

Hygiene Predictors among COVID-19 Screened Individuals during the First Wave in Mumbai: A Cross-Sectional Survey

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Abstract:


Introduction: The most important lesson COVID-19 pandemic taught is basic hygiene practices. It is important to understand hygiene practices among patients during first wave, when meager knowledge about the management of COVID-19 was available. **Objective:** To assess the adopted behavioral practices and predictors for COVID-19 infection among screened individuals during the 1st wave. **Method:** A cross-sectional study included COVID-19 screened individuals attending COVID -19 screening OPD at Mumbai. Total 950 participants were interviewed telephonically using convenient sampling method. Logistic regression analysis was performed. **Results:** A total 950 respondents participated, with median age of 36 years (range: 18yrs to 83 years). Respondents, RTPCR positive or quarantined were 36%. Analysis concludes that practices of having seen or read about hand hygiene, face hygiene, maintaining social distancing, cough etiquettes and enforcement of strict lockdown were significantly associated with lower risk of COVID-19 infection (p value <0.05). **Conclusion:** Hygiene Practices were followed correctly by more than 50% of this cohort however few individuals were able to answer knowledge related questions correctly. Simple hygiene practices like face hygiene, cough etiquettes, social distancing, strict following of lockdown and having seen or read information on hand washing were predictors of COVID-19 infection. The study highlights the need for quick and rigorous attempts to educate people during a state of a health emergency.

Keywords: COVID-19, Hygiene predictors, Practices, Pandemic

Introduction:

In India, the state of Kerala identified its first COVID-19 case in January 2020.^[1] When the first nationwide lockdown was implemented on March 24th, 2020 India had 519 cases which increased to 12,000 cases mid-April, 2020. The screening of international travelers started in early March 2020 and International flights were stalled from March 22nd, 2020.^[2] Higher incidence and mortality were noted in Maharashtra.

Mumbai city early on in the pandemic was noted to have the highest number of cases. Mumbai city is the most important entry point to India with a dense population. It is also an epicenter for migrant workers and laborers and about 41% of people reside in slums. Screening for COVID-19 in the city was limited to Kasturba Infectious Disease hospital.^[3] It was the first authorized centers to screen, test and treat individuals for COVID-19. Other centers gradually opened as the number of cases started rising.

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In the beginning of the pandemic, very few people knew about the importance of hand washing, using masks, sanitizers, maintaining physical distance, and quarantine.^[4] Studies were conducted to assess the knowledge, attitude, and practices (KAP) towards COVID -19 in the community and outdoor and indoor patients elsewhere in India.^[5-8] Present study was conducted to know how exactly people who tested positive differed in their adopted behavioral practices from those who did not, especially in city like Mumbai during the beginning of the pandemic.

Method:

A cross sectional study was conducted by conducting telephonic interview of individuals who visited the COVID-19 screening OPD from April 1st to April 30th, 2020. Their contact numbers were obtained from the records. Early in the pandemic RTPCR testing was restricted to International travelers to specific countries, symptomatic individuals and contacts of RTPCR confirmed cases. Participants declared RTPCR positive or were advised home quarantine based on clinical suspicion were grouped together and compared with those who screened negative. Since no study or data was available, through convenient sampling, 1000 participants were anticipated. Out of 1467 mobile numbers contacted, 517 mobile numbers were wrong, out of network or switched off. The final sample size of 950 respondents was achieved.

Approval for study (EC/OA-71/2020) from Institutional Ethics Committee (IEC) was taken. Additionally, permission from Institutional Head of Kasturba Hospital was taken.

Study tool and analysis:

An interview schedule was developed with the help of government approved training materials related to COVID-19. Verbal consent was taken prior to starting the interview. The interview was conducted in Hindi, Marathi, or English, depending on the participant's language preference. For initial

analysis chi-square test was used. The KAP that were significant (<0.05) further underwent binomial regression analysis. Statistical software IBM SPSS version 28 was used for analysis.

Results:

Out of 950 individuals, 79 % (754) respondents were males. The median age was 36 years (18 years to 83 years) (males=36 years, females=33 years). (Table 1) Total number of individuals who detected COVID positive was 342 (36%). Correct hygiene measures followed by COVID positive individuals were as follows; proper hand hygiene 269 (78.6%), adequate time taken while applying soap 247 (72.2%) , soap used for washing up to elbow 294 (85.9%), used sanitizers 313 (91.5%), minimum alcohol content in sanitizer 134 (39.1%), waiting after application of sanitizer 153(44.7%), washing hands more frequently 162 (47.3%), not touching face, nose and mouth 269 (78.6%), using flexed elbow while sneezing 140 (40.9%), appropriate masks usage 181(52.9%), maintaining social distancing always 134 (39.1%), followed lockdown strictly 115 (33.6%) and took hydroxychloroquine prophylaxis 37(10.8%). During initial analysis parameters that significantly differ from the screened negative individuals were education, religion, working for essential services, practice of face hygiene, spread of COVID-19, seen or read information of hand washing, frequency of hand hygiene, using flexed elbow while coughing/sneezing, maintain social distancing, and following lockdown. On regression analysis, factors significantly associated with risk of infection were; having seen or read documents on hand hygiene practices, face hygiene, strictly following lockdown, following cough etiquettes and maintaining social distancing always. (Table 2) It was also noted that large number of individuals contacted the Government approved helpline '1916' (60.8%) and downloaded the 'Arogya Setu application' (37.6%). The most common source for COVID-19 related information was news channels (43%).

Table 1: Demographic Characteristics of COVID-19 Positive and Negative Individuals (N=950)

Demographic variables	COVID-19 infection		Total
	Yes (n=342)	No (n=608)	
Age (Years)			
18-40	213 (34.9)	398 (65.1)	611
41-60	119 (37.9)	195 (62.1)	314
>60	10 (40)	15 (60)	25
Gender			
Male	268 (35.5)	486 (64.5)	754
Female	74 (37.8)	122 (62.2)	196
Education			
Uneducated	3(21.4)	11(78.6)	14
Primary & Secondary	72(38.3)	116 (61.7)	188
Higher secondary	119(29.1)	290 (70.9)	409
Graduate	145 (46.9)	164 (53.1)	309
Professional	2 (18.2)	9(81.8)	11
Ongoing	0 (0)	6 (100)	6
Did not disclose	1 (7.7)	12 (92.3)	13
Working for essential services			
Yes	93 (46)	109 (54)	202
No	249 (33.3)	499 (66.7)	748
Religion			
Hindu	271 (37.5)	452 (62.5)	723
Muslim	52 (35.1)	96 (64.9)	148
Christian	8 (66.7)	4 (33.3)	12
Did not disclose	11 (16.4)	56 (83.6)	67

Discussion:

The present study was conducted during the initial stage of COVID -19 Pandemic to find out the hygiene practices among individuals who visited the COVID-19 screening OPD. Even though it was early in the pandemic a large number of individuals were screened positive (36%).

It was found that, majority of the respondents were males between 18-40 years, this could represent the male predominance among the

working community. Acharya et al and Srivastava et al who conducted the similar studies at West Bengal and North Eastern states also found male preponderance.^[5,6] In present study, majority of respondents were having lower educational status. Similar finding was observed in the study conducted by Gupta et al in North India.^[7] Despite the lower educational status among the study cohort, correct responses for hygiene practices ranged from 54 % to 88% but few participants correctly answered

Table 2 : Knowledge, Attitudes and Practices of Hygiene Measures among Respondents

Hygiene measures	COVID-19 infection			Odds Ratio B-Coefficient (95%CI)	p value
	Yes (n=342)	No (n=608)	Total		
Knowledge of spread of COVID-19 infection					
Airborne, fomites and droplets	10(2.9)	7(1.2)	17	0.790 (0.283-2.204)	0.652
Droplets /fomites or both	247(72.2)	475(78.1)	722		
Others	10(2.9)	17(2.8)	27		
Don't know	75 (21.9)	109(17.9)	184		
Hand hygiene					
Read or seen any official document or information about hand hygiene technique	269(78.7)	388(63.8)	657	0.567 (0.401-0.801)	0.001
Frequency of washing hands / or using sanitizer (10 or more)	230(67.3)	401(66)	631	0.948 (0.659-1.363)	0.773
Face hygiene					
Washing face more frequently	162(47.4)	362(59.5)	524	1.348 (1.009 -1.802)	0.043
Face -mask usage and cough etiquettes					
Covering of mouth while coughing or sneezing	140(40.9)	189(31.1)	329	0.658 (0.484-0.894)	0.007
Social distancing					
Maintaining at least 1 meter distance(always)	134 (39.2)	299(49.2)	433	1.472 (1.087- 1.992)	0.012
Following lockdown					
Followed lockdown (100% or fully)	115 (33.6)	28 (4.6)	399	1.434 (1.049-1.962)	0.024

knowledge related questions. A large number of individuals were aware of the practices without having the background knowledge for the same. Other studies showed higher rates of correct responses as far as hygienic practices were concerned.^[5-9] These findings may be used to guide future IEC interventions.

Knowing the importance of respiratory hygiene was only restricted to medical professions and workers but with the onset of the pandemic it had become essential for every individual to know and follow them. News channels seemed to be the commonest source of information similar to other

studies, however lack of common pre-defined authorized IEC material could have led to many of the misconceptions and lack of adequate knowledge.

Lack of internet availability in phones, insufficient memory space and not finding the app usefulness, many individuals deleted the Arogya Setu app. Individuals who migrated to the villages followed lesser mask usage. Individuals working outdoors found it difficult to access water and soap, as they found sanitizers expensive. Usual responses heard for social distancing was that surrounding people did not follow distancing even though they tried.

Strengths and Limitations of the study:

The telephonic interview led to safely collecting data during a pandemic. It is also beneficial for collecting additional information, clear doubts and reaching the lesser educated individuals which were not possible through an online Google form. The study conducted during the initial phase of pandemic, practices might have changed over a period of time.

Conclusion:

Hygiene measures related to COVID 19 were followed correctly by more than 50% of study cohort however few individuals were able to answer knowledge related questions correctly. Simple hygiene practices like face hygiene, cough etiquettes, social distancing, strict following of lockdown and having seen or read information on hand washing were predictors of COVID-19 infection. The study highlights the need for quick and rigorous attempts to educate people during a state of a health emergency.

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