



Knowledge, Attitude and Practice of Proper Handling of a Face Mask during Pandemic of COVID - 19 amongst the General Population in Chennai – A Survey

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i44B32663

Editor(s):

(1) Dr. Paola Angelini, University of Perugia, Italy.

(2) Dr. Sawadogo Wamtinga Richard, Ministry of Higher Education, Scientific Research and Innovation, Burkina Faso.

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Complete Peer review History: <https://www.sdiarticle4.com/review-history/73698>

Received 12 August 2021

Accepted 13 September 2021

Published 22 September 2021

Original Research Article

ABSTRACT

Background: Facemasks have become a mandatory to prevent the pandemic spread of COVID-19. It can be utilized as part of a broader strategy to reduce transmission and save lives. However, there are several basic conditions for using masks that the general population is unaware of. People should be highly aware of the proper handling, usage and disposal of the facemask to prevent the spread.

Aim: The aim of the study is to analyze the general public's knowledge, attitude, and practice of correct face mask handling during a covid-19 epidemic, with the hope of providing the essential awareness to prevent future worsening crises.

Methods: The survey was conducted among general population. A total of 130 participants participated in the knowledge, awareness and practice assessment survey and the questionnaire was distributed online using Google survey forms. The data were collected, tabulated in excel and statistically analyzed using SPSS IBM version 20.0. Descriptive analysis & Pearson's chi square test statistical analysis were performed.

Results: The results of the study showed that majority of the population preferred to wear face mask and 81.5 % believed that facemasks provides protection against corona virus; 3.1 % participants did not agree and 15.4 % participants were in dilemma.

Conclusions: Our results showed that some practices among young people could be regarded more appropriate than in the older people which quantify the need of more awareness campaign regarding the standardization, protocols, guidelines and strict implementation on the handling, usage and disposal of mask to minimize the pandemic spread.

Keywords: Awareness; Facemasks; COVID – 19; Chennai.

1. INTRODUCTION

The corona virus disease (COVID - 19), a highly infectious disease was first identified in Wuhan, China, spread rapidly across the world in just a month, triggering a global public health emergency [1]. The outbreak began at the verge of 2019 and still ongoing. The people affected with COVID - 19 exhibited mild to moderate illness and were able to recover from the illness without hospitalization. According to World Health Organization (WHO) the most common symptoms of COVID - 19 are fever, dry cough and tiredness; less common symptoms are aches and pains, sore throat, diarrhea, conjunctivitis, headache, loss of taste or smell, a rash on skin, or discoloration of fingers or toes and severe symptoms includes difficulty breathing or shortness of breath, chest pain and loss of speech [2] So, wearing face masks is now one of the key methods for global prevention of the new COVID - 19 pandemic among general public [3]. Yet there are certain recommendations for wearing a face mask appropriately. According to WHO, it has been stated that the facemask should be worn in such a way that it should cover the person's mouth and nose, the outer as well as the inner surface of a face mask should not be touched in any circumstances and hand hygiene should be maintained before wearing and after removal of the face mask [4]. But it is very difficult for the general public to adapt face masks as mandatory in their day - to - day life. This is quite a difficult task not just for the general public but also for the health care professionals to use a face mask for longer periods. Unfortunately due to the discomfort, people have chosen different convenient methods to wear masks on their chin and neck [4]. Similar to the recommendations for wearing a face mask properly, there are also certain recommendations for disposing a face mask. The common inappropriate ways are replacing potentially contaminated face masks on desks, or inside pockets, or bags in close contact with other personal belongings and also

the masks are squeezed repeatedly during removal and reuse [5]. The consequences of this inappropriate use of face masks are self and environmental contamination and increased risk of transmission of COVID - 19.

This study is performed to evaluate the concern among the general public in favor of prevention of transmission of COVID - 19 potentially by wearing face masks. This study quantifies the need for wearing a face mask and to further emphasize the potential outcomes of inappropriate handling of masks. Matusiak Ł et al. [6]. Assessed the use of face masks among younger adults and found that single-use masks constituted 52.5 %; 23.9 % of responders re - used single-use mask and also 73.6 % participants suggested mask decontamination but concluded saying the procedures for decontamination were not appropriate. No other similar studies have been performed to analyze the general public's opinion on the appropriate and inappropriate ways of handling a face mask in general public.

The aim of the study is to assess the knowledge, attitude and practice of proper handling of a face mask during pandemic of covid - 19 amongst the general population through a validated questionnaire.

The current study will estimate the importance of facemasks among the general people, with their existing knowledge of facemasks on the pandemic, This present study will aid in the development of public education campaigns on the proper handling, use, and disposal of face masks.

2. METHODS

2.1 Study Design and Participants

This is a cross-sectional survey study conducted using an online (electronic based survey) based questionnaire that was distributed among the general population. The questionnaire was

assessed by 2 independent experts, who provided comments on the correct wording and understanding of each question. The final version of the questionnaire comprised 23 questions with 22 single choice questions and 1 short answer question; of which 2 were demographic questions, 1 short answer question pertaining to the profession of the participants and 20 questions relating to the knowledge, attitude and practice of face masks. The survey was created in English language using Google Forms and posted with a brief invitation letter on email, whatsapp and text message groups mainly for random population, inviting people to complete the survey. The study included 130 participants. A simple random sampling was used to select the participants. The participation in the survey was voluntary. No incentives were provided to the survey participants. The survey was distributed among potential participants during August 2020 to October 2020. The knowledge, attitude and practice assessment survey took approximately 5 - 7 minutes to complete. The data from the corresponding responses were checked regularly for clarity, consistency and accuracy.

2.2 Inclusion Criteria

- General population with no age as limit to participate in this survey.
- General population with no profession as barrier to participate in this survey.

2.3 Exclusion Criteria

- Participants who do not have Internet access were excluded from this survey.
- Participants who do not know English language were excluded, since the survey was conducted in English language.

2.4 Data Collection

The data for this study was collected with the participants who volunteered to take part in a knowledge assessment survey. The data collected were tabulated in Microsoft Excel 2007 and analyzed with two other examiners. Only completely filled forms were included for analysis.

2.5 Statistical Analysis

Statistical analysis was conducted through IBM SPSS statistical software version 20.0. The chi-square test and descriptive analysis was applied

to determine statistical differences between the studied groups. The resulting P values were considered significant if $P < 0.05$.

3. RESULTS

A total of 130 participants were included in this study of which 106(81.5%) participants believed and agreed that wearing face masks during this pandemic situation reduces the risk of COVID - 19 exposures whereas 4(3.1%) participants did not agree and 20(15.4%) participants were in dilemma. The age of the participants were grouped into 3 categories: <20, 20 - 40 and >40, of which 15(11.5%) participants were <20 years of age; 89(68.5%) were 20 - 40 years of age and 26(20%) were between >40 years of age. of the entire 130 participants, 76(58.5%) were female participants and 53(40.8%) were male participants. Also one of the participants did not prefer to mention his / her gender.

Out of 130 participants, 50(38.5%) participants preferred to use disposable face masks; 32(24.6 %) participants preferred reusable face masks and 48(36.9 %) preferred to use both, disposable as well as reusable masks. On comparing with the age and gender, preferences were given for both types of face masks according to their conveniences (Fig. 1a and 1b). We also evaluated the different types of preferred reusable masks, of which 52(40%) participants used cloth masks; 23(17.7%) used N95 masks; 35(26.9%) used both cloth as well as N95 masks; 14(10.8%) preferred different types of masks other than these two types and 6(4.6%) participants never preferred any of these. Also 37(28.5%) participants reused the disposable mask and 83(63.8%) did not prefer to reuse a disposable mask and 10(7.7%) were in doubt whether to reuse or not. The percentages of the reusability of mask according to the age categories and gender category are depicted in Fig. 2a and Fig. 2b respectively. Regarding the duration of usage of masks, 24(18.5%) participants used their masks for just an hour; 10(7.7%) used it for 2 hours; 29(22.3%) used it for 4 hours; 46(35.4%) used it for 8 hours and 21(16.2%) used masks for the entire day (Fig. 3a and 3b). The duration of usage of masks on comparing with age showed significant value ($p = 0.016$). Of the 130 participants, 108(83.1%) participants suggested that a mask should cover the nose, mouth and chin; 18(13.8%) covered their nose and mouth whereas 4(3.1%) preferred to cover only their mouth (Fig. 4a and 4b). The extent of

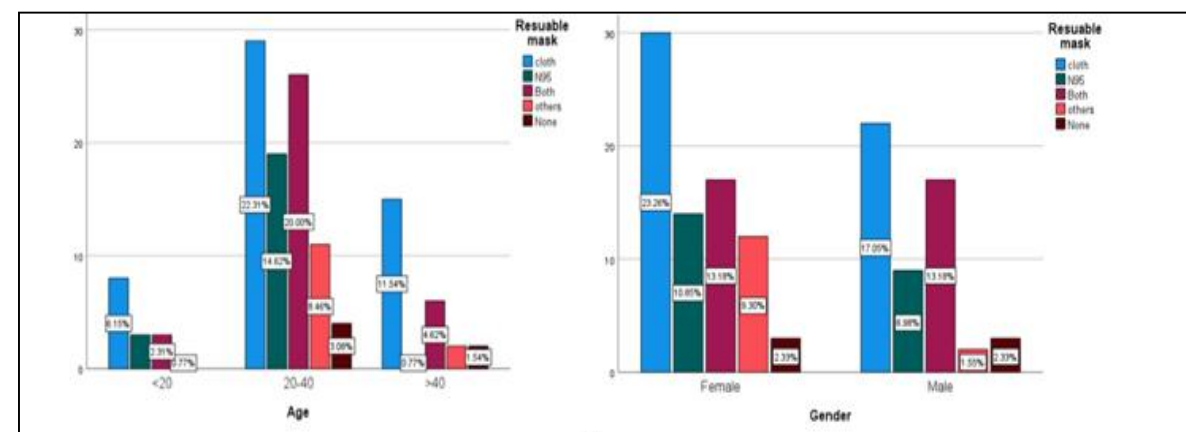
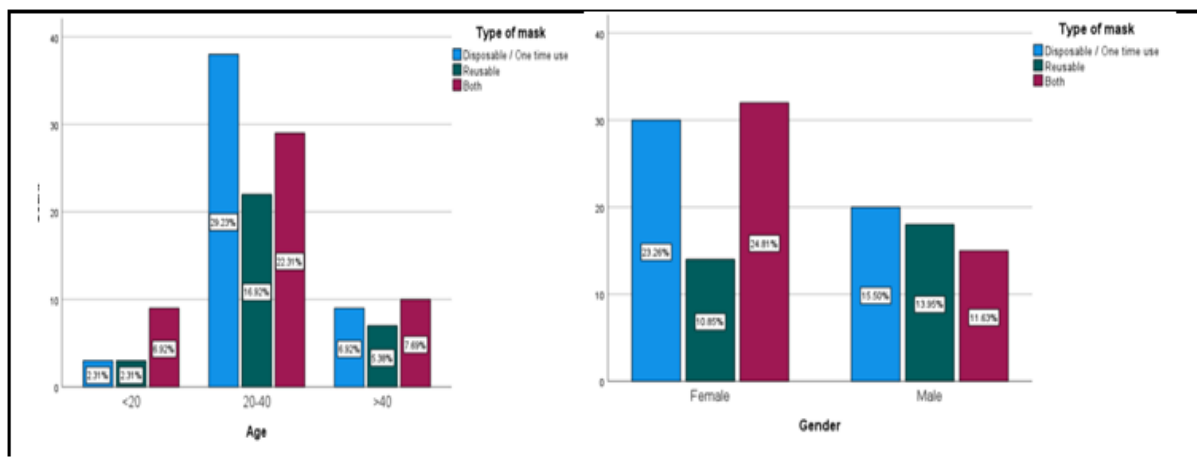
coverage of mask with difference in gender shows statistically significant value ($p = 0.017$). On evaluation of appropriate disposal of masks, 20(15.4%) participants have preferred to just throw the masks; 74(56.9%) of them wrapped and discarded in trash bin and 36(27.7%) discarded their masks in trash bin without wrapping (Fig. 5a and 5b) (disposal of mask on

comparing with gender reveals statistically significant value (p value = 0.017).

The study was statistically analyzed using chi - square test comparing with the age and gender, of which the P - values are listed in Table 1.

Table 1. P values of chi - square test on comparing the usage of facemasks during the COVID-19 with the age and gender

S. No	The categories analyzed with age	P Values	
		Age	Gender
1	Types of mask	0.323	0.095
2	Types of reusable masks preferred	0.269	0.237
3	Reusability of single use mask	0.963	0.142
4	Duration of usage of mask in a day	0.016	0.848
5	Extent of coverage of mask	0.212	0.017
6	Disposal of mask	0.233	0.017



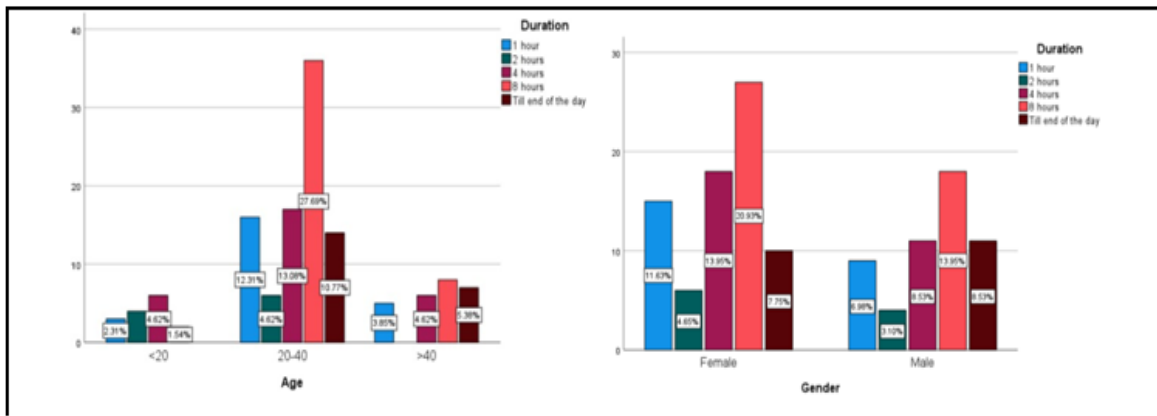


Fig. 3a and 3b. Percentage of duration of usage of mask on comparing with age and gender respectively

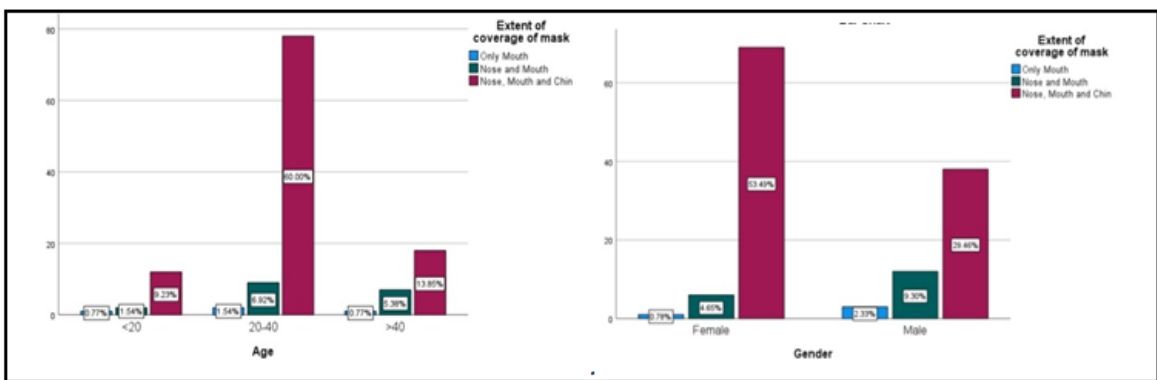


Fig. 4a and 4b. Percentage of extent of coverage of face mask on comparing with age and gender respectively

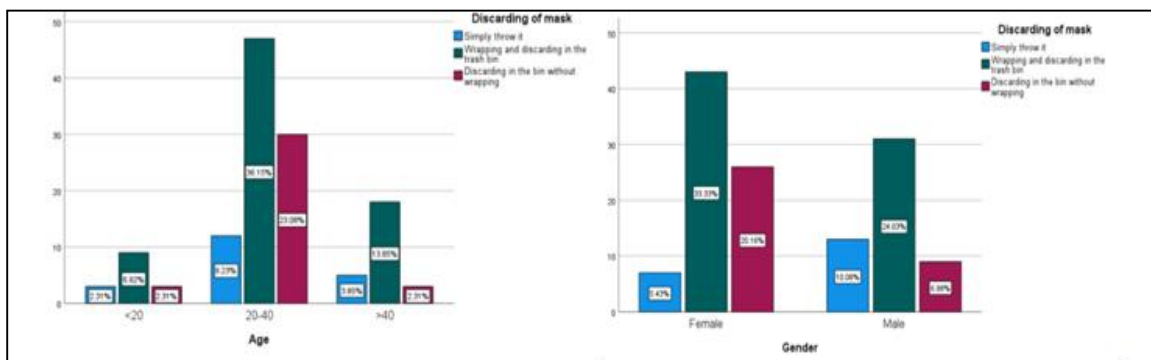


Fig. 5a and 5b. Percentage of disposal of face mask on comparing with age and gender respectively

4. DISCUSSION

The droplet or airborne diseases can be prevented transmission primarily by the usage of face masks. The concept of reusable masks is widespread worldwide, particularly in Asia, a key region for emerging infections [7].

Facemasks, during outbreaks and pandemics were used globally, not only to protect people from acquiring viral infections but also to minimize spread of infection from the wearer. Yet majority of the population are still in dilemma, for handling, usage and disposal of masks appropriately. Our study results

revealed that 75.4% of the study population was interested in knowing the proper methods in handling, usage and disposal of masks. Also the scientific evidences on the protective effectiveness of face masks against viral transmission among humans are not sufficient enough.

Our study results revealed that majority of the participants who wore masks regularly were below 20 years of age. This shows that younger generation is more aware of the current pandemic situation and is readily implementing more public health behaviors; this is definitely a step up by the younger generation in fighting against COVID - 19. The CDC (centres for disease control and prevention) suggests that everybody above 2 years of age should prefer wearing a mask in public and also people suffering from COVID - 19 as well as people caring for someone who is affected by COVID - 19. Yet people suffering from respiratory disorders, unconscious, incapacitated or otherwise unable to remove the mask without assistance are not advised to wear a mask [8].

Our study results showed that female participants wore masks regularly. The previous literature found to have no difference between the female and male population in relation to usage of masks [6]. Regardless of the gender, the usage of mask should be practiced by almost everybody until the eradication of corona virus globally. There is no previous evidence to prove that gender plays a role in protection against COVID - 19.

According to CDC, there are different types of masks being manufactured with each having its own purpose which is mainly categorized as disposable and reusable [8]. In this study about half of the study population preferred to use disposable masks rather than reusable masks. This could be because of their personal conveniences. The disposable masks are designed to be most comfortable for long duration usage. Disposable masks are mainly the surgical masks that are solely meant for healthcare workers. Also regarding the reusable masks, Cloth and N95 masks are highly used. This study results revealed that cloth masks were predominantly preferred rather than N95 masks. Previous literature suggests that homemade masks with a common fabric may be used for people with no signs and symptoms but they are insufficient for health professionals or other employees contacting large numbers of

people or for home - treated Covid - 19 patients' caregivers [9]. The N95 masks can be with or without the exhalation valves or vents, which are highly recommended by the US Department of Labor since >95% efficient at filtering 0.3 - μm particles (smaller than the 5 - μm size of large droplets created during talking, coughing, and sneezing [10]. In contradictory, CDC does not recommend the use of exhalation valves or vents as it cannot completely prevent the transmission of COVID - 19 to anyone using this type of mask. The gap in the material will cause your respiratory droplets to flee and enter others [8].

The results of this study showed that majority of the population preferred covering their nose, mouth and chin using mask for better protection rather than just covering the nose and mouth or just the chin. Almost there is not much difference between the genders in the extent of coverage of masks and the chi square test shows statistically significant results ($p = 0.017$). This is concordance with the WHO (World health organization) guidelines. According to WHO, 2020 the proper way to protect ourselves is to cover the nose, face and chin. This must be because of the awareness among the general public due to constant advertisements by the televisions, social media, radio stations, health care professionals in hospitals, public service sectors, etc. There are also few people who prefer to keep their mask in the chin without covering their nose and mouth. This could be due to the inconvenience of usage of mask for a longer duration and also not able to adapt to the current scenario where the masks are made mandatory in life. Ideally the mask should be worn during sneezing, coughing and also while talking; this is the one of the mandatory preventive measure that should be followed to stop the spread of COVID - 19. The financial state of each participant could have had an impact on the usage of masks among general public.

The disposal of the masks is still a dilemma for the general population as usage of mask is much emphasized than the disposal of the masks. Most of the population has chosen to dispose the mask in the bin which is wrapped using polythene sheets or packed inside zip lock covers; which is the ideal way for disposal of masks. According to Greater Chennai Corporation (GCC) has advised non - quarantined homes and residents to dispose used masks by disinfecting them with ordinary

bleach solution (5%) or sodium hypo - chlorite solution (1%). Masks are wrapped and kept in a closed bin before provision to the sanitary workers. They are treated as domestic hazardous waste and incinerated by GCC [11-14]. Not the proper handling and usage prevents the spread of COVID - 19, also the proper disposal help in preventing the spread.

5. CONCLUSION

Our study shows that maximum of the population are much aware and have the desired knowledge on the usage of masks but the knowledge of handling and the disposal of the masks are still questionable. Our results showed that some practices among young people could be regarded more appropriate than in the older people which quantify the need of more awareness campaign regarding the standardization, protocols, guidelines and strict implementation on the handling, usage and disposal of mask to minimize the pandemic spread.

6. LIMITATIONS

This study was conducted through an online survey; the target group excludes those who do not have Internet access. Also, the sample size is small with no uniform distribution of samples among the categories. The responses received are restricted to a particular geographic region. This could have probably influenced the results of the study. Thus this study needs to be performed on a larger scale for accurate quantification. Further more studies are required with large sample size to substantiate the results obtained from this current study.

ETHICAL APPROVAL

Ethical approval for this study was obtained from Institution Review Board (IRB).

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Author has declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
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