wells in many of the households. This trend was mainly due to their belief that treated water is being distributed through public water connections. In urban areas where houses are built too close to each other, respondents reported instances of contamination of water sources like open/tube wells. None of the households had an absence of a sanitary latrine or a latrine without a roof or door. All the surveyed households, except four, had sanitary latrines with a roof, door and water connection.

5.5 Socio-economic Status of the Elderly

The elderly persons surveyed from 400 families were 567 in number. Socio-economic status, self-reported health conditions, morbidity conditions and health care utilization of elderly members of each family have been included in the questionnaire as separate sections. The profile of the elderly, along with their socio-demographic status, is discussed in Table 5.4. Among the elderly people surveyed, around 68 percent are married and 29 percent are widowed. Those who have divorced or are separated constitute only 0.5 percent and 3 percent, unmarried.

Table 5.4

Profile of the elderly

Variable	Category	Number n=567 (%)
Age in Years	60-69	382 (67.3)
	70-79	142 (25.1)
	≥80	43 (7.6)
Gender	Male	266 (46.9)
	Female	301 (53.1)
Marital Status	Married	385 (67.9)
	Unmarried	17 (3)
	Widowed	162 (28.6)
	Divorced/Separated	3 (0.5)
Literacy	Illiterate	18 (3.2)
	Primary	143 (25.2)
	High School	181 (31.9)
	Higher Secondary	43 (7.6)
	Degree	137 (24.2)
	P.G/Professional or higher	45 (7.9)
Location	Rural	210 (37)
	Urban	357 (63)

Source: Primary Survey

5.5.1 Age Composition

Age distribution of the surveyed group reveals that majority of the elderly surveyed belonged to the 60-69 age group, also referred to as young-old. Around 25 percent belonged to the old-old category (70-79) and around 8 percent fell under the 80 and above (oldest-old) section (Table 5.4).

5.5.2 Gender wise Distribution of Elderly

Gender wise distribution of elderly impacts the health behaviour and status of any population primarily because women are expected to have higher life expectancy and live longer than men (Stephen Austad.,2006). Women in the sample collected, constitute 53 percent whereas men account 47 percent, implying that the global norms are true in case of the study sample also (Table 5.4).

5.5.3 Educational Qualification

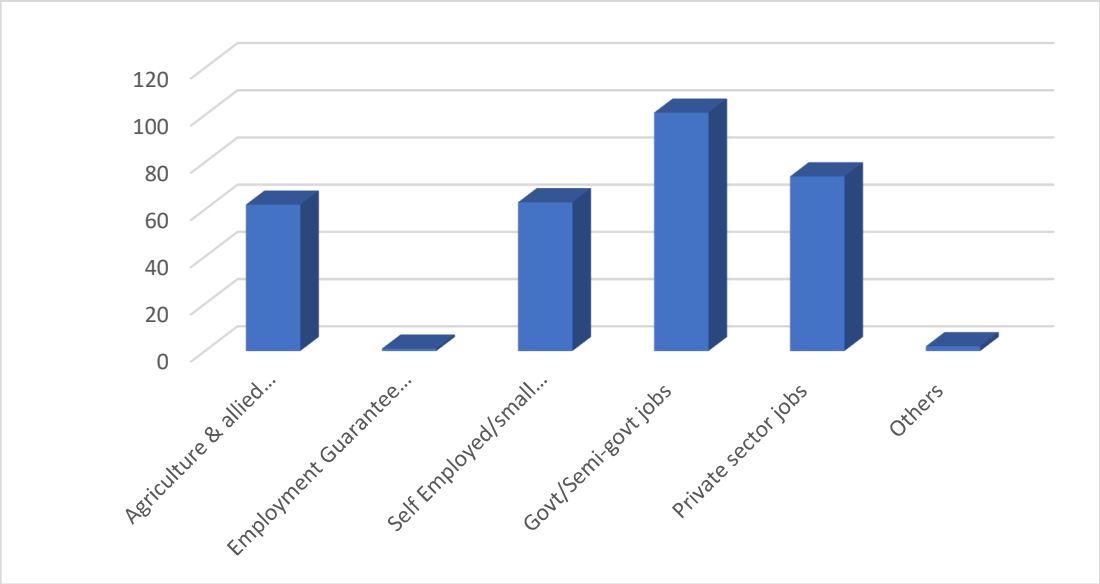
Education appears to have a distinct impact on health outcomes. In general, individuals who are illiterate or have lower levels of education tend to face a higher risk of poor health compared to those with higher educational attainment (Mathew.J.Mattam.,2015). According to Table 5.4, majority of the elderly surveyed have high school education as their highest level of literacy. Approximately 8 percent have acquired postgraduate/professional education, 24 percent are graduates, and 25 percent have only primary education. The proportion of illiterates stands at 3 percent, which contradicts the assertion that Kerala has achieved 100 percent literacy. The fact that illiterates can still be spotted in a cent percent literate state like Kerala might be because the term "illiterate", in the survey refers to those who have not received formal schooling. The discrepancy might be because surveys in general consider people as literate, if they can at least read and write their name.

5.5.4 Occupational Status

The health outcome of elderly depends upon their work status and source of livelihood. The job status and earning capacity of the elderly will be reflected in their health care affordability and utilization. This particular aspect is discussed in Figure 5.2.

Figure 5.2

Occupational Status of Elderly



Source: Primary Survey

The past occupational status of elderly was taken into account and was observed that 33 percent of elderly had derived their income from Government or semi-govt employees. Those with private sector job comprised 24 percent, which was followed by self -employed and agriculture and allied activities. Elderly employed in Employment Guarantee Scheme and other occupations were negligible.

Status of health and utilization of health care facilities are highly dependent on the earnings or income for any individual or group. Analysing the earnings of the elderly revealed that mean income amounted to 15653.880 rupees. This indicates the fact that majority of the surveyed elderly either belonged to upper or middle-income category. Almost all the surveyed elderly had earnings through income or pension of some sort. With the details described above in the background, we progress to examine the health status of the elderly.

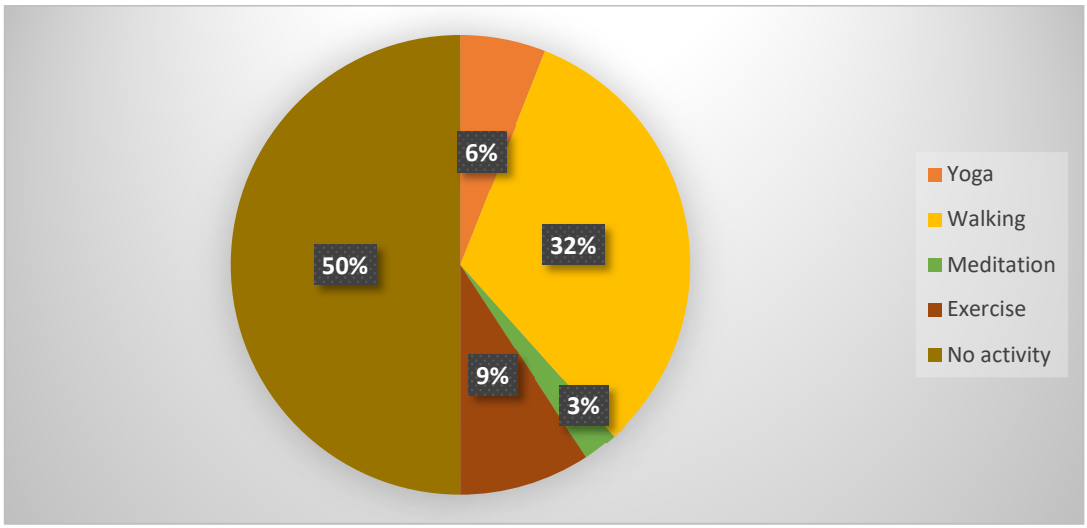
5.6 Health Status of the Elderly

As population becomes old, a general decline in health tends to accompany the process. Thus elderly are more susceptible to health problems. Various factors

influence the health status of the older people. Hence health conditions and health seeking behaviour of individuals vary according to their circumstances. Understanding the health habits of the older population become crucial. Along with factors like food habits, physical activity and medical assistance, ill health behaviour and lifestyle also influence the status of health and hence requires attention in examining the health conditions of any group. The improvement or deterioration in health conditions of elderly attributes to a great extent to the daily movement or physical activity. The activity level of the surveyed elderly is depicted in Figure 5.3, which reveals that majority around half of them were not engaged in any sort physical activity on a daily basis. Walking was observed to be the most common type of activity that accounted to 32 percent followed by other exercises and yoga. It was observed that no activity in elderly belonging to urban areas literally meant sedentary lifestyle, whereas no activity among rural elderly meant no special initiative like exercises to remain fit, even though they engage in farming or manual labour in their own home and property.

Figure 5.3.

Physical Activity of the Elderly

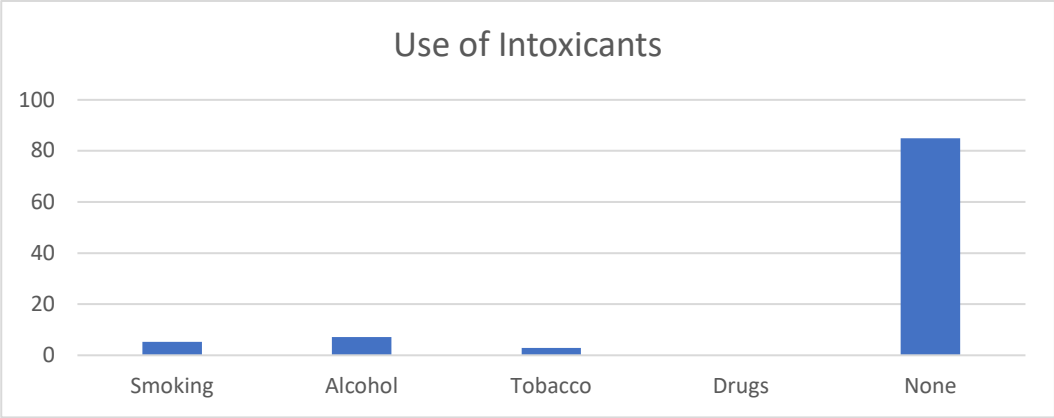


Source: Primary Survey

It is indeed a known fact that prevalence of ill health habits adversely affects the health status of the elderly. Habits detrimental to health such as smoking, use of alcohol and other types of drugs and intoxicants were analysed.

Figure 5.4.

Ill-Health Habits of the Elderly



Source: Primary Survey

Figure 5.4 provides an overview of the prevailing misdemeanors. As the data stands, large majority of the surveyed elderly had no ill habits. Prevalence of these habits was observed only among 15.1 percent of the surveyed elderly, which was indeed a small figure. Certain habits like smoking and alcohol consumption were observed mainly among men and could be considered exclusively as male centric habits. But habits like use of tobacco and betel were observed among females too. Habit of smoking attributed to 5.2 percent of the elderly and alcohol consumption to 7.1 percent. Usage of tobacco was observed among 2.8 percent of the elderly. None of the elderly reported usage of drugs or other intoxicants. Prevalence of ill habits contribute to various health issues and can be considered as one of the major reason for most of the chronic and acute health problems of any category of population. Hence the association between ill health behaviour and non-communicable health issues like chronic and acute illnesses have been analysed using correlation, the result of which has been displayed in table 5.5. As the approximate significance is greater than 0.05, the null hypothesis that there is no significant relationship between ill health behaviour and chronic and acute illnesses cannot be rejected. This implies that there is no significant relation between the variables analysed.

Table 5.5

Correlation between ill-health behaviour and chronic/acute illness

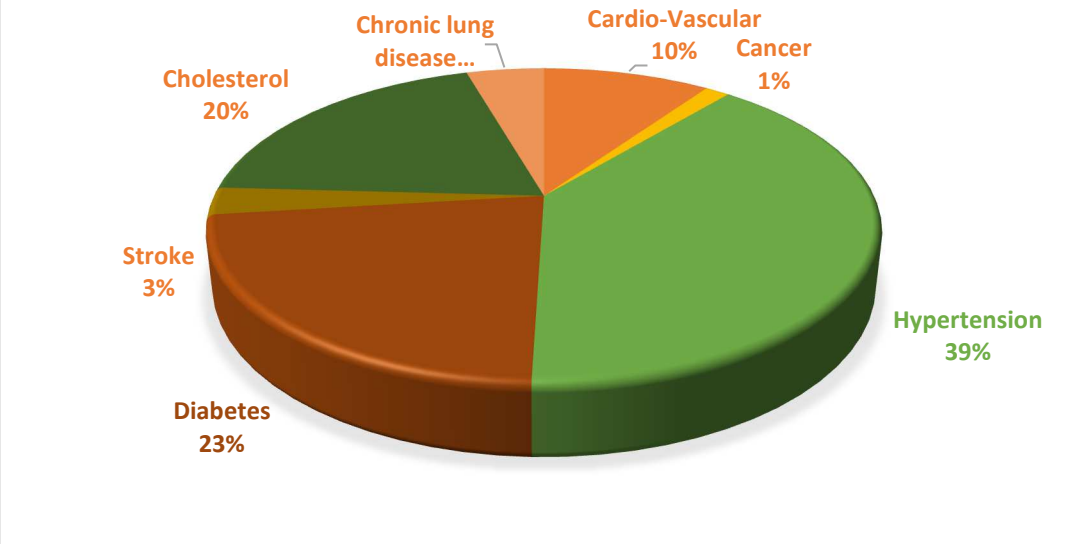
Measure	Value	Approx.Sig.
Phi	0.004	0.928
Crammer's V	0.004	0.928

Source: Primary Survey

The result may be due to the fact that elderly are more prone to chronic and acute as they pass through the process of ageing, irrespective of the presence of misdemeanors. Hence such practices, as observed, do not contribute much to the physical ailments present among the elderly. Health conditions diagnosed among the sample respondents are illustrated in figure 5.5.

Figure 5.5

Health Conditions of the Elderly



Source: Primary Survey

Almost ninety percent of the respondents had some diagnosed health condition or the other, with hypertension, diabetes and high cholesterol being the most prevalent chronic condition, followed by cardio vascular disease, chronic lung disease, stroke and cancer. Conditions like cardio vascular disease, cancer etc will be diagnosed only

symptoms appear and the study observed only the diagnosed conditions while those at the risk of having such diseases in future might have been excluded.

Table 5.6

Geriatric Problems

Health Conditions	Bone/joint disease	Neurological /Psychological Problems	Hearing/Ear related problems	Eye related issues	Common oral health problems
No. of elderly	162	55	121	387	290
Percentage	29%	10%	21%	68%	51%

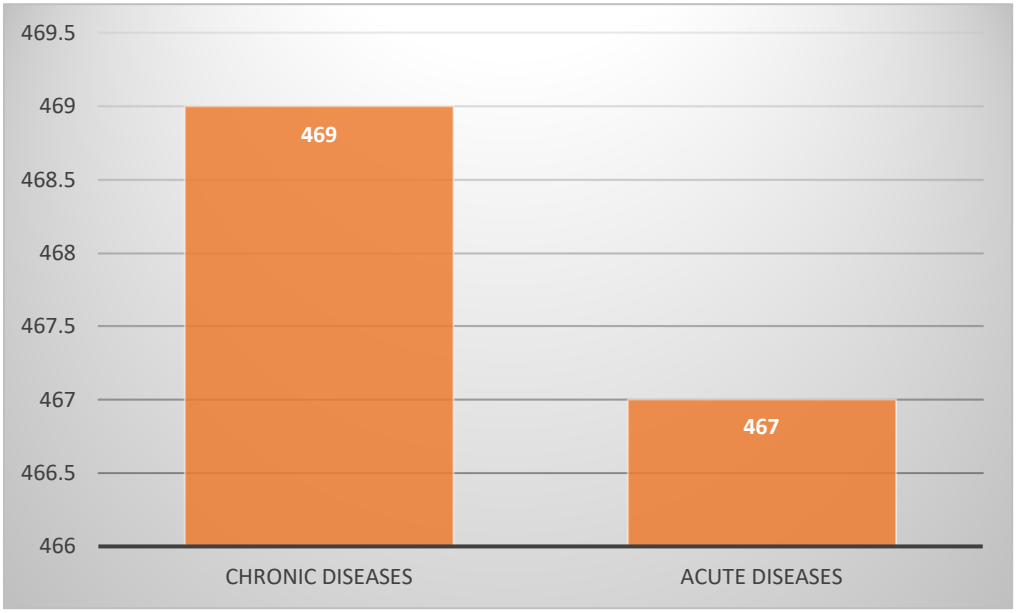
Source: Primary Survey

Certain health conditions are specific to elderly population. These are natural and are a part of growing older. Such conditions are inevitable , worsens as one ages and are more common among elderly than younger people.These are degenerative issues and can be identified as geriatric conditions (Williams T.F.,1989). Table 5.6 gives a detailed description of geriatric conditions among the surveyed population. Among the issues discussed, most prominent is the eye related issues which include conditions like cataract, glaucoma, refractive error and others.Usage of spectacles account to 79 percent of the surveyed elderly. Around half of the elderly surveyed had several oral health issues and the most common among them was edentulism either partial or complete, followed by tooth decay or dental caries. But usage of dentures was observed only among 14 percent of the elderly which was attributed mainly to the high cost and inconvenience while using them. Bone/joint diseases like Osteoarthritis, Osteoporosis, Rheumatoid Arthritis were observed among 29 percent of the surveyed. Hearing or ear related issues have been reported among 21 percent whereas usage of hearing aid was observed in very few elderly. When enquired about the low usage of hearing aid, most of the elderly responded that they experience significant difficulty in adapting to the new auditory system. This adjustment results in irritation, leading them to stop using such aids.

The health issues and geriatric conditions discussed above can be categorised into chronic and acute conditions.Chronic conditions develop gradually over time and persist for a lifetime. These conditions need to be managed and brought under control and cannot be eliminated completely. Acute conditions on the other hand, manifest rapidly and are of a short duration. They often require immediate medical attention and can be resolved with proper medical attention. Figure 5.6 gives the chronic and acute illnesses of the surveyed elderly.

Figure 5.6

Chronic and Acute Illnesses



Source: Primary Survey

Chronic illnesses appears to be more prevalent than acute illnesses, with a clear and observable difference between both.

5.7 Self-Rated Health Status

In evaluating a person's health status, it becomes important to consider their self-perception of health. An individual can be regarded as healthy if he/she feels that they are in good health (Central Statistics Office,2011). The subjective well-being of elderly adults is most strongly linked to their perceived health status. Self-assessment of health emerges as the most significant predictor of life satisfaction among older

individuals (Cockerham et al, 1983). An individual's perception of their own health is increasingly recognized as a crucial complement to traditional health assessment indicators. The complex interplay of physical, emotional, and social factors plays a significant role in disease development, and neglecting these aspects can lead to misleading conclusions (Hunt et al.,1980). Thus, excluding self-rated health status while analysing the health of elderly would be inappropriate.

The study analyzed self-rated health status of the elderly, in a five point scale ranging from excellent to very bad. The result is given in table 5.7.

Table 5.7

Self-Rated Health Status

Self rated health status	No of elderly	Percentage
Excellent	28	4.938271605
Very good	107	18.8712522
Good	340	59.96472663
Bad	77	13.58024691
Very Bad	15	2.645502646
Total	567	100

Source: Primary Survey

It can be observed from table that 340 elderly out of 567 surveyed, reported their health status as good. Furthermore around 19 percent of them considered their health status to be very good and 5 percent observed their health status as excellent. These results show that majority of the elderly surveyed claim to be in good health.

Variables that may have significant effect on the self-rated health status has been analysed using ordered logit model, the result of which is given in table 5.8.

Table 5.8

Ordered Logit on Determinants of Self-rated health Status

Variable	dy/dx	S.E	Z	p value	95% C.I		X
Chronic Disease	-.0147547	.01074	-1.37	0.169	-.035797	.006288	.82716
Acute Disease	.0056503	.00755	0.75	0.454	-.009147	.020448	.823633
Income	-2.41e-07	.00000	-1.01	0.313	-7.1e-07	2.3e-07	15653.9
Education Primary	-.0006918	.01743	-0.04	0.968	-.034846	.033462	.250441
High School	.0134498	.01997	0.67	0.501	-.025684	.052584	.320988
Higher Secondary	.037511	.03825	0.98	0.327	-.037459	.112481	.075838
Degree/Diploma P.G/ Professional/Higher	.0299099	.02771	1.08	0.280	-.0244	.08422	.241623
	.0405358	.04089	0.99	0.321	-.039598	.12067	.077601
Occupation Agriculture	-.016678	.00777	-2.15	0.032	-.031908	-.00144	.109347
Employment Guarantee Scheme	.1763194	.26932	0.65	0.513	-.351544	.704182	.001764
SmallBusines/Self employed	.0821747	.02844	2.89	0.004	.026427	.137923	.11111
Govt/Semi-govt Job	.003588	.01092	0.33	0.742	-.017811	.024988	.178131
Private Sector	.0155484	.01564	0.99	0.320	-.015101	.046198	.128748
Others	.0020646	.05207	0.04	0.968	-.099987	.104117	.003527
Age	-.0023709	.00064	-3.72	0.000	-.003621	-.00112	67.8571
Gender	.0100451	.00695	1.45	0.148	-.00357	.023669	.469136

The analysis takes into consideration the dy/dx , the slope coefficients or change in probability. LR Chi Square was observed to be 86.53 which implies that all regression coefficients have very little effect on the self -rated health status. The model gives a pseudo R^2 value of 0.0671, which is a small value. No collinearity was observed in the data. Overall significance can be observed. Most of the regression coefficients, except certain categories in occupation and age, are statistically insignificant, which implies that only some key factors determine the self-rated health status.

5.8 Mental Health and Depression among the Elderly: Evidence from India and Kerala

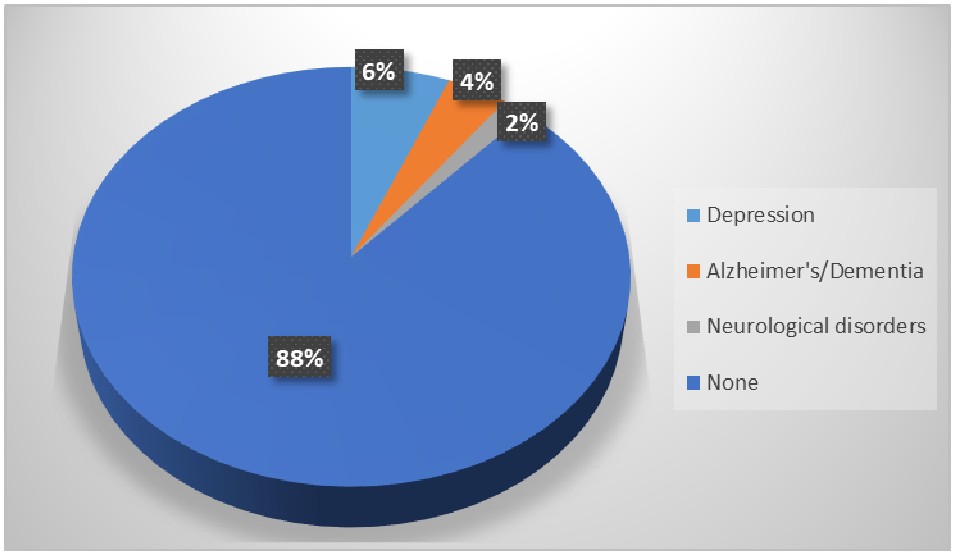
Mental health is an inevitable and still the most neglected component in the overall well being of older population. Several studies like Building a Knowledge Base on Population Ageing in India (BKPAI, 2011), Longitudinal Ageing Study in India (LASI, 2018) and Kerala Ageing Survey (KAS, 2013) confirms the high prevalence of depression and distress among elderly population in the State**.** There exists a close association between education attainment and cognitive performance among older people as observed in LASI survey. Elderly with higher educational levels were observed to perform consistently well in all areas of cognitive function. Age is another important factor affecting cognitive score and deterioration in cognitive abilities become more pronounced among the age group of seventy-five years and more. However, Kerala exhibits a higher score compared to other states, exhibiting clearly the impact of education and schooling in late- life mental functioning (LASI, 2018).

The BKPAI survey report delves more into the mental health status of elderly in Kerala by studying the recalling ability among elderly. Elderly in Kerala were able to recall on an average 3.7 words out of ten, which is slightly below the seven-state average of 4.1. People belonging to better financial background displayed better recall abilities. Men performed well in recalling words than women. In addition, widowhood and advancement in age further contributed to poorer performance.

Depression or psychological distress, even though lower compared to other states, has been observed to be prevalent among the geriatric population in the state. The conditions intensify among women, rural residents, widowed and very old (BKPAI, 2011). The mental health status and neurological disorders of the elderly have been observed to be very low in this study, which is described in figure 5.7.

Figure 5.7

Neurological and Psychological Conditions of the Elderly



About 88 percent of the surveyed elderly had neither depression, Alzheimer's nor neurological disorders. Depression was observed among 6 percent, Alzheimer's /Dementia among 4 percent and neurological disorders among 2 percent of the surveyed elderly. These statistics reveal that the elderly in Kerala has a highly satisfactory level of mental health status.

5.9 Conclusion

Health Status and problems of the surveyed elderly and the determinants of perceived health status has been analysed in this chapter, which reveals significant insights into their living conditions, demographic characteristics, and health challenges. The majority of the elderly population resides in pucca type houses, with 338 households reported. Most of these individuals live in their own homes, highlighting a trend of stable housing conditions among the elderly. The primary source of drinking water was public water connection, indicating access to essential utilities.

Among the 567 elderly individuals, 67.3% are in the 60-69 age group, with a female predominance of 53.1% and a significant proportion (67.9%) being married. Educational attainment is relatively low, with 25.2% (143 individuals) having only primary education, the highest among the education categories . Employment history

indicates that the most common previous occupation was government or semi-government jobs.

Physical activity among the elderly is limited, with walking being the most prevalent form of exercise. Notably, 50% of the surveyed individuals reported no engagement in any physical activity, highlighting a critical area for public health intervention. Among older adults, chronic illnesses are the most prevalent health issues, with high blood pressure being the most widespread, followed by diabetes. When considering geriatric problems, eye-related issues are the most common, succeeded by oral health problems.

The findings indicate that the elderly population is predominantly affected by chronic health conditions rather than acute illnesses, pointing to the need for sustained and specialized healthcare services to manage these long-term health issues.

Analysis on self-rated health status reveals that majority of the elderly claim to be in good health conditions (60%) and 19% presumed to have very good health conditions. Age was observed to be an important factor in determining perceived health status. The results are consistent with the findings of Cockerham et al (1983), which observes relationship between perceived health status and variables like age, sex, marital status, education, income, race and number of symptoms. These insights necessitate the importance of enhancing healthcare infrastructure, promoting physical activity, and improving education and awareness about chronic disease management among the elderly. Future policies and programs should focus on these areas to improve the overall health and well-being of the elderly population.

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CHAPTER 6

DEMAND FOR HEALTH CARE AND HEALTH CARE FINANCING

6.1 Introduction

An effective healthcare system enhances quality of life and overall well-being, alleviating the burden of both communicable and non-communicable diseases. This, in turn, boosts productivity and contributes to national growth. With higher incomes, individuals can access better nutrition and healthcare services, leading to improved health outcomes. Health investments yield benefits at both the macroeconomic level and the individual and household levels. However, the financial strain of poor health can exacerbate poverty, increasing the number of people living below the poverty line. Ill-health has lasting effects, often impacting multiple generations. In Kerala, a state that consistently ranks high in health indicators, household healthcare expenditures are notably substantial. The 1946 Bhore Committee Report underscored the importance of improving financial access to healthcare and reducing health inequalities. There are disparities in health outcomes both between and within states, as well as among different social groups based on income, gender, and health status. Key factors driving healthcare costs include the availability of healthcare professionals, access to essential medicines, and the adoption of appropriate medical technologies (T.A Nisha.,2021)

A fair healthcare financing system should shield households from the risk of impoverishment due to high healthcare expenses. In many developed countries, health insurance is commonly used to achieve this protection. However, in Kerala, the lack of a risk-pooling mechanism, a shrinking public healthcare sector, and increasing commercialization in healthcare make it crucial to assess how elderly population, one of the categories of population that demands health care the most, finance their healthcare needs.

This chapter explores the demand for health care, as well as the critical issue of healthcare financing methods used by the elderly, with a focus on out-of-pocket

expenses, which remain the dominant form of healthcare funding in many developing regions. Additionally, the study examines the coping strategies elderly households employ to manage the financial strain of healthcare costs that exceed their regular income.

6.2 Demand for Health Care

Understanding healthcare demand is essential for effective service delivery. Findings from such analyses have a wide range of practical uses. This information can be used to enhance access to healthcare services by identifying factors that influence service utilization, such as household income, proximity to healthcare facilities, service availability, health insurance coverage, and the cost of services. Additionally, demand analysis can uncover factors shaping patients' perceptions of care quality, which assists policymakers in crafting interventions to encourage socially beneficial healthcare usage patterns.

Understanding these dynamics is crucial, as healthcare benefits the population only when it is effectively used for health maintenance, promotion, disease prevention, and treatment. Analyzing demand patterns also aids in promoting equity in health outcomes by highlighting which social groups lack access to essential healthcare services, often due to poverty or other barriers. This allows for targeted interventions to deliver necessary care to vulnerable populations. In this way, demand analysis provides policymakers with valuable data to address both efficiency and equity challenges in the healthcare system. Broadly, healthcare demand analysis encompasses studying behaviors and practices that contribute to overall health improvement (Mwabu,G.,2017).

Pillai.M.R (2006) identifies socio-cultural traits such as age, gender and educational background as influencing factors in decision to seek health care services. These factors influence perception of health needs. Geographical availability of various forms of care and ease of access to health care services influence demand for health care. If individuals can easily reach facilities, they are more likely to avail health care.

As observed by Kutty V.R (2000), rising disposable income and economic growth contributes to health care demand as the ability to seek health care services make them more likely to pay for such services. Furthermore, aging population in the State has

contributed significantly to health care. As life expectancy increased, larger portion of the population experienced chronic diseases resulting in higher demand for health services. Several other factors like growth in education, especially female education, improved settlement patterns with better roads and infrastructure and presence of sophisticated health care services especially in public sector have created a robust demand for health care services in Kerala (Kutty V.R.,2000).

Thus the present study assessed determinants of demand for health care to understand the contributing factors. Household demand for health care focuses on the socio-demographic factors and hence the significance of factors such as age, income, education and location have been analysed using logistic regression. The result of the analysis is given in table 6.1.

Table 6.1

Logistic Regression on Demand for Health Care.

Logistic regression 567					Number of obs =	
					LR chi^2(8) = 43.01	
					Prob > chi^2 = 0.0000	
Log likelihood = -288.27003					Pseudo R^2 = 0.0694	
DdI |	Coefficient	Std. err.	z	P>|z|	[95% conf. interval]	
Age |	.0121595	.0156548	0.78	0.437	-.0185234	. 0428424
Y |	-6.51e-06	7.69e-06	-0.85	0.398	-.0000216	8.57e-06
Ed_p |	-.5833926	.5016395	-1.16	0.245	-1.566588	.3998028
Ed_h |	-.6122946	.5055272	-1.21	0.226	-1.60311	.3785204
Ed_{hr}|	-1.305724	.6916906	-1.89	0.059	-2.661412	.0499649
Ed_d |	-1.195559	.6001519	-1.99	0.046	-2.371835	-.0192828
Ed_{pg}|	-.1449445	.6659551	-0.22	0.828	-1.450193	1.160303
Lctn |	.8284842	.2488181	3.33	0.001	.3408096	1.316159
cons|	-1.582474	1.197965	-1.32	0.187	-3.930442	.7654946

The Likelihood Ratio (LR) Chi Square is used to assess the overall significance of logistic regression models. The result of logistic regression gives an LR Chi Square value of 43.01 which implies that the regression coefficients have significant effect on the variance in demand for health care. The pseudo R^2 value was observed to be 0.0694, which is relatively low. Overall significance is given by Prob>chi^2 = 0.0000, which implies that the model has overall significance. This suggests that there is a statistically significant relationship between independent variables and demand for health care among elderly households. Location and higher secondary and degree level education have been observed to be significant predictors ($p < 0.05$), which implies that these factors influence demand for health care among the elderly households. The result is closely associated with the findings of Kutty, V. R. (2000), who observed that education and location played a significant role in health care demand in the State.

6.3 Health Care Expenditure

Analysing health care expenditure involves a deeper insight into concepts like out-of-pocket health expenditure (OOP) ,catastrophic heath expenditure and coping mechanism. With higher share of OOP health expenditure, households may become indebted and many times such payments become catastrophic and lead the households into debt trap. OOP health expenditures are a critical concern due to their potential to drive households into poverty. Studies indicate that, globally, millions of people each year are pushed below the poverty line due to medical expenses (Xu et al., 2007; Flores et al., 2018). In addition, studies also reveal that OOP expenditures constitute a major component of total health expenditure, disproportionately affecting low-income households and rural populations (Berman et al., 2010). This eventually leads to financial catastrophe and debt trap. Thus a deeper understanding about these concepts is discussed in the following sub sections.

6.3.1 Out of Pocket Health Expenditure

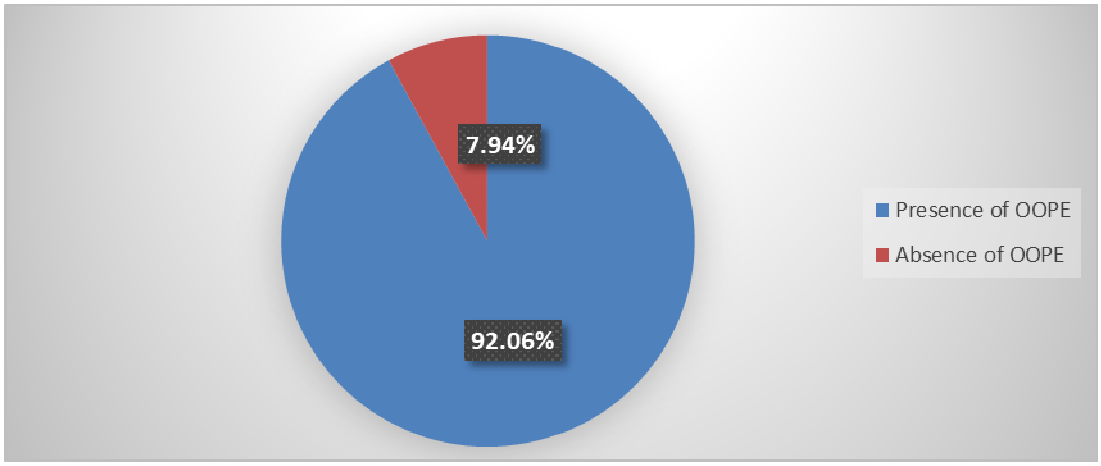
The present study analyses OOP health expenditure of the elderly households in Kerala, with the extent of OOP health expenditure and descriptives being given in table 6.1 and table 6.3. It can be observed that around 92 percent of the surveyed

elderly households reported presence of OOP health expenditure and median OOP expenditure amounts to 2000 Rs and mean expenditure amounts to 3412.35 Rs. The confidence interval for mean has been constructed.

The extent of OOP expenditure is regarded as an inevitable component in analysing health care utilisation as well as financing. Out-of-pocket health expenditure, or the direct spending by households on healthcare, on the other hand significantly impacts elderly households, often burdening them financially.

Figure 6.1

Extent of Out-of-Pocket Expenditure



Source: Primary Survey

Elderly individuals typically face higher healthcare needs due to age-related illnesses, requiring frequent doctor visits, medications, and sometimes long-term care. In many cases, out-of-pocket spending depletes savings, especially for those on fixed incomes or pensions. This financial strain can affect the elderly's quality of life, leading to difficult choices between essential needs like food and housing versus medical care. The high cost of healthcare may even discourage necessary treatments, resulting in worsened health outcomes. Consequently, out-of-pocket health expenses can contribute to poverty and indebtedness among elderly households.

With the extent of OOP expenditure being 92 percent among the studied group, there is high possibility for the presence of financial burden and catastrophe, especially among elderly households falling in the lower income strata.

Table 6.2

Normality Test of OOP Health Expenditure

	Kolmogorov-Smirnov Test			Shapiro-Wilk Test		
Out-of-pocket expenditure.	Statistic	d.f	Sig.	Statistic	d.f	Sig.
	0.245	402	0.000	0.638	402	0.000

The descriptive statistics of OOP Expenditure given in table 6.3 reveals that the OOP expenditure on health is highly skewed. Normality test statistics like Kolmogorov-Smirnov and Shapiro-Wilk tests, further confirms the result. The null hypothesis that OOP health expenditure is normally distributed , is rejected as both the test statistics are significant.

Table 6.3

Descriptive Statistics of OOP Health Expenditure

Mean		3412.35
Standard Deviation		4947.09
Skewness		3.83
Median		2000.00
95 percent C.I for Mean	Lower	2927.28
	Upper	3897.41

Source: Primary Survey

District wise comparison of OOP health expenditure has been summarized in table 6.4**.** Mean OOP expenditure of elderly has been observed to be higher for Ernakulam district, followed by Kozhikode and Thiruvananthapuram district.

Table 6.4

District wise classification of mean OOP health expenditure

District	Mean OOPE(in Rs)
Eranakulam	5697.93
KKD	2718.76
Tvm	1560.64

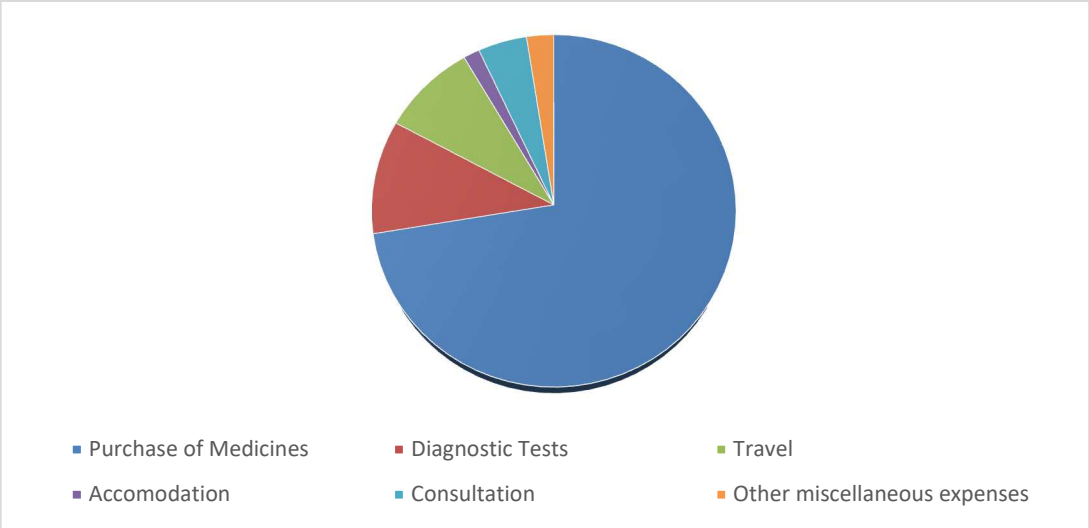
Source: Primary Survey

6.3.2 Components of OOP Health Expenditure

Out-of-pocket health expenditure for elderly households is comprised of multiple components that reflect the varied healthcare needs associated with aging. Key components include direct payments for medical consultations, diagnostics, and treatments, purchase of medicine, which may be routine or emergency in nature. Elderly individuals often require medications for chronic conditions, leading to regular pharmacy expenses that form a substantial part of these costs. The study observed the most important component of OOP expenditure among the elderly households. The result is summarized in figure 6.2. Purchase of medicines was observed to the most important component of majority of the households, with 291 households opting for the same. This is followed by diagnostic tests and travel expenses with 10.45 percent and 9 percent of the households considering it as the most important component in their OOP health expenditure respectively.

Figure 6.2

Important Components in OOP Health Expenditure



Source: Primary Survey

The findings of the study is consistent with several other studies (Wagstaff & Doorslaer., 2003; Doorslaer et al., 2007), which observes that share of expenditure on medicines forms a higher portion in total health expenditure especially among poor and rural households.

6.3.3 Determinants of OOP Health Expenditure

Out-of-pocket (OOP) health expenditure is influenced by various determinants that shape the economic burden on households. Researches have emphasized various factors like age, size of family, location, number of elderly in households, income, health insurance coverage, presence of chronic diseases, use of private healthcare and social security benefits as potential determinants of OOP health expenditure (William Joe & U.S Mishra, 2009; Mohanty, K.S, 2020; Garg C.C and Karan A.K, 2009).

William Joe and U.S. Mishra (2009) highlight that socioeconomic factor, such as income level, education, and occupation, are fundamental in influencing OOP health costs. Households with lower income levels are often disproportionately affected, as they lack access to comprehensive health insurance or government-sponsored health coverage, leading them to pay directly for health services. Similarly, Garg C.C and Karan A.K(2009) emphasize that OOP costs are often higher for households without

formal employment or stable financial resources, which limits their ability to access affordable healthcare options.

Another key determinant is the prevalence of chronic conditions or frequent medical needs within a household. Chronic diseases, long-term care needs, and recurring treatments significantly increase OOP expenditure, as many health systems do not fully cover these costs. According to William Joe and U.S Mishra (2009), this leads to substantial financial hardship, especially for older adults or those with long-standing illnesses, who may require ongoing medication and regular medical appointments.

Healthcare accessibility and quality also play a role, as individuals living in rural or underserved areas may face increased travel costs or limited-service availability. This limitation can result in higher spending when individuals must seek specialized care outside their local area, Additionally, the type of health insurance coverage, whether public or private, directly affects the scope of coverage, co-payment structures, and overall spending, impacting households differently based on insurance policies and government support (Garg C.C and Karan A.K,2009)

Thus, determinants of OOP health expenditure include socioeconomic factors, chronic illness prevalence, healthcare accessibility, and the type and extent of health insurance coverage. Together, these factors contribute to varied financial impacts, often placing the heaviest burden on low-income and vulnerable households. Based on these observations, the present study tries to analyse the determinants of OOP health expenditure by taking into consideration factors like, social security benefits, health insurance coverage, income, location, size of the family, number of elderly, presence of chronic illnesses, average age and use of private health care.

In order to examine whether the determinants are significant or not, the study makes use of Analysis of Covariance (ANCOVA). This method is used for testing the effects of interaction of categorical variables on continuous dependent variable. The effects of other selected variables that vary with the dependent variable is controlled. The result of ANCOVA analysis, with continuous variable, OOP health expenditure as dependent variable and other factors as independent variables, is summarized in table 6.5.

The result reveals that coefficients like use of private health care, chronic diseases and the number of elderly are significant, which implies that these are the factors that have a significant effect on OOP health expenditure. The sign of the coefficients gives the relationship between dependent and independent variables. The result gives an F value of 4.211, which is not very large, refuting the possibility of collinearity. This result obtained is consistent with studies conducted by Pandey A(2018), Garg C.C and Karan A.K (2009), Damme et al(2004), Kei Kawabata et al (2002), Panda B.K and Mohanty S.K (2022) and others.

Table 6.5

Analysis of Covariance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	1485.941	2934.897		.506	.613	-4284.122	7256.004
SocialSB	-402.221	593.348	-.034	-.678	.498	-1568.754	764.313
HI	-716.875	561.357	-.062	-1.277	.202	-1820.514	386.764
Y	-.005	.006	-.038	-.728	.467	-.017	.008
Lctn	365.798	557.323	.036	.656	.512	-729.910	1461.505
Family size	72.265	166.636	.023	.434	.665	-255.344	399.874
Number of elderly	968.233	464.005	.106	2.087	.038	55.991	1880.476
Chronic diseases	2913.955	650.629	.218	4.479	.000	1634.806	4193.103
Average age	-54.623	41.913	-.065	-1.303	.193	-137.025	27.780
Use of Pvt Health Care	734.726	231.878	.166	3.169	.002	278.849	1190.603

a. Dependent Variable: OOPE

6.3.4 Catastrophic Health Expenditure

The prevalence of OOP health expenditure leads the study into examining catastrophic effect of health payments. The impoverishment effect of health expenditure has been looked into by using measures from Minimum Standard Approach. The approach

considers OOP health expenditure and income of the households. It requires that health expenditure shall not exceed a specified limit or threshold income. Generally, threshold level is specified at five, ten, fifteen, twenty or twenty five percent. Household expenditure on health should remain in a specified threshold of income. If the household OOP health expenditure goes beyond this set limit, health expenditure is classified as catastrophic. As catastrophic health payments disrupt the over-all financial condition of households, there is possibility that such payments push the households into impoverishment.

An important measure discussed in Minimum standard approach is the catastrophic head count that measures the financial catastrophe of households. Head count considers the proportion of households that crosses the threshold limit, which, in the present study, is five, ten, fifteen, twenty and twenty five percent. Table 6.6 gives the detailed description of the analysis.

Table 6.6
Catastrophic Head Count

Threshold Level	Number Of Households	Catastrophic Headcount
5 percent	153	38.06
10 percent	50	12.44
15 percent	16	3.99
20 percent	28	6.97
25 percent	14	3.48

Source: Primary Survey

The table reveals the headcount, which refers to the catastrophic measure of health care. Around 38.06 percent of elderly households fall in the lowest threshold limit of five percent and spend in excess of five percent threshold. Around 12 percent of elderly households spend more than 10 percent of their income on health care and incurs catastrophic payment. As the threshold level is further raised to 15, 20 and 25 percent, the incidence of catastrophic health payment falls.

Several studies on catastrophic expenditure reveals similar results as observed above. Ghosh (2011) observed that at 10 percent threshold level, the catastrophic head count is 32.42 percent. The study utilized NSSO data. Similarly, George (2005) in his study

observes catastrophic headcount for rural Kerala as 26.64 percent, whereas for urban Kerala this stands at 20.90 percent. Incidence of catastrophe is higher among elderly households.

Catastrophic expenditure among the elderly based on social group categories[1] have been summarized in table 6.7.

Table 6.7

Catastrophic Expenditure based on social group categories

Categories	General	OBC	SC	Total
Catastrophic Expenditure Incurred	175	79	6	260
No Catastrophic Expenditure	71	66	3	140

Source: Primary Survey

It can be observed that catastrophic expenditure has been incurred more by elderly households belonging to general category, followed by OBC and SC. Similarly households that do not incur catastrophic expenditure are more for general category.

6.4 Health Insurance Coverage

Kerala is known for its unique demographic features and progressive healthcare policies. With its aging population and high life expectancy, Kerala faces increasing healthcare demands, making insurance coverage a crucial factor in mitigating out-of-pocket expenses and ensuring access to medical services (Rajan, 2020). Households often resort to distress financing methods to cover healthcare costs for the elderly, as these expenses are recurring. Due to the high likelihood of frequent hospitalizations and the need for ongoing management of chronic illnesses, this financial strain is not a one-time occurrence but a continuous burden.

Health insurance plays a crucial role in healthcare financing by enhancing the equity of healthcare access and protecting households from the financial devastation caused by significant medical expenses. Enrolling in health insurance can lead to increased utilization of healthcare services, as families feel more secure in seeking medical treatment without the fear of high costs.

Most of the developed countries, offer universal health coverage to the population for health financing. In contrast, a significant portion of the population in developing countries remains outside formal health insurance systems, making them vulnerable to financial hardship from unexpected healthcare costs.

The coverage of health insurance in India varies among states and socio-economic groups. Insurance coverage is higher among household with elderly members (Mohanty, K.S, Abhilasha, Upadhyay Asish; 2023). But unlike other states in India, a significant portion of the elderly in Kerala is enrolled under government-sponsored schemes like the Comprehensive Health Insurance Scheme (CHIS). Government of India has launched various health insurance schemes for the elderly population, like the Rashtriya Swasthya Bima Yojana (RSBY) and allied schemes, Ayushman Bharat Yojana and Central Government Health Scheme (CGHS). Comprehensive health insurance coverage schemes like Medisep have been provided by Kerala Government for its employees. Other insurance schemes like Employee State Insurance Scheme (ESIS), medical reimbursement or health insurance schemes by employers and private health insurance schemes are popular in the state. RSBY introduced in 2008, is a hospitalization insurance scheme aimed at providing free hospitalization and day-care services up to ₹30,000 per annum to families below the poverty line in designated public and private healthcare facilities.

This section evaluates the reach and utilization such health insurance schemes among the elderly people. In the absence of universal health insurance programs, which are common in several other countries, the analysis in Kerala focuses primarily on the penetration of available health insurance schemes among the elderly. Table 6.8 gives detailed description of the insured and uninsured families.

Table 6.8

Insurance Enrolment among Elderly Households

Insured		**Uninsured**	
Number	**Percentage**	**Number**	**Percentage**
303	75.37	99	24.63

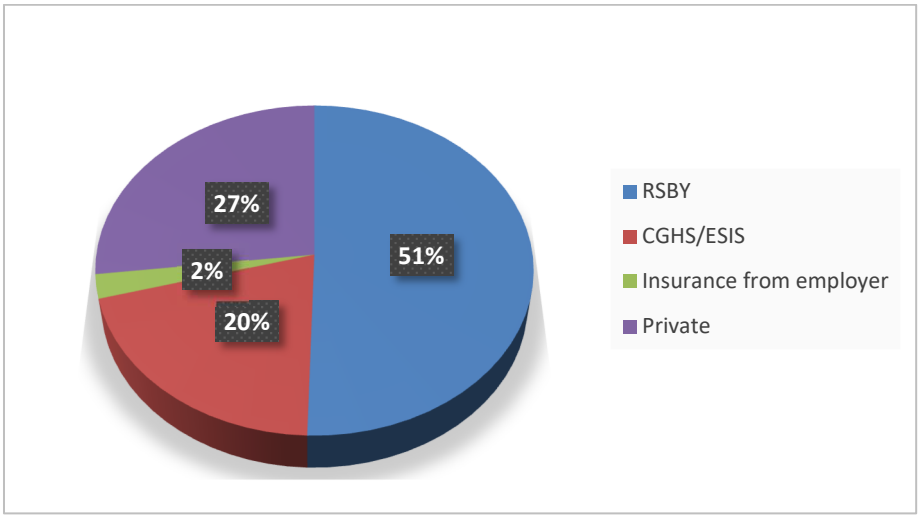
Source: Primary Survey

Enrolment in health insurance scheme is observed to be higher among the elderly households. Around three-fourth of the surveyed households opted for health insurance. The elderly individuals with health insurance coverage in these households accounted for 74.77 percent and those individuals without insurance accounted to be 25.23 percent.

Enrolment of elderly individuals in health insurance schemes has been described in figure 6.3, which explains the type of coverage being opted by the elderly.

Figure 6.3

Health Insurance Coverage of Elderly Individuals



Source : Primary survey

It is evident from the data that more than half of the elderly individuals have enrolled in RSBY scheme. The coverage of employer specific health insurance is observed to be meagre. Private health insurance is getting popular among the elderly, especially among elderly falling in middle to higher income category. This statistic is observed to be twenty seven percent, in the study. Health Insurance sector has experienced an upward movement in coverage especially after the pandemic. The study also supports the fact that compared to earlier days health insurance has gained popularity and acceptance among elderly people of the state.

6.6 Coping Mechanism

Coping mechanism refers to the way households deal with the financial burden caused by catastrophic health expenditure. Health care financing poses a significant challenge for the elderly, as they often face increased medical expenses with limited income sources. Coping with these financial demands requires a combination of strategies, including income management, savings, external support, and reliance on social security schemes. By using these mechanisms, elderly individuals aim to ensure access to quality health care while maintaining financial stability and dignity.

One of the primary measures for coping with health care costs is income management. For retired individuals, pensions and annuities serve as a steady source of income, helping cover routine medical expenses. Some elderly individuals seek part-time employment or freelance work to supplement their income, particularly in cases where medical costs outstrip retirement funds. Savings, built over a lifetime, often act as a financial buffer, allowing seniors to manage sudden or recurring health care needs. This proactive planning is essential, but for those without adequate savings, other strategies become crucial.

Support from friends and family plays a vital role in easing the financial burden. Donations or direct financial assistance from loved ones often provide immediate relief in emergencies or for large medical bills. Borrowing is another common mechanism in general, where seniors may take loans from friends, family, or financial institutions to meet health care expenses. In extreme cases, elderly individuals may resort to selling assets, such as property or valuables, to access funds for urgent treatments. Selling consumables like farm produce or handmade goods can also provide a modest source of income for health care costs.

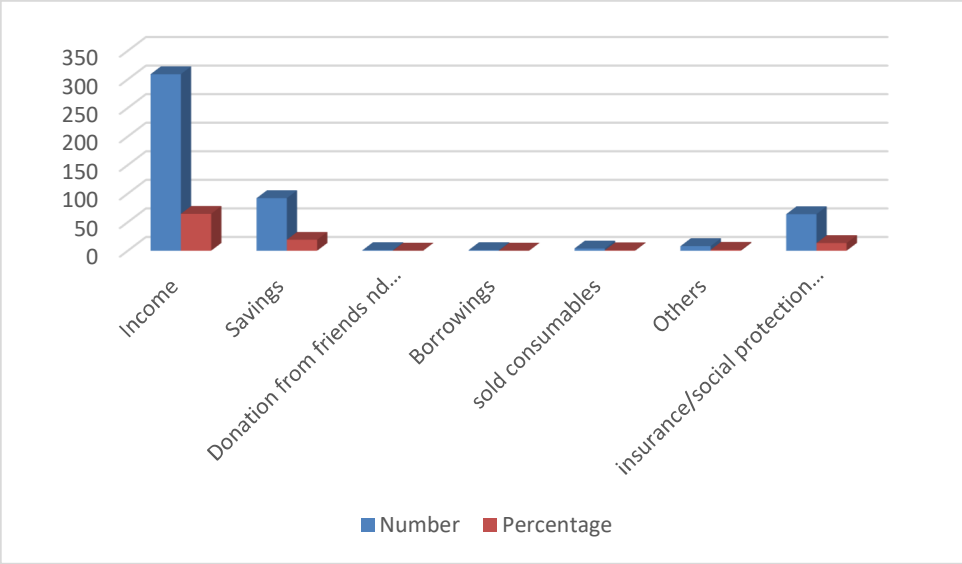
Social security schemes and senior-specific insurance plans cover crucial hospitalization treatments, significantly reducing out-of-pocket expenses. Non-profit organizations and community programs also provide free or subsidized health services and medications. Additionally, some elderly individuals benefit from financial support through pensions, disability benefits, or charitable donations from institutions dedicated to elder care. Insurance may also act as a coping mechanism in case of

hospitalization. As is evident from the earlier section, half of the elderly possess health insurance. In addition to all these measures elderly belonging to lower income section may resort to social security benefits as coping mechanism.

Enquiry into these measures in this study reveals that 64.5 percent of the elderly rely on income as coping mechanism followed by savings with a share of 19.2 percent. Insurance and social security schemes constitute 13.36 per cent. Other measures were observed to be negligible in the sample.

Figure 6.4

Coping Mechanism



Source: Primary Survey

6.7 Conclusion

The analysis underscores the multifaceted nature of healthcare demand and expenditure among elderly households in Kerala. The findings highlight critical determinants influencing healthcare demand, including location and educational attainment, as revealed through logistic regression analysis. While the model demonstrates overall significance (Prob > chi² = 0.0000), the low pseudo-R^2 value (0.0694) suggests that additional factors beyond those considered may contribute to healthcare demand variability.

Out-of-pocket (OOP) healthcare expenditure emerges as a predominant financial burden for elderly households, with 92% of surveyed households incurring such expenses. The data indicates substantial financial strain, as median and mean OOP expenditures are ₹2000 and ₹3412.35, respectively. Moreover, the skewed distribution of OOP expenditure, confirmed by normality tests, highlights significant disparities in healthcare spending. Components like medication purchases, diagnostic tests, and travel costs were identified as major contributors to OOP expenses, emphasizing the multifaceted demands of aging-related healthcare needs.

The study's analysis of catastrophic health expenditure reveals the alarming financial vulnerability of elderly households. Approximately 38.06% of households experience catastrophic spending at the lowest threshold (5% of income), with the proportion decreasing as thresholds rise. Comparisons with previous studies corroborate the substantial impact of healthcare costs, particularly for elderly populations. Catastrophic expenditure not only disrupts household financial stability but also risks pushing families into poverty.

Health insurance plays a critical role in mitigating financial risks, with 75.37% of surveyed households reporting enrolment in schemes such as the Rashtriya Swasthya Bima Yojana (RSBY) and state-specific programs like CHIS. Despite significant progress in health insurance coverage, gaps persist, particularly among low-income households and those without formal employment-linked insurance benefits. The findings underscore the need for expanded coverage and more inclusive policies to reduce financial barriers to healthcare access.

Coping mechanisms employed by elderly households reveal a heavy reliance on income management, savings, and external support, including family assistance and social security schemes. However, the adequacy of these measures is variable, with many households still facing substantial financial challenges. The study highlights the importance of strengthening safety nets and ensuring equitable access to healthcare services.

In conclusion, the study provides a comprehensive understanding of the demand for healthcare and the financial implications of OOP expenditure among elderly

households in Kerala. The findings call for policy interventions to enhance health insurance penetration, address inequities in healthcare access, and reduce the financial burden on vulnerable elderly populations. Expanding government support, promoting preventive healthcare, and integrating comprehensive elder-specific policies are imperative to ensure sustainable and equitable healthcare systems for the aging population.

Notes:

1. Social group categorization is based on the community category lists provided by official bodies like Kerala Public Service Commission, National Commission for Backward Classes (**NCBC**) and Directorate of Scheduled Tribes Development Department (**STDD**).

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CHAPTER 7
SUMMARY AND CONCLUSION

Health status and healthcare financing are central elements in understanding the well-being of any population, particularly the elderly, who are often more vulnerable due to the cumulative effects of aging, chronic illnesses, and socioeconomic challenges. Health status reflects the physical, mental, and social dimensions of an individual's well-being, while healthcare financing includes the resources, mechanisms, and policies that enable individuals to access necessary medical services. Together, these aspects form the foundation of a robust healthcare system capable of addressing the needs of a growing geriatric population.

The steadily increasing proportion of elderly individuals presents significant challenges and opportunities for healthcare systems. Older adults often experience a higher prevalence of chronic diseases, functional limitations, and comorbidities, necessitating frequent and specialized medical interventions. Simultaneously, the financial burden associated with accessing healthcare can aggravate inequalities, particularly in regions where out-of-pocket expenses constitute a major share of health financing. These issues are further compounded in countries like India, where traditional family support systems are evolving, and institutional mechanisms to support geriatric care are still developing.

Kerala, known for its advanced demographic transition and exemplary health indicators, provides a unique context to explore these challenges. With one of the highest proportions of elderly populations in India, Kerala portrays both the successes and strains of managing geriatric health. While the state boasts relatively better access to healthcare services, the economic implications of an aging population, along with rising healthcare costs, underscore the need for comprehensive health financing strategies. The present study delves into these dynamics, focusing on the interaction between health status and financing mechanisms among Kerala's elderly population.

This chapter presents the culmination of the research findings, synthesizing the insights gained through extensive data collection and analysis. It begins with a concise summary of the study's key findings, offering a structured reflection on the major themes that emerged. The findings are contextualized against the study's objectives, illustrating how they contribute to understanding the health and financial challenges faced by Kerala's geriatric population. The summary is intended to provide a clear and comprehensive overview of the study's outcomes, serving as a foundation for the conclusions that follow.

Subsequently, the chapter outlines the critical conclusions drawn from the findings, emphasizing their relevance in present day scenario. These conclusions not only address the immediate research objectives but also highlight broader implications for geriatric health management and healthcare financing. The study's insights are positioned within the larger academic discourse, drawing comparisons with existing literature and identifying areas of alignment or divergence. This analytical approach underscores the contribution of the study to advancing knowledge in the fields of public health, gerontology, and health economics.

The study has several limitations, methodological and contextual constraints that may have influenced the findings. These reflections aim to provide transparency and guide the interpretation of the results, ensuring that the conclusions are grounded in evidence. By addressing these limitations, this chapter seeks to lay the groundwork for future research, identifying gaps and proposing directions for subsequent studies that can build on the current findings.

Finally, the findings of the study have significant relevance for policymakers, healthcare providers, and stakeholders involved in geriatric care and health financing. Recommendations are made to enhance the effectiveness and equity of healthcare delivery and financing systems for the elderly in Kerala, with a focus on sustainable and inclusive strategies. By doing so, the chapter aims to bridge the gap between academic research and actionable insights, contributing to the development of policies that improve the health and well-being of Kerala's aging population.

7.1 Findings

The findings of the study are as follows:

- Highest educational attainment in majority of the households was observed to be 'Degree', indicating that they have educated members capable of addressing the health needs of elderly residents. Among the surveyed households, those with a single elderly member are the most prevalent.

- Among the surveyed households, 85.5% were classified as pucca, 11% as semi-pucca, and 4.5% as serviceable kucha. Notably, none of the households depended on public wells or tube wells as a source of drinking water. Additionally, all households had access to sanitary latrines, with none lacking roofs or doors.

- Analysis of socio-economic status reveals that approximately 68% are married, while 29% are widowed. A small fraction, 0.5%, are divorced or separated, and 3% remain unmarried. Most of them were in the 60-69 age range, commonly referred to as the young-old. Approximately 25% belonged to the 70-79 age group, categorized as the old-old, while about 8% were aged 80 and above, classified as the oldest-old. Women constituted 53 % and men 47%.

- Elderly population reported 'high school' as their highest level of education. About 24% are graduates, while 25% have completed only primary education. Notably, 3% were classified as illiterate, challenging the claim of 100% literacy in Kerala. This discrepancy stems from the common definition of "illiterate," which refers to individuals without formal schooling, even if they possess basic literacy skills such as the ability to read and write their name.

- The previous occupational status of the elderly was analyzed, revealing that 33% had earned their income as government or semi-government employees. About 24% had worked in the private sector, followed by those engaged in self-employment and agriculture or related activities. Participation in Employment Guarantee Schemes and other occupations among the elderly was minimal.

- An analysis of the earnings of the elderly revealed an average income of ₹15,653.88, indicating that most respondents fell into the upper- or middle-income categories. Nearly all surveyed elderly individuals had a source of income, either through employment or pensions.

- Health conditions and health habits were observed. An analysis of the activity levels among the elderly revealed that nearly half were not engaged in any form of daily physical activity. Walking emerged as the most common activity, practiced by 32%, followed by other exercises and yoga. In urban areas, a lack of activity typically indicated a sedentary lifestyle. In contrast, for rural elderly individuals, "no activity" often meant the absence of specific fitness practices, such as exercises, despite their involvement in farming or manual labor on their property.

- A vast majority of the surveyed elderly did not exhibit any unhealthy habits, with only 15.1% reporting such behaviors. Habits like smoking and alcohol consumption were predominantly observed among men, making them largely male-centric. However, the use of tobacco and betel was noted among women as well. Smoking was reported by 5.2% of the elderly, while 7.1% consumed alcohol, and 2.8% used tobacco. Notably, none of the surveyed elderly reported using drugs or other intoxicants.

- Health conditions analyzed reveals that 90% of the respondents had a diagnosed health condition, with hypertension, diabetes, and high cholesterol being the most common chronic ailments. These were followed by cardiovascular disease, chronic lung disease, stroke, and cancer.

- Examination of geriatric conditions among the surveyed population revealed that eye-related problems, including cataracts, glaucoma, refractive errors, and others, were the most common. Notably, 79% of the elderly reported using spectacles. Around half of the respondents experienced oral health issues, with edentulism being the most prevalent, followed by tooth decay or dental caries. However, only 14% of the elderly used dentures, primarily due to the high cost and

inconvenience. Bone and joint conditions, such as osteoarthritis, osteoporosis, and rheumatoid arthritis, affected 29% of the surveyed elderly. Hearing or ear-related problems were reported by 21%, but only a small number of elderly individuals used hearing aids.

- Chronic illnesses seem to be more prevalent than acute illnesses, with a noticeable and distinct difference between the two.

- An analysis of self-rated health status shows that the majority of the elderly consider themselves to be in good health, with 60% reporting this, while 19% believe their health to be very good.

- Factors such as location and educational attainment at the higher secondary and degree levels are significant, indicating their influence on the demand for healthcare among elderly households.

- Approximately 92% of the surveyed elderly households reported having out-of-pocket (OOP) health expenses. The median OOP expenditure was ₹2,000, while the average expenditure amounted to ₹ 3,412.35.

- The purchase of medicines emerged as the most significant component of out-of-pocket (OOP) health expenses for the majority of households, with 291 households prioritizing this. Diagnostic tests and travel expenses followed, identified as the most critical expense by 10.45% and 9% of households, respectively.

- Use of private healthcare, the presence of chronic diseases, and the number of elderly individuals are significant factors, indicating their notable impact on out-of-pocket (OOP) health expenditures.

- Approximately 38.06% of elderly households exceed the lowest threshold of 5% for health expenditures. Around 12% allocate more than 10% of their income to healthcare, resulting in catastrophic payments. As the threshold levels increase to 15%, 20%, and 25%, the proportion of households experiencing catastrophic health payments declines.

- About three-fourths of the surveyed households reported having health insurance. Among the elderly in these households, 74.77% were covered by health insurance, while 25.23% did not have any coverage.

- Over half of the elderly individuals have enrolled in the RSBY scheme, while employer-specific health insurance coverage remains minimal. Private health insurance is gaining popularity among the elderly, particularly those in the middle- to higher-income categories, with 27% opting for such plans.

- Among the elderly, 64.5% rely on their income as a primary coping mechanism, followed by 19.2% who depend on savings. Insurance and social security schemes account for 13.36%, while other coping measures were found to be negligible within the sample.

7.2 Scope for further research

While the study sheds light on diagnosed health conditions and healthcare utilization, future research could explore the unmet healthcare needs or the barriers elderly individuals face in accessing quality health care, and provide a more comprehensive understanding of the gaps in healthcare services. The prevalence of chronic illnesses is significant, but the study focuses on current diagnoses. Longitudinal studies tracking the progression of these illnesses and preventive measures could offer actionable insights. Although a substantial proportion of elderly individuals are enrolled in health insurance schemes like RSBY, the effectiveness of these programs in reducing OOP expenses and ensuring access to care can be specifically looked into. Evaluating the adequacy and reach of these schemes could help in policy improvements.

7.3 Policy Recommendations

Policies designed specifically for the elderly population is needed for the improvement and betterment of social, economic and health status of the elderly. Some policy recommendations based on the findings of the study are :

- Preventive and long-term care: High prevalence of chronic conditions such as hypertension and diabetes along with widespread eye-related geriatric morbidities, highlights the need for regular geriatric screening camps. These can be institutionalized at the primary healthcare level, focusing on non-communicable diseases (NCDs), vision, hearing, and mobility-related issues.

- Dedicated geriatric clinics in primary and community health centres will ensure continuous management and early detection of chronic illnesses.

- Community based physical activity and wellness programmes with an aim to promote movement among elderly, can be implemented at district and panchayath levels.

- Targeted health awareness and health literacy programmes should be introduced for elderly individuals to improve healthcare-seeking behaviour. Mobile health units and community outreach services can be strengthened in underserved areas to ensure equitable access to healthcare services for elderly households.

- Diagnostic services for the elderly should be made more affordable or free within the public sector, given their substantial contribution to OOP spending. Continuous availability of essential medicines should be ensured by the government particularly for chronic diseases, as medicines constitute the largest share of OOP expenditure.

- Existing public insurance schemes such as RSBY should be strengthened with geriatric-specific benefit packages, including outpatient care, medicines, diagnostics, and long-term management of chronic diseases. Awareness campaigns should be conducted to improve understanding and effective utilization of insurance benefits among elderly households.

- Measures to promote self-employment among the elderly can be initiated. Special schemes for elderly people interested in self-employment in fields of agriculture, industrial and tertiary sectors can be provided. Availing financial assistance, providing legal support, subsidised raw materials and fertilizers in case of

agriculture and supportive services in setting up small scale and cottage industries can make them economically stable and active.

7.4 Conclusion

The study provides a comprehensive analysis of the health, economic, and social aspects affecting elderly households of Kerala and the findings reveal a high prevalence of chronic illnesses, significant out-of-pocket healthcare expenses, and a reliance on income and savings as coping mechanisms. Despite widespread enrollment in health insurance schemes, the financial burden on elderly households remains substantial, particularly among those in lower-income groups.

The results of the study highlight the changing dynamics of health behaviors, such as the growing preference for private health insurance among middle- and upper-income elderly and the minimal use of dentures and hearing aids despite their reported needs. Furthermore, differences in health outcomes and coping strategies between urban and rural elderly populations underscore the importance of location-specific interventions.

Addressing these challenges requires targeted policy measures, improved access to affordable healthcare, and greater promotion of preventive health practices. By expanding the scope of research to address the highlighted gaps, future studies can contribute to more inclusive and effective strategies for improving the well-being of the elderly population.

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APPENDIX

Schedule Number | District

(1) Thiruvananthapuram (2) Ernakulam (3) Kozhikode

INTERVIEW SCHEDULE

for the study of

HEALTH STATUS AND HEALTH FINANCING AMONG GERIATRIC POPULATION IN KERALA

I. GENERAL HOUSEHOLD PROFILE

1) Taluk/Block :

2) Grama Panchayat/Muncipality :

Ward No :

3) Name of the Head :

4) Gender of the Head :

(1) Male (2) Female (3) Transgender

5) Main source of employment :

(*1)None (2) Land and related (3) forest related (4) non agricultural labour (5) estate labour (6) employment guarantee scheme (7) govt / semi govt job (8) agricultural labour (9) animal husbandry (10) small vendor (11) private service (12) others (specify)*

6) Land holdings (in cents)

7) Number of Elderly :

8) Household members:

1	2	3	4	5	6	7	8	9	10	11
Sl No	Name	Relation to Head	Age	Gender	Caste	Marital status	Age at marriage	Education	Occupation	Monthly income
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

3: *(1 Head (2)spouse of the head (3)son/daughter (4)mother/father (5)brother/sister(6) son/daughter in law (7) grandchild (8) father/mother in law (9) brother/sister in law (10) other, specify*

5: *(1) Male (2) Female (3) Transgender*

7: *(1) married (2) unmarried (3) widowed (4) divorced (5) separated*

9*:* *(1) No education/ illiterate (2) Primary education (3) High school education (4) Higher Secondary (5) Degree (6) P.G/Professional (specify)*

10*:* *(1)None (2) Land and related (3) forest related (4) non agricultural labour (5) estate labour (6) employment guarantee scheme (7) govt / semi govt job*

(8) agricultural labour (9) animal husbandry (10) small vendor (11) private service (12) retired (13) others (specify)

9) Type of House ☐

(1)Unserviceable kucha (2) serviceable kucha (3) kucha (4)semi pucca (5)pucca

10) Number of rooms ☐

11) Ownership ☐

(1) own (2) government provided (3) partially govt and own (4) rental (5) Others (specify)

12) Electrified ☐

(1) Yes (2) No

13) Ration card ☐ 13.1) If yes, colour ☐

(1) Yes (2) No
(1)Yellow(2)Pink(3)Blue(4)White(5)Brown

14) Major source of drinking water ☐

(1)own well/tube well (2) public well/tube well (3) public tap (4)public water connection (5) river (6)others,specify

15) Status of sanitary latrine ☐

(1)no latrine (2) without door (3) without roof (4) with roof and door, but no water connection (5) with roof, door and water connection

II. INCOME/CONSUMPTION/SAVINGS/INVESTMENT

16) Monthly Household Income (in Rs): ☐

17) Main Source of Income: ☐

(1) agricultural and allied activities (2) non-agricultural business or self-employed activities(3) wages/salaries(4) pension(5) government/public transfers(6) Others(specify)

18) Rank the following items from 1 to10 according to their share in monthly consumption expenditure:

Food	
Clothing & Footware	
Sanitary items	
Health	
Machine	
Electricity & Fuel	
Religious activities	
Travelling	
Recreation	
Communication	
Intoxicants and pan	
Debt repayment	
Charity	
Others(specify)	

19) Buildings owned:

Area	Type of construction

20) Financial Assets owned : ☐

(1) Stocks (2) Bonds (3) Mutual Fund (4) Bank Deposits (5) Life Insurance Funds

21) Household durables held :

TV : ☐ Fridge : ☐ Washing machine : ☐ Air conditioner :
☐ Two Wheeler : ☐ Car : ☐ Any other(specify) : ☐

22) Debts/Loans (if any) : ☐ *(1)Yes(2)No*

23) Savings (if any) : ☐ *(1) yes (2)no*

23.1) Type of savings : ☐

24) Investments (if any) : ☐

24.1) Type of investment : ☐

ELDERLY SPECIFIC SCHEDULE

25) Marital Status : ☐

1	2	3	4
Sl.No	Marital Status	If *(1),* resides with	If *(2),(3,(4*), resides with

2 *: (1) Married (2) Unmarried (3) Widowed (4) Separated (5) Divorced*

3, 4*:* (*1) Alone (2) Children (3) Grandchildren (4) Siblings (5) Relatives (6) Others*

(26) Educational Status:

Sl.No	Response

(1)Illiterate (2) High School (3) Higher Secondary/Pre-degree (4) Degree (5)P.G/Professional

Sl.No	Past	Present

(27) Occupation : ☐ *(1)Yes (2) No*

27.1) If yes, type of work:

Sl.No	Past	Present	Avg Monthly Earnings

(1)agricultural & allied activities (2) animal husbandry (3) employment guarantee scheme (4) small business / self employed (5) Govt or semi- govt jobs (6) Private sector (7)Others (specify)

28) Do you receive pension:

Sl.No	Response

(1)Yes (2) No

28.1) If yes, type of pension:

Sl.No	Response

(1) NPS (2)EPF/EPS (3)Old Pension Scheme(Central Govt)(4) National Social Assistance Scheme (5)Family Pension(6)APY (7) PMVVY (8) Varishtha Pension Bima Yojana (9)Others specify*

Sl.No	Response

29) Do you possess land: ☐ *(1)Yes (2) No*

29.1) If yes, how many cents/acres:

Sl.No	Land area

29.2) Income from land (if any):

Sl.No	Response

30) Do you possess any additional buildings:

Sl.No	Response

(1)Yes (2) No

30.1) Income from buildings if any:

Sl.No	Amount (in Rs)

31)Other assets if any:

Sl.No	Response	If yes, details

(1)Yes(2)No

31.1) Monthly income from assets:

Sl.No	Amount(in Rs)

32) Do you have any savings?

Sl.No	Response

(1)Yes (2) No

Sl.No	Type

32.1) If yes, type of savings:

33)Do you have any debts?

Sl.No	Response	Amount(if yes)

(1)Yes (2) No

HEALTH AND MORBIDITY

34) Do you suffer/ have ever suffered after crossing 60 years of age, from any of the following chronic illnesses?

Sl.No	Illness

(1) Cardiovascular diseases (CVDs) (2) Hypertension or high blood pressure (3) Chronic heart diseases (4) Stroke (5)Diabetes or high blood sugar (6) High Cholesterol (7) Anemia (8) Chronic lung diseases (9) Cancer/ Malignant tumor (10) None

35) Have you ever been , after 60 years, diagnosed with bone/joint diseases?

1	**2**	**3**
Sl.No	Response	Type(if yes)

2: *(1)Yes (2)No*

3: *(1) Osteoarthritis (2) Osteomalacia (3) Osteoporosis (4) rheumatoid arthritis*

36) Have you been diagnosed with Neurological or Psychiatric Problems?

1	2	3
Sl.No	Response	Type(if yes)

2 *: (1) Yes (2) No*

3 : *(1)Depression (2) Alzheimer's disease and dementia (3) Psychiatric problems (4) Neurological problems*

37) Prevalence of urogenital illnesses :

Sl.No	Response	Type

(1) Yes (2) No

38) Do you suffer/ have suffered from eye/ear related illnesses?

1	2	3
Sl.No	Response	Type(if yes)

2*: (1) Yes (2) No*

3 : *(1) Cataract (2) Glaucoma (3) Refractive error (4) Hearing or ear-related problems (5) Others*

39) Have you been diagnosed with oral health issues?

1	2	3
Sl.No	Response	Type(if yes)

2 *: (1) Yes (2) No*

3: *(1)Common oral health problems (2) Dental caries (3) Periodontal disease (4) Partial edentulism (5) Complete edentulism (6) Others*

40) Have you suffered from any of the following vector/ water borne ailments?

1	2	3
Sl.No	Response	Type (if yes)

2 : *(1) Yes (2) No*

3 : *(1) Malaria (2) Dengue (3) Chikungunya (4) Diarrhoea/Gastroenteritis (5)Typhoid (6)Jaundice/Hepatitis*

41) Have you been diagnosed with any of the following diseases?

Sl.No	Tuberculosis	Urinary Tract Infection

(1) Yes (2) No

Self-reported Prevalence of Symptom based Health Conditions

42) Have you had symptoms of any of the following issues?

Sl.No	Angina (chest pain)	Sleep problem	Reproductive health problem	Undergone Hysterectomy	Undergone Pap smear test	Undergone Mammography

(1) Yes (2) No

43) Have you felt any functional limitations?

1	2	3
Sl.No	Response	Type(if yes)

2: *(1) Yes (2) No*

3: *(1)* ***ADL****(walking, feeding, dressing and grooming, toileting, bathing, transferring/ability to move from one position to another) (2)* ***IADL****(managing finances, managing transportation like driving/using public transport, shopping and meal preparation, house cleaning and maintenance, managing communication, managing medication like buying and taking them as directed)*

44) Do you use any of the following aids :

Sl.No	Spectacles	Hearing Aid	Walker/ Walking Stick	Dentures	Wheel Chair

(1) Yes (2) No

45)Do you possess the following habits?

SI.No	Smoking	Alcohol	Tobacco	Drugs	Other Intoxicants(specify)

(1) Yes (2) No

45.1) If yes, how often do you use them?

SI.No	Smoking	Alcohol	Tobacco	Drugs	Other Intoxicants(specify)

(1)Very rarely (2) Rarely (3) Occasionally (4) Often (5) On a daily basis

46) Rate your physical activity.

Sl.No	Sedentary	Lightly active	Moderately Active	Active

47) Do you practice any of the following

Sl.No	Yoga	Meditation	Exercise	Other activities like Walking , Dance, Zumba, Aerobics etc

ACCESS TO HEALTH CARE (HEALTH CARE UTILISATION)

48) Have you/ any elderly member faced illness in the past 30 days : ☐

(1) Yes (2) No

48.1) Details of treatment (past 1 month)

1	2	3	4	5
Sl. No	Name	Type of ailment	Treated/ Not Treated	If not treated, Reason

3: *(1) fever of unknown origin (2) asthma and other respiratory diseases (3) cardiovascular (4) high/low BP (5) skin diseases (6) ear/throat/eye ailments (7) kidney/urinary system (8) cancer/tumour (9) TB (10) jaundice (11) chicken pox (12) diseases of mouth/teeth/gum (13) accident/injury/fractures (14) diarrhoea/dysentery (15)gynaecological disorders (16) diabetics (17) epilepsy (18) anaemia (20) cerebral pals y (21) arthritis (22) gastro enteric disease (23) liver cirrhosis(24)migraine (25)mental disease (26) others, specify*

4: *(1) Yes (2) No*

5: *(1) ailment not considered serious (2) treatment not available in neighbourhood (3) financial reason (4) others, specify*

49) Details of hospitalisation(past 1 year)

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Sl.No	Ailments that caused IP care	System of treatment	Type of hospital	Recommended days of treatment	Actual days taken	Expenditure on medicine (Rs)	Doctors fee (Rs)	Other treatment cost (Rs)	Transport cost (Rs)	Lodging expenses

2: *same code as column 3 of question 48*

3: *(1) allopathy (2) ayurveda (3) homeopathy (4) sidha (5) unani (6) other, specify*

4: (1) PHC/ CHC (2) Govt Taluk/ district hospital (3) Govt Medical College (4) Private Hospital

49.1) Whether continued treatment after discharged from hospital?

(1) Yes (2) No ☐

49.1.1) If yes, source of treatment after discharge from hospital

Sl.No	Response

(1) PHC/ CHC (2) Govt Taluk/ district hospital (3) Govt Medical College (4) Private Hospital/Clinic (5) Govt doctor's residence (6) Residence of other doctors (7) Professional treatment at home

49.1.2) If No, Reason for not seeking health care ☐

(1) Financial reason (2) remoteness of health care facilities (3) unavailability of accompanying person (4) others, specify

50) Self rated health Status:

Sl.No	Response

(1) Excellent (2) Very good (3) Good (4) Bad (5) Very bad

51) Mortality record during the last one year

1	**2**	**3**	**4**	**5**
Sex	Age at death	Cause of death	Place of death	Medical attention before death

1: *(1) male (2) Female*

3: *(1) old age related (2) cardiac arrest(3)cancer (4) accident/injury (5) pregnancy related (6) infant death (7) communicable diseases specify (8) other, specify*

4: *(1) Home (2) Government hospital/PHC/CHC/Medical college (3) Private hospital/clinic (4) in course of journey*

5: *(1) Received (2) Not received*

52) Which type of treatment do you prefer?

Sl.No	Type of treatment	
	Past	Present

(1) Ayurveda (2) Homeopathy(3) Allopathy(4) Siddha (5) Unani

53) Pattern of utilisation of health care for outpatient treatment(past 1 month)

Sl.No	Response

(1) PHC/ CHC (2) Govt Taluk/ district hospital (3) Govt Medical College (4) Private/trust Hospital/clinic (5) Pharmacy(6) Govt doctor's residence (7) Residence of other doctors

53.1) Most important reason for selecting private hospital/clinic (only for responses with code 4) ☐

(1) Better facilities/ behaviour (2) doctors (3) accessibility/distance (4) financial reasons (5) others, specify

53.2) Reason for not using public/government institution (only for responses with code 4) ☐

(1) Non availability of drugs (2) lack of proper attention (3) lack of trust (4) distance (5) lack of knowledge (6) time consuming(7)lack of facilities (8) others, specify

54) Reason for selecting a system of medical treatment

Sl.No	Reason for selecting Health Care Facility

(1) Quick remedy (2) no side effect (3) less cost (4) easy access

55) If illness occurs, do you resort to self medication

Sl.No	Response

(1) Yes (2) No

56) The stage at which you visit the doctor

Sl.No	Response

(1) Very beginning (2) after trying over the counter medicines from medical shops (3) after trying home remedies (4) when disease gets worsen

57) Have you changed from one system of treatment to another any time?

Sl.No	Response

(1) Yes (2) No

57.1) If yes, reason for change in the system of treatment.

Sl.No	Response

(1) Duration of healing (2) cost of treatment (3) facility is not available (4) lack of confidence (5) absence of side effects (6) others(specify)

58) Pattern of direct OOP expenditure during the last 30 days

Item	Amount
Direct medical expenditure (consultation, tests,	
medicines, surgery)	
Expenditure on transportation	
Expenditure on accommodation	
Miscellaneous expenses	

59) Most important component of OOP ☐

(1) Purchase of medicines (2) diagnostic tests (3) travel (4) accommodation/hotel expenses (5) consultation fee (6) other, specify

60) Who pays for hospitalisation?

Sl.No	Response

(1) Respondent (2) Spouse/Partner (3)Son/Daughter (4)Other Family Member (5) Non-Family Member (6)Mandatory/Voluntary Insurance Scheme

61) Sources of Finance for Health Care Services during Hospitalization ☐

(1) Income (2) Savings(3) donations from friends/relatives (4) borrowing (5) sold assets (6) sold consumables (7) others, specify

62) Most important form of coping mechanism to meet OP visit ☐

(1) Income (2) Savings(3) donations from friends/relatives (4) borrowing (5) sold assets (6) sold consumables (7) others, specify

63) Do household resort to borrowing for treatment ☐
(1) Yes (2) No

63.1) If yes, sources of borrowing ☐

(1) Friends/relatives (2) merchants (3) money lender (4) bank (5) Kudumbashree (6) others, specify

64) Do household sold any productive asset for treatment ☐

(1) Yes (2) No

64.1) If yes, details: ☐

65) Is there any prevailing indebtedness on account of treatment ☐

(1) Yes (2) No

65.1) If Yes, consequences of indebtedness from health care expenditure ☐

(1) Lost permanent income asset (2) Lost educational opportunities (3) Sold assets (5) Mortgaged assets (6) others, specify

66) Any amount received/ to be received as reimbursement ☐

(1) Yes (2) No

67) Do you have any health Insurance coverage: ☐

(1) Yes(2)No

67.1) If Yes, type of Insurance: ☐

(1)RSBY and allied schemes(state specific schemes) (2) Central Government Health Scheme (CGHS)/Employee State Insurance Scheme (ESIS) (3) medical reimbursement/health insurance from an employer(4)Private health Insurance(5)Others

Note: *NSAP consists of IGNOAPS, IGNWPS, IGNDPS, NFBS & Annapurna Scheme.