e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2025; 17(8); 1681-1690

Original Research Article

Practice and Perceptions about the use of Face Masks among Elderly in the COVID Era

Carol Pinheiro[1], Dharani Sree Tamilselvan[2], Cynthia Philomin Cardoz[3], Anuja Munduvadackal Viswabhadran[4], Amrutha Mudikunnath Sivadasan[5], Lakshmi Rajeev Thuruthiyath[6]

[1]Associate Professor, Department of Community Medicine, Government T. D. Medical College, Alappuzha, Kerala, India

[2]Senior Resident, Department of Community Medicine, Government T. D. Medical College, Alappuzha, Kerala, India

[3]Undergraduate student, Government T. D. Medical College, Alappuzha, Kerala, India

[4]Assistant Surgeon, FHC Thiruvallam, Thiruvananthapuram, Kerala, India

[5]Assistant Professor, Department of Community Medicine, Malabar Medical College & Research Centre, Ulliyeri, Calicut, Kerala, India

[6]Assistant Professor, Department of Community Medicine, Government Medical College, Kasaragod, Kerala, India

Received: 27-06-2025 / Revised: 25-07-2025 / Accepted: 27-08-2025

Corresponding Author: Carol Pinheiro

Conflict of interest: Nil

Abstract:

Background: Mask use among the elderly who have heightened vulnerability to infections due to age-related comorbidities and immune decline was both a protective necessity and a behavioural adaptation during the COVID pandemic. Mask-wearing remains a vital component of standard airborne infection control measures today in both healthcare and community settings even in the post pandemic phase. Gaining insight into the factors that influence mask use in this age group can guide tailored health education to promote sustained preventive habits for safeguarding the elderly.

Objectives: This study aims to explore the current perceptions, attitudes and practices related to mask use among the elderly, highlighting barriers and facilitators that influence behaviour.

Methods: This was a cross-sectional study done among 366 persons aged 60 years and above attending a primary health care setting in Ambalappuzha South panchayat in the district of Alappuzha during January to June 2021. Information about the perceptions, knowledge and practice of face mask use was collected from the study participants attending the outpatient clinics and vaccination clinics in the health centre using a self-prepared semi structured questionnaire. Data was entered in Microsoft Excel and analysed using SPSS version 27. Continuous variables were summarized as mean (SD), and categorical variables as proportions. Associations were tested with chi-square test and a p value of less than 0.05 was considered as statistically significant.

Results: The mean age (SD) of the study population was 67.28 (5.96) years with the age ranging from 60 years to 87 years. Majority of the study population 250 (68.3%) belonged to the 60 to 69 year age group and around 250 (68.3%) of the elderly had comorbidities. The knowledge regarding the use of mask and the disease COVID-19 was good among the study participants and almost over 90% of them had knowledge about COVID-19, about the airborne mode of spread of the disease and about the proper use of the mask but only 51.6% were aware that triple layer mask cannot be reused. The questions on perceptions and attitude towards the use of mask showed that majority believed that mask alone cannot offer complete protection against COVID-19 and that wearing mask and practising social distancing is essential for protection. The practices followed was assessed which showed that good proportion of them were following proper mask use practices. Younger elderly (<65 years) showed better knowledge regarding hand hygiene and proper disposal of mask, practice of hand hygiene and mask replacement after six hours compared to older participants which was found to be statistically significant.

Conclusion: Elderly individuals in the study demonstrated high knowledge, positive perceptions, and generally good practices regarding mask use. Age stratified analysis showed that younger elderly (<65 years) showed better adherence to hand hygiene, mask replacement, and knowledge regarding hand hygiene and proper disposal compared to older participants. These findings highlight the need for targeted interventions to reinforce optimal mask handling and disposal practices among older adults, ensuring effective protection against other airborne infections.

Keywords: Face Masks, COVID-19 Prevention, Older Adults, Public Health Measures.

Introduction

Face masks have emerged as one of the most effective, low-cost and accessible public health tools for controlling the spread of respiratory infections, particularly during the COVID-19 pandemic. The pandemic profoundly reshaped global public health practices, with mask use becoming a crucial defence against respiratory illnesses. By providing a physical barrier that reduces the transmission of respiratory droplets, mask protects both the wearer and people around them. [1] The utility of masks extend beyond pandemics, as they are also effective against other common airborne illnesses such as influenza, tuberculosis and seasonal viral infections. The simplicity of use combined with its effectiveness makes face mask a cornerstone of personal and community-level infection prevention strategies.

The World Health Organization (WHO) advised the use of masks as part of a comprehensive package of prevention and control measures that can limit the spread of certain respiratory viral diseases, including COVID-19. [2] The use of mask was recommended in addition to other infection control measures like hand hygiene, physical distancing of at least one metre, avoidance of touching one's face, respiratory etiquette, adequate ventilation in indoor settings, testing, contact tracing, quarantine and isolation. [3] The appropriate use, storage and cleaning or disposal of masks is also essential to make them useful for infection control.

The elderly population is particularly vulnerable to respiratory infections due to age-related decline in immune function and the presence of comorbidities such as diabetes, hypertension, and chronic lung disease. During the COVID-19 pandemic, older adults faced significantly higher rates of hospitalization and mortality. [4] Among the elderly, who bore a disproportionate burden of morbidity and mortality, the use of face masks was considered a symbol of both protection and vulnerability. The consistent use of face masks among the elderly served as an empowering tool for them to engage in safe social interactions. In the post-pandemic context, continued mask use among the elderly remains crucial, especially in crowded or high-risk settings, to safeguard their health and preserve their autonomy and quality of life.

In India, the elderly population above 60 years constituted a high-risk population, accounting for over 53% of COVID-19-related deaths despite forming only around 8.6% of the total population. [5] The national guidelines during the pandemic in India mandated mask use in public spaces, and adherence was particularly emphasized among high-risk groups, including the elderly. The state of Kerala, which boasts high health literacy and a strong public health system, demonstrated early success in promoting mask use and other preventive behaviours during the initial waves of the pandemic. [6] Government-led initiatives, community mobilization, and decentralized health governance contributed to high compliance rates among the general population, including older adults.

Recent research underscores that masks remain an effective tool in preventing the spread of respiratory infections even after the acute phase of the COVID-19 pandemic. [7,8] A retrospective cohort study from Beijing found that mask use by entire families before the first family member developed COVID-19 symptoms was 79% effective in reducing transmission. [9]

Mask-wearing remains a vital component of standard airborne infection control measures in both healthcare and community settings. In places with poor ventilation, high population density, or during outbreaks of respiratory illnesses, masks serve as a first line of defence. They complement other infection control practices such as hand hygiene, physical distancing, and vaccination. Given the potential for future respiratory outbreaks, emerging variants, and comorbidities prevalent among the elderly, understanding their current perceptions and practices is not only relevant but essential.

Aims & Objectives: The study aimed to understand the perceptions and practice of face mask use among the elderly in a coastal panchayat in Central Kerala. Such knowledge is vital for designing context-specific health communication strategies, reinforcing protective behaviours, and preparing for future outbreaks. It also provides valuable insight into the long-term behavioural impact of the pandemic on a demographically and medically sensitive group. The objective of the study was to assess the knowledge, attitude and practice about mask use among persons aged 60 years and above in a coastal panchayat in Central Kerala.

Materials & Methods

This was a cross-sectional study done among 366 persons aged 60 years and above attending a primary health care setting in Ambalappuzha South panchayat in the district of Alappuzha during 2021. The study was initiated after obtaining Institutional Research Committee and Institutional Ethics Committee approval (IEC 65/2020). The study period was six months from January to June 2021.

Study Procedure: Information about the perceptions, knowledge and practice of face mask use was collected from the persons aged 60 years and above attending the outpatient clinics and

vaccination clinics in the health centre. A self-prepared semi structured questionnaire through interview technique was used to collect information on the demographic profile, the knowledge about covid and mask use, their attitude towards the guideline of using masks and their practice of using mask. The queries regarding the infection control practices raised by the study participants were addressed by the investigators and health education regarding the importance of these infection control measures was given for reinforcing protective behaviours and for continued protection from other airborne illnesses.

Statistical Analysis: The data collected was entered in Microsoft Excel and statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 27 (SPSS Inc, Chicago, USA). Quantitative variables were summarised in means with standard deviation or median with interquartile range and categorical variables were summarised as percentages and proportions. Informed consent was taken from the study participants, confidentiality was maintained during all stages of the study and the data collected was used for the purpose of this study only.

Results

The use of face masks had been strongly recommended in national and international public health guidelines during respiratory outbreaks. It was emphasized that mask use should be a part of the "COVID-19 Appropriate Behaviour" protocol, particularly for the elderly and individuals with comorbidities. This strategy was enforced in public places during the COVID pandemic by the health system and the local self-government. Even in the post-pandemic phase, mask use is recommended in crowded, poorly ventilated settings or during seasonal surges of respiratory illnesses.

In this context, a total of 366 persons aged 60 years and above who visited the primary health centre in Ambalappuzha south panchayat were studied, of whom 206 (56.3%) were women. The mean age (SD) of the study population was 67.28 (5.96) years with the age ranging from 60 years to 87 years. Majority of the study population 250 (68.3%) belonged to 60 to 69 year age group. A majority 166 (45.4%) had a level of education up to high school and 119 (32.5%) were employed at present. Among those employed at present, majority 56 (15.3%) were teachers and employed in office work, 52(14.2%) were employed in daily wage jobs and 11(3%) were employed as per National Rural Employment Guarantee (NREG) scheme. Majority of the study population 308 (84.2%) belonged to Ambalappuzha South Panchayat, while the rest belonged to the other coastal panchayats nearby. (Table:1)

Around 250 (68.3%) of the elderly had comorbidities, 19 (5.2%) gave history of COVID-19 and 38(10.4%) reported that other family members had COVID-19. A majority of the elderly 261 (71.3%) had taken COVID vaccination. (Table: 2)

Table 1: Demographic profile of the study population (n=366)

Characteristics		Study population n (%)
Age group	60- 69 years	250 (68.3 %)
	70-79 years	104 (28.4 %)
	≥80 years	12 (3.3 %)
Gender	Male	160 (43.7 %)
	Female	206 (56.3 %)
Level of education	No formal schooling	13 (3.6%)
	Primary school	125 (34.2%)
	High school	166 (45.4%)
	Pre degree	14 (3.8%)
	Degree/ Diploma	48 (13.1%)
Present employment status	Employed	119 (32.5%)
	Not employed	247 (67.5%)
Occupation	No occupation	131 (35.8%)
	Homemaker	84 (23%)
	Teacher, office work	56 (15.3%)
	NREG work	11 (3%)
	Daily wage employee	52 (14.2%)
	Retired from service	32 (8.7 %)

Table 2: Clinical characteristics of the study population (n=366)

Characteristics		n (%)
Presence of comorbidities	Yes	250 (68.3%)
	No	116 (31.7%)
H/o COVID-19	No	347 (94.8%)
	Yes	19 (5.2%)
H/o COVID-19 in other family members	Yes	38 (10.4%)
	No	328 (89.6%)
COVID vaccination status	Taken	261 (71.3%)
	Not taken	105 (28.7%)

The knowledge regarding the use of mask and the disease COVID-19 was good among the study participants. A total of 304 (83.1%) of the elderly had knowledge about COVID-19 and 346 (94.5%) knew about the airborne mode of spread of the disease. A majority 349 (95.4%) of them knew that cloth masks had to be washed with soap and water after each use, 363 (98.9%) knew that the mask needs to cover the nose mouth and chin for proper protection, 364 (99.5%) were aware that the mask should not be used once it is wet and 364 (99.5%) knew that one's mask should not be used by others. Half of the study participants 189 (51.6%) were aware that triple layer mask cannot be reused. (Table: 3)

Table 3: Knowledge and Perceptions among elderly about the use of mask (n=366)

Sl. No.	Knowledge Items	Correct/Positive Response n (%)	Incorrect/ Negative Response n (%)
1	Knows about the disease COVID	304 (83.1%)	62 (16.9%)
2	Knows about the airborne mode of spread of COVID	346 (94.5%)	20 (5.4%)
3	Knows how to disinfect cloth mask	349 (95.4%)	17 (4.7%)
4	Knows that triple layer mask cannot be reused	189 (51.6%)	177 (48.3%)
5	Knows that correct use of mask is to cover nose, mouth and chin	363 (98.9%)	4 (0.7%)
6	Knows that mask should not be used once it is wet	364 (99.5%)	2 (0.5%)
7	Knows that one's mask should not be used by others	364 (99.5%)	2 (0.5%)
	Perception items		
1	Believes that mask alone cannot protect against COVID	295 (80.6%)	71 (19.4%)
2	Feels that mask and social distancing is essential for prevention	358 (97.8%)	8 (2.2%)
3	Believes mask prevents other airborne infections	346 (94.5%)	20 (5.5%)
4	Feels that improper disposal of masks promotes spread of infection	278 (76%)	88 (24%)
5	Believes it is inappropriate to touch the outer surface of the mask	243 (66.4%)	123 (33.6%)
6	Feels that mask use reduces the spread of other air borne infections	355 (97%)	11 (3%)
7	Believes that wet mask should not be used	353 (96.4%)	13 (3.5%)
8	Believes that one must wash hands after touching mask	262 (71.6%)	104 (28.4%)
9	Believes one should not remove or loosen the mask while talking	316 (86.3%)	50 (13.7%)
10	Believes it is needed to wear mask even after COVID vaccination	303 (82.8%)	63 (17.2%)

The questions on perceptions and attitude towards the use of mask showed that majority 295 (80.6%) of them believed that mask alone cannot offer complete protection against COVID-19 and majority 358 (97.8%) felt that wearing mask and practising social distancing is essential for protection. Most of the study participants 346 (94.5%) are of the opinion that mask prevents other airborne infections too, 278 (76%) feel that improper disposal of mask can lead to spread of infection. Among the 366 study participants, 243 (66.4%) believes one should not touch the outer surface of the mask, 353 (96.4%) feel that wet mask should not be used, 262 (71.6%) believed that one must wash hands after touching the mask. A major proportion 316 (86.3%) were of the opinion that the mask should not be removed while talking and 303

(82.8%) believed that it is necessary to wear the mask even after COVID vaccination. (Fig 2)

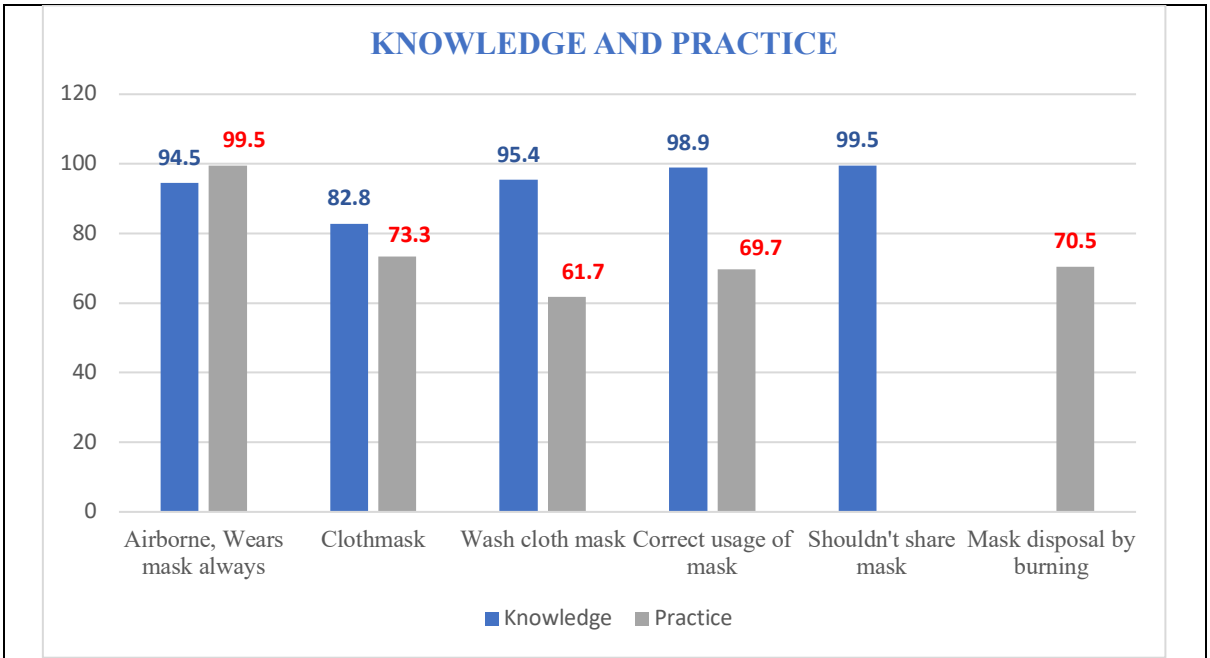

Figure 1: Comparison of knowledge and practice regarding mask usage (n=366)

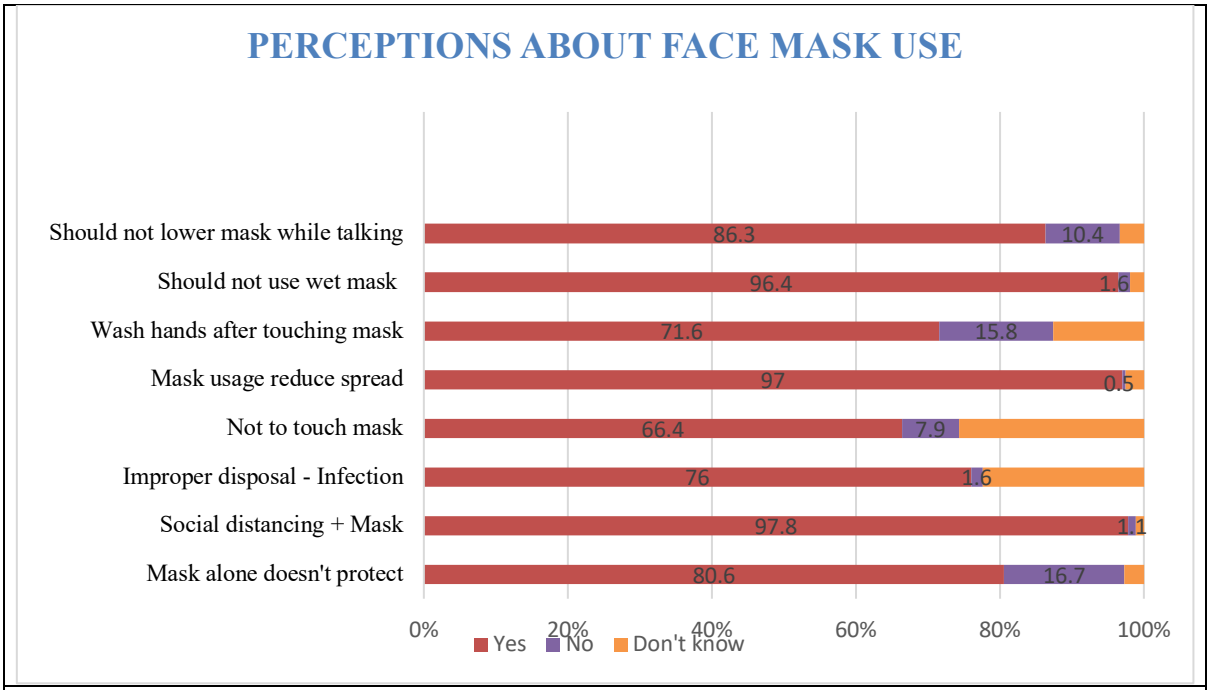

Figure 2: Perceptions of elderly about mask usage

The questions on practice assessed the study participants habits about the use of mask and it was found that majority 364 (99.5%) of them used mask regularly while going outside homes, 303 (82.8%) used cloth mask regularly, 226 (61.7%) usually washed their cloth mask after each use and 225 (69.7%) were in the habit of washing hands after touching their masks. Majority 258 (70.5%) followed the practice of burning the triple layer mask after use and majority 142 (38.8%) used their triple layer mask for one full day before disposing it. (Table:4)

Table 4: Practice of mask use among the elderly. (n=366)

Sl. No.	Items Assessed	n (%)
1	**Practice of wearing mask outside home always**	
	Yes	364 (99.5%)
	No	2 (0.5%)
2	**The type of mask used**	
	Cloth mask	303 (82.8%)
	Triple layer surgical mask	45 (12.3%)
	N-95 mask	18 (4.9%)
3	**Frequency of washing cloth mask**	
	After each use	226 (61.7%)
	Daily	127 (34.7%)
	On alternate days	13 (3.6%)
4	**Practice of washing hands after touching one's mask**	
	Always	255 (69.7%)
	Once in a while	105 (28.7%)
	Never	6 (1.6%)
5	**Method of disposal of triple layer mask practised in their homes**	
	Burning	258 (70.5%)
	Burying	18 (4.9%)
	Other ways	90 (8.4%)
6	**Duration of using a triple layer mask**	
	6 hours	95 (26%)
	One day	142 (38.8%)
	More than a day	25 (6.8%)
	Difficult to say	104 (28.4%)

To understand the difference in knowledge, perceptions and practice about the use of mask among the elderly, the study population was categorised into persons aged 60 to 65 years and persons more than 65 years. There was no significant difference in the level of knowledge regarding the use of mask in the two groups. In the domain of perceptions regarding the use of mask, there was significant difference in certain areas between the two groups. Among the elderly less than 65 years, 80 .3% believed that improper disposal of mask can lead to spread of infection as compared with 71.3% in the group above 65 years and this difference was statistically significant. (p value-0.045, OR: 1.639, 95% CI: 1.009-2.661) There was statistically significant difference in the perception that it is inappropriate to touch the outer surface of masks with 72.9% of elderly <65 years agreeing to it as compared with 59.6% in the age group > 65 years. (p value- 0.007, OR: 1.825. 95% CI: 1.176-2.831) It was found that 77.1% of elderly <65 years believed that handwashing is essential after touching mask as compared with 65.7% among elderly in the age group >65 years which was found to be statistically significant. (p value-0.016, OR:1.758, 95% CI: 1.110-2.785) The fact that mask should not be removed while talking was agreed by 89.9% of elderly < 65 years as compared with 82.6% of elderly > 65 years, which was statistically significant. (p value- 0.042, OR: 1.876, 95% CI: 1.017-3.466) In the domain of practice of use of mask, hand hygiene practices after touching mask was practised by 74.5% of elderly <65 years as compared with 64.6% of elderly >65 years which was statistically significant. (p value-0.040, OR: 1,598, 95% CI: 1.020-2.504) The practice of changing triple layer mask after 6 hours was practised by 36.2% of elderly <65 years as compared with 15.2% of elderly >65 years, which was statistically significant. (p value <0.001, OR: 3.169. 95% CI: 1.910-5.257) (Table: 5)

Table 5: Perceptions, Knowledge and Practice of mask usage among the elderly by age (n=366)

Item Assessed	≤ 65 years (n=188)	>65 years (n=178)	χ^2 value	P value	OR (95% CI)
Domain – Perception					
Improper disposal of mask can lead to spread of infection	151 (80.3%)	127 (71.3%)	4.029	**0.045**	**1.639 (95%CI: 1.009-2.661)**
It is inappropriate to touch the outer surface of the mask	137 (72.9%)	106 (59.6%)	7.272	**0.007**	**1.825 (95%CI: 1.176-2.831)**
Wearing mask can prevent other airborne infections	185 (98.4%)	170 (95.5%)	2.635	0.105	2.902 (95%CI 0.757-11.118)
Hand washing is essential after touching mask	145 (77.1%)	117 (65.7%)	5.839	**0.016**	**1.758 (95%CI: 1.110-2.785)**
Mask should not be removed while talking	169 (89.9%)	147 (82.6%)	4.142	**0.042**	**1.876 (95%CI: 1.017-3.466)**
Wearing mask alone doesnot protect against COVID	156 (83%)	149 (83.79%)	0.035	0.852	0.949 (95%CI 0.547-1.645)
Mask has to be worn even after taking COVID vaccination	160 (85.1%)	143 (80.3%)	1.459	0.227	1.399 (95%CI 0.810-2.414)
Domain -knowledge					
Aware of correct mode of transmission of COVID	181 (96.3%)	165 (92.7%)	2.268	0.132	2.037 (95%CI: 0.794-5.230)
Aware that triple layer should not be reused	96 (51.1%)	93 (52.2%)	0.051	0.821	0.954 (95%CI: 0.633-1.437)
Knows that mask should cover nose, mouth and chin	187 (99.5%)	175 (98.3%)	1.125	0.289	3.206 (95%CI: 0.330-31.108)
Knows that wet mask should not be used	186 (98.9%)	178 (100%)	1.904	0.168	
Domain- Practice					
Practice of washing cloth mask after each use	117 (62.2%)	109 (61.2%)	0.039	0.844	1.043 (95%CI: 0.684-1.590)
Hand hygiene practice after touching mask	140 (74.5%)	115 (64.6%)	4.208	**0.040**	**1.598 (95% CI: 1.020-2.504)**
Practice of burning triple layer mask	139 (73.9%)	119 (66.9%)	2.205	0.138	1.406 (95%CI: 0.896-2.208)
Practice of changing triple layer mask after 6 hours	68 (36.2%)	27 (15.2%)	20.983	**<0.001**	**3.169 (95% CI 1.910-5.257)**

Discussion

This study aimed to explore the current perceptions, attitudes, and practices related to mask use among the elderly which highlights an interplay of knowledge, behaviour and practices with factors like motivation, social norms, perceived risks and barriers significantly influencing adherence to mask-wearing.

The COVID pandemic has imparted many lessons during since its inception in December 2019 including the importance of wearing masks. The general population especially the elderly suffered a lot due to COVID-19 and its consequences such as loss of life, economic loss, and loss of positive mental health in addition to the exceptional fear and anxiety in the community. The elderly population revolves around social connection more compared to younger generations and they were deprived of this socialism due to the sudden pandemic and subsequent lockdown. Elderly are more vulnerable to infections due to senility, and various pre-existing comorbidities such as diabetes, hypertension, cardiovascular disease, and chronic kidney disease. Recoveries in the elderly usually take time and complications arise in the presence of comorbidities. They also have to deal with mental health problems such as anxiety and depression due to their isolation, the burden of household costs, and periodic medical checkups.

The national guidelines have consistently emphasized the use of face masks as a critical component of preventive measures, particularly for vulnerable populations such as the elderly. It clearly states that wearing masks in public places remains advisable to reduce the risk of transmission, especially during periods of seasonal respiratory infections. In line with global guidance from the World Health Organization (WHO), Indian advisories reiterate that high-risk groups, including senior citizens, should maintain preventive behaviours such as mask-wearing to safeguard against both COVID-19 and other airborne diseases. These recommendations aim not only to protect the

individual wearer but also to reduce community spread and the burden on healthcare system.

The present study included majority of elderly in the age group 60 -69 years, majority with school education and 67.5% not employed at present. The census 2011 showed that about 56% of India's elderly were illiterate, and around 65% were economically dependent particularly pronounced among women and rural elderly. [10] This study revealed 68.3% of the elderly had co morbidities, similar to a study of elderly patients admitted to hospital found that 85.2% had preexisting comorbidities, particularly hypertension (44.5%) and diabetes (34.8%) [11] The COVID vaccination coverage for two doses was 71.3% which is less than the coverage in a study done in North India. [12]

Studies assessing older adults showed that most were aware of mask use and other preventive behaviours, attributed to aggressive information campaigns. In a hospital-based survey of elderly (≥60 years) in rural India, awareness of key COVID-19 facts was high with 79.8% having knowledge on the mode of spread, 97.5% were aware of preventive measures including mask use but only 57.2% covered both mouth and nose correctly with masks. [13] In the present study also, majority had good knowledge about the mode of spread, the correct use of the mask and other aspects like not using wet masks and not touching the outer surface of the mask. Other studies also have shown that elderly had high general knowledge about COVID and prevention measures including masks similar to the findings of high awareness of correct mask use (98.9%) and other aspects in this study. [14] There are multiple studies showing widespread awareness of mask use and its importance among elderly and general Indian populations. [14,15,16]

The importance of wearing mask lies in the fact that it reduces the spread of respiratory droplets containing infectious viral particles, including from infected persons before they develop symptoms. [17] Wearing mask also makes people feel they can play a role in contributing to stopping spread of the virus and encouraging concurrent transmission prevention behaviours such as hand hygiene and not touching the eyes, nose and mouth. [17] In the present study also the elderly were aware that wearing masks prevents transmission of other respiratory illnesses like tuberculosis and influenza thereby reducing the burden of these diseases in the community.

The study revealed high awareness and favorable perceptions regarding mask use among the elderly. Most participants believed that masks and social distancing together are essential to prevent COVID-19 (97.8%). This aligns with evidence showing that layered interventions—masking, distancing, and ventilation-are more effective than single strategies alone in controlling respiratory virus spread. [18–20] More than three-fourths of respondents recognized that improper disposal could promote infection spread (76%). This is consistent with environmental health studies showing that discarded masks may pose contamination risks. [21,22] However, evidence suggests fomite transmission of SARS-CoV-2 is relatively low compared to airborne routes, indicating that the infection risk from disposal may be less than perceived. [23,24] Similarly, the awareness that touching the outer surface of the mask is inappropriate (66.4%) and that wet masks should not be used (96.4%) reflects WHO recommendations. [3] The perception that masks should be worn even after COVID vaccination (82.8%) aligns with public health advisories recommending continued use during periods of community transmission. [25]

The present study demonstrated that nearly all participants (99.5%) reported wearing masks outside their homes, reflecting very high compliance. This is in line with findings from other studies where mask adherence was reported to be high during peak COVID-19 waves after intensive public health campaigns. [26] The type of mask used in our sample was predominantly cloth masks (82.8%), followed by surgical masks (12.3%) and N95 respirators (4.9%). This practice agrees with surveys from India where cloth masks were favored due to affordability, accessibility, and reusability. [27] Regarding hygiene, most participants washed their cloth masks after each use (61.7%) or daily (34.7%). This finding is in agreement with WHO and CDC recommendations that masks should be washed daily. [3] Hand hygiene after touching masks was reported as always practiced by 69.7%, while 28.7% admitted doing so only occasionally which is supported by other studies showing good awareness but suboptimal adherence in practice. [28] For disposal practices, burning was most common (70.5%), followed by burying (4.9%). This aligns with rural household practices observed in Kerala and Assam, where open burning was reported as the primary disposal method. However, experts caution that burning masks in uncontrolled conditions may release toxic fumes, and improper disposal contributes to environmental pollution. [21] With respect to duration of surgical mask use, 38.8% used for one day, while 26% limited use to six hours. These findings correspond with recommendations for single-day use. [3]

Participants younger than 65 years demonstrated significantly stronger perceptions than those older than 65 in several key areas. The age disparities observed in certain mask-related hygiene and disposal perceptions-favouring younger participants-may primarily reflect differences in health literacy, exposure to health campaigns, or capacity to change long-standing habits which is

more prominent in the younger elderly. The study also assessed practical mask-related behaviours across age groups. The differences observed include hand hygiene after touching masks was significantly higher in the younger group (74.5% vs. 64.6%, OR=1.598; P=0.040), changing triple-layer masks after 6 hours was also more common in the younger group (36.2% vs. 15.2%, OR=3.169; P<0.001) and burning of used triple-layer masks was practiced more by younger participants, though the difference did not reach statistical significance (73.9% vs. 66.9%; P=0.138). Studies have reported that younger adults were more likely to adhere to hand hygiene recommendations compared to older counterparts, partly due to greater exposure to digital campaigns and social media messaging. [16,29] The tendency of younger adults to burn disposable masks more frequently reflects greater alignment with recommended biomedical waste disposal practices. This is consistent with global literature showing that while perceptions may not differ significantly across age, practical execution is often more robust among younger adults, potentially due to better health literacy, mobility, and responsiveness to digital health communication.

When implementing mask policies for the public, decisionmakers should clearly communicate the purpose of wearing a mask, including when, where, how and what type of mask should be worn; explain what wearing a mask may achieve and what it will not achieve; and communicate clearly that this is one part of a package of measures along with hand hygiene, physical distancing, respiratory etiquette, adequate ventilation in indoor settings and other measures that are all necessary and all reinforce each other; inform/train people on when and how to use masks appropriately and safely with focus on waste management, sustainability, social and psychological acceptance.

Gaining insight into the factors that influence mask use in this age group can guide tailored health education, promote sustained preventive habits, and support policymaking aimed at safeguarding high-risk populations

Conclusion

The study highlights high levels of knowledge, positive perceptions, and generally good practices regarding mask use among elderly individuals in the study population. Awareness about the importance of mask use, proper handling, and hygiene was notably high, particularly regarding covering the nose, mouth, and chin, not using wet masks, and not sharing masks with others.

Age-stratified analysis revealed that younger elderly (<65 years) demonstrated significantly better adherence to certain preventive behaviours, including hand hygiene after touching masks and timely replacement of triple-layer masks, as well as greater awareness of proper mask disposal. Older participants (≥65 years) showed slightly lower compliance with these nuanced practices, although overall perceptions and basic mask-use behaviours were similar across age groups.

The study underscores the importance of targeted educational interventions aimed at reinforcing proper mask handling, disposal, and replacement practices, especially among the older segment of the elderly population. Public health strategies should continue to emphasize mask use alongside complementary measures such as hand hygiene and social distancing, to mitigate the risk of COVID-19 and other airborne infections among older adults.

References

1. Health C for D and R. N95 Respirators, Surgical Masks, Face Masks, and Barrier Face Coverings. FDA [Internet]. 2024 Oct 21 [cited 2025 Jul 23]; Available from: https://www.fda.gov/medical-devices/personal-protective-equipment-infection-control/n95-respirators-surgical-masks-face-masks-and-barrier-face-coverings
2. Coronavirus disease (COVID-19): Masks [Internet]. [Cited 2025 Jul 23]. Available from: https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19-masks
3. WHO-2019-nCov-IPC_Masks-2020.5-eng (1).pdf.
4. Lekamwasam R, Lekamwasam S. Effects of COVID-19 pandemic on health and wellbeing of older people: a comprehensive review. Ann Geriatr Med Res 2020;24(3):166–72.
5. Nag K, Sen S. Challenges and opportunities of elderly care during COVID-19 Era. J Compr Health 2025;13(1):7–11.
6. Chathukulam J, Tharamangalam J. The Kerala model in the time of COVID19: Rethinking state, society and democracy. World Dev 2021;137:105207.
7. Greenhalgh T, MacIntyre CR, Baker MG, et al. Masks and respirators for prevention of respiratory infections: a state of the science review. Clinical Microbiology Reviews. 2024;37(2):e00124-23.
8. Howard J, Huang A, Li Z, et al. An evidence review of face masks against COVID-19. Proceedings of the National Academy of Sciences 2021;118(4):e2014564118.
9. Wang Y, Tian H, Zhang L, et al. Reduction of secondary transmission of SARS-CoV-2 in households by face mask use, disinfection and social distancing: a cohort study in Beijing, China. BMJ Glob Health 2020;5(5):e002794.
10. Malik C, Khanna S, Jain Y, et al. Geriatric population in India: Demography,

vulnerabilities, and healthcare challenges. J Family Med Prim Care 2021;10(1):72–6.
11. Poddar A, Selvam S, Saroch A, et al. Medical emergencies and comorbidities in the elderly and very elderly patients in North India. International Journal of Noncommunicable Diseases 2023;8(2):75.
12. Senjam SS, Manna S, Goel G, et al. Vaccination coverage against COVID-19 among rural population in Haryana, India: A cross-sectional study. PLOS One 2024;19(3):e0299564.
13. Soares RB, Zacharias P. Perceptions and practices of COVID-19 among the elderly in rural India: A cross-sectional study during the pandemic lockdown. The Journal of Community Health Management 2025;9(2):92–6.
14. Goyal LK, Sharma DK, Wadhwani D, et al. Knowledge, attitudes, and practices among older adults of urban rajasthan toward COVID-19: a cross-sectional survey. Journal of the Indian Academy of Geriatrics 2021;17(2):67.
15. Tang H, Wang J, Zhang Y, et al. Knowledge and behaviour of community residents' face mask-wearing during the COVID-19 pandemic: a cross-sectional study in Shanghai, China. 2022 Feb 1 [cited 2025 Jul 19]; Available from: https://bmjopen.bmj.com/content/12/2/e052497.abstract
16. Nagarajan R, Rubeshkumar P, Jagadeesan M, et al. Knowledge, attitude, and practice towards face mask use among residents of Greater Chennai Corporation, India, March 2021. Front Public Health [Internet]. 2022 Jul 28 [cited 2025 Aug 22]; 10. Available from: https://www.frontiersin.org/journals/public-health/articles/10.3389/fpubh.2022.938642/full
17. Baier M, Knobloch MJ, Osman F, et al. The effectiveness of mask-wearing on respiratory illness transmission in community settings: a rapid review. Disaster Med Public Health Prep 2022;17:e96.
18. Näher AF, Schulte-Althoff M, Kopka M, et al. Effects of Face Mask Mandates on COVID-19 Transmission in 51 Countries: Retrospective Event Study. JMIR Public Health and Surveillance 2024;10(1):e49307.
19. Bazant MZ, Bush JWM. A guideline to limit indoor airborne transmission of COVID-19. Proc Natl Acad Sci U S A 2021;118(17):e2018995118.
20. Catching A, Capponi S, Yeh MT, et al. Examining the interplay between face mask usage, asymptomatic transmission, and social distancing on the spread of COVID-19. Sci Rep 2021;11(1):15998.
21. Selvaranjan K, Navaratnam S, Rajeev P, et al. Environmental challenges induced by extensive use of face masks during COVID-19: a review and potential solutions. Environ Chall (Amst) 2021:100039.
22. Surgical face masks as a potential source for microplastic pollution in the COVID-19 scenario. Marine Pollution Bulletin 2020;159:111517.
23. Goldman E. Exaggerated risk of transmission of COVID-19 by fomites. Lancet Infect Dis. 2020;20(8):892-3.
24. Yang S, Cao L, Li K, et al. Evidence for fomite transmission of SARS-CoV-2 Omicron variant in a mouse model. mLife. 2025;4(3):332.
25. Venkataraman R, Yadav U, Shrestha Y, Narayanaswamy S, Basavaraju SHP. Knowledge and attitudes toward the COVID-19 vaccine among India's general rural population. Vacunas 2023;24(2):128–34.
26. Abaluck J, Kwong LH, Styczynski A, et al. Impact of community masking on COVID-19: a cluster-randomized trial in Bangladesh. Science 2022;375(6577):eabi9069.
27. Easwaran V, Alshahrani S, Mantargi MJS, et al. Examining factors influencing public knowledge and practice of proper face mask usage during the COVID-19 pandemic: a cross-sectional study. Peer J 2024;12:e16889.
28. Sim SW, Moey KSP, Tan NC. The use of facemasks to prevent respiratory infection: a literature review in the context of the Health Belief Model. Singapore Med J. 2014;55(3):160-7.
29. Zhong BL, Luo W, Li HM, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. Int J Biol Sci 2020;16(10):1745-52.