Original Article

COVID-19 preparedness among public and healthcare providers in the initial days of nationwide lockdown in India: A rapid electronic survey

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Abstract

Background and Aims: The COVID-19 Pandemic has been raging across continents in recent months. Public health measures are crucial in preventing COVID-19. The Government of India declared a nationwide lockdown on 24 March, 2020. The objective of this study is to assess preparedness among general public and healthcare providers against COVID-19 by way of adopting public health measures at the very beginning of the nationwide lockdown in India. **Settings and Design:** A rapid cross sectional electronic survey was conducted across the country between 25 and 27 March, 2020. **Methods and Materials:** Participants were general public and healthcare providers. Online questionnaire was generated in Google Forms. This included precautionary measures such as staying home, hand hygiene, wearing masks, cough hygiene and advisory against face touching. The web link to the form was shared through WhatsApp. **Statistical Analysis Used:** Descriptive data analysis was done using Epi Info software (version-7). **Results:** A total of 226 persons (general public = 183; healthcare providers [HCPs] = 43) participated in the study. During the lockdown, HCPs spent more time outside than the general public (p = 0.009). Only 47% of the participants claimed to practise frequent hand washing and majority (72%; n = 163) did not wear masks while outdoors. Almost a half (45%) of the participants touched their face frequently and very few (8%) participants covered their mouth or nose while coughing or sneezing. There was no significant difference between HCPs and general public in frequent hand washing (p = 0.456), wearing masks (p = 0.255), face touching (p = 0.632) or covering mouth/nose while coughing or sneezing (p = 0.428). **Conclusion:** There is lack of preparedness among general public and healthcare providers against COVID-19 at the beginning of the nationwide lockdown in India.

Keywords: COVID-19 in India, healthcare providers and COVID-19, lockdown, pandemic, public preparedness

Introduction

Viral diseases have always been serious threats to public health. In December 2019, a cluster of pneumonia-like cases were reported from Wuhan, China. Chinese scientists rapidly isolated a virus from a patient by 7 January 2020 and sequenced the viral genome.[1] This pandemic causing virus was yet another variant of *coronaviridae* family as SARS-CoV in 2002 and later MERS-CoV in 2012 that caused numerous fatalities.[2] The World Health Organization (WHO) officially named the disease as Corona Virus Disease 2019 (COVID-19) on 11 February 2020.[3]

The first case of COVID-19 in India was reported on 30 January 2020.[4] As a preventive measure, the Prime Minister of India ordered a complete nationwide lockdown for 21 days on 24 March 2020. Isolation for a period of 14 days was recommended for the potentially infected individuals as the

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incubation period was 2 to 14 days.[5] By 25th of March, the cumulative number of cases in India had spiked to 562 active cases and around 12 deaths were reported.[6] The number of new cases during this period is plotted in the epidemic curve [Figure 1].

Since COVID-19 primarily spreads through respiratory droplets and fomites, and the asymptomatic period is variable, preventive measures are key in limiting its spread.[3] These largely hygiene-related measures include maintaining physical or social distance, frequent hand washing, covering portals of entry (nose and mouth) with face masks, avoidance of frequent face touching and practice of cough hygiene. In the absence of a specific vaccine against COVID-19 or its definitive treatment, the only available public health tools are quarantine or isolation and community containment measures.[7] This requires strong coordination between all levels of healthcare, starting from primary care facilities which are crucial links in implementing preventive measures, early identification and streamlining of cases, contact tracing and enabling strategic management of the demanding health resources in the country.[8]

This study was conducted to assess the basic preparedness among general public and healthcare personnel against the spread of COVID-19 at the very beginning of the nationwide lockdown in India. Our study was aimed at identifying gaps in uptake of preventive measures and generating appropriate health education material regarding COVID-19.

Methods

A cross-sectional electronic survey was conducted among general public and healthcare providers (HCPs) in India between 25th and 27th March, 2020. Indian citizens, aged 18 years and above were allowed to participate.

Assuming that adequate hand washing would be carried out by both HCPs and general public at rates of about 50%, sample size was fixed at a minimum of 35 for HCPs and 139 for general public, respectively. The percentage of hand washing among general public was expected to be not less than 40% with a difference of not more than 20% between the 2 groups. The power was 90% at this level with 2.5% one-sided significance.

A survey questionnaire was generated in English on *Google Forms*. The survey covered aspects of COVID-19 transmission and preventive measures being followed. These included going outdoors since lockdown was announced; frequency of hand washing or touching one's face; use of masks when outdoors, covering mouth or nose while coughing or sneezing. Participants were also asked about recent onset of common cold or pre-existing respiratory disease (s) and contact with persons who were ill. They were also asked to suggest precautions that could be taken for preventing the spread of COVID-19. The participants were contacted via *WhatsApp* and were provided with the web link of the survey form. Each participant was informed about the study objectives and consent for participation was obtained. No participant identifier data was collected and participants were given a single chance to fill the survey form. Descriptive data analysis was done using Epi Info software [Epi Info 7, build 7.2.3.1 (2019), Centres for Disease Control and Prevention, Atlanta, Georgia, USA and World Health Organization, Geneva, Switzerland]. Categorical variables were summarized as percentages and continuous variables (hours spent outdoors) were summarized as mean (standard deviation). Pearson Chi-square test and independent T-Test were applied to assess the association between healthcare provider versus general public and practice of preventive measures (frequency of hand washing, touching one's face; use of masks, cough hygiene, staying indoors), history of respiratory illness (recent or pre-existing) and contact with persons who were ill. We used the cut-off of 0.05 to draw statistical significance of our inferences.

Ethical considerations

We followed Telemedicine Practice Guidelines Enabling Registered Medical Practitioners to Provide Healthcare Using Telemedicine (25 March 2020) which is part of the Indian

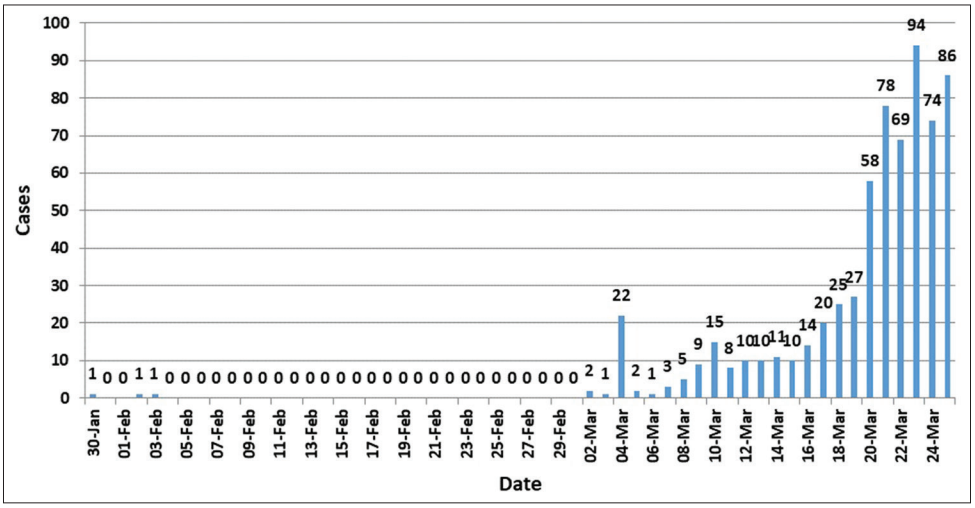

Figure 1: Epidemic curve of COVID-19 in India as of 25th March 2020 (Source of data- https://api.covid19india.org/)

Medical Council (Professional Conduct, Etiquette and Ethics Regulation, 2002) in the absence of guidelines regarding ethics committee approvals following the sudden and unprecedented lockdown. The procedure for approvals was not ready at the time of lockdown on 25th March 2020. Hence, we followed the general E-survey CHERRIES guidelines in good faith.[9] This was later ratified in April 2020 by the Indian Council of Medical Research document on ethics procedures during COVID-19 on the matter of public health and socio-behavioural research (Section 2.11 Clause 1). We responded in a responsible fashion to stimulate thoughts on self-protection in keeping with preparedness required in such emergencies and maintained the ethical principles stated in the Declaration of Helsinki.

Results

A total of 226 participants completed the survey. Of these, 81% (n = 183) were general public and 19% (n = 43) were health care providers (doctors, nurses, pharmacists and laboratory technicians). About a half (47%; n = 106) of the participants washed their hands 3-5 times a day, while the remaining participants washed their hands only after meals, touching objects, after coughing or sneezing. Most (88%) of the participants stayed indoors during the lockdown, while the rest ventured outside for essential tasks. HCPs spent significantly more time outdoors since the lockdown than general public (p value = 0.009). About 72% (n = 163) of the participants did not use masks while going outdoors. More than half (55%) of the participants were able to avoid touching their face frequently. Very few (8%) participants had a habit of covering their mouth or nose while coughing or sneezing. There was no significant difference between healthcare providers and general public in frequent hand washing (p = 0.456), use of face masks when outdoors (p = 0.255), covering mouth or nose while coughing or sneezing (p = 0.428) and touching face frequently (p = 0.632). Although HCPs and general public did not differ in recent episodes of common cold (p = 0.330) or pre-existing respiratory disease (s) (p = 0.486), HCPs had significantly higher frequency of contact with sick persons than the general public (p = 0.010). Participants also provided suggestions on preventive measures against COVID-19 such as *self quarantine, hand wash, social distancing, drink water, use sanitizer, follow WHO* as presented in word cloud format [Figure 2].

Figure 2: Word cloud depicting precautionary measures suggested by participants against COVID-19

Discussion

The present study was conducted at the beginning of the first phase of nationwide lockdown of 1.3 billion people in India, which was the biggest such intervention in the world. This lockdown phase lasted 21 days (25 March 2020 to 14 April 2020) and was implemented as in other countries to reduce the spread of COVID-19 within and from outside the country.[10] Lockdown was enforced by preventing people from going outdoors, closing all establishments, educational institutions and services except essential services such as hospitals, pharmacies, grocery stores and prohibition of all social activities. The lockdown continued into phase 2 and 3, until 17 May 2020. The present study was of a general kind and was a very early attempt (25 to 27 March 2020) in reaching out to apparently healthy persons who were held up at their residences due to the sudden surge in COVID-19 cases and concomitant lockdown which paralysed the nation.

In our study, most participants stayed indoors since the lockdown was announced. This was largely due to the government directives and strict vigilance.[11] As expected, healthcare providers spent more time outdoors as compared to general public and reported higher frequency of contact with sick persons. This posed higher chances of COVID-19 infection among healthcare providers as emphasized earlier.[12] However, practice of frequent hand washing was found lacking among the HCPs and this was comparable with the general public. Similarly, the importance of hand washing in COVID-19 prevention was reportedly overlooked by 13% of healthcare workers in another setting.[13] Overall, less than half of the study participants practised frequent hand washing. This indicates the inadequate practice of hand hygiene at the time of the study in spite of the same advice being handed out for other illnesses such as pandemic influenza.[3]

Most participants did not use face masks while going outdoors and non-use was comparable between general public and HCPs. This could possibly be due to lower perceived risk of COVID-19 infection, as there were relatively less number of cases at the time of the survey or purely due to lack of awareness. This was highlighted in a recent study from China which reported significantly higher usage of face masks in COVID-19 prevalent regions, whereas non-usage was associated with lack of knowledge about COVID-19.[14] Inadequate knowledge and practices by healthcare workers regarding face masks has also been reported earlier.[15] Therefore, diligent training of healthcare staff with accountability mechanisms, whilst ensuring availability of face masks should done apart from focussing on public awareness.

Furthermore, almost half of the study participants had a habit of touching their face frequently and only 8% practiced cough

hygiene. These practices did not differ between HCPs and the general public. Frequent face touching has been reported earlier among medical students, wherein face touching was 23 times per hour on average, with mouth and nose being the most commonly touched areas.[16] This necessitates reinforcement on avoidance of negative sub-conscious behaviours such as neglect of hand hygiene and face touching which increase the risk of COVID-19 transmission.[17] The dual benefits of using masks therefore needs to be emphasized during public awareness drives. Masking not only prevents respiratory droplet spread from asymptomatic infected persons to susceptible individuals while talking, coughing or sneezing but also acts as a barrier from face touching.[18]

Several precautionary measures were suggested by the participants and the most common ones included self-quarantine and social distancing. This was reflected in their practice of staying indoors since the lockdown started. However, there is need to clear misconceptions and ensure clarity in usage of terms that have been associated with COVID-19 such as quarantine, social distancing and "correct techniques" of hand washing, masking and cough hygiene.[19]

Although participant demographics were not assessed in the present study, previous studies have attributed lack of preparedness among general public to lower socio-economic background and associated limited awareness about COVID-19.[20,21]

Even in the healthcare sector, awareness about COVID-19 emerged as a major determinant in observing safe practices and facility preparedness.[22-24] As emphasized earlier, preparedness entails regular updates by authorities on COVID-19 transmission and latest guidelines to ensure that all cadres are trained as per requirements and to address queries or concerns of healthcare staff.[22,25]

Since the lockdown and until today, governments and print media have been actively creating awareness on precautionary measures against COVID-19. Further research could evaluate the uptake of recommended safety measures against COVID-19 pandemic, across sections of society.

The present study has limitations in terms of generalizability as an online survey is restricted to those with access and comprehension of usage. Also our study captures practices in the initial days of COVID-19 in the country and fewer healthcare providers participated in the study. However, important insights have been gained on immediate behaviour change and standard precautionary measures that were followed in the initial days and subsequent nationwide lockdown. The study therefore provides a direction on focus areas of low uptake for public health authorities and key stakeholders. Moreover, health education campaigns on COVID-19 should incorporate appropriate behaviour change strategies.

Concerted efforts by the government are needed to engage primary care physicians who can strengthen the foundations of healthcare in the country during this or future pandemics. With restriction in movement, limited access to secondary and tertiary health facilities, primary care is only accessible to most citizens.[26] Additionally, several primary care facilities have been entrusted by state governments in providing non-COVID health services, triaging of patients with COVID-like symptoms, assisting in COVID-19 sample collection and contact tracing. Hence, it is essential for primary care physicians to develop epidemiological skills, stay abreast with government guidelines, develop innovative safety measures in engaging with patients, provide appropriate health information to patients and their families and ensure adequate supplies are available to prevent spread in primary care set-ups. COVID-19 pandemic should be considered as an opportunity for strengthening the health system through primary care.

Conclusion

Government of India announced the biggest nationwide lockdown in March 2020 to contain the spread of COVID-19. General public and healthcare providers were found lacking in preventive practices such as hand hygiene, face touching, cough hygiene and masking. Almost half of the participants were not practicing hand hygiene and had a habit of touching their face frequently. Only 8% of the participants covered their mouth or nose while coughing or sneezing and 72% did not wear face masks while going outdoors. The practice of preventive measures was comparable between healthcare providers and general public albeit healthcare providers being at greater risk of COVID-19 due to higher frequency of outdoor activity and exposure to sick persons. Most of the study participants had stopped going outdoors since the lockdown was announced. Thus, the only major lifestyle change at the time was staying indoors. This study highlights the overall lack of preparedness in basic preventive measures which was observed among the study participants including healthcare providers; quite of a few of them who are primary care physicians.

Key points

COVID-19 evoked unprecedented response from all countries and India obliged by implementing the biggest lockdown of all times. The measures announced were rolled out so fast that even the healthcare workers were caught by surprise. Our rapid assessment unveiled this lack of preparedness by demonstrating the relative lack of difference in practice patterns with regard to infection prevention between the health care workers and general population. We need the primary care physicians to be adequately equipped to deal with such emergencies in future and they must serve as the leading lights for the population in this regard.

Recommendations

Our study has policy implications as it provides important information on public preparedness during shutdown of a country's functioning. It is imperative to ensure that mechanisms are in place to address fundamental needs and issues of the people for successful completion of such mass scale policy decisions. Future studies could assess current practices among

citizens as the country is well into the pandemic, with continual rise in the number of COVID-19 cases.

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Conflicts of interest

There are no conflicts of interest.

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