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Original Research Article

Knowledge, attitude and practice pattern regarding use of masks, in an urban slum in West India

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ABSTRACT

Background: After almost a year of the COVID-19 pandemic, economies around the world are opening up. However, with newer, more virulent strains being reported across the globe, the efficacy of vaccines has also come into question, and regulatory authorities are emphasising once again, the importance of mask use and social distancing. The aim of the study was to understand the knowledge, attitude and practice towards wearing of masks during this pandemic.
Methods: This was a non-interventional, questionnaire based, cross sectional study conducted in urban slums in Mumbai, India. A validated questionnaire was administered to those who volunteered to be part of the study, during sero-survey in the slum area.
Results: A total of 1342 participants were included in the study. An overwhelming 1232 (91.8%) knew that masks should cover both nose and mouth. Almost 72% claimed to wear their face masks more than 50% of the time when outside their homes, while 27.5% used them only when in crowded places. Interestingly only 3% said they did not wear masks at all. 86% subjects were of the opinion that cloth masks should be washed daily, and 5% said it should be washed once every two days. There was a significant association with the knowledge regarding proper usage and cleaning of mask, and age, gender and occupation.
Conclusions: The knowledge and attitude towards wearing and care of masks reveals that there was a significant association between proper usage and cleaning of masks and age, occupation, literacy and income.

Keywords: COVID-19, Knowledge and attitude towards mask acceptance, Mask use, Lockdown

INTRODUCTION

As the scourge of the COVID-19 pandemic becomes a part of the new normal, governments across the global are 'reopening' their economies, and relaxing social distancing norms.[1,2] With the advent of the vaccine against the SARS-CoV-2 has also heralded a false sense of security, despite much skepticism about its efficacy, accessibility and acceptability. At a time that new infections continue, without a universally accessible and effective treatments in sight, it is critical to emphasize on measures that can mitigate the disease transmission.

These include social distancing, immunization, and the use of facial masks. With unlocking of economies, the first becomes less relevant, and the use of vaccines is, so far, a logistical jigsaw with several missing pieces.[3]

There is, therefore, much emphasis on widespread community use of facial masks, and messaging from public health authorities and governments is as relevant today as it was at the beginning of the disease outbreak. That said, both, compliance and enforcement of health regulatory mandates depend on several contextual factors, the most

important of which is the knowledge and attitudes of the population at risk.[4]

The aim of the was to analyze the knowledge, attitude and practice patterns prevalent in a large urban slum in Mumbai, India's bustling metropolis. Social distancing norms are, more often than not, not enforceable given the overcrowding; and even when available, access to the vaccine will be limited for this demographic. Consequently, mask use is the primary intervention to mitigate the virus transmission in this vulnerable population.

METHODS

This cross-sectional, non-interventional, observational questionnaire-based study was conducted in an urban slum in Mumbai, Maharashtra. A questionnaire designed to assess knowledge, attitude and practices pertaining to COVID-19 was administered along with a diabetes and eye screening program, and a SARS-CoV-2 RT-PCR assay.

The first 300 adults who volunteered for the program each day were administered a validated questionnaire in one of the three languages: English, Hindi or Marathi. All questionnaires were administered over a five days period from the 5th-10th of October 2020, after an informed consent.

The questions were designed to elicit the following details: demographic information, knowledge, attitudes and perspectives regarding COVID-19. In this report, we have analysed only those responses which are related to the use of facial masks relating to COVID-19 transmission. The responses to the following questions were analysed in detail- (a) Q1- do they use the masks outside (yes/no); (b) Q2- if yes, area to be covered by the mask; (c) Q2- duration of usage of masks; and (d) Q3- washing of cloth masks.

The study protocol was approved by the Institutional Ethics Committee at Ashwini Rural Medical College, Hospital and Research Centre, Sholapur, Maharashtra. The inclusion criteria for the study were voluntary participation, and limited to the subjects above the age of 18 years. Residents of that slum not giving consent to participate in the study were excluded.

Statistical analysis

Frequency and percentages were calculated for categorical variables. Median and range was reported for continuous variables. Difference in proportion was examined by $\chi 2$ tests with Yates' correction, if required. According to needs, Fishers' exact test was also used. P value of <0.05 was considered as statistically significant.

RESULTS

Of the 1342 respondents, nearly half were in the age group of 40- 60 years, gender distribution was almost equal and almost 90% of them were either illiterate or educated less than high school and more than half of them had no income (Table 1). Almost a third each had blue collared jobs, or were housewives, while 7% were unemployed. There was no significant association between usage of masks with the gender amongst the study participants (p=0.62).

Of the 1342 respondents, an overwhelming 1232 (91.8%) knew that masks should cover both nose and mouth (Table 2 and Figure 1).

Almost 72% claimed to wear their face masks more than 50% of the time when outside their homes, while 27.5% used them only when in crowded places. Interestingly only 3% said they did not wear masks at all.

There was a significant association with the knowledge regarding proper usage and cleaning of masks with education and occupation (p<0.001), with the illiterate and the retired, performing badly on this criterion (Table 2). Nearly 71% of the study participants wore masks outside house and 27.5% wore mask only in crowded places (Figure 2).

There was a significant association between practice towards frequency of wearing mask outside house and income, with those earning more than 200,000 reportedly wearing the masks 100% of the time (Table 3). Similarly, 86% subjects responded by saying that cloth masks should be washed daily, and 5% said it should be washed once every two days (Figure 3). There was a significant association between frequency of washing cloth mask with age, occupation and education (p<0.001) (Table 4).

Table 1: Socio-demographic characteristics of study participants (n=1342).

Variables	N	%
Age (years)		
18-40	524	39
40-60	647	48.2
>60	171	12.7
Gender		
Male	632	47.1
Female	710	52.9
Education		
Illiterate	405	30.2

Continued.

Variables	N	%
<10th standard	841	62.7
Graduate	83	6.2
post-graduate	13	1.0
Income per year		
No income	756	56.3
<50,000	472	35.2
>2,00,000	21	1.6
50,000-2,00,000	93	6.9
Occupation		
Blue collar	485	36.1
Housewife	517	38.5
Retired	85	6.3
Small business	85	6.3
Student	47	3.5
Unemployed	97	7.2
White collar	26	1.9

Table 2: Knowledge regarding proper usage of mask.

Variables	Don't know		Mouth+nose		Mouth only		Total		Chi square	P value
	N	%	N	%	N	%	N	%		
Age (years)										
>60	31	18.13	140	81.87	0	0.00	171	100	35.55	<0.001
18-40	23	4.39	498	95.04	3	0.57	524	100		
40-60	52	8.04	594	91.81	1	0.15	647	100		
Total	106	7.90	1232	91.80	4	0.30	1342	100		
Sex										
Female	67	9.44	640	90.14	3	0.42	710	100	5.75	0.056
Male	39	6.17	592	93.67	1	0.16	632	100		
Total	106	7.90	1232	91.80	4	0.30	1342	100		
Education										
<10th standard	29	3.45	811	96.43	1	0.12	841	100	86.11	<0.001
Graduate	3	3.61	79	95.18	1	1.20	83	100		
Illiterate	73	18.02	330	81.48	2	0.49	405	100		
Post-graduate	1	7.69	12	92.31	0	0.00	13	100		
Total	106	7.90	1232	91.80	4	0.30	1342	100		
Income per year										
<50,000	28	5.93	443	93.86	1	0.21	472	100	12.14	0.059
>2,00,000	0	0.00	21	100.0	0	0.00	21	100		
50,000-2,00,000	3	3.23	90	96.77	0	0.00	93	100		
No income	75	9.92	678	89.68	3	0.40	756	100		
Total	106	7.90	1232	91.8	4	0.30	1342	100		
Occupation										
Blue collar	28	5.77	457	94.23	0	0.00	485	100	37.45	<0.001
Housewife	54	10.44	460	88.97	3	0.58	517	100		
Retired	16	18.82	69	81.18	0	0.00	85	100		
Small business	1	1.18	83	97.65	1	1.18	85	100		
Student	1	2.13	46	97.87	0	0.00	47	100		
Unemployed	6	6.19	91	93.81	0	0.00	97	100		
White collar	0	0.00	26	100	0	0.00	26	1000		
Total	106	7.90	1232	91.80	4	0.30	1342	100		

Table 3: Attitude towards usage of duration of facial mask use outside the house.

Variables	Less than 50%		More than 50%		Never		Only crowded place		Total		Chi square	P value
	N	%	N	%	N	%	N	%	N	%		
Age (years)												
>60	2	1.17	122	71.35	0	0.00	47	27.49	171	100	35.55	<0.001
18-40	0	0.00	368	70.23	0	0.00	156	29.77	524	100		
40-60	4	0.62	474	73.26	3	0.46	166	25.66	647	100		
Total	6	0.45	964	71.83	3	0.22	369	27.50	1342	100		
Sex												
Female	4	0.56	507	71.41	2	0.28	197	27.75	710	100	5.75	0.056
Male	2	0.32	457	72.31	1	0.16	172	27.22	632	100		
Total	6	0.45	964	71.83	3	0.22	369	27.75	1342	100		
Education												
<10th standard	3	0.36	623	74.08	0	0.00	215	25.56	841	100	86.11	<0.001
Graduate	0	0.00	66	79.52	0	0.00	17	20.48	83	100		
Illiterate	3	0.74	266	65.68	3	0.74	133	32.84	405	100		
Post-graduate	0	0.00	9	69.23	0	0.00	4	30.77	13	100		
Total	6	0.45	964	91.80	3	0.22	369	27.50	1342	100		
Income per year												
<50,000	1	0.21	382	93.86	2	0.42	87	18.43	472	100	12.14	0.059
>2,00,000	0	0.00	9	42.86	0	0.00	12	57.14	21	100		
50,000-2,00,000	0	3.00	53	56.99	0	0.00	40	43.01	93	100		
No income	5	0.66	520	68.78	1	0.13	230	30.42	756	100		
Total	6	0.45	964	71.83	3	0.22	369	27.50	1342	100		
Occupation												
Blue collar	1	0.21	365	75.26	1	0.21	118	24.33	485	100	37.45	<0.001
Housewife	4	0.77	355	68.87	2	0.39	156	30.17	517	100		
Retired	0	0.00	59	69.41	0	0.00	26	30.59	85	100		
Small business	0	0.00	69	81.18	0	0.00	16	18.82	85	100		
Student	0	0.00	37	78.72	0	0.00	10	21.28	47	100		
Unemployed	1	1.03	56	57.73	0	0.00	40	41.24	97	100		
White collar	0	0.00	23	88.46	0	0.00	3	11.54	26	100		
Total	6	0.45	964	71.83	3	0.22	369	27.50	1342	100		

Table 4: Practice regarding frequency of washing of cloth mask.

Variables	Don't know (%)		Every 2 days (%)		Every week (%)		Everyday (%)		No need to wash		Total		Chi square	P value
	N	%	N	%	N	%	N	%	%		N	%		
Age (in years)														
>60	31	18.13	6	3.51	0	0.00	133	77.78	1	0.85	171	100	40.13	<0.001
18-40	20	3.82	30	5.73	1	0.19	471	89.89	2	0.38	524	100		
40-60	52	8.04	38	5.87	0	0.00	555	85.78	2	0.31	647	100		
Total	103	7.68	74	5.51	1	0.07	1159	86.36	5	0.37	1342	100		
Sex														
Female	66	9.3	38	5.35	0	0.00	603	84.93	3	0.42	710	100	6.8	0.146
Male	37	5.85	36	5.70	1	0.16	556	87.97	2	0.32	632	100		
Total	103	7.68	74	5.51	1	0.07	1159	86.36	5	0.37	1342	100		
Education														
<10th standard	28	3.33	56	6.66	1	0.12	753	89.54	3	0.36	841	100	86.45	<0.001
Graduate	3	3.61	5	6.02	0	0.00	74	89.16	1	1.20	83	100		
Illiterate	71	17.53	12	2.96	0	0.00	321	79.26	1	0.25	405	100		

Continued.

Variables	Don't know (%)		Every 2 days (%)		Every week (%)		Everyday (%)		No need to wash		Total		Chi square	P value
	N	%	N	%	N	%	N	%	%		N	%		
Post-graduate	1	7.69	1	7.69	0	0.00	11	84.62	0	0.00	13	100		
Total	103	7.68	74	5.51	1	0.07	1159	86.36	5	0.37	1342	100		
Income per year														
<50,000	30	6.36	27	5.72	1	0.21	411	87.08	3	0.64	472	100		
>2,00,000	0	0.00	1	4.76	0	0.00	20	95.24	0	0.00	21	100		
50,000-2,00,000	3	3.23	3	3.23	0	0.00	87	93.55	0	0.00	93	100	12.90	0.376
No income	70	9.26	43	5.69	0	0.00	641	84.79	2	0.26	756	100		
Total	103	7.68	74	5.51	1	0.07	1159	86.36	5	0.37	1342	100		
Occupation														
Blue collar	28	5.77	26	5.36	0	0.00	429	88.45	2	0.41	485	100		
House-wife	52	10.06	32	6.19	0	0.00	432	83.56	1	.19	517	100		
Retired	15	17.56	4	4.71	0	0.00	66	77.65	0	0.00	85	100		
Small business	2	2.35	3	3.53	0	0.00	80	94.12	0	0.00	85	100	98.04	<0.001
Student	1	2.13	0	0.00	0	0.00	46	97.87	0	0.00	47	100		
Unemplo-yed	4	4.12	7	7.22	0	0.00	85	87.63	1	1.03	97	100		
White collar	1	3.85	2	7.69	1	3.85	21	80.77	1	3.85	26	100		
Total	103	7.68	74	5.51	1	0.07	1159	86.36	5	0.37	1342	100		

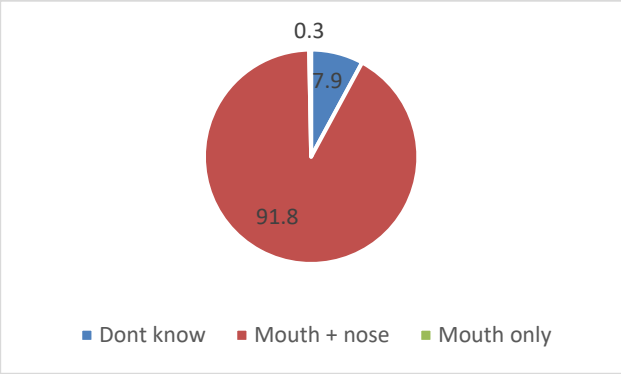

Figure 1: Knowledge regarding proper use of mask covering nose and mouth.

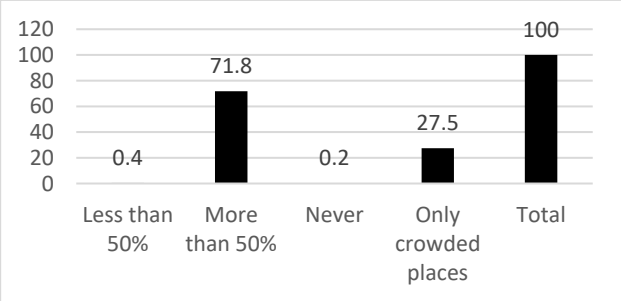

Figure 2: Attitude of wearing mask outside house.

DISCUSSION

As countries begin to unlock their economies and social restrictions get eased, public health experts are apprehensive about increased transmission of the COVID-19 disease. With increasing reports of vaccine hesitancy, and insufficient data on vaccine efficacy, containing the pandemic via immunization remains a logistical challenge. In this situation, the use of masks becomes critical in breaking the chain of community transmission.[3,4]

The inhabitants of urban slums in India battle overcrowding, malnutrition and several comorbidities. The drastic economic impact of the COVID-19 lockdown, and the loss of jobs thereafter, has only worsened the situation. Social distancing is almost impossible in the tenements, and with jobs being few and underpaid, the inhabitants of the urban slums in India are unlikely to get the vaccine anytime soon. This demographic therefore, is exceptionally vulnerable to the disease, and lacks access even to basic healthcare amenities. For them therefore, mask use becomes the front runner in the fight against the pandemic. As is true for any public health guideline, its efficacy is dependent on the messaging adopted by the regulatory agencies, and the knowledge, attitudes and practices by the target demographic. Our study is therefore important in evaluating the impact of the public health guidelines, and in determining the lacunae therein, so that further initiatives can be tailored to better suit the

community at large. The survey also provides an overview of COVID-19 prevention practices almost six months after the lockdown in India, and can help in decision making about future efforts focusing on communication with vulnerable communities to comply with pandemic control measures.

Azlan et al evaluated the responses to an online survery about COVID-19 prevention practices in March-April of 2020, in Malaysia.[5] Of the 4850 respondents, 3719 (76.7%) reported that they wear face masks to prevent the infection by the COVID-19 virus. More than half of the respondents reported that they wear a face mask when going out in public (51.2%). The group found that mask usage was found to be significantly more in males, people between 18 and 49 years of age, students and in those earning less than RM 3,000 per month. They also found that people living in the Central region, above 50 years of age, and with an income over RM 12,000 per month were less likely to wear a face mask. It is interesting to note this statistic is despite the Ministry of Health Malaysia mandate at that time, stipulating that medical face masks should only be worn by those who are showing symptoms of COVID-19 or similar illnesses. The authors attributed this response to both, the lack of clear communication from health regulators, as well as the lack of availability of face masks.

In the current study nearly 71% of the respondents reported wearing of mask for more than 50% of the time outside their houses. Also, our current study revealed that there was a significant association with the knowledge regarding proper usage and cleaning of masks with education and occupation: the poorest performers were the illiterate, and the retired.

In addition, there was a significant association between the wearing mask outside house and income, with those earning more than 200,000 reportedly wearing the masks 100% of the time.

We also found that more than 85% of the subjects believed that cloth masks must be washed daily, and only 5% said it should washed once every two days. There was a significant association between frequency of washing cloth mask with age, occupation and education, as for mask use.

Similarly, in the study conducted in 6919 respondents through online questionnaire in Huabei, China, in January-February, 2020, conducted by Zhong et al revealed most participants had worn masks when going out (98.0%) in recent days.[8] This potentially risky behavior was related to male gender, students, and poor COVID-19 knowledge.

A face mask was worn by 59 and 79.3% of the participants of the 410 respondents in an online survey in Lebanon conducted in April, 2020 by Domiati et al, in case they were sick or when in a crowded place.[9] As many as 75.6% of the respondents replaced their facemask after a single use.

In the current study nearly 90% of the respondents knew that they both mouth and nose are to be covered, this is in contrast to the online survey conducted in April, 2020 in Jammu and Kashmir, India, among those older than 15 years, showed similar results.[6] Of the 1574 respondents more than half (56%) of the respondents had looked for proper ways of wearing the mask. 1104 (73.4%) reported that they were wearing a mask to reduce the risk of infection. Around 32% subjects believed that wearing a mask could prevent acquiring the infection.

Gelsetzer et al conducted a rapid online survey in February-March, 2020 and reported that 37.8% of US participants and 29.7% of UK participants believed that wearing a common surgical mask was 'highly effective' in preventing COVID-19 infection.[7]

Interestingly there is not much information available regarding the frequency of washing the cloth masks, even in health communications by the regulatory authorities. Despite that, an overwhelming majority of the residents of the slum were of the opinion that cloth masks must be washed daily.

The obvious drawback of our study is recall bias, and reporting bias, both of which are true for all self-reported questionnaire-based assessments of KAP patterns. How much of the knowledge demonstrated in the recall assessments is actually put into practice is a matter of conjecture. Also, it also holds to reason that the results of the urban slum in Western India may not necessarily be applicable to the rest of the country.

Our study was different from all of these online surveys since the questionnaire was administered in person during a sero-survey conducted in an urban slum. We are of the opinion that this demographic does not find adequate representation in online surveys due to their limited access to the same, despite being active social media users, in terms of consuming entertainment and news related content. Moreover, since this was an administered questionnaire, literacy was not a barrier to being part of the survey. We therefore believe that our study, within the limits of extrapolation, is a true and valid representation of the KAP in urban Indian slums regarding mask use.

CONCLUSION

There is a significant association between proper usage and cleaning of masks and age, occupation, literacy and income. It is therefore essential that all education initiatives regarding COVID-19 appropriate behaviour must be targeted at the most vulnerable. These include the poor, illiterate and elderly inhabitants of urban slums.

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