ORIGINAL RESEARCH

A Study to assess the Perceived Benefits and Barriers of Face Mask Usage during COVID-19 Pandemic among Common Public

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Abstract

Background: The coronavirus disease-2019 (COVID-19) pandemic is continuing till today. In the absence of standard vaccines or medicines to stop COVID-19, one of the best possible methods to slow down the spread of the virus is to wear a face mask, along with hand washing and practicing physical distancing. Masking up is a cheap and useful way of limiting the transmission of the disease. The COVID-19 infection spreads from person to person through respiratory droplets produced when an infected person coughs, sneezes, or talks. Masks provide an effortless fence to help prevent these respiratory droplets from spreading in the air.

Aim: To assess the perceived uses and barriers of face mask wearing during COVID-19 pandemic among common public.

Research methodology: The investigator selected a quantitative approach, descriptive research design. The study was conducted at a selected area in Chennai, Tamil Nadu, India. The sample size of the study was 100 and non-probability convenient sampling technique was used to select the samples. Brief introduction about the self and study was given and confidentially of the response was assured and willingness to participate in the study was obtained. A tool consisted of a structured questionnaire to assess the demographic variables of the participants. A structured 5-point rating scale on benefits and barriers of face mask wearing was used.

Results: Findings depict that 91% of the participants had very high perceived benefits, 64% of the participants had high perceived barriers.

Conclusion: A face mask could be very helpful in minimizing COVID-19 transmission, especially if it is widely used and has high compliance. Although the study's participants were aware of the advantages of face mask use, they may not have been as willing to cooperate due to its inconveniences.

Keywords: Barriers, Benefits, Coronavirus disease-2019, Face mask, Pandemic, Perceived.

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Introduction

In reaction to the appearance of a novel coronavirus in Wuhan, China, on January 30, 2020, the World Health Organization (WHO) declared a Public Health Emergency of International Concern (PHEIC). The COVID-19 epidemic was deemed a pandemic by WHO on March 11, 2020. Nearly 500,000 global fatalities had been connected to COVID-19 by the end of June 2020. When this outbreak will end is uncertain. In response to this outbreak, the general public sought advice from experts on a variety of topics, including whether wearing face coverings, especially medical-grade ones (such as masks, goggles, or similar items), might lower the risk of contracting or spreading disease, especially in private and public settings.[1] Since COVID-19 spreads mostly among persons who are in close contact with one another, it is especially vital to wear a mask when indoors with people who do not live together and when unable to stay at least 6 ft away. A properly fitted face mask prevents the spread of airborne virus droplets released while coughing or sneezing, preventing them from contaminating the workplace or penetrating surrounding people's respiratory systems.[2] In addition to protecting against airborne allergens and particles, wearing a mask minimizes the transfer of respiratory infections from hands to nose contact. When both diseased individual and the contact wear masks, the transmission is minimized, but compliance in the latter case is frequently low.

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Several public health and hygiene initiatives have been launched; arguably the most obvious is the use of face masks. Medical studies on the use of face masks as personal protective equipment (PPE) against the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) were very cautiously interpreted.[3] As part of a comprehensive strategy to stop the spread of SARS-CoV-2, the WHO has updated its recommendations to advise that Governments must encourage its people to wear masks in specific situations and settings to effectively prevent COVID-19 transmission in areas of community transmission.[4] Face mask use may lower the incidence of primary respiratory infection by 6–15%.[5]

Aim

Most COVID-19 transmission occurs by respiratory droplets. When someone coughs, sneezes, talks, shouts, or sings, respiratory droplets are released into the air. People close to them may then breathe these droplets in or have them land in their mouths or nostrils. Masks are a simple barrier that can assist stop respiratory droplets from contaminating others. Studies demonstrate that when worn across the nose and mouth, masks lessen the discharge of droplets.[6]

The physiological implications of wearing masks for extended periods, as well as its unique considerations, such as wearing masks when exercising, and worries for people who already have chronic ailments. Wearing a mask does not seem to have any negative physiological effects in healthy populations, and the benefits of doing so seem to exceed the known drawbacks because they could save lives. There seem to be very mild physiological side effects of wearing a mask.[7]

A major reason for people to choose to wear a mask was to protect other people, particularly vulnerable groups and individuals. Self-preservation, accountability, the desire for control, and professional manner were additional driving forces. Barriers included perceived identity and autonomy conflicts, uncertainty or misinformation, poorly reported susceptibility to COVID-19, and physical and social discomfort.[8] Face masks can reduce overall infections and deaths, even with a modest protective impact, and they can postpone the epidemic's peak.[9] According to research findings, a barrier to social engagement has a substantial impact on how the flu experience and perceived obstacles interact ($p = 0.003$). The participants thought that wearing a mask might make it more difficult for others to understand their emotions. There were significant differences in perceived benefits ($p = 0.028$), perceived hazards ($p = 0.003$), and social value ($p = 0.021$) with regard to association between mask-wearing experience and the perceived barriers.[10]

Throughout the pandemic, particularly after the lockdown restrictions were released, "wearing a face mask" compliance increased.[11] Numerous studies have reported a range of discomforts related to face mask use, including lack of effectiveness as well as physical, communicative, and emotional discomforts.[12–20] In addition to being uncomfortable, wearing a mask for an extended amount of time in a warm climate can hinder verbal and nonverbal communication.

Objectives

- To assess the perceived benefits and barriers of face mask usage during the COVID-19 pandemic among common public.
- To associate the perceived benefits and barriers of face mask usage during the COVID-19 pandemic among the common public with their selected demographic variables.

Research Methodology

The investigator used a quantitative approach, a non-experimental descriptive research design. The sample size of the study was 100 and non-probability convenient sampling technique was used to select the samples. A brief introduction about the self and study was given and confidentially of the response was assured and willingness to participate in the study was obtained. Ethical principles were followed throughout the study. Participants who were interested to participate are asked to fill out the form. The confidentiality and anonymity of information about the study participants were assured and maintained. Adults aged from 18 years to 60 years were included. A self-rating structured questionnaire was used to assess the demographic variables of the participants. A structured rating scale on benefits (consisting of 10 items) and barriers (with 15 items) of face mask wearing used to assess the perceived benefits and barriers of face mask wearing among the general public. Each item is measured on a 5-point rating scale. The reliability and validity of the tool were assessed by the researchers. The collected data were analyzed using descriptive and inferential statistics; $p < 0.05$ level was considered significant for the study.

Results

Demographic Variables

Frequency and percentage distribution of demographic variables of the common public showed that the age of the participants ranged from 18 years to 60 years. With respect the gender, 42 (42%) were males and 58 (58%) were females. With respect the education, 9% had a professional degree, 14% had a graduate or postgraduation, 13% had an intermediate or post high school diploma, 28% had high school certificate, 27% middle school certificate, and 8% completed primary school, and 1% were illiterate. Occupation of the participants was, 12% were professionals, 18% were semi-professionals, 7% were shop owners, 16% were skilled workers, 9% were semi-skilled workers, 5% were unskilled workers, and 33% were unemployed. Regarding the habit of face mask wearing, 22% do not wear face mask regularly, 78% had worn face mask. With regard to the history of COVID-19 infection, 1% were affected with COVID-19 infection and 99% of them were not affected with COVID-19 infection. Presence of comorbidity, 15% had diabetes, 12% had hypertension, 7% had chronic obstructive pulmonary disease (COPD)/asthma, and 66% had other illnesses.

Perceived Benefits and Barriers of Face Mask Usage

Figure 1 highlights the benefits of face mask wearing; 91 (91%) had very high perceived benefits, 9 (9%) had high perceived benefits, and none 0 (0%) had low perceived benefits.

Table 1 depicts the frequency and percentage distribution of barriers to face mask wearing. About the barriers to face mask wearing, 33 (33%) had very high perceived barriers, 64 (64%) had high perceived barriers, and 3 (3%) low perceived barriers.

Table 2 evaluation of the items-wise perceived advantages of face mask use indicates 82% firmly believe that wearing a face mask lowers the risk of contracting the COVID-19 virus, 78% agree that

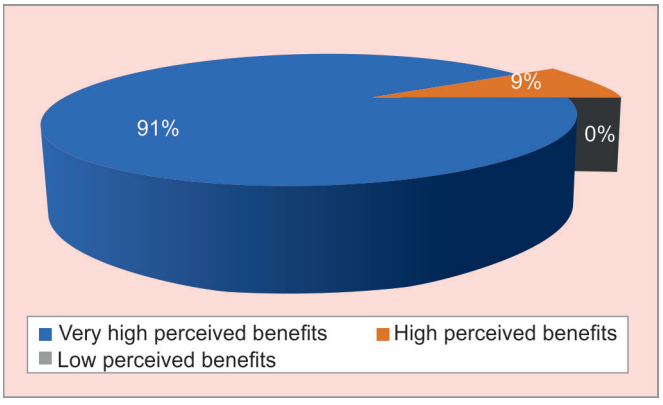

Fig. 1: Percentage distribution of benefits of facemask wearing

the virus release during speaking is reduced, and 4 (4%) disagree that wearing a face mask in areas where sufficient distance is not feasible reduces the spread of infection.

Most of the study participants either strongly agree or agree that face mask wearing has lots of benefits in preventing COVID-19 infections.

Table 3 assessment of items wise perceived barriers of face mask wearing had shown that 82 (82%) strongly agree that the face mask reduces the chances of getting COVID-19 virus infection, 78 (78%) agree that the virus release during speaking is reduced, and 4 (4%) disagree that wearing a face mask in areas where sufficient distance is not feasible reduces the spread of infection. Most of the study participants either strongly agree or agree that face mask wearing has lots of benefits in preventing COVID-19 infections.

Among the study samples, 24 (24%) strongly agree that wearing a face mask reduces the ability to communicate, 77 (77%) agree that people criticize them for being in public while ill, and 52 (52%) disagree that makes exhaled air to go into eyes, 6 (6%) strongly disagree that face mask makes exhaled air to go into eyes.

Table 4 shows the correlation of benefits and barriers of face mask wearing among the general public. Concerning the benefits of face mask wearing, the mean score was 30.76 ± 3.041 and for the perceived barriers, the mean score was 45.37 ± 23.877. There was a positive weak correlation existing between perceived benefits and barriers of face mask wearing which is not significant at $p < 0.05$.

Association of the Level of perceived Benefits and Barriers of Face Mask Usage among the Common Public with Their selected Demographic Variables

Association of the level of perceived benefits of face mask usage with the selected demographic variables of the common public. The demographic variables habit of face mask-wearing ($X^2 = 13.3315$, $p = 0.001$) and the history of COVID-19 infection ($X^2 = 9.0908$, $p = 0.01$) shown statistically significant association with the benefits of face mask wearing at $p < 0.01$ level. The other demographic variables had not shown any statistical association with the level of perceived benefits of face mask wearing.

The demographic variable "habit of wearing face mask" had shown statistically significant association with the level of perceived barriers face mask wearing at ($X^2 = 8.8497$) $p < 0.05$ level. Other demographic variables had not shown statistically significant association with perceived barriers to face mask wearing at $p < 0.05$ level.

Table 1: Frequency and percentage distribution of barriers of facemask wearing

Barriers	*Frequency*	*%*
Very high perceived barriers	33	33
High perceived barriers	64	64
Low perceived barriers	3	3

Discussion

The effectiveness of community mask usage to prevent the spread of respiratory diseases was debatable prior to the COVID-19 pandemic since there was insufficient reliable data to support their use. The scientific evidence has grown during the pandemic. Presently, convincing results show that community mask use is an effective nonpharmacologic intervention to stop the spread of this illness, particularly as source control to stop dissemination from sick people but also as protection to mask wearing people's exposure to infection.[20] As part of PPE and as a public health strategy to stop the COVID-19 pandemic, face masks should be worn.

Description of Demographic Variables of the Study Participants

In terms of age, 10% of the respondents were between the ages of 18 and 20 years, 22% were between the ages of 20 and 30 years, 19% were between the ages of 31 and 40 years, 23% were between the ages of 41 and 50 years, 22% were between the ages of 51 and 60 years, and 4% were over the age of 60. With respect the gender, 42 (42%) are males and 58 (58%) are females. Regarding education, 9 (9%) had a professional degree, 14 (14%) had a graduate or post graduate degree, 13 (13%) had an intermediate or post high school diploma, 28 (28%) had a high school diploma, 27 (27%) had a middle school diploma, 8 (8%) had finished primary school, and 1 (1%) was illiterate. When looking at the occupation, 12 (12%) of those employed were professionals, 18 (18%) were semi-professionals,

Table 2: Assessment of items wise perceived benefits of facemask wearing ($N = 100$)

Items	*Statements*	*Strongly agree (4)*		*Agree (3)*		*Disagree (2)*	
A	*Perceived benefits*	*(N)*	*%*	*(N)*	*%*	*(N)*	*%*
1	Wearing face mask reduces the chances of getting COVID-19 virus infection	82	82	18	18	–	–
2	Cheap and easy method to prevent spread of infection	50	50	48	48	2	2
3	People without symptoms also will be a source of infections	23	23	76	76	1	1
4	Virus release during speaking is reduced	22	22	78	78	–	–
5	Simple barrier to prevent our respiratory droplets from reaching others	34	34	64	64	2	2
6	Avoids propelling droplets during coughing and sneezing	41	41	58	58	1	1
7	Provides a sense of security	31	31	67	67	2	2
8	Wearing a face mask in areas where sufficient distance is not feasible reduces the spread of infection	38	38	58	58	4	4
9	Provides a sense of social responsibility	38	38	59	59	3	3
10	Prevents breathing virus loaded air	43	43	54	54	3	3

Table 3: Assessment of items wise perceived barriers of facemask wearing ($N = 100$)

Items	*Statements*	*Strongly agree (4)*		*Agree (3)*		*Disagree (2)*		*Strongly disagree (1)*		*Undecided (0)*	
B	*Perceived barriers*	*(N)*	*%*	*(N)*	*%*	*(N)*	*%*	*(N)*	*%*	*(N)*	*%*
1	Reduces ability to communicate	24	24	70	70	6	6	–	–	–	–
2	Blocks emotional expressions during communication	17	17	73	73	10	10	–	–	–	–
3	Communication is misinterpreted	21	21	59	59	20	20	–	–	–	–
4	Impairs face recognition and identification	19	19	55	55	26	26	–	–	–	–
5	Causes breathing difficulty	17	17	57	57	26	26	–	–	–	–
6	Causes sweating	17	17	55	55	28	28	–	–	–	–
7	Causes headache, dizziness	18	18	55	55	27	27	–	–	–	–
8	Causes redness, rashes	12	12	51	51	35	35	2	2	–	–
9	Causes eye glass to fog	10	10	40	40	45	45	5	5	–	–
10	Makes exhaled air to go into eyes	11	11	30	30	52	52	6	6	1	1
11	Wearing a face mask in uncomfortable	15	15	40	40	41	41	4	4	–	–
12	Wearing a face mask makes me to feel unattractive	18	18	60	60	18	18	4	4	–	–
13	Wearing a face mask would make me feel embarrassed	14	14	67	67	17	17	2	2	–	–
14	People criticize me being in public while ill	8	8	77	77	13	13	2	2	–	–
15	Sometimes emotions get misrecognized	8	8	77	77	13	13	2	2	–	–

Table 4: Correlation of perceived benefits and barriers of facemask wearing

Descriptive statistics	*Mean*	*SD*	*r*
Benefits	30.76	3.041	0.0028
Barriers	45.37	23.877	$p = 0.977$

7 (7%) were shop owners, 16 (16%) were skilled workers, 9 (9%) were semi-skilled workers, 5 (5%) were unskilled workers, and 33 (33%) were unemployed.

Regarding the habit of face mask wearing 78 (78%) were face mask, 22 (22%) had not worn face mask. Regarding the history of COVID-19 infection, (1%) had COVID-19 infection, and 99 (99%) had not COVID-19 infection. With regard to the presence of comorbidity, 15 (15%) had diabetes, 12 (12%) had hypertension, 7 (7%) had COPD/asthma, and 66 (66%) had other illnesses.

Assessment of perceived Benefits and Barriers of Face Mask Usage

With regard to the level of benefits of face mask usage, almost all study participants had perceived benefits of face mask usage in the prevention of COVID-19, and none of the participants considered that wearing face ask has no benefits.

With regard to the level of barriers to face mask usage, one-third of the participants perceived a very high level of barriers in mask usage and half of the study samples perceived a high level of barriers, and a minimal percentage perceived to have low barriers. Hence, the findings of the study show that the participants are trying to wear a face mask during the pandemic even though varied levels of barriers were felt by them. Item-wise descriptive analysis shows that most of the participants agreed to perceive the benefits of face mask usage. Some of them also disagreed with the barriers and half of them agreed with perceived barriers.

Face mask usage has increased throughout the COVID-19 pandemic. Wearing a face mask is generally motivated by the desire to protect others when it is required, but in cases where it is not, it is only motivated by the belief that the mask protects oneself from infection and the experience of personal risk.[21]

Association of selected Demographic Variables with perceived Benefits and Barriers of Face Mask Usage

This study included different age-groups with varied background variables, participants who had the habit of wearing a mask and were affected with COVID-19 infection had a significant association ($p < 0.01$) with the benefits of wearing the mask. Similarly, they also expressed the barriers which were statistically significant at $p < 0.05$. It is proven that the people who actually wear face mask are the ones are able to perceive the benefits and discomforts caused by wearing mask continuously.

Another important finding to be noted is that history of COVID-19 infection among those people have shown significant association with perceived benefits at $p = 0.01$. Most of the study participants were not affected by COVID-19 infection among those who felt very high benefits of face mask wearing.

Hence, both of these findings reveal the truth that the habit of wearing a face mask and not being affected with COVID-19 infection was linked with perceived benefits of face mask wearing.

Wearing a community mask significantly decreases the spread of the SARS-CoV-2 coronavirus in two different ways. First, masks stop infected individuals from spreading SARS-CoV-2 to others by preventing the exhalation of virus-containing droplets into the air. This element of mask use is particularly significant because at least 50% or more of transmissions are thought to originate from people who never show symptoms or who are in the pre-symptomatic stage of the COVID-19 sickness.[22]

Conclusion

Findings from this study show that COVID-19 infection is prevented by wearing a face mask regularly in the community setting. Hence, the researchers understand that wearing face mask has both benefits and barriers. However, weighing the advantage of face mask usage in control or spread of COVID-19 infection nullifies the barriers felt.

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