

Change in Health-seeking Behaviour among Elderly during the COVID-19 Pandemic in Rural Areas of Central Kerala: A Cross-sectional Study

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ABSTRACT

Introduction: The Coronavirus Disease-2019 (COVID-19) pandemic has had a significant impact on the elderly population, leading to both fatalities from the virus and delayed treatment of acute emergencies. Additionally, many elderly individuals have demonstrated poor health-seeking behaviour in managing chronic conditions. Reasons for this include fear, access barriers, and strain on healthcare resources and personnel.

Aim: To evaluate the change in health-seeking behaviour among the elderly in rural areas of central Kerala during the pandemic and identify the associated factors.

Materials and Methods: A community-based cross-sectional study was conducted in the rural field-practice areas of the Department of Community Medicine at a tertiary care Medical College in Kerala, India from May 2021 to August 2021. A total of 252 elderly individuals aged 60 years and above were interviewed using a structured pretested questionnaire. Socio-demographic details and responses on health-seeking behaviour during the pandemic were documented. Data were summarised using frequencies and percentages for categorical variables or mean and standard deviation for continuous variables. Associations were tested using the Chi-square test.

Results: The study revealed that 83.73% (211 out of 252) of the elderly participants had Non Communicable Diseases (NCDs),

with hypertension in 130 (51.59%) and diabetes in 90 (35.71%) being the most prevalent. A significant change in the preference for healthcare facilities was noted ($p < 0.001$), with a decline in appropriate health-seeking behaviour by 16.16%. Moreover, 9.13% (23 participants) resorted to self-treatment at home, and 49.21% (124 participants) opted for traditional remedies to boost their immunity. The type of family was significantly associated with the decline in health-seeking behaviour ($p < 0.05$). Of the 16 participants who indicated a lapse in their regular follow-up since the onset of the pandemic, the primary reasons for missing appointments were fear of contracting COVID-19 in 14 cases (87.50%), lockdown restrictions in six cases (37.50%), and transportation challenges in three cases (18.75%).

Conclusion: The study revealed a high prevalence of chronic diseases like hypertension, diabetes, osteoarthritis, and Coronary Artery Disease (CAD) among the elderly. There was a decline in health-seeking behaviour by 16.16% among the elderly with chronic diseases due to various challenges posed by the pandemic. Implementing strategies such as utilising social media, promoting telemedicine, and adopting a comprehensive technological approach is crucial to enhance healthcare accessibility for elderly populations in rural areas.

Keywords: Aged, Chronic disease, Coronavirus disease-2019, Health behaviour, Health services accessibility, Rural population

INTRODUCTION

Health-seeking behaviour involves individuals responding to their perception of a health issue or illness by taking actions to seek an appropriate remedy. Consulting a trained allopathic doctor in a recognised health facility is considered appropriate health-seeking behaviour [1]. Geriatric patients with Non Communicable Diseases (NCDs) require regular follow-up with health professionals and informal caregivers to manage their illnesses [2].

The COVID-19 pandemic has instilled fear in older people, particularly due to the high fatality rate and poorer outcomes [3]. The fear of exposure to the virus has led to the avoidance of public healthcare facilities. Older adults prefer to stay at home and often seek alternative treatments according to their understanding, including self-medication and traditional medicine [4]. The Kerala state's annual vital statistics report (2020) highlighted an increase in deaths occurring in rural areas outside of healthcare institutions. This includes non institutional deaths (20.04%), cases where no medical attention was received (30.02%), and situations where the medical attention status was unspecified (0.01%) [5]. This raises questions about potential lapses in medical care for the elderly and critically ill during the pandemic

year. The diversion of healthcare services toward the pandemic response has burdened and depleted the public health system. Many government medical institutions and hospitals were converted into COVID-19 hospitals, disrupting regular treatment of chronic diseases. Lockdown and containment zone regulations further hindered timely access to healthcare for the elderly [6].

Despite several studies on the effects of COVID-19 on individuals with various chronic conditions and access to healthcare in the general population, there remains a significant research gap regarding the perspectives of older individuals and their health-seeking behaviour during the pandemic, particularly in Kerala and South India [6-8]. Therefore, the present study aimed to assess the change in health-seeking behaviour among the elderly before and after the pandemic outbreak and determine the various associated factors in rural areas of central Kerala.

MATERIALS AND METHODS

This community-based cross-sectional study was conducted in the rural field-practice areas of the Department of Community Medicine at a tertiary care Medical College in Kerala, India from May 2021

to August 2021. The study received approval from the Institutional Research and Ethics Committee (IEC/553/2021 dated 17/03/2021).

Inclusion and Exclusion criteria: The study included rural residents aged 60 years and above, excluding non permanent residents, critically-ill individuals unable to respond to the questionnaire, and those who declined to participate.

Sample size calculation: The study aimed for a minimum sample size of 250 participants. The sample size calculation was based on the formula for proportion estimation, considering a significance level of 5%, a relative precision of 6%, and data from a prior study conducted in South India, which reported a health-seeking behaviour rate of 81% among elderly individuals living in rural areas [9]. Convenience sampling was used to include 252 elderly individuals who met the eligibility criteria.

Study Procedure

Data from the participants were collected using a structured pretested questionnaire consisting of 25 items. The questionnaire covered various aspects, including socio-demographic information and inquiries about health-seeking behaviour. Participants were asked about chronic illnesses, medications, healthcare sources, check-up frequency, emergencies, and procedures postponed during the pandemic.

The questionnaire was developed by the study investigators, who possess expertise in the field of public health with a specific focus on the elderly population. It was designed specifically to capture changes in health-seeking behaviour during the pandemic, as no suitable existing questionnaire was available for studying the unique impact of COVID-19 on this population. Content validation by a panel of public health experts ensured high validity, and construct validity was established through factor analysis, indicating a strong structure. The questionnaire demonstrated excellent reliability, with a high Cronbach's alpha (0.88) and a Pearson correlation coefficient of 0.82 in a test-retest assessment, confirming its stability over time.

Trained health workers conducted standardised, formal in-home interviews with the participants using the questionnaire. Informed consent and consent for publication were obtained from all participants, and participant anonymity was maintained to ensure confidentiality during the questionnaire administration.

STATISTICAL ANALYSIS

Categorical variables were presented as frequencies and proportions, while quantitative variables were summarised using mean and standard deviation if the data followed a normal distribution. If the data did not follow a normal distribution, the median and Interquartile Range (IQR) were used. To determine the factors associated with the change in health-seeking behaviour, the Chi-square test or Fischer's-exact test was used. A p-value <0.05 was considered statistically significant. The statistical analysis was performed using Statistical Package for Social Sciences (SPSS) software version 20.0.

RESULTS

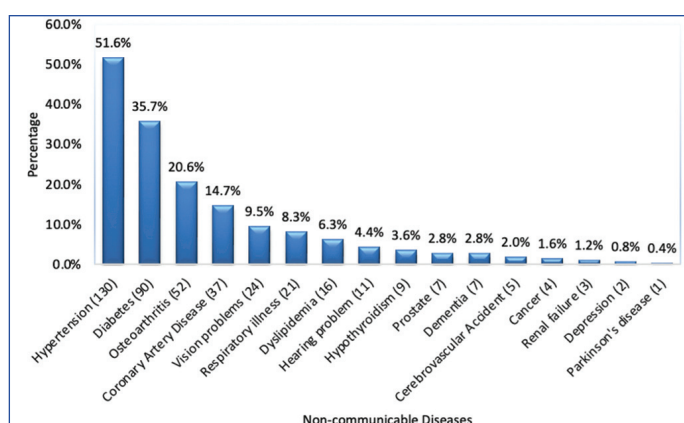
The study included a total of 252 elderly individuals, with 116 males (46.03%) and 136 females (53.97%). The mean age of the participants was 69.32 years, with a standard deviation of 7.78 years. Approximately 47.62% of the participants had completed high school education. The majority of participants were unemployed (65.48%), married (61.51%), resided in joint families (41.67%), and belonged to the middle-class socio-economic bracket (33.73%) [Table/Fig-1] [10].

Among the participants, 83.73% had atleast one Non Communicable Disease (NCD). Hypertension was the most prevalent condition, affecting 51.59% of the participants, followed by diabetes (35.71%), osteoarthritis (20.63%), and coronary artery disease (14.68%) [Table/Fig-2].

Variables	Frequency	Percentage
Gender		
Male	116	46.03
Female	136	53.97
Age (years)		
60-69	138	54.76
70-79	85	33.73
80 and above	29	11.51
Educational status		
Illiterate	25	9.92
Primary/Middle school	107	42.46
High school/Senior secondary	99	39.29
Degree and above	21	8.33
Occupation		
Not working	165	65.48
Working	55	21.82
Retired	32	12.70
Religion		
Hindu	102	40.48
Muslim	38	15.08
Christian	112	44.44
Marital status		
Unmarried	12	4.76
Married	155	61.51
Widowed	85	33.73
Type of family		
Nuclear	47	18.65
Three generation	100	39.68
Joint family	105	41.67
Socio-economic status^a		
Class-I	24	9.52
Class-II	66	26.19
Class-III	85	33.73
Class-IV	60	23.81
Class-V	17	6.75

[Table/Fig-1]: Socio-demographic profile of the participants (N=252).

^aBased on the updated BG Prasad Classification - 2021 [10]



[Table/Fig-2]: Distribution of Non Communicable Diseases (NCD) (Chronic illness) among the participants in the present study (N=252).

Among the participants with chronic illnesses, 84.83% reported adhering to regular medication, with 26.81% taking five or more medications daily.

There was a significant difference in the choice of healthcare services before and after the onset of the pandemic (p<0.001) [Table/Fig-3]. After the onset of COVID-19, there was a decrease in visits to healthcare facilities, with 9.13% of participants opting for self-treatment at home.

Source of treatment		During the COVID-19 pandemic				Total	p-value
		PHC/government hospital	Private hospital	Private clinic	Self-treatment		
Before the pandemic	PHC/Government hospital	59 (78.67%)	4 (5.33%)	4 (5.33%)	8 (10.67%)	75 (100%)	<0.001 ^a
	Private hospital	0	103 (88.03%)	4 (3.42%)	10 (8.55%)	117 (100%)	
	Private clinic	0	1 (1.67%)	54 (90.00%)	5 (8.33%)	60 (100%)	
Total		59 (23.41%)	108 (42.86%)	62 (24.60%)	23 (9.13%)	252 (100%)	

[Table/Fig-3]: Source of treatment before and after onset of the pandemic (N=252).

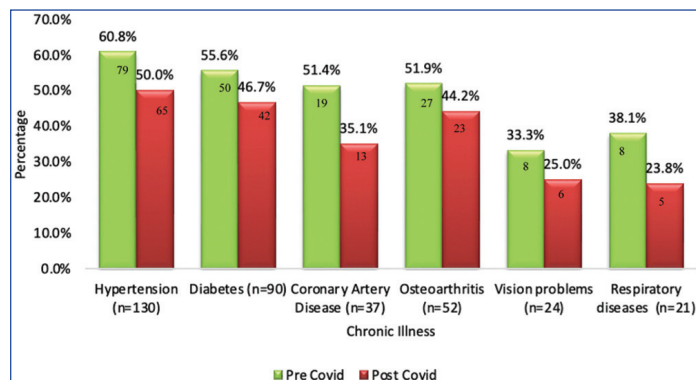
PHC: Primary health centre

The majority of participants reported visiting healthcare facilities only when necessary (53.17%). Among those with chronic conditions, 46.91% had regular follow-ups prior to the pandemic, with 83.84% maintaining the same frequency of follow-ups post-COVID-19.

The main reasons for avoiding visits to healthcare facilities were the fear of contracting COVID-19, lockdown restrictions, transportation difficulties, reluctance from family members, closure of healthcare facilities, and financial constraints [Table/Fig-4].

Among participants on daily medication, 98.3% reported uninterrupted treatment during COVID-19, while 1.7% experienced interruptions due to various challenges. None of the participants denied hospital admission or missed regular procedures during this time. The type of family (three-generation/joint family vs. nuclear family) was significantly associated with the decline in health-seeking behaviour ($p < 0.05$) [Table/Fig-5].

Approximately 5.16% of participants experienced a health emergency during this period, and 9.13% attempted self-treatment



[Table/Fig-4]: Morbidity-specific changes in health-seeking behaviour among the participants during the pandemic.

Variables	Decline in health-seeking behaviour during the pandemic		p-value
	Yes	No	
Age			
60-70 years	6 (12.77%)	41 (87.23%)	0.382
>70 years	10 (19.23%)	42 (80.77%)	
Gender			
Male	4 (9.30%)	39 (90.70%)	0.104
Female	12 (21.43%)	44 (78.57%)	
Education			
Illiterate	1 (12.50%)	7 (87.50%)	0.769
Literate	15 (16.48%)	76 (83.52%)	
Occupation			
Not working	15 (17.65%)	70 (82.35%)	0.322
Working	1 (7.14%)	13 (92.86%)	
Marital status			
Unmarried	0	4 (100%)	0.224
Married	7 (12.28%)	50 (87.72%)	
Widow/Widower	9 (23.68%)	29 (76.32%)	

Type of family			0.029 ^a
Nuclear	8 (33.33%)	16 (66.67%)	
Three generation	4 (9.09%)	40 (90.91%)	
Joint	4 (12.90%)	27 (87.10%)	
Socio-economic status			
Upper and upper middle (Class-I and II)	7 (19.44%)	29 (80.56%)	0.542
Middle (Class-III)	3 (10.00%)	27 (90.00%)	
Lower middle class and Lower (Class-IV and V)	6 (18.18%)	27 (81.82%)	

[Table/Fig-5]: Factors associated with the decline in appropriate health-seeking behaviour during the pandemic (n=99).

a) Significant: p-value <0.05 using Chi-square test

at home. Around 49.21% took immunity boosters, primarily using homeopathy. A total of 14 deaths within the participants' families were reported. Most participants confirmed that a health worker visited their home during the study period, and the majority expressed a preference for organising home-based care for the elderly.

DISCUSSION

The findings of the present study revealed a decline in the health-seeking behaviour of the elderly during the pandemic. The mean age of the participants was 69.32±7.78 years, and the prevalence of NCDs was high at 83.73%. Hypertension was the predominant chronic condition, affecting 51.59% of the participants, followed by diabetes at 35.71%, osteoarthritis at 20.63%, and CAD at 14.68%. These results are similar to another study conducted in Kerala by Areekal B et al., [11], while studies from other parts of India reported higher occurrence of musculoskeletal morbidity and vision problems but lower prevalence of diabetes [12,13].

Among the 211 participants with chronic illnesses, the majority (84.6%) followed a daily medication routine, while a smaller number (46.92%) visited healthcare facilities regularly (every three months or less). Previous studies in India before the pandemic showed higher rates of favourable health-seeking behaviour, ranging from 65.8% to 81.1% [9,12]. Similar to a study from urban Delhi [14], most participants (53.17%) sought medical care only when they felt it was necessary. The main reasons for this behaviour, as reported in a Shimla study, include associating illnesses with natural aging, lack of healthcare access, religious beliefs, financial constraints, and not having anyone to accompany them to hospitals [12].

After the onset of the pandemic, a significant change in the choice of healthcare facilities was observed, as many secondary and tertiary facilities became exclusive COVID-19 centres. This created a gap in healthcare services for managing chronic conditions [15]. Even among the elderly who regularly sought care, 16.16% acknowledged a decrease in visits to healthcare facilities. Restricted access and reduced availability of healthcare sources resulted in missed appointments and more medical issues among the elderly [16]. Facility visits for common chronic conditions, particularly CAD, showed a pronounced decline. Regular follow-up is crucial for CAD secondary prevention, and lapses can lead to serious consequences [17].

The type of family emerged as the only predictor of the decline in health-seeking behaviour, with elderly individuals in three-generational

and joint families showing higher compliance with facility visits compared to those in nuclear families. Higher socio-economic status was also correlated with improved healthcare access during the pandemic in another rural Kerala NCD study [7].

The fear of contracting COVID-19 was the most common reason for not having regular check-ups (87.50%). The “infodemic” driven by social media adversely affected public perception of healthcare facilities, categorising them as high-transmission areas [18]. Alleviating such fears and convincing people of the importance of addressing their health concerns is a major challenge for healthcare professionals. Novel methods of communication, such as social media, social networking platforms, short documentaries or movies, self-help groups, and talks, should be made available to healthcare professionals to spread the notion that “Pandemic or no pandemic, health is essential, and we are prepared to care for you”.

Limited accessibility was identified as another major reason for decreased hospital visits. Challenges with transportation were cited by 18.75% of the participants, while 37.50% mentioned lockdown or containment zone restrictions. One participant mentioned financial constraints. Similar findings were seen in qualitative studies across four cities in North and South India [19]. Strategies such as home care delivery or mobile outpatient services, involving medical teams visiting and assessing elderly patients at home, conducting preliminary lab tests, and providing basic medication, can address these logistics issues. Telemedicine and online consultations offer alternatives to minimise cross-infection. These approaches enable cost-effective remote patient care, save time, space, resources, and manpower, and facilitate efficient communication with patients and consultations with specialists. Digital records, tele-monitoring, smart wearables, and other devices can collect daily health data for the elderly [20]. Integrating these systems can improve elderly access and delivery of care, thereby improving outcomes. The Government of India’s e-Sanjeevani Outpatient Department (OPD), a web-based platform, has benefited many within the safe environment of their homes [21].

Some participants (9.13%) resorted to self-treatment at home, a behaviour that was not observed before the pandemic. Another South Indian study identified fear of COVID-19 as the top reason for self-medication [8]. Health anxiety significantly increased during the pandemic, leading to a surge in online health information seeking related to diabetes, hypertension, lung disease, and cardiovascular disease [22]. The study highlights the importance of self-care practices during the pandemic, such as diet, exercise, medication adherence, self-monitoring of blood glucose and blood pressure, and stress management [23]. Primary care physicians and healthcare workers play a crucial role in reinforcing these measures. Additionally, digital self-management programs have proven effective for disseminating information [24].

Nearly half of the participants sought immune-boosting remedies from alternative medicine, with homeopathy being the preferred choice (49.21%). The safety and efficacy of these remedies are widely debated, with reports linking their usage to drug-induced liver injury [4,25,26]. It is important to emphasise that vaccination remains the most reliable approach to prevent COVID-19 hospitalisations [27].

Among the 179 participants on daily medication for chronic conditions, the majority (98.34%) reported no interruption in treatment due to COVID-19. Only a small number (1.67%) mentioned instances of missing regular medication for varying durations. This can be attributed to Governmental and non Governmental initiatives, healthcare worker visits, and strong community and family support that ensured continued medication access for the elderly and immobilised individuals during this challenging period.

The ‘Surakshit Dada-Dadi, Nana-Nani Abhiyaan’ campaign was launched to ensure the well-being of senior citizens during the pandemic through behaviour change, access to essential services,

and early detection and tracking of COVID-19 symptoms [28]. Additionally, the ‘Ayushman Bharat’ health insurance scheme offered free diagnosis and treatment in public hospitals for all age groups [29]. Patients with chronic diseases have acknowledged receiving financial assistance, complimentary medicines, and essential supplies from the government [19]. Most participants (80.95%) confirmed that a health worker visited their home during the pandemic, highlighting Kerala’s well-organised and accessible healthcare system [30]. Adequate training and empowerment of healthcare workers in basic acute emergency and NCD management are crucial to significantly improve health outcomes, as they maintain close community ties and deep local understanding. Furthermore, associations and clubs can contribute by encouraging the elderly to proactively seek regular preventive healthcare.

The study sheds light on the self-treatment behaviour, the importance of self-care practices, the use of alternative medicine, the continuity of medication access, and the role of government initiatives and healthcare workers in supporting the elderly during the pandemic. The study is notable for its unique focus on the health-seeking behaviour of elderly individuals in rural central Kerala during the pandemic. The findings contribute to preparedness for future waves of this magnitude and emphasise the importance of ensuring the well-being of the growing geriatric population. The study also highlights the significance of promoting awareness about preventive healthcare and regular health checkups for the elderly. Overall, the study highlights the decline in health-seeking behaviour among the elderly during the pandemic, suggests strategies to address the challenges faced in accessing health services and offers implications of such healthcare strategies and interventions.

Limitation(s)

The study has some limitations, including reliance on self-reported participant information, which is susceptible to memory recall and social desirability bias. The diagnosis of chronic conditions was based on participants’ history and medical records, without confirmatory lab investigations.

CONCLUSION(S)

In conclusion, the present study highlights the high prevalence of chronic diseases among the elderly population, including hypertension, diabetes, osteoarthritis, and CAD. Despite a decline in health-seeking behaviour during the pandemic, the majority of participants adhered to their daily medication regimens, which can be attributed to government initiatives, healthcare worker home visits, and strong family and community support. The primary reasons for the decline in facility visits were fear of contracting COVID-19, lockdown restrictions, and transportation issues. To address these challenges, it is crucial to implement strategies such as utilising social media platforms, promoting telemedicine services, and adopting a comprehensive technological approach to enhance healthcare accessibility for elderly populations in rural areas. These measures can help mitigate the impact of the pandemic on the health-seeking behaviour of the elderly and ensure their well-being.

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