

KAP Study on Hand Hygiene to Prevent the Spread of Coronavirus, among General Population during Pandemic - An Online National Cross-Sectional Survey

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ABSTRACT

BACKGROUND

As of 29th June 2021, 182,261,516 total cases of Covid-19 with 3,947,170 deaths have been reported worldwide from 218 countries, out of which 30,316,897 Covid-19 cases and 397,668 deaths are from India.¹ Maharashtra contributing 19,16,236 cases and 49,189 deaths.² Hands are one of the main pathways of transmission of the virus. All out efforts have been made by the Governments and health agencies to increase awareness on hand hygiene among general population. However, it is felt that compliance of general population to hand hygiene is poor. So, this study was carried out to assess the knowledge, attitude and practices (KAP) of hand hygiene to prevent the spread of corona virus, among general population during pandemic.

METHODS

A cross sectional study was carried out among general population aged 15 years and above through an online survey obtaining the data by a predesigned google form and analysed using Epi Info V7.

RESULTS

513 individuals from 17 states of India responded. Participation was almost equal in both genders (47.6 % male and 52.4 % females). Majority of the participants (65 %) had good knowledge regarding modes of transmission. In this study, online platforms and doctors emerged to be the most common source of Covid related information. 79.14 % participants had knowledge regarding hand hygiene as an important method of prevention of Covid infection. But only 14.8 % knew the exact time to be devoted towards hand hygiene. Majority had favourable attitude and practices towards hand hygiene. 80.15 % participants from urban area told that 20 - 30 seconds as minimum time for alcohol-based sanitizer to kill most germs on hands which was found statistically significant.

CONCLUSIONS

Majority of participants had good knowledge, favourable attitude and practices regarding hand hygiene as a mode of prevention for Covid-19 infection during this ongoing pandemic situation. Still continuous and more detailed demonstrations of hand washing as well as time to be devoted to hand washing and use of sanitizer is required to break chain of transmission and contain Covid-19 disease.

KEYWORDS

Covid-19, Hand Washing, Hand Rub

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BACKGROUND

As of 29th June 2021, 182,261,516 total cases of Covid-19 with 3,947,170 deaths have been reported worldwide from 218 countries, out of which 30,316,897 Covid-19 cases and 397,668 deaths are from India.¹ Maharashtra contributing 19,16,236 cases and 49,189 deaths.² It is seen that the number of Covid-19 cases are increasing exponentially. Government imposed mechanisms like lock down, closure of schools, containment of area, penalties if rules were not obeyed. Various preventive measures like social distancing, hand hygiene, proper use of face mask have been promoted by government to contain the spread. Corona virus disease 2019 (COVID-19) is a respiratory illness that is caused by a novel corona virus first identified in an outbreak in Wuhan, China. The disease can spread from person to person, both through direct contact with an infected person or through contact with surfaces contaminated with viral droplets. Viral droplets are ejected from the mouth or nose when an infected person coughs or sneezes.^{3,4} Contaminated hands may act as vector in transmission of Covid 19-virus.

For any infection that is transmitted through person to person, hand washing with soap or hand rub with a sanitizer after any contact with a potentially infected person, surface, or object is an effective method to help protect oneself and others from infection. This result was also found in influenza and acute respiratory tract infection where hand hygiene along with face mask reduce its rate in community setting.^{5,6} For novel viruses, it is especially important to practice preventive measures, such as hand washing, cleaning and disinfecting surfaces, and social distancing to slow the outbreak. Hand washing with soap washes the infection-causing germs off one's hands before they get a chance to infect an individual, and before one touches surfaces that could help spread these infection-causing germs to other people. This is why top public health officials continue to emphasize hand washing with soap as a frontline defense during outbreaks, such as corona virus. In their guidelines on how to prevent infection with the novel corona virus, the World Health Organization (WHO) states that people should "wash their hands frequently with soap and water" and also promotes six steps of hand hygiene.⁷

Hand hygiene is low cost, effective and simple method to prevent Covid-19 virus transmission. It reduces transmission by reducing contact and droplet infection. Many public campaigns are being organized in India to promote and support hand hygiene behaviour and also supported by UNICEF.^{8,9} Still, people continue to express doubt that something as simple as basic personal hygiene could have any effect in the context of a pandemic. Adherence by individuals to hand hygiene is necessary to limit the spread of disease and it is affected by their knowledge, attitude and practices regarding the same which was depicted in study which found that intervention on emotional drivers increased hand washing with soap.¹⁰ We therefore undertook this study with the objective of assessing the same.

Objectives

To assess knowledge, attitude and practices on hand hygiene to prevent the spread of coronavirus, among general population during pandemic.

METHODS

The study was approved by Institutional Ethical Committee vide their letter No SKNMC / Ethics / APP / 2020 / 653 dated 30 May 2020. This was a cross sectional study carried out to assess knowledge, attitude and practices on hand hygiene to prevent the spread of corona virus, among general population during pandemic. Study was conducted from 01 June 2020 to 15 July 2020 using a structured questionnaire Google form. Snowball sampling method was used to pull participants from all states of India. Questionnaire based on the objectives of the study were prepared and validated by teaching faculty members of department of community medicine of the institute for language, time taken and ease of understanding and solving. Accordingly, Google form was prepared, and link of Google form was shared via various WhatsApp groups and Face book and requesting the contacts of the investigators to forward the link to their friends and groups. The Google form used in this study can be accessed via the link mentioned.¹¹ Confidentiality of the respondents was maintained by keeping the forms anonymous. Informed consent of the respondents was implied as they had filled up the questionnaire after reading the purpose of the study.

Statistical Analysis

Data was downloaded in MS Excel spread sheet. It was further processed and analysed using EPI INFO 7.2.2.6 version software. Knowledge regarding hand hygiene was tested using information available on website of World Health Organization and Ministry of Health and Family Welfare of India.^{3,4} Knowledge, attitude and practices were denoted as frequencies and percentages. Association between various responses and some socio-demographic characteristics of participants was analysed using chi-square test. P value < 0.05 was considered as statistically significant.

RESULTS

These are shown in the following tables and figures. Across various states, a total of 513 individuals participated in the online survey. As seen in fig no 1, maximum responses were from the state of Maharashtra (83.4 %). There were responses received from 16 other states of India.

The socio-demographic characteristics of the participants has been shown in Table 1. Majority of the participants 396 (77.2 %) were in the age group of 15 - 29 years. An almost equal proportion of male (47.6 %) and female (52.4 %) participation was received.



Figure 1. Distribution of Study Participants across Various States of India

As shown in Figure 2, most common source for information regarding for the participants were online platforms (31.38 %) and their family doctors (30.41 %).

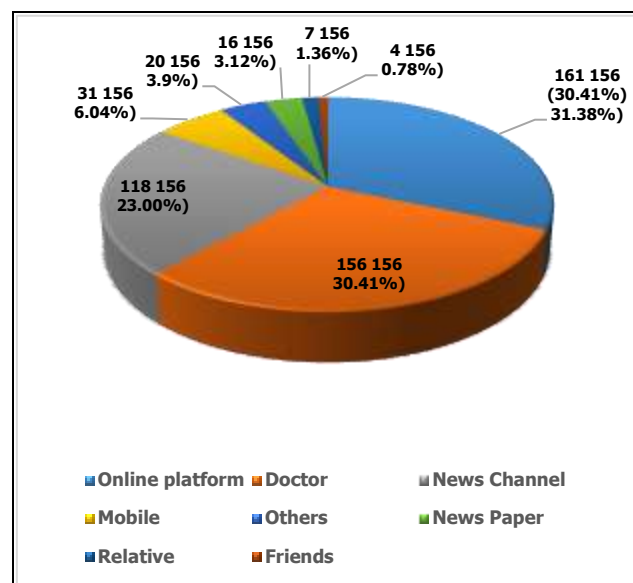


Figure 2. Sources of Information Regarding Hand Hygiene among the Study Participants (n = 513)

Characteristics		Frequency (n = 513)	Percentage (%)
Age in years	15 - 29	396	77.2
	30 - 44	54	10.5
	45 - 59	33	6.4
	Above 60	30	5.8
Gender	Male	244	47.6
	Female	269	52.4
Marital status	Married	113	22.0
	Unmarried	398	77.6
	Widow / widower	1	0.2
Education	Divorcee / separated	1	0.2
	No formal education	1	0.19
	Up to 4 th standard	1	0.19
	Up to 10 th standard	2	0.39
	Up to 12 th standard	176	34.31
	Graduate	208	40.55
	Postgraduate	60	11.70
	Professional	42	8.19
Occupation	Others	23	4.48
	Unemployed	17	3.31
	Retired	16	3.12
	Housewife	16	3.12
	Engineer	8	1.56
	Government servant	12	2.34
	Business man / woman	12	2.34
	Bank employee	4	0.78
	Student	357	69.59
	Health care worker	43	8.38
	Frontline worker	6	1.17
Area of residence	Others	22	4.29
	Urban	434	84.60
	Rural	79	15.40
Religion	Hindu	468	91.2
	Muslim	8	1.6
	Sikh	15	2.9
	Christian	11	2.1
	Others	11	2.1

Table 1. Socio-demographic Characteristics of the Study Participants (n = 513)

310 (60.44 %) had an education level of above intermediate, majority 357 (69.59 %) were students by occupation. 398 (77.61 %) were unmarried. Most of them 434 (84.60 %) were residents of urban areas and 468 (91.2 %) were Hindu by religion.

As shown in Table 2, majority of the participants (79 %) stated that hand hygiene along with maintaining respiratory etiquettes (2.23 %) played the most important part in breaking the transmission of corona virus. However, majority of the participants selected 20 - 30 seconds as the sufficient time to be devoted to sanitize the hand with sanitizer (52.20 %) and hand washing (67.20 %).

		Frequency (n = 513)	Percentage (%)
Important part of breaking the transmission of corona virus is played by which practices	Rinse hands	11	2.14 %
	Sneezing into elbow joint	11	2.14 %
	Coughing into hands	1	0.19 %
	Proper hand hygiene	84	16.37 %
Minimum time for hand hygiene alcohol based hand sanitizer	All of the above	406	79.14 %
	2 - 3 minutes	31	6 %
	20 - 30 seconds	267	52.20 %
Hand washing	40 - 60 seconds	57	11 %
	Less than 10 sec	158	30.79 %
	2 - 3 minutes	76	14.81 %
Hand washing	20 - 30 seconds	345	67.25 %
	40 - 60 seconds	71	13.84 %
	Less than 10 sec	21	4.09 %

Table 2. Knowledge Regarding Hand-Hygiene as a Preventive Measure against COVID -19 among the Study Participants (n = 513)

Majority of the participants had a very favourable attitude towards maintaining hand hygiene. As shown in Table no. 3, 96.3 % agreed that "proper hand hygiene can avoid spread of corona". A staggering 99.22 % agreed that methods of hand hygiene should be taught to all. 56.34 % participants said that emergencies and other priorities make hygiene more difficult but 97.47 % said that they adhere to correct hand hygiene practices at all times. 80.70 % participants said that they do not hesitate to ask others to wash their hands and 88.30 % said that they feel insecure if they don't wash their hands.

		Frequency (n = 513)	Percentage
Do you agree that proper hand hygiene can avoid spread of corona	Agree	494	96.30 %
	Disagree	9	1.75 %
	I don't know	10	1.95 %
Do you feel that correct knowledge of hand hygiene needs to be taught to all	Agree	509	99.22 %
	Disagree	2	0.39 %
	I don't know	2	0.39 %
Do you adhere to correct hand hygiene practices at all times	No	13	2.53 %
	Yes	500	97.47 %
Emergencies and other priorities make hygiene more difficult at times	No	224	43.66 %
	Yes	289	56.34 %
I am reluctant to ask others to do hand washing	No	414	80.70 %
	Yes	99	19.30 %
I feel insecure if I omit hand washing	No	60	11.70 %
	Yes	453	88.30 %
	Total	513	100.00 %

Table 3. Attitude towards Hand-Hygiene as a Preventive Measure against COVID -19 among the Study Participants (n = 513)

		Frequency (n = 513)	Percentage (%)
Are you following hand washing with soap and water regularly	No	9	1.75 %
	Yes	504	98.25 %
Do you forget to maintain hand hygiene at times?	No	367	71.54 %
	Yes	146	28.46 %
Do you use hand sanitizer after touching potentially infected surfaces	No	11	2.15 %
	Yes	500	97.85 %
Total		513	100.00 %

Table 4. Practices towards Hand-Hygiene as a Preventive Measure against COVID -19 among the Study Participants (n = 513)

	Area	Rural (n) (%)	Urban (n) (%)	χ^2 Value	P Value	Interpretation
K 1. Minimum time needed for alcohol-based hand sanitizer to kill most germs on hands	20 - 30 seconds	53 (19.85)	214 (80.15)	8.449	0.004	Significant
	Others*	26 (10.57)	220 (89.43)			
K 2. Minimum time required for hand washing to kill most germs on hands	20 - 30 seconds	51 (14.78)	294 (85.22)	0.307	0.579	Not significant
	Other	28 (16.67)	140 (83.33)			
A 1. I feel insecure if I omit hand washing	No	9 (15.00)	51 (85.00)	0.008	0.927	Not significant
	Yes	70 (15.45)	383 (84.55)			
P 1. Are you following hand washing with soap and water regularly?	No	1 (11.11)	8 (88.89)	0.011**	0.915	Not significant
	Yes	78 (15.48)	426 (84.52)			
P 2. Do you use hand sanitizer after touching potentially infected surfaces?	No	1 (9.09)	10 (90.91)	0.029**	0.866	Not significant
	Yes	78 (15.60)	422 (84.40)			
P 3. Do you forget to maintain hand hygiene at times?	No	56 (15.30)	310 (84.14)	0.008	0.927	Not significant
	Yes	23 (15.86)	122 (84.14)			

Table 5. Knowledge, Attitude and Practices of Study Participants Regarding Hand Hygiene Cross Tabulated with Area

*Others include less than 10 sec, 40 - 60 seconds and 2 - 3 minutes
 **Yates corrected chi square test applied

A greater proportion of participants followed good practices regarding hand washing. As shown in Table no. 4,

98.25 % participants said that they were following hand washing with soap and water regularly, 97.85 % said that they use hand sanitizer after touching potentially infected surfaces, only 28.46 % participants stated that they forget to maintain hand hygiene at times.

As shown in Table 5, 80.15 % participants from urban area, whereas only 19.85 % from rural area, mentioned, 20 - 30 seconds as minimum time for alcohol-based sanitizer to kill most germs on hands. The difference was found to be statistically significant.

There was no statistically significant difference in other parameters of knowledge, attitude, and practices regarding hand hygiene among urban and rural participants.

As shown in table 6, there was no statistically significant difference in the knowledge, attitude, and practices regarding hand hygiene among males and females.

	Gender	Male (n) (%)	Female (n) (%)	χ^2 Value	P Value	Interpretation
K 1. Minimum time needed for alcohol-based hand sanitizer to kill most germs on hands	20 - 30 seconds	137 (51.31)	130 (48.69)	3.129	0.077	Not significant
	Other	107 (43.50)	139 (56.50)			
K 2. Minimum time required for hand washing to kill most germs on hands	20 - 30 seconds	163 (47.25)	182 (52.75)	0.042	0.836	Not significant
	Other	81 (48.21)	87 (51.79)			
A 1. I feel insecure if I omit hand washing	No	30 (50.00)	30 (50.00)	0.161	0.688	Not significant
	Yes	214 (47.24)	239 (52.76)			
P 1. Are you following hand washing with soap and water regularly?	No	3 (33.33)	6 (66.67)	0.276	0.599	Not significant
	Yes	241 (47.82)	263 (52.18)			
P 2. Do you use hand sanitizer after touching potentially infected surfaces?	No	5 (45.45)	6 (54.55)	0.019	0.888	Not significant
	Yes	238 (47.60)	262 (52.40)			
P 3. Do you forget to maintain hand hygiene at times?	No	168 (45.90)	198 (54.10)	1.409	0.235	Not significant
	Yes	75 (51.72)	70 (48.28)			

Table 6. Knowledge, Attitude and Practices of Study Participants Regarding Hand Hygiene Cross Tabulated with Gender

DISCUSSION

In the present situation of a global pandemic that has a high transmission rate, maintaining proper hand hygiene is one of the best measures to address the spread of Covid-19. The present study was an initiative to understand knowledge attitude and practices among the Indian citizens towards hand hygiene as a preventive measure against Covid-19.

In present study, 513 Indian citizens had participated. Majority of the participants 396 (77.2 %) were in the age group of 15 - 29 years and most of them 434 (84.60 %) were residents of urban areas. This outcome might be attributed to individuals from younger age group from urban area are predominant users of internet and social media.

In present study, though 406 (79.14 %) of the participants agreed that hand washing was one of the important methods of breaking the transmission, 267 (52.20 %) and 345 (67.25 %) participants could tell the correct amount of time that should be devoted to sanitizing hands using alcohol based sanitizer and washing hands with soap and water respectively. This could be due to the predominance of age group 15 - 29 years and students among the participants who had access to real-time information via social media. In a similar study by Kartheek et al. though 97.6 % respondents agreed about frequent hand washing, only 77.87 % confirmed about washing hands \geq 20 seconds.¹²

This reflects the discordance between information and implementation among participants. Another study done by Mark et al. in United States found that frequent hand washing was least prevalent (64.6 %) among adults.¹³ In another study done in Thailand among health care workers and general public in hospital setting, smaller proportion of participants knows correct duration for hand washing.¹⁴ In another study done in Uganda, only 8.4 % of the participants had good knowledge of hand hygiene, university students had better knowledge compared to the other participants.¹⁵

In present study, 214 (80.15 %) participants from urban area told that 20 - 30 seconds as minimum time for alcohol-based sanitizer to kill most germs on hands which was found statistically significant. This outcome could be related to presence of higher proportion of study participants from urban areas, who are more likely to use internet and social media than those from rural areas.

In present study, when asked regarding sources of information about hand hygiene, most of them reported social medias like online platform, news channel, and newspaper. 30.41 % participants also reported source of information as doctors. In Covid situation, social medias became most active tool for disseminating the information and many participants found doctor as reliable source of information.

Majority of the participants in the present study had a favourable attitude towards hand hygiene. Majority of participants 494 (96.3 %) reported that proper hand hygiene can avoid spread of corona, 509 (99.22 %) participants reported that correct knowledge regarding hand hygiene should be taught to all and 453 (88.30 %) participants accepted that they feel insecure on omitting hand washing. Study done by Dwipayanti et al. found that majority participants perceived hand washing as effective preventive measure but faced problem in accessing hand washing facilities.¹⁶

In present study, more females and participants from urban area felt insecure when they omit hand washing. This outcome might be the reflection of better knowledge towards hand hygiene among females and participants from urban area, but the difference was not statistically significant.

Majority of the participants in the present study had favourable practices towards hand hygiene, as majority of them 504 (98.25 %) reported that they regularly washed their hands with soap and water, 500 (97.85 %) participants also reported using hand sanitizer after touching potentially

infected surfaces but 146 (28.46 %) also confessed to have forgotten to maintain hand hygiene at times due to some other emergencies. In study done by Edris et al. found that 95.4 % participants are following hand washing practices along with other Covid appropriate behavior.¹⁷ In another study done by Christine et al. found that only 42 % participants mostly practice hand hygiene behaviour and increased frequency with quality of hand washing since Covid-19 pandemic.¹⁸ In another study done by Iqbal in Pakistan found that even though 71 % participants found to follow hand washing practices with hand sanitizer but 26.2 % reported occasional use of it in recent weeks.¹⁹ Study done by Bates et al. found that 94.5 % participants reported to follow hand washing for at least 20 minutes after returning to home or touching another person.²⁰

In present study, even though practices towards hand hygiene were more followed in urban area and by females, the difference was not statistically significant. Study done by Mark et al. also found the similar results where males reported less frequent hand washing.¹³ Study done by Njingu et al. also found the similar results where higher proportion of females reported regular hand hygiene practices than males.²¹

CONCLUSIONS

Based on the present study, more public involvement is needed to promote hand hygiene. This can involve health education campaigns and physical demonstrations of hand washing and sanitization, on social media, television, and radio stations since they are the safe ways of communication in times of such a pandemic like Covid-19. The hand hygiene health education can further be scaled to community campaigns especially in rural areas when the pandemic is over to promote behavioural changes, compliance and solidarity to conquer the Covid-19 contagion.

Limitations of the Study

As virtual snowball sampling method was used, the survey was respondent driven. Since the data collection was done using Google forms, people with access to a smart phone alone could be included. Hence, most probably individuals from really low socio-economic strata got almost no representation in the study sample. Thus, results cannot be generalized to whole population of India.

Strength of the Study

The strength of the study is due to online questionnaire which was available in multiple languages, thus response from far and wide regions could be obtained. Thus, the access was not restricted during national lockdown.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.

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