Adherence to "Mask Wearing" Behavior among Visitors of Corona OPD at First Designated COVID Hospital in Gujarat during First Wave: A Lesson for Future

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Abstract

Background: Coronavirus disease 2019 is an infectious disease caused by Severe Acute Respiratory CoronaVirus-2. Compared to severe/hospitalized patients, mild symptomatic patients and asymptomatic contacts are more dangerous to the community for spreading this disease. Hence it is very necessary to assess their mask wearing behavior to reduce the burden of disease on the health system. **Method:** This mobile based cross-sectional study was conducted among visitors of corona OPD at 1st designated covid-19 hospital, Gujarat, three months after their visit to corona OPD. The patients were asked if they were wearing masks and maintaining social distancing and washing their hands after returning home. Average 10% of visitors were selected by systematic random sampling method among the daily cases registered at Corona OPD during the first wave April-July 2020. **Results:** Adherence to social distancing, mask wearing and hand washing were 70.7%, 87.7% and 84.2% respectively in visitors. More asymptomatic than symptomatic visitors (90.3% v/s 87.5%) adhered to mask wearing. Among those who did not adhere to mask wearing, 22.4% had one or more co-morbid conditions and 15.4% reported similar symptoms in their family within one incubation period. **Conclusion:** Out of total patients 272(87.7%) of visitors adhered to "mask wearing" behavior. There is a need to convert this compelled covid appropriate behavior into habit and practice by periodic health education during a new wave of pandemic. This will reduce the burden of this disease in terms of morbidity, hospitalization and mortality in future.

Key words: adherence, COVID -1, mask wearing

Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by Severe Acute Respiratory CoronaVirus-2 (SARS-CoV-2). [1] The disease was first identified in December 2019 in Wuhan city of China and has since spread in many countries including India.[2] The virus primarily causes an acute febrile illness, which can precede acute respiratory distress syndrome (ARDS) and death. The World Health Organization (WHO) declared it as a Public Health Emergency of International Concern (PHEI) and on 11 April, 2020 it was declared as a pandemic.[3] In India, the Ministry of Health and Family Welfare (MOHFW) and Ministry of Home Affairs (MHA) invoked Epidemic Disease Act – 1897 and Disaster Management Act – 2005 to enhance powers of the central government to implement prevention activities against this disease across the country.[4] As per the guideline of MOHFW - GOI, first designated covid hospital with separate OPD for patients with covid like symptoms in Gujarat was started in April 2020.[5] Along with this government introduced a series of strict preventive measures like local & regional lockdown, closure of schools / colleges, work from home in non-essential services,

guideline for covid appropriate behavior viz safe distancing, mask wearing and use of soap / sanitizer to flatten epidemic curve.

In the absence of cure and uncertain efficacy of vaccines, adherence to mask wearing is the only gold standard preventive measure to control this pandemic. Mask wearing substantially reduces coronavirus transmission in two ways. Firstly, mask wearing prevents infected persons from exposing others to the virus by blocking exhalation of virus containing droplets into the air. Secondly mask protects uninfected wearers.[6,7]When masks are worn and combined with other recommended mitigation measures, they protect not only the wearer but also the greater community. Hence W.H.O. recommended the wearing of face masks to prevent the spread of coronavirus.[8] Wearing a mask can become uncomfortable, particularly for long periods in a warm environment, and covering the nose and mouth may inhibit verbal and nonverbal communication, particularly for children and deaf individuals.[9] These may be the reasons for non-adherence to mask wearing.

Compared to severe/hospitalized patients, mild symptomatic patients and asymptomatic contacts are more dangerous to the community for spreading this disease. Hence, it is very necessary to assess their adherence to mask wearing behavior in the very early stages of pandemic to reduce the burden of disease on the health system. With this background this study was conducted.

Materials and Method

This mobile based cross-sectional study was conducted among visitors of Corona OPD at the first state level designated COVID-19 hospital in Gujarat, attached to B.J. Medical College, Ahmadabad. After taking ethical permission, first, we took the whole line list of patients who attended COVID OPD from April 2020 to July 2020. We select alternate 3 days from the week and took patients attended COVID OPD on these days. Out of total 10,656 patients, those who were immediately admitted in hospital (1599) and patients transferred to any covid care center (5646) were excluded from study. From the remaining 3411 patients, we selected 10% patients as a convenient sample size for our study. This 10% of the convenient sample was selected by systematic random sampling method, we got 341 patients. Those who were ready to give verbal consent on the phone were included in our study. So out of 341, 24 were non respondents. So, our final sample size was 317. Pretested predesigned pro-forma was used by investigators for data collection. After taking verbal consent we conducted a mobile based interview. Variables like age, sex, education, occupation, overcrowding, co-morbidity, covid test result, symptomatology, outcome of illness, current practices regarding infection prevention, particularly adherence to mask wearing, were asked after taking verbal consent. The interviews were conducted three months after their visit to COVID OPD. An attempt was made to impart health education to patients/family members regarding prevention of coronavirus infection specifically mask wearing. Data was entered & analyzed in excel. For continuous data unpaired t test and for categorical data chi-square test were used. P value < 0.05 was considered as statistically significant.

Results

Table 1 shows comparison of different variables among symptomatic & asymptomatic patients. Out of 317 patients, 286 (90.2%) had mild symptoms and 31(9.8%) were asymptomatic. From total symptomatic patients, 179(62.6%) were male. Mean age of symptomatic patients was 42 years while that of asymptomatic patients was 33 years and this difference was statistically significant. Those who were symptomatic out of them 49(17.1%) had one or more comorbidity. From total symptomatic 71(25%) were tested positive for covid-19 while 215(75%) were negative. Out of 286 symptomatic patients, 7(2.4%) were later died due to complications related to covid as reported by their relatives.

Figure 1 shows clinical presentation of symptomatic patients who visited covid OPD. Out of 317 patients, 286 (90.2%) had mild symptoms and 31(9.8%) were asymptomatic. Major symptoms reported among symptomatic patients were fever (123), cough-cold (53), sore-throat (23), followed by fatigue-body ache (22) and breathlessness (17). Figure 2 shows covid appropriate behavior among patients. Out of total 310 patients, 70.7 % followed social distancing, 87.7 % were wearing mask while going outside and 84.2% were using soap/sanitizer. Adherence to mask wearing and using of sanitizer and soap were better practiced by male as compared to females.

Table 1: Characteristics of patients at COVID OPD during first wave (N=317).

No	Variable	Mild Symptomatic patients n=286(%)	Asymptomatic contacts n=31(%)
1	**Gender** Male Female	 179(62.6) 107(37.4)	 22(70) 9(30)
2	**Age (Years)***	42±15.4	33±15.4
3	**Patients with Co-morbidities** Yes No	 49(17.1) 237(82.9)	 4(12.9) 27(87.1)
4	**COVID test result** Positive Negative	 71(25) 215(75)	 4(12.9) 27(87.1)
5	**Outcome of treatment** Cured Died later	 279(97.6) 7(2.4)	 31(100) 0(0)

***P < 0.05**

Figure 1: Clinical presentation of symptomatic patients (n=286).

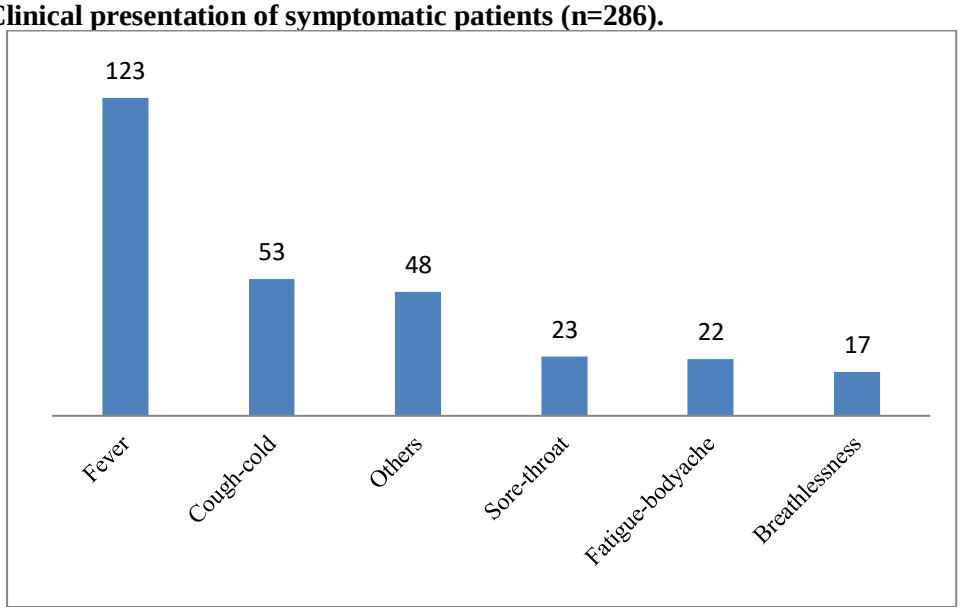
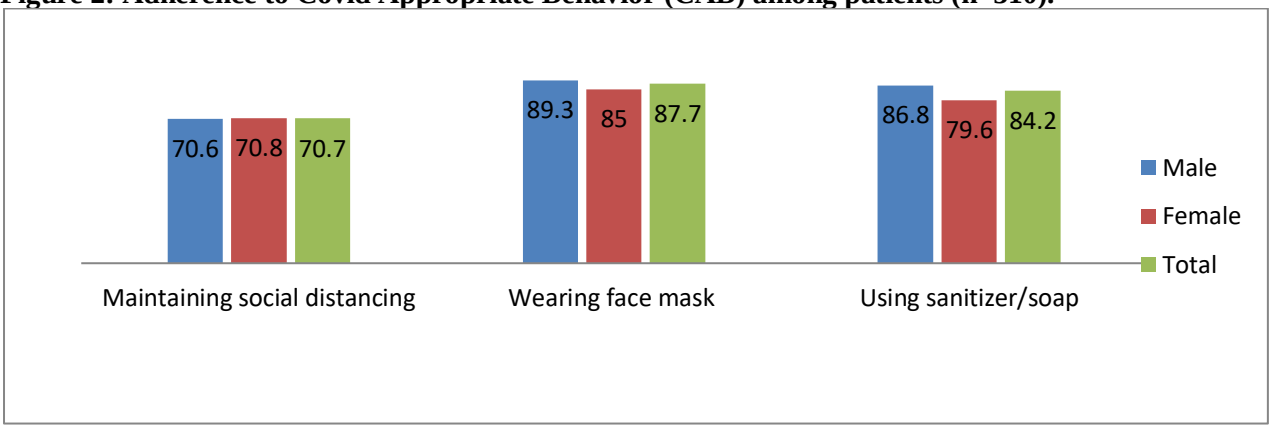


Figure 2: Adherence to Covid Appropriate Behavior (CAB) among patients (n=310).



*7 participants who died were excluded.

Table 2: Adherence to "mask wearing" in patients according to clinico-epidemiological parameters (n=310).

No	Clinic-epidemiological parameters	Wearing mask (n=272)	Not wearing mask (n=38)
1	**Age (in years)**	40.3±15	42.6±17
2	**Gender**		
	Female	96(85.0)	17(15.0)
	Male	176(89.3)	21(10.7)
3	**Education**		
	Illiterate	14(82.4)	3(17.6)
	Literate	258(88.1)	35(11.9)
4	**Occupation**		
	Employed	172(90.5)	18(9.5)
	Unemployed	100(83.3)	20(16.7)
5	**Test results**		
	Positive	65(87.8)	9(12.2)
	Negative	207(87.7)	29(12.3)
6	**Residing at overcrowded household**		
	Yes	41(89.1)	5(10.9)
	No	231(87.5)	33(12.5)
7	**Clinical presentation**		
	Mild Symptomatic	244(87.5)	35(12.5)
	Asymptomatic	28(90.3)	3(9.7)
8	**Other family members who reported similar symptoms within one incubation period (14 days):**		
	Yes	22(84.6)	4(15.4)
	No	250(88.0)	34(12.0)
9	**Co-morbidities:***		
	Present	38(77.6)	11(22.4)
	Absent	234(89.7)	27(10.3)

*$P < 0.05$

Table 2 shows clinic-epidemiological parameters of the patients who adhered to mask-wearing. From total illiterate patients 258(88.1%) were wearing masks while 35(11.9%) still not practice mask wearing while going outside. Even after being employed and working at the office 18(9.5%) patients were not wearing mask. Even though tested positive for covid test 12.2% of patients were not wearing mask. Approximately 11% of patients who were living in overcrowded condition still not wearing mask. Even after developing symptoms 35(12.5%) patients were not wearing masks. Out of those who had comorbidities 11(22.4%) patients were not wearing mask.

Discussion

This study was conducted among visitors of Covid OPD at first designated covid hospital in Gujarat during first wave.

In our study, 90.2% visitors had one or more symptoms while 9.8% visitors were asymptomatic contacts. Neeraj et al,[10] Hasan et al,[11] Li et al,[12] and Quan xing et al[13] reported 28.3%, 13.1%, 29.4% and 20.8% asymptomatic in their study respectively. Number of people without symptoms reporting to Covid OPD may be due to ignorance and uncertainty associated to this new disease. In our study asymptomatic were close contacts of symptomatic or covid positive patients, had travel history or coming from containment zone. Among symptomatic, fever was most common symptoms followed by cough-cold, sore throat, and body ache, for both male and female in our study. Hasan et al[11] and Chen N et al[14] also reported fever and cough as main symptoms. We found overall male predominance without any significant difference between mild symptomatic and asymptomatic contacts. Maria Khan et al[15] in Pakistan and Hasan et al[11] also reported males were affected more. Less involvement of female gender may be due to their less outdoor contacts, having more robust innate immunity or they may be following more hand hygiene. In

our study 25% mild symptomatic patients and 12.9 % asymptomatic contacts were tested covid positive. It demonstrates that asymptomatic contacts can also transmit disease and restricting their movement can prevent further spread of disease.

In our study 70.7 %, 87.7% and 84.2% visitors were following social distancing, mask wearing and use of soap/sanitizer respectively, three months after their visit to Covid OPD. Taylor S et al[16] reported 84% general public in U.S. and Canada adhered to mask wearing. The same study noted belief of "mask is ineffective in preventing covid-19 in" those 16 % people who didn't stick to mask wearing. Nan-chan chiu[17] in Taiwan, based on national epidemiological data, reported that wearing masks, hand hygiene, and social distancing might have contributed not only to the prevention of Covid-19 but also to decline of other respiratory infectious diseases. Nicolas H. et al[18] based on stochastic agent-based micro simulation model suggest that early implementation of face mask use with an achievable adherence of 80 % in the population would have reduced cumulative COVID-19 incidence, mortality, and hospital-bed occupancy, as compared to the observed epidemiological situation in France, supporting the importance face mask as protection measure. Fischer CB et al[19] reported mean covid-19 rates for states in U.S. with at least 75% mask adherence in the preceding month was 109.26 per 100,000 compared to 249. 99 per 100,000 for those with less adherence.

In our study approximately 16.7% patients were not wearing mask although they were working at office and were at high risk of getting infection as in office, they came into contact with so many asymptomatic patients. Even after tested positive for covid 12.2% of patients were not wearing mask which may increase chances of transmission of infection to other close contacts of them.

In our study 11% patients were not wearing mask although they were residing in overcrowding condition. As overcrowding itself, a risk factor for increasing transmission of infection, especially among high-risk people among family like geriatric, children and pregnant lady.

In our study 22.4% patients even after having comorbidities were not wearing mask. Those who had comorbidities were at more risk of getting covid infection and developed more complication as compared to those who don't have comorbidities.

Though conducted at one center only and having a small sample size, the findings of this study help policy makers and health managers to plan and implement face mask wearing and adherence as key strategy to control another wave of such pandemic in future.

Conclusion

In our study we observed overall covid appropriate behavior specially mask wearing was 87.7%. Those who were symptomatic & comorbid were also not taking preventive measures for infection. There is a need to convert this compelled covid appropriate behavior in to habit and practice by periodic health education during next wave of pandemic. This will reduce burden of this disease in terms of morbidity, hospitalization and mortality in future.

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