

Awareness and Usage of 'Aarogya Setu' Mobile Phone Application in Mulshi Block of Pune District: A Clinic-based Study

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Abstract

Background: The 'Aarogya Setu' mobile phone application (app) is designed to inform people regarding the potential risk of COVID-19. A limited amount of information is available about awareness and usage of the app. **Objective:** To assess awareness, opinions, and usage of the 'Aarogya Setu' app amongst out patients of three clinics in Mulshi taluka of Pune district. **Methods:** Convenient sampling technique was used. A total of 234 patients were interviewed who visited the clinics over five months. The interviews were conducted on phone using a pre-tested questionnaire. Additionally, 15 in-depth interviews were conducted with the participants who had previously used the app. on the telephone using an interview schedule. Quantitative data were analyzed by calculating frequencies and associations. An inductive approach was used to analyze qualitative information. **Results:** Around one-third of the participants (33.8%) were aware that the 'Government of India' (GoI) has developed an app named 'Aarogya Setu' to fight against the pandemic. A significantly higher percentage of awareness was observed in the participants less than 35 years of age. The app was mostly known and used for 'obtaining the number of nearby COVID-19 patients'. Overall, the participants believed in the purpose of the app. Concerns were raised about the reliability of the data gained from the app. **Conclusion:** Awareness of the 'Aarogya Setu' app needs to be enhanced amongst all age groups. Trust building in the app must be strengthened simultaneously.

Keywords

Aarogya Setu; COVID-19; SARS-CoV-2; Mobile phone application

Key messages

Mass awareness campaigns on 'Aarogya Setu' are required amongst rural populations.

Introduction

The 'Aarogya Setu' app is developed by the GoI to combat the COVID-19 pandemic, by enabling people to estimate the risk of getting infected with 'SARS-CoV-2'.

The risk is calculated by tracking the interactions between app users with help of Bluetooth technology.

The app is designed to work on 'Android' and 'iOS' mobile phone operating systems. [1]

The available data on awareness and usage of the app is scarce and heterogeneous.

Percentages of awareness have differed in previous studies from 35% amongst participants of a hospital-based study from south India to 97.11% in an online survey from Maharashtra state.

Similarly, app usage in participants has varied in several studies from south India viz. 18%, [2,3] 37.5% [4] and 48.7%. [5]

The app had been appreciated for timely launch, provision of information and notifications about nearby COVID-19

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patients [6] and identifying hotspots. [7] However, there are concerns about reliability [6,7] and privacy of data obtained from the app. [6]

'Aarogya Setu' is one of the prime strategies of GoI to fight against the pandemic.

It empowers an individual to take appropriate decisions by providing updated information and alerts.

Also, the more people use this app, the more useful it becomes.

Hence, the app needs to be utilized by urban as well as rural populations in India.

It is crucial to explore driving factors and gaps in the usage of the app to develop suitable strategies against the pandemic.

Rural India accounts for 65.5% of the population. [8] However, the penetration and utilization of the 'Information Communication and Technology' (ICT) is lesser in rural India as compared to the urban areas. [9]

Hence, we focused our study on rural populations. The objective of the study was to assess awareness, opinions and usage practices about 'Aarogya Setu' amongst outpatients of three clinics in Mulshi block of Pune district.

Methodology

This exploratory study adopted a mixed-method design using quantitative and qualitative approaches.

An international university has established two stationary and one mobile clinic in the Mulshi block of Pune district.

Clinical services are catered to needy and rural populations residing in 22 identified villages.

The study population consisted of the outpatients visiting these clinics from 16th April to 31st August 2020.

The sample was selected by the 'Convenient sampling technique'. The investigators called every phone number recorded in the daily patient registers of the clinics.

In case a patient was not available on phone, any adult family member was interviewed who received the call.

The patients were removed from the list that couldn't be reached after three calls.

Respondents below 18 years of age were excluded from interviews.

The data was collected using a structured questionnaire, which was piloted on 36 participants that visited the clinics from 28th March to 15th April 2020.

The questionnaire was modified based on the findings of the pilot study.

It included open and closed-ended items and was designed to assess the awareness regarding various features of the app as well as opinions and usage practices about the app.

Telephonic interviews were undertaken given the limitations imposed on travelling and social interactions by the pandemic.

Total 234 interviews were conducted from 10th August to 5th November 2020.

At the end of the interview, the investigators imparted complete information about the app to the participants.

Fifty-nine respondents were shortlisted who had used the app previously-they were referred to as 'app users'.

As the second part of the data collection, the investigators called the 'app users' again to conduct in-depth interviews.

Patients who could not be reached after three calls were delisted.

A total of 15 'app users' were interviewed that were willing to participate.

The interviews were conducted from 28th October to 8th November 2020, using an 'Interview Schedule'-to deeply explore opinions about the design, utility and usage of the app.

All the study investigators had public health and social work experience, and they were trained before data collection. All the tools were designed in the Marathi language.

The quantitative data were analyzed by calculating frequencies, and by testing associations using the Chi-square test.

The qualitative data was analyzed by an inductive approach.

Ethical Considerations

Ethical clearance was acquired from the Independent Ethics Committee (IEC) of the university.

Before enrolment in the study, every participant was informed about an audio recording of the interview; and verbal consent was obtained with help of an Informed Consent Form (ICF).

Results

'Table 1' presents the demographic details of the participants. Twenty-five to 34 years was the largest age group (41.9%).

Approximately two-thirds (67.5%) were males. More than half of the participants (57.3%) had completed educational grade from fifth to tenth.

'Salaried employees' was the largest occupational group (38.9%).

Table 1: Demographic profile of participants.

Serial number	Characteristics	Number of participants
A) Age (years)		
(Range: 18 to 70 years, Average: 34 years)		
1	18-24	35 (15.0)
2	25-34	98 (41.9)
3	35-44	58 (24.8)
4	45-59	38 (16.2)
5	60 and above	5 (2.1)
B) Sex		
1	Male	158 (67.5)
2	Female	76 (32.5)
C) Type of residence		
1	Urban	18 (7.7)
2	Rural	216 (92.3)
D) Level of education		
1	Not attended school	10 (4.3)
2	Primary	15 (6.4)
Serial number		
3	Secondary	134 (57.3)
4	Higher secondary	38 (16.2)
5	Higher education	37 (15.8)
E) Type of occupation		
1	Salaried worker	91 (38.9)
2	Laborers	35 (15.0)
3	Trade/Business	29 (12.4)
4	Farmer	28 (12.0)
5	Other	51 (21.8)
	Total	234 (100)

'Figures in parentheses indicate percentage'.

Primary: 1st to 4th standard, Secondary: 5th to 10th standard, Higher:

Secondary: 11th to 12th standard, Higher education: Above 12th standard.

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Awareness about 'Aarogya Setu'

The awareness was measured in a stepwise approach as depicted in Figure 1. Seventy-nine (33.8%) participants were aware of the app. The awareness was significantly associated with the age group (P=0). A higher percentage of young participants (≤ 34 years) were aware of the app in comparison to older participants (≥ 35 years) (Table 2). Seventy-four (31.6%) participants were aware of the term 'Aarogya Setu'. Eighty-one (39.3%) participants were unaware of the 'Aarogya Setu' app as well as the term.

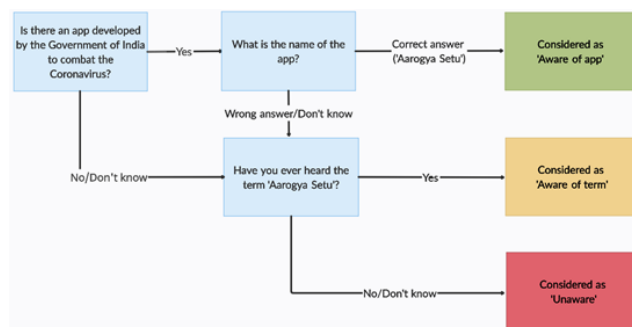


Figure 1: Steps in assessment of awareness about 'Aarogya Setu'.

Table 2: Awareness by Age group.

Age group (years)	Awareness about 'Aarogya Setu'	
	(Number of participants)	
	Yes	No
18-24	16 (45.7)	19 (54.3)
25-34	41 (41.8)	57 (58.2)
35-44	17 (29.3)	41 (70.7)
45-59	4 (10.5)	34 (89.5)
60 and above	1 (20.0)	4 (80.0)
Total	79 (33.8)	155 (66.2)

$\chi^2=36.743$; degrees of freedom=4; P=0.000.
*Figures in parentheses indicate percentages (within age group).

'Figure 2' presents responses about various sources of information about the app. 'television' (44.9%) was the largest source of information, followed by 'friends and family members' (26.9%). 'Figure 3' describes responses about various types of information available in the app. The most known type of information that could be obtained from the app was the 'number of COVID-19 patients nearby the user and identifying a containment zone' (57%).

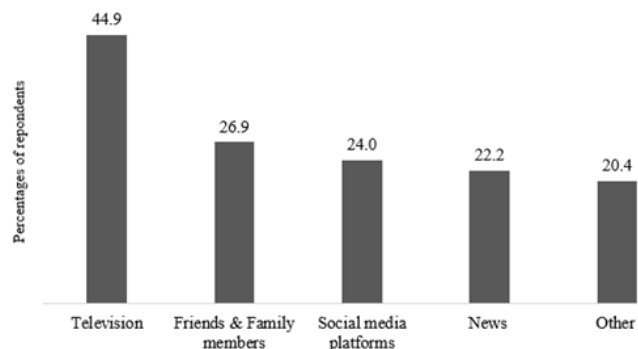


Figure 2: Source of information about 'Aarogya Setu' (n=167).

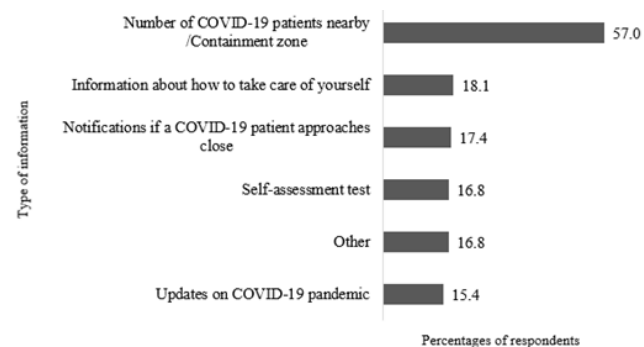


Figure 3: Awareness regarding types of information gained from 'Aarogya Setu' *(n=149).

App usage

One hundred and sixty-four (70.1%) participants had smartphones. Out of them, 53(32.3%) participants had downloaded the app on their phones.

Seventy-three participants were aware of 'Aarogya Setu' as well as owned a smartphone. However, only 38 (52.1%) of them had downloaded the app.

The main reasons for a low response towards download and use of the app were: the participants had challenges in handling smartphone and they did not consider the app necessary.

Only 18 participants had used the self-assessment test when they were suffering from cold, cough or fever.

'Table 3' describes the utilization of 'Aarogya Setu' by purpose.

The app was predominantly used 'to obtain advice on how to take care and protect oneself from the SARS-CoV-2 infection' and 'to receive information on the number of nearby COVID-19 patients'.

Table 3: Utilization of ‘Aarogya Setu’ by purpose * (n=57).

Serial number	Purpose	Number of respondents
1	To get advice about taking care from ‘SARS-CoV-2’	27 (47.4)
2	To get information about the number of COVID-19 patients nearby users or in a particular area	19(33.3)
3	To assess self-status for safety	8 (14.0)
4	To get technical information or updates about SARS-CoV-2/COVID-19 pandemic	7 (12.3)
5	To get entry in particular places like malls and offices	5 (8.8)

*Multiple responses.
‘Figures in parentheses indicate percentage’.

We included an open-ended question to assess the opinions of participants about the app. In general, the participants opined positively about the intent towards the development of ‘Aarogya Setu’. It was considered as ‘handy to obtain relevant information about COVID-19 pandemic’ and ‘useful for everyone’. However, some of the participants expressed concerns that the app does not provide information about ‘quarantined’ and ‘recovered’ COVID-19 patients, does not alert at times though a patient is close, and does not provide accurate information about the number of nearby patients. Participants suggested updating the app such that it would provide clinical advice, would be functional without internet connectivity, and would be less reliant on user-reported data.

We explored personal measures adopted by the participants against the ‘SARS-CoV-2’ infection [Figure 4]. ‘Mask’ was the most adopted measure (77.8%), followed by sanitizer (74.3%).

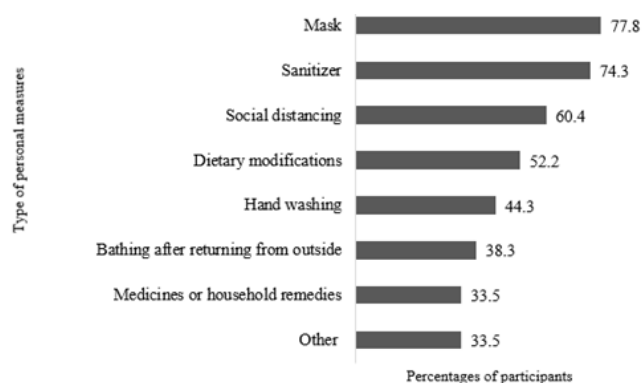


Figure 4: Personal measures adopted for prevention against SARS-CoV-2 infection*(n=230).

In-depth interviews

In-depth interviews revealed ‘Usefulness’ and ‘Concerns’ about the app as two major codes of the data. The application was considered helpful ‘to obtain information about the number of COVID-19 cases nearby users’ and ‘to plan movement to an area by determining the probable risk associated with COVID-19’. After undertaking a self-assessment test on the app, users received subsequent guidance e.g. need to visit a testing centre. Relevant information could be accessed free of cost and at any time of

the day with help of the app. Participants appreciated the app's design, color combinations, and the ‘Tricolors theme’ identical to the Indian flag. The font of the letters was comfortable for reading. The app was utilized as a mandatory prerequisite to get entry into malls and workplaces. Participants believed that the app can be useful in controlling the pandemic if every user fills up correct information about their symptoms in the app. Users questioned the accuracy and reliability of the data obtained from the app. Some participants discontinued the use due to difficulty in operating smartphone, irregular network connectivity and reduction in the incidence of COVID-19 during later stages of the lockdown. [9]

Following are two quotes mentioned by users

"I can get all the information from this app at hands. For the reason I always keep my mobile phone with me, I need not go outside to get any information. I get information about the care and precautions that must be taken"-A rural female.

"The app is useful otherwise but I am a bit skeptical about the functioning of the Corona alarm. It shows less number of positive patients in the COVID-19 hospital and if I go outside it shows a high number of patients"-A rural male.

Discussion

We found lower percentages of awareness in comparison to other studies. [2,3,4,5] This could be possible because we followed a stepwise approach for the assessment of awareness rather than asking a direct question on ‘Aarogya Setu’. Secondary data analysis of public reviews available on ‘Google Play Store’ found that people used the app for self-assessment and getting updates on the COVID-19. [6]

In a community-based feedback survey from a metropolitan city, it was revealed that the app was largely used for ‘identifying nearby COVID-19 patients’, and ‘receiving alerts if a patient comes close’. Our study had similar findings to both studies. Additionally, we found that the app was used to get entry at malls and workplaces. Kodali et al. identified that people were optimistic about the usefulness of the app in the fight against the pandemic. Our study participants also believed largely in the purpose of the app. Few common concerns were recognized between our study

and other studies such as ‘lack of confidence about authenticity and reliability of data’, ‘dependency of the functionality of the app on user-reported data’, ‘no provision of notifications even if a COVID-19 patient was nearby’ [7] and ‘lack of surety about data privacy’. [6,10] Identical to a village-based survey from south India, [4] difficulty in handling smartphones was a major reason for limited installation and app usage amongst our participants too. Kodali et al. identified that the app’s interface was not liked by the users. In contrast to this, our participants mentioned the design, color combinations and fonts acceptable. Similar to other studies, [3,7] need for promotion of the app was identified in our study too.

As strength, our study was exclusively focused on the assessment of awareness and usage of ‘Aarogya Setu’. Other studies covered this aspect as a subset of the assessment of COVID-19 awareness. [2,3,5,10] Our study had a limitation in that it was a clinic-based study as opposed to a cross-sectional design.

This study highlighted the gaps in awareness and utilization practices of ‘Aarogya Setu’. Though awareness was comparatively higher amongst younger participants, only half of them were aware. Participants were familiar with obtaining the number of nearby COVID-19 patients and receiving necessary guidance from the app.

However, features such as self-assessment tests, educational videos, information on national or state level scenario of the pandemic and daily updates were used less frequently. We also found that only a few of the participants were following all the key personal measures such as masks, sanitizer or social distancing. Hence, we propose that comprehensive sensitization campaigns about ‘Aarogya Setu’ need to be undertaken in future. People across all age groups must be informed about each feature of the app.

The campaign should aim at behavior change rather than the dissemination of knowledge amongst communities. Sensitizing a maximum number of people within a short period is the need of the hour. Social media platforms can be a practical way to achieve this target. However, just 17.1% of our participants received information about ‘Aarogya Setu’ from these sources. Additionally, we observed that approximately 50% of smartphone holders had downloaded the app despite being aware of it. Nevertheless, the use of mobile phone and the internet is increasing in rural India. [11,12] Hence, mobile phone applications like ‘What’s app’ and social networking sites like ‘Facebook’ can be successfully used in the awareness drives.

Conclusion

Awareness about ‘Aarogya Setu’ was low in the rural communities. Those less than 35 years of age had

significantly higher percentages of awareness than older participants. Despite owning a smartphone, approximately only half of the participants downloaded the app on their phones. In general, participants only knew about some of the functions of the app such as obtaining information about the number of nearby COVID-19 patients. Though participants were convinced about the utility of the app, they believed that it is worthwhile only if the users fill up accurate information about their symptoms in the app. Participants expressed a lack of reliability about the data available on the app; and suggested that it should be updated considering poor network connectivity and challenges of rural populations in handling smartphones. Large scale sensitization campaigns on various features of the app are needed. Additional efforts are required for promotion and trust enhancement about ‘Aarogya Setu’.

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