Demography India
A Journal of Indian Association of Study of Population
Journal Homepage: https://demographyindia.iasp.ac.in/

Catastrophic Expenditure on health care in selected districts of Kerala: Determinants and Comprehensive Health Insurance Coverage

Ramya R[1] and Anil Chandran S[2]*

Abstract

Out of Pocket expenditures make a significant impact on the financial status of individuals and their families, pushing them into impoverishment, especially for those who belong to the economically backward sections of the society. Various health insurance schemes such as Comprehensive health insurance scheme (CHIS), sponsored by Government of Kerala, provide good cover against the economic and financial losses due to hospitalization. The main objective of the study is to analyze catastrophic health expenditures among the CHIS enrolled beneficiaries and the role of comprehensive health insurance scheme in reducing the catastrophic expenditures. Analysis showed that about one-third of the enrolled beneficiaries sought hospitalization for diseases and surgeries covered under the scheme. This study found out that CHIS enrolled beneficiaries spend much more than the package rate offers. The analysis of the study showed that among the hospitalized CHIS scheme enrolled beneficiaries, nearly 30 percent paid out of pocket expenditures for hospitalization related expenses. Incidences of catastrophic health expenditure were analyzed using the capacity to pay approach method. Analysis of the incidence of catastrophic health expenditure showed that nearly 40 percent of households have an incidence of catastrophic health expenditures. In conclusion we can say that the comprehensive health insurance scheme needs a lot of improvement regarding higher claim packages. Primary household data is used for the data analysis.

Keywords

Catastrophic health expenditure, CHIS, Health insurance. Out of pocket expenditure

**Corresponding Author:*
[1] *Email: ramyademography@gmail.com*
[2] *Assistant Professor, Department of Demography, University of Kerala. Email: anil@keralauniversity.ac.in*

Introduction

Health is an essential component of human development. According to the World Health Organization, healthcare consists of all goods and services designed to promote the overall health of an individual or population, which include "preventive", "curative", and a few palliative care services (Sheeba. A, Seilan.A, 2010). The organized provisions of all these services constitute a healthcare system. India is facing an important public health challenge, viz., access to affordable healthcare services, especially among people with low incomes who are living in rural areas. The healthcare system in India has a mixed network of public and private healthcare sectors, which offers a wide range of medical services catering to all sections of the people. The public health system comprises health facilities regulated by central and state governments. Most public health facilities provide health care either free of cost or at subsidized rates. The public health care system comprises Primary, secondary, and tertiary health care. The Government of India explored various health financing options to manage problems arising from increased healthcare costs and a rise in out-of-pocket healthcare expenses. The majority of the workers in specific categories still need social security coverage. Recognizing the need to provide coverage for these workers, the Central Government has introduced the Rashtriya Swasthya Bima Yojna (RSBY) (National Portal of India). The main objective of this scheme is to protect BPL households suffering from financial liabilities arising from health shocks requiring hospitalization.

Kerala state has always been ahead in promoting quality healthcare services Kerala state has the highest number of health facilities, where most doctors, hospital beds, and other sophisticated facilities are in private health facilities (Nair Manju R, Varma Ravi Prasad, 2021). The increased usage of private hospitals has contributed to the rise in out-of-pocket expenses, especially for hospitalisation and medicines. The main challenge in Kerala's health sector is increased healthcare costs due to increased privatization, commercialization of health facilities, and rise in medicine costs. To reduce the impact of high spending on healthcare and to control the impact of out-of-pocket expenses, the government of Kerala, in collaboration with the central government, introduced various health insurance schemes for BPL families to make quality healthcare services available. To provide health coverage to the BPL families living in rural areas of Kerala State and those who are deprived of essential quality care services, the Government of Kerala launched the Comprehensive Health Insurance Scheme (CHIS) as an add-on to Rashtriya Swasthya Bima Yojana in all the 14 districts of Kerala. The Department of Labor Rehabilitation, Health and Family Welfare, Rural Development, and Local Self Government jointly implement the scheme. A separate nodal agency, "The Comprehensive Health Insurance Agency of Kerala (CHIAK) is formed to implement CHIS. The scheme provides cashless benefits and helps to avoid providing treatments to the beneficiaries. The CHIS scheme has fixed packages that include more than 1000 inpatient and outpatient procedures provided at inclusive prices. The scheme's main objective is to provide coverage for all BPL households, poor workers, and their families. Under the CHIS scheme, to avail of its benefits, 24 hours of hospitalisation is required. It also includes day care treatments that require less than 24 hours.

The Objective of study are to analyze catastrophic health expenditures among the CHIS enrolled beneficiaries and to examine the implementation of comprehensive health insurance schemes and its role in reducing catastrophic health expenditures.

Materials and Methods

Data

Primary Data is collected through a questionnaire prepared for the purpose.

Methods

Univariate and Bivariate Analysis and Catastrophic health expenditure Analysis.

For the classification of districts, a stratified sampling method is used. The districts were selected based on the number of people enrolled in CHIS and the number of CHIS claims in 2017-2018. This data is taken from the Kerala State Government Comprehensive Health Insurance Agency (Data issued under the Right to Information Act 2005). Districts were divided into four different subgroups, or strata, based on few characteristics. The characteristics include districts with a high number of enrolled families, districts with a low number of enrolled families, districts with a high number of total claims settlements, and districts with a low number of complete claim settlements. One district from each strata was selected using systematic random sampling. The selected districts are Kollam, Kottayam, Thrissur and Kozhikode. Villages in these four districts were selected based on systematic random sampling. The sample size is calculated by

Sample Size 'n' = z2 * $\frac{P(1-p)}{d^2}$.With a confidence interval of 95 per cent, an absolute margin of error of five per cent and a p-value of 0.5, the calculated sample size = 384. In order to adjust for non-response, the sample size was increased by 25 percent. So, the final sample size covered was 480. Four districts were selected; the sample size allocated in each district is 120. So, 120 households were selected in each district, which was covered from eight villages and by taking 15 households in each village.

Catastrophic health expenditure analysis is done to determine how much each household are spending out of pocket on health care. For this study, incidence of household catastrophe is calculated using the capacity to pay approach method. (Xu.al,2003). The primary data was collected individually and no pilot study was done or no prior training was provided.

Results

Table 1 Profile of the household members

Characteristic	Count (%)
Age	
0-14	292(15.2)
15-50	1003(52.9)
Above 50	636(32.9)
Sex of the Household Member	
Male	956(49.5)
Female	975 (50.1)
Educational Qualification	
No Education	52 (2.8)
Primary	755 (38.3)
Secondary	752 (38.9)
Graduate	276 (15.1)
Post Graduate	96 (4.9)
Occupation	
Daily Wage Workers	694(35.9)
Pensioner	184(9.5)
No Job	984(50.9)
Others	69(3.5)
Total	1931

Table 1 describes the distribution of household members according to demographic characteristics. More than 50 per cent are in the age group 15 to 50 years. There are an almost equal proportion of males and females. Nearly 40 per cent have both primary and secondary level of education, and less than 3 per cent have no education. Occupational status shows that almost 50 per cent have no job, and more than 30 per cent are daily wage earners.

Considering the gender wise distribution of household members based on demographic characteristics, more than 50 percent of both genders belong to the 15-50 age group. Nearly 60 percent of both genders are currently married having an age at marriage between 18 and 30 years. Analysis revealed that most males and females have only attained primary and secondary level of education. Less than 10 percent of males and females have attained PG or higher educational levels.

Table 2 Profile of the household

Religion	
Hindu	302(63.0)
Muslim	74(15.2)
Christian	104(21.7)
Social Group	
Scheduled Caste	52(10.6)
Scheduled Tribe	10(2.1)
Other Backward Caste	232(48.4)
Others	186(38.8)
Possession of Ration Card	
Yes	476(99.2)
No	6(0.8)
Colour of Ration Card	
Yellow	46 (9.5)
Pink	217(45.2)
Blue	150(31.4)
White	67(13.9)
Household Income Category	
Less than 5000	78(15.6)
5000-10000	221(46.3)
10000-20000	135(28.3)
Above 20000	46(9.8)
Total	480

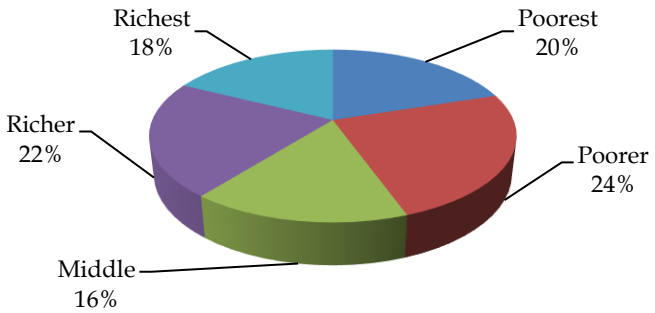

Figure 1 Asset Index classification of Households

Figure 1 describes the asset index classification of households. For the construction of asset index, few variables were taken based on the availability of few household amenities such as source of drinking, type of toilet facility, type of cooking facility, electricity, radio, smart phone, internet, computer, LCD/LED television, normal television, refrigerator, AC, cooler, washing machine, motor cycle/ scooter, bullock carts and car. Construction of asset index is done using the principal component analysis method. Asset index of households was categorized into five categories based on asset scores such as poorest, poorer, middle, richer and richest.

Table 2, describes the household profile based on the primary data collected among households. At least 10 per cent of households are yellow ration card holders, and 45 per cent are Pink ration card holders. Considering the household monthly income level, only 15 per cent of households have a monthly income of less than 5000. More than 40 per cent of households have a monthly income of 5,000 to 10,000. And only less than 10 per cent of households have a monthly income above 20,000. Nearly 40 per cent of the households belong to the first two categories of asset index.

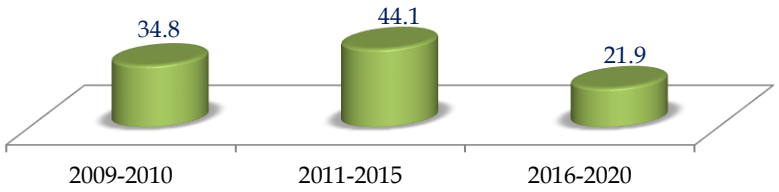

Figure 2 CHIS enrolment year wise in selected districts

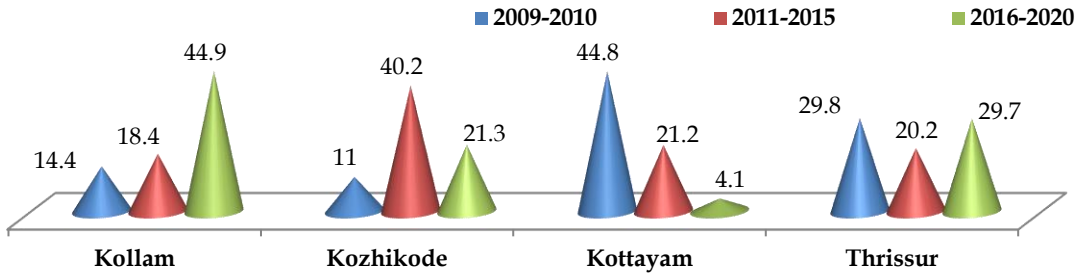

Figure 3 CHIS enrolment status district and year wise in selected districts

Figure 2 and Figure 3 describes the year-wise distribution of enrolment in CHIS in the selected districts and districts and year-wise distribution of enrolment status of CHIS in the selected districts of Kerala.

The years 2011-2015 showed the highest enrollment. There was 20 percent decline in enrolment from 2016 to 2020. Analysis shows an increase in enrolment in the Kollam district from 2016 to 2020.

In Kozhikode and Kottayam districts, enrolment declined in 2016-2020. In the Thrissur district, little change is observed in enrolment.

Table 3 Category wise CHIS enrolment

Categories of CHIS	Count (%)
Old Age and Social Security Pension Holder	388(20.2)
BPL category	344(17.9)
Agricultural Welfare Fund Board Member	248(12.9)
Shops and Commercial Establishments Welfare Member	164(8.5)
Construction Workers Welfare Fund Board Member	160(8.3)
MNREGS	151(7.9)
Others	466(24.3)
Total	1921

The analysis shows that 20 per cent of beneficiaries are enrolled under old age and social security pension holder". Other main enrolled CHIS categories include the "BPL category, agricultural welfare fund board member, and MNREGS. Over 20 per cent are enrolled in other categories, such as fisherman welfare fund board members, domestic workers, and Auto or taxi drivers.

Table 4 Distribution of household members who sought hospitalisation one year before the survey and type of health facility sought for treatment.

Status of Hospitalisation	Count (%)
Hospitalized	688 (35.8)
Not Hospitalized	1232 (64.2)
Total	1920
Type of Health Facility	
Any Government Health Facility	676 (98.3)
Any Private Health Facility	1.7 (1.7)
Total	688

Table 5 Hospitalisations based on disease-specific surgery and Non-surgery

Type of Surgery	Count (%)
Single Disease Surgery	656 (95.3)
Multiple Disease Surgery	18 (2.6)
Non-Surgery	14 (2.1)
Total	688

Table 6 Distribution of CHIS claim based on hospitalisation and CHIS claim based on the type of health facility sought for hospitalisation

Claimed CHIS	Count (%)
Claimed CHIS	464 (67.4)
Not Claimed CHIS	224 (32.6)
Total	688
Type of Health Facility sought for hospitalisation	Claimed CHIS
Government Health Facility	452 (97.4)
Private Health Facility	12 (2.5)
Total	464

Table 7 CHIS claim based on type of surgery or non-surgery

Type of Surgery/ Non-Surgery	Claimed CHIS
Major surgery	408 (87.6)
Minor surgery	44 (9.6)
Non – surgery	12 (2.5)
Total	464

Table 8 Distribution of details of medical services received during hospitalisation, and the out of pocket expenditure incurred

Details of medical services	Count (%)
Surgery	182 (16.4)
Non-Surgery	182 (26.4)
X-ray/ ECG/ Scanning	148 (21.7)
Other diagnostics	176 (25.5)
Paid OOPE	242(35.2)
Not paid (used CHIS)	446(64.8)
Total	688
Direct Medical OOPE	N (mean ± SD)
OOPE incurred	242 (19850 ± 29619.3)
Minimum OOPE incurred	6000/-
Maximum OOPE incurred	1,40,000/-
Type of surgery (OOPE incurred)	Count (%)
Major Surgery	144(68.5)
Minor Surgery	42 (17.4)
Non Surgery	34 (14.1)
Total	242

Table 9 Distribution of average OOPE incurred based on average household monthly income

	Average monthly income less than 15000	Average monthly income greater than 15000
	Count (%)	Count (%)
Major Surgery	131 (65.2)	35(85.3)
Minor Surgery	36 (17.9)	6(14.7)
No Surgery	34(16.9)	-
Total	201	41

Catastrophic expenditure incurred for hospitalized individual CHEi = $\frac{OOPE_i}{HCE_i - SE_i}$

For each household i =, CHEi =1, if, $\frac{OOPE_i}{HCE_i - SE_i}$

CHEi = 0, if, $\frac{OOPE_i}{HCE_i - SE_i} \leq 0.4$, Incidence of CHE is calculated for household = $\frac{1}{N}\sum_{i=1}^{N} CHE_i$

Incidence of CHE = $\frac{691}{480}$=1.4.The study uses the capacity to pay approach for catastrophic health expenditure analysis (Xu.al, 2003).

Where OOPEi is the out-of-pocket health expenditure of ith household, HCEi is the consumption expenditure of ith household, and SEi is the subsistence expenditure of ith household. Subsistence expenditures are

calculated using the expenses incurred for food (Bonu et al., 2009; Mohanty and Kastor, 2017). For this study, CHE is calculated for each household using the above formula and the sum of CHE is estimated to be 69. Households were classified based on the incidence of CHE. Households having an incidence of CHE less than one were categorized as Non-incidence CHE households, and incidences of CHE greater than one were classified as CHE households.

Table 10 Distribution of households having incidences of CHE, Main Sources to meet OOPE incurred for hospitalisation and other main reasons for out-of-pocket health expenses

Incidence of CHE	Count (%)
Non-incidence of CHE	140 (57.8)
Incidence of CHE	102 (42.2)
Total	242
Sources	
Own Savings	68 (41.5)
Borrowed money	96 (58.5)
Total	164
Reasons	
Card not accepted	184 (76.1)
Card not renewed	52 (21.4)
Others	6 (2.5)
Total	242

Main Sources to meet OOPE incurred for hospitalisation and Main reasons for out-of-pocket health expenses. from the analysis it shows that nearly 2 out of 5 families went into financial trouble (had incidences of CHE) due to health spending. Thus, the CHIS scheme could be more effective in reducing the OOPE expenditures and the catastrophic expenses incurred for hospitalisation. It can be seen that the primary sources were through borrowing money. Thus, it can be interpreted that since many households belong to the lower SEC category, most of the household's monthly savings became nil, and they had to borrow money to pay OOPE health expenditures for hospitalisation, leading them to impoverishment.

Discussion

Analysis shows that more than 35 per cent sought hospitalisation. The majority sought hospitalisation in a government health facility. And only less than 2 per cent sought private hospitals for hospitalisation. It can be observed that the majority of hospitalisations were for single disease surgery. Only 2 per cent sought hospitalisation for multiple disease surgery. Analysis showed that more than 60 per cent of beneficiaries claimed CHIS. It can be observed that CHIS claim settlements are high in government hospitals. Analysis showed that over 80 per cent of the claims were for major surgeries. The major surgeries are heart-related surgeries such as bypass surgery and angioplasty, other surgeries such as backbone surgery and ENT surgery, and related surgeries such as handicap surgery, knee replacement surgery, varicose surgery and fracture.

Other major surgeries include caesarean delivery, neurosurgery, hysterectomy operation, pancreas removal, and thyroid cyst, breast removal related to cancer, chemotherapy and ortho-related surgeries. Minor surgeries are cataracts, removal of cysts, angiograms, and hernia operation. Non- surgeries are a treatment

for diabetes, dialysis, diarrhoea, fits, fever and normal delivery. [Reference: Kerala Government CHIS package). It can be observed that most hospitalized beneficiaries received medical services such as X-ray/ECG/scanning and other diagnostics tests through payment only. Nearly 30 per cent of CHIS-enrolled beneficiaries paid out-of-pocket expenditures for hospitalisation-related expenses, and in that 20 per cent claimed CHIS and also had OOPE. The cost of different types of surgeries ranges from 1000 to 30000 as per the CHIS package. The mean OOPE incurred for a specific surgery is calculated based on each surgery cost, as mentioned in the CHIS package. Each type of surgery is then classified into major and minor based on the price. If the cost of the surgery is above 20,000/-, it is classified as major surgery, and if the cost ranges from 1000/- to 20000, it is referred to as minor surgery. The major surgeries are heart-related surgeries such as Bypass surgery and angioplasty; other major surgeries are backbone surgery, ENT surgery, leg-related surgeries such as handicap surgery, knee replacement surgery, varicose surgery and fracture, caesarean delivery, neurosurgery, hysterectomy operation, pancreas removal, and thyroid cyst, breast removal related to cancer, chemotherapy and ortho-related surgeries. Minor surgeries are cataracts, removal of cysts, angiograms, and hernia operation. Non-surgeries taken are a treatment for diabetes, dialysis, diarrhoea, fits, fever and normal delivery. [Kerala Government CHIS package). Analysis shows that more than 60 per cent incurred OOPE for significant surgeries, and only 17 per cent incurred OOPE for minor surgeries. Nearly 40 per cent of households experienced incidences of CHE. From the study it is observed that even though many beneficiaries are claiming CHIS, but are still paying out of pocket. the primary reasons cited are the consulted health facility declined to accept the card even though they are empanelled in CHIS. Other reasons include the beneficiary non-renewal of CHIS card. the study observed that majority of CHIS beneficiaries lack basic awareness about the modalities of CHIS, ways to obtain services under CHIS, benefits availing from empanelled private hospitals. A study carried out by Philip. NE. et.al (2016) also found that CHIS did not reduce the OOPE of inpatient care in Kerala.

Conclusion

Out-of-pocket health expenditures make a significant impact on the overall financial status of individuals and their families, pushing them into poverty, especially for those who belong to economically backward sections of society. Health insurance schemes such as CHIS, sponsored by the Government of Kerala, provide good coverage against the economic and financial losses due to hospitalisation. This study portrays an overall picture of the CHIS implementation status and analyses whether CHIS is beneficial in reducing catastrophic health expenditures using primary household data. Through the study, an attempt was made to understand the enrolment and utilization of CHIS. Enrolment in CHIS is higher among people working in organised sectors such as domestic helpers and fishing workers compared to the daily wage workers. This may be because people get interpersonal communication regarding CHIS as part of discussions with peer groups.

The study indicated that poorest sections of the society have lesser chance of enrolment in CHIS, which is true for most of the governmental programmes. Though about one-third of those enrolled in CHIS sought hospitalisation for diseases/surgeries covered by CHIS, only about three-fifths claimed CHIS, partly because of the reluctance of health facilities to accept the card or non-renewal of membership in CHIS. The hospitals seem not keen to cater to the CHIS beneficiaries, maybe because the claim package

is unattractive. The low package rates lead to the beneficiary households to pay part of the expenditure out-of-pocket. As per the analysis, about two-fifths of the households went into catastrophe due to high out-of-pocket payments, which is quite high. Though CHIS has been providing claims per its package, this study found that the CHIS enrolled families spend much more than the package offers. CHIS package offers much less than each individual spends on inpatient care. Thus, each hospitalized CHIS-enrolled beneficiary had to incur substantial out-of-pocket expenses needed for hospitalisation. These include the money spent on surgery, X-ray, ECG/ scanning and other diagnostic tests. A household belonging to an economically backward community cannot afford such significant amounts and has to borrow money, often forcing them to be impoverished. In conclusion, we can say that CHIS need a lot of improvement regarding higher claim packages and coverage of all diagnostic tests and related services, including more extended post-hospitalisation periods. The system needs to make sure that CHIS claimants are not paying higher out-of-pocket health expenditures and that they are not getting into impoverishment due to this. So CHIAK government of Kerala needs to consider having programs to improve awareness regarding various factors of the scheme. So, it would be strongly recommended that "Future policies must focus on improving hospital empanelment and creating awareness about the card renewals.

Limitations of the Study

- Due to the pandemic, the whole study was affected. The data collection was done as and when the COVID situation was improving.
- The data includes only the perspectives of CHIS beneficiaries and doesn't include the provider's perspective.

References

Morton, M., Nagpal, S., Sadanandan, R., & Bauhoff, S. (2016). India's largest hospital insurance program faces challenges in using claims data to measure quality. *Health Affairs*, *35*(10), 1792-1799.

Chauhan, A. S., Prinja, S., Selvaraj, S., Gupta, A., Muraleedharan, V. R., & Sundararaman, T. (2022). Cost of delivering primary healthcare services through public sector in India. *Indian Journal of Medical Research*, *156*(3), 372-380.

Pattnaik, A. K., Misra, S. N., & Ghadai, S. K. (2019). Claim settlement: The moment of truth in health insurance. *International Journal of Recent Technology and Engineering*, *8*(2), 581-585.

Government of India Ministry of Health and Family Welfare, Rural Health Satistics, 2020-2021.

Kadyan, S., Bhasin, N., & Madhukar, V. (2022). Impact of claim settlement procedure of health insurance companies on customer satisfaction during the pandemic: A case of third-party administrators. *Insurance Markets and Companies*, *13*(1), 66-80.

Kapur Radhika. (2019). The Public Health System in India, *ACTA Scientific Nutritional health, 3(11).*

Keshri, V. R., & Ghosh, S. (2019). Health Insurance for Universal Health Coverage in India: A critical analysis based on coverage, distribution and predictors from National Family Health Survey–4 Data.

Khetrapal, S., Acharya, A., & Mills, A. (2019). Assessment of the public-private-partnerships model of a national health insurance scheme in India. *Social Science & Medicine*, *243*, 112634.

Kinnan Cynthia et.al. (2022). Selection in Health Insurance: An evaluation of India's RSBY, The Abdul Latif Jameel Poverty Action Lab.

Krishnan, G. A., & Nair, A. K. (2021). Primary health-care innovations with superior allusion to family health centers. *Indian Journal of Community Medicine, 46(1),* 149-152.

Kumar, A. (2023). The transformation of the Indian healthcare system. *Cureus, 15(5).*

Luke, S., & Vincent, J. (2020). Awareness and utilization of health insurance among patients of a tertiary care centre in South India. *International Journal Of Community Medicine And Public Health, 7(10),* 4033–4036.

Medical Trust Hospital, Kochi. (2021). Health Care in Kerala.

Misra, S., Awasthi, S., Singh, J. V., Agarwal, M., & Kumar, V. (2013). Estimation of out of pocket direct and indirect medical expenditure and spending burden ratio across income quintiles in urban Lucknow, India. *Clinical Epidemiology and Global Health*, *1*(1), 12-18.

Muraleedharan, M., & Chandak, A. O. (2022). Emerging challenges in the health systems of Kerala, India: qualitative analysis of literature reviews. *Journal of Health Research*, *36*(2), 242-254.

Nair, D. (2016). Determinants of enrollment in comprehensive health insurance scheme and implementation challenges: a study in Kerala, South India. *Health Science Journal, 10(1), 1.*

Nair, M. R., & Varma, R. P. (2021). Availability, distribution and utilisation of health care services in Kerala. Trivandrum: Achutha Menon Centre for Health Science Studies, Sree Chitra Tirunal Institute for Medical Sciences and Technology.

Najmi, A., Sadasivam, B., & Ray, A. (2021). How to choose and interpret a statistical test? An update for budding researchers. *Journal of family medicine and primary care, 10(8),* 2763-2767.

Nanda, M., & Sharma, R. (2023). A comprehensive examination of the economic impact of out-of-pocket health expenditures in India. *Health Policy and Planning*, *38*(8), 926-938.

National Family Health Survey, 2005-2006, Fact sheet

National Family Health Survey, 2015-2016, Fact sheet

National Family Health Survey, 2019-2021, Fact sheet

Neog Dipalee. (2014). Health Condition of Rural Women; Few Observations from the Identified Social Groups, *Journal of Agricultural Engineering and Food Technology, 1(1),* 10-16

OECD. 2017. Financing of health care, Health at a Glance 2017, 10.1787

Philip, N. E., & Ravindran, T. K. S. (2017). Government sponsored health insurance coverage and out-of-pocket spending among elderly in Kerala: a cross-sectional study. *Journal of Aging Research and Healthcare*, *2*(1), 15-27.

Swasthya, R. (2012). Rashtriya Swasthya Bima Yojana. *Economic & Political Weekly*, *47*(39), 57.

Malhi, R., Goel, D., Gambhir, R. S., Brar, P., Behal, D., & Bhardwaj, A. (2020). Rashtriya swasthya bima yojana (RSBY) and outpatient coverage. *Journal of Family Medicine and Primary Care*, *9*(2), 459-464.

Sankar D, H., Joseph, J., Benny, G., & Nambiar, D. (2023). Of primary health care reforms and pandemic responses: understanding perspectives of health system actors in Kerala before and during COVID-19. *BMC primary care*, *24*(1), 59.

Selvaraj, S., Karan, A. K., Srivastava, S., Bhan, N., & Mukhopadhyay, I. (2022). India health system review.

Singh, J., & Mahmood, S. M. J. (2022). An Assessment of service quality in tertiary hospitals and role of communication for the growth of medical tourism in Asian context including COVID era. An empirical evidence from India. *Journal of Positive School Psychology*, 4984-5003.