

Psychological Behavior and Compliance of the General Population with Facemasks during the COVID-19 Pandemic: Implications for the Future

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ABSTRACT

Background: Globally people have succumbed to viral infections that posed a stupendous threat. Community wearing of facemask helped lowering the incidence of COVID-19. The objective was to determine the public opinion regarding prolonged mask-wearing practice, and to find out the behavioral differences as pertinent compensations for not wearing that may help combat pandemics because of emerging infections.

Methodology: This cross-sectional study carried out in the outpatient departments of Military Hospital (MH) Rawalpindi, Pakistan from January to June 2021 after ethical approval. Participants selected by non-probability convenience sampling technique of different residential, economic and educational backgrounds, above 16 years of age, from both genders to give their opinion on a validated questionnaire, “Multidimensional face mask perceptions scale” with eight domains.

Results: Among 175 participants, almost 81.7% participants were of the view that when they do not wear mask it is because facemasks get overheated and disrupt the breathing, 60.6% adopted compensation ways by avoiding people and 45.7% considered its wearing a hassle. Female participants felt more uncomfortable by disrupted breathing ($p = 0.029$), male participants reflected about value of independence ($p < 0.001$), and participants from rural area thought a difficult access to get facemasks ($p = 0.003$).

Conclusion: The most likely reason for not wearing mask among participants was uncomfortable breathing. The other reasons includes adopting social distancing guidelines as a compensatory measure, finding facemask wearing practice a hassle, interference with freedom and access issues by rural population. Designing and implementing awareness sessions may halt such spread of pandemics because of emerging infections.

Keywords:

COVID-19, humans, masks, Pakistan, pandemics

INTRODUCTION

Globally people have succumbed to viral infections from time to time that have posed a stupendous threat to the general public.¹ Recently world has encountered such an infection and World health organization (WHO) was compelled to declare it a global pandemic on March 11, 2020 as a result of swift escalation and transnational expansion of cases. Corona virus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) rapidly spread across the world from Wuhan, China.² The main concern was to limit the spread of virus and its variants as the pandemic had heavily devastated many healthcare systems. Hence, the foremost goal was to prevent transmission and development of new infections.³

Although number of cases and deaths due to corona has been decreased worldwide, WHO has reported 629 million cases and 6.5 million deaths by November 6, 2022.⁴

Leading role of community wearing of face-mask has been considered in lowering the incidence of COVID-19 as it has been related to reduction of release of respiratory droplets from mild and sub-clinical cases.¹ Correct and consistent use of face mask is recommended by CDC and has been considered an effective public health tool with a message that even any type of mask can protect as compared to wearing no mask at all. Different situations demand various types of masks and even use of two masks for better protection from the virus during pandemic.⁵ Nevertheless, role of hand hygiene for its correct use cannot be overlooked,⁶ as hand hygiene has a vital role to play for its wearing, removing and mandatory care after disposing off mask.⁷

To make it a socio-cultural norm and to decrease social stigma of wearing facemask by sick individuals only, governments endorsed universal or public mass

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wearing. Different countries at various phases of pandemic suggested many measures for its implementation.⁸ During influenza pandemics in the past, beneficial effect of widespread use of face mask by population had also shown reduction in spread and containment of epidemics.⁹ Wearing of masks by subclinical cases with no symptoms gives protection to high risk individuals including immune-compromised, comorbid, and pregnant females, provided it is used early on time along with other public health measures like hand hygiene, avoiding touching face unnecessarily, right cough etiquette and social distancing.⁶

Awareness and compliance of community for such public health measures confirm implementation of **these actions. It stresses that community's perception** towards the efficacy and usage of facemask be identified to plan strategies for future recommendations. We conduct this study to assess the perception of the common masses towards the compliance with facemasks during the COVID-19 pandemic. The rationale of this study is to gauge the reasons for psychological and practical hindrance in compliance with face masks. Therefore, this cross-sectional study aims to determine the public opinion regarding routine and prolonged mask-wearing practice, and to find out the behavioral differences as pertinent compensations for not wearing facemasks.

METHODOLOGY

This cross-sectional study carried out in the OPDs (outpatient departments) of Military Hospital (MH) Rawalpindi, Pakistan, covered a span of 6 months from January to June 2021. Non-probability convenience sampling technique aimed to achieve affordable, timesaving and efficient research. Participants visiting the busy OPDs of ENT, Dermatology, General Medicine, Gastroenterology, Ophthalmology and Pediatrics departments were included for data collection after ethical approval (ERC/ID/173) of the institution. Using WHO sample size calculator a total of 196 sample size was calculated with 95% confidence level, absolute precision of 5% ($d=0.05$) and anticipated population proportion of 15% ($P=0.15$). Response rate for our sample was 89% with 21 refusals and incomplete questionnaires.

People in all the listed OPDs who were able to give verbal consent, were included to collect data in a favorable environment. Participants incorporated were patients in stable condition and their attendants, while from department of pediatrics were parents or attendants. Demographically the respondents consisted

of both genders from different residential, economic and educational backgrounds. We excluded respondents **below 16 years of age and elderly ≥ 80 years old and did not approach psychologically impaired and severely ill or unstable patients.**

Data were collected using validated questionnaire, multidimensional face mask perceptions scale (FMPS) based on three-study process with satisfactory psychometric properties¹⁰, without any modifications in the statements after receiving permission from the author. The data collection was face-to-face and interviewer-administered after taking verbal consent and through cooperation of respondents. Time taken for each questionnaire was approximately 5-7 minutes. The questionnaire through eight categories based on four items in each category identified psychological behavior of participants when they or people generally do not wear mask in public. Eight categories identified were comfort, efficacy doubts, access, compensation, inconvenience, appearance, attention and independence. Each item identified the response from strongly disagree to strongly agree on seven point Likert Scale. All categories were scaled from strongly disagree to strongly agree where highest score was given to strongly disagree. Therefore, the highest score for these dimensions represent disagreement to the perception or more positive response.

The data were analyzed using SPSS version 26.0. The level of significance was set at value of >0.05 . For descriptive analysis, we identified mean and standard deviation of each domain and non-parametric tests for inferential analysis. To compare mean ranks for two and more than two categories, we applied Mann-Whitney U test and Kruskal-Wallis H test respectively, as dependent variable was not normally distributed.

RESULTS

Among 175 participants, the mean age was $35+13.45$, with minimum age 16 years and maximum 76, Fig 1. We explored normality of data by investigating numerical and visual outcome.

A Shapiro-Wilk's test value $p<0.05$, skewness and kurtosis values, and visual inspection of Q-Q plots, box plot and histogram showed that scores were not normally distributed.

Participants were of the view that when they do not wear mask it is because facemasks get overheated and disrupt the breathing (comfort domain). They disagreed that they had efficacy doubts about the mask or thought that they are ineffective (efficacy doubts domain). They were certain about the availability of

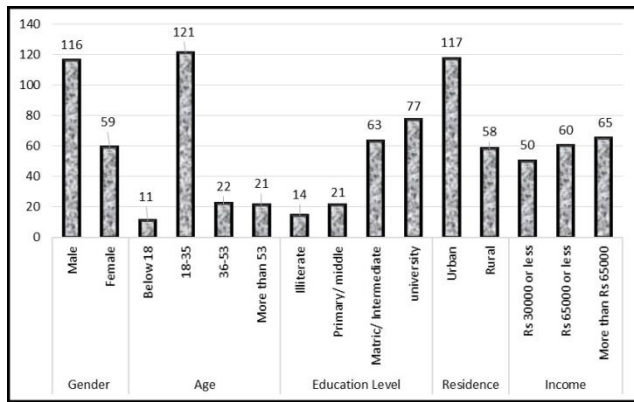


Figure 1: Demographic variables of study participants

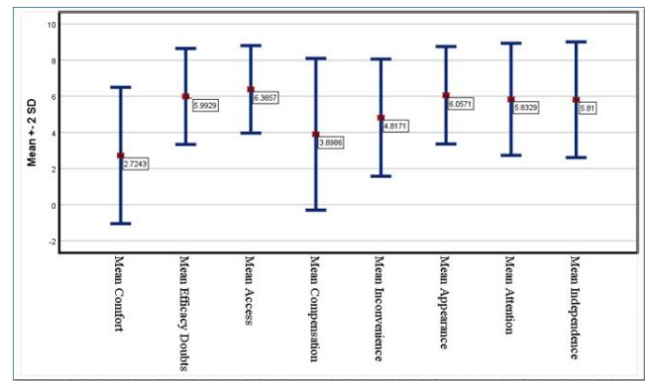


Figure 2: Mean and standard deviation of domains

Table 1: Perceptions of participants for representative item from eight domains

Categories	Category Description	Mean Response (S.D)	Why I do not wear facemask; Disagreement N (%)
Comfort	Facemasks disrupt breathing and/or cause overheating.	2.72+1.88	32 (18.3%)
Efficacy Doubts	Face masks provide few health benefits/are ineffective.	5.99+1.32	148 (84.6%)
Access	It is difficult to get a face mask/ are too expensive.	6.38+1.21	158 (90%)
Compensation	I can avoid people when I go out anyways. I only go out for a short period of time.	3.89+2.09	69 (39.4%)
Inconvenience	Wearing a face mask is too much of a hassle.	4.81+1.62	95 (54.3%)
Appearance	Face masks look weird/ ugly	6.05+1.34	139 (79.4%)
Attention	Face masks make other people feel uneasy.	5.83+1.55	140 (80%)
Independence	I do not like feeling forced to do something	5.81+1.60	132 (75.4%)

Table 2: Comparison of mean ranks of different categories between genders.

S. No	Categories	Group	Mean Rank	U-Value	p-Value
1.	Mean Comfort	Male (116)	93.88	2740.500	.029*
		Female (59)	76.45		
2.	Mean Efficacy	Male	77.00	2145.500	.000*
		Female	109.64		
3.	Mean Access	Male	80.13	2509.000	.001*
		Female	103.47		
4.	Mean Compensation	Male	93.17	2822.500	.058
		Female	77.84		
5.	Mean Convenience	Male	84.58	3025.000	.209
		Female	94.73		
6.	Mean Appearance	Male	80.09	2504.500	.002*
		Female	103.55		
7.	Mean Attention	Male	83.06	2848.500	.062
		Female	97.72		
8.	Mean Independence	Male	75.14	1930.000	.000*
		Female	113.29		

Note: * Significance at less than 0.05.

proper type of mask and did not consider them expensive (access domain). Study participants were of the opinion that when they did not use mask it is because they stay away from people and go out for a short time (compensation domain). They thought that habit of wearing the mask while going outside is difficult to develop (convenience domain). They strongly disagreed that wearing of facemask seems ugly or weird (appearance domain). They differed that wearing of facemask make other people uncomfortable (attention domain), or if they do not wear mask it is

because they value their independence (independence domain) Figure 2. Frequency of reasoning outcomes from representative item of eight domains was identified, Table 1.

Female participants as compared to males felt more uncomfortable while wearing facemask, however, they trust more on efficiency of masks, were more confident about the availability of masks, and did not think that wearing of facemask seems weird or make other people uncomfortable. Majority male participants as compared to females considered that if they do not

wear mask it is because they value their independence, Table 2. We identified a significant difference (p -value .003) among participants from rural area who thought a difficult access to get facemasks with Mann-Whitney U value 2576 (mean rank urban: rural 94.98:73.92 respectively). We found no significant difference between mean ranks in categories among different educational levels and different ages by applying Kruskal-Wallis H test.

DISCUSSION

The use of facemask in community setting is under constant debate for its routine practice by unwell people and caregivers or its usage by public, for which governments has changed recommendations from time to time along with a mandatory use of other preventive measures.¹¹ The aim of the current study was to assess perceptions of common masses about reasons of not wearing masks in public places, based on the opinions through a validated questionnaire with eight domains to cover wider possibilities, and to observe differences between genders, residential, educational and different age levels.

Initially during COVID-19 pandemic, WHO did not mention face mask use by common masses, later on it was advised for all, whether infected or not. Despite plentiful evidence about their efficacy, many individuals opt to avoid them resulting in rallies, protests, and resistance marches around the world.¹² A compliant community response was observed in those nations who were aware of the disastrous effects of past pandemics and also through strict measures and better communication by government.¹³ This study participants believe that they did not have any reservations about health benefits of wearing mask on recommendations. It may be due to the reason that they have faced previous waves of this current pandemic.

Past studies have shown that to increase compliance in case of shortage or difficulty breathing, cloth face masks with less efficient role was encouraged to promote widespread use during epidemic and pandemics. This may help raising awareness of prevailing risk and behavioral guidance for majority of the community among susceptible as well as by general population.⁹ As majority of participants in this study accepted that facemasks disrupts breathing or get overheated, and they tried to adopt compensatory behaviors by avoiding people and going out for short period of time. It is in contrast with the study in which participants highlighted it as a “social tool”, preventing

infection, maintaining social behavior and healthy communication with each other.¹⁴

Public hospitals were able to implement proactive bedside infection control measures. A study from Hong Kong reported a significantly lower number of cases due to better community response towards facemask linked to past painful experience, as compared to countries even with established healthcare system.¹ Most of current study members accepted that wearing of mask did not make other people uneasy or uncomfortable and had faith that they did not feel that they are forced to wear it. A significant decrease in disease spread, controlling of disease waves and decreasing need of lockdown observed due to public sensitization and adopting habit of wearing face mask.^{8,15}

The studies have been conducted to assess correct steps of wearing, taking off and disposing of the mask and practice of wearing it with certainty during required situations¹⁶ and has revealed its unsatisfactory practice.^{7,17} Female participants in these studies have shown to adopt more preventive measures, whereas male members thought that facemask interfere with their independence. Improper use and less common use of facemask also found among participants of older age.¹⁸ Female participants of present study trusted on efficiency of facemasks and believed that they are accessible, but have shown perceptions of discomfort while wearing them, while male participants expressed the feeling of forced to do something. As is revealed by a study that despite people were conscious about benefits of wearing mask, still non-compliance observed due to barriers of difficult breathing and discomfort.¹⁹ Studies have shown increase usage of mask by more people that are educated as well as in older age group and among females who exhibited better attitude towards its wearing.¹⁹ However, in this study perceptions were same for all age and educational levels.

Recently covid-19 has emerged as a huge global crisis affecting every segment of population and directly influencing the lifestyle and attitude of people. Since mask wearing is a cost effective practice that has been proven beneficial against transmission of COVID-19 so a positive attitude is mandatory as an efficient interventions for reducing its spread particularly in countries like us with a less developed health system. In order to combat pandemics because of emerging infections in coming days the current study may help to get insight about the perceptions of the general population towards wearing of facemask. This may help the public health policy makers in designing and

implementing the health strategies and awareness sessions to halt the spread of such pandemics.

The main strength of the study is to find out the behavioral perceptions towards mask wearing from general population on a validated questionnaire as it may help to identify behavioral patterns in future in such pandemics. However, it may differ if more participants are included from different areas, which was one of the limitations in our study. There is also possibility of biased opinion and change in behavioral perceptions with time.

CONCLUSION

Facemasks have proved to be revolutionary in curbing the expansion of the virus during COVID-19 pandemic. Albeit best efforts to comply, this mere simple task of facemask wearing becomes laborious sometimes, which leads to refusal. General public of variable demographic profile from OPD of MH, Rawalpindi, expressed reasoning behind disuse of facemask. The most likely reason for most was uncomfortable breathing and/or overheating. The other reasons includes following social distancing guidelines as a compensatory measure, finding facemask wearing practice a hassle, interference with freedom and showing more concerns in accessing facemasks by rural population. In order to combat pandemics because of emerging infections this study may help designing and implementing the awareness sessions to halt such spread.

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