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Parental apprehensions on the outbreak of the coronavirus disease in the first week of the COVID-19 pandemic in South India

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ABSTRACT

Background: Coronavirus disease (COVID-19) has been responsible for the loss of numerous lives worldwide. The World Health Organization declared COVID-19 as a pandemic on 11th March 2020. Children have been affected by COVID-19 through the disruption of their daily routine because of the inevitable measures to prevent disease transmission. Social media has played a role in spreading awareness, rumors, and myths regarding COVID-19 causing parental apprehensions. This study aimed to study the knowledge, attitude, practices, and apprehensions of parents of children aged ≤12 years toward COVID-19 in South India.

Methods: The cross-sectional study was conducted on the parents of children aged ≤12 years using Google Forms containing 9 sociodemographic, 10 knowledge, 6 attitude, and 4 questions related to concerns among 1,107 participants from South India.

Results: Overall, 98.4% of parents were aware of COVID-19 etiology, transmission, risk factors, signs, and symptoms. About 23.7% of parents were against allowing their children to play despite the use of personal protective measures. Nearly 84.6% of parents said that social media influenced their opinion regarding COVID-19. Approximately 85.6% of parents were afraid that their children were at risk of COVID-19. About 65% of parents are willing to voluntarily vaccinate their child when a vaccine is developed, whereas another 33.2% of parents are willing to do so based on the cost of the vaccine. **Conclusions:** The majority of the parents are concerned regarding the COVID-19 outbreak. These concerns are accentuated by the role of social media. The parents are willing for voluntary vaccination as and when developed.

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COVID19; parental concerns; vaccination; public health; pandemic; social media and health

Introduction

A large number of pneumonia cases were reported in Wuhan, Hubei Province, China, in December 2019. The patients diagnosed had reported an exposure to a particular wholesale seafood market selling multiple species of live animals [1,2]. The diagnosis and cause of the disease were attributed to a novel member of enveloped coronavirus. It has affected 81,174 people in China and has spread to 150 countries as on 20th March 2020, resulting in 2,34,073 people affected and 9,840 people succumbing to the disease [3]. On 7th January 2020, the World Health Organization (WHO) named it as the 2019 novel corona virus (2019-nCoV), and on February 11th, 2020, the illness associated was named as 2019 coronavirus disease (COVID-19) [4]. The WHO declared COVID-19 as a pandemic on 11 March 2020 [5].

Globally, the number of children who have tested positive is substantially less than the number of adults. A study conducted by Dong et al. [6] from Shanghai Children's Medical Centre showed that young children, particularly infants, were vulnerable to 2019-nCoV infection irrespective of gender variation. The lower incidence of children affected initially was attributed to a lower chance of children

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exposed to the wholesale seafood market. As the pandemic is now in the stage of human-to-human transmission, the risk of infection with 2019-nCoV is substantially more. However, children have been affected by COVID19 with their routine day-to-day life thrown out of gear due to closure of schools, quarantine, lockdown, and other measures to prevent the disease transmission.

COVID-19 infected 2,143 children in China, but the mortality rate was significantly lower than adults [6], and 1.2% of COVID-19 cases reported in the United States were from children [7]. As of 19 April 2020, there were 100 cases of COVID-19 in children in India which accounted for 0.6% of the COVID-19 cases in India [8]. Furthermore, the healthcare system in India is unique with almost 44% of the population dependent on the public health sector, which has only 19% of the workforce of doctors [9]. A large population with diverse cultures and socioeconomic inequalities, wherein the community is given the highest pedestal, makes India vulnerable to the COVID-19 pandemic, especially the children [9].

There has been a change in trend in the recent epidemics of the times, namely, the severe acute respiratory syndrome (SARS) in Guangdong, China, in 2003; H1N1 outbreak in 2009; Ebola in West Africa in 2014; and Zika virus outbreak of 2016 concerning awareness and personal protective measures adopted, which have been attributed to social media that played a role in spreading awareness [10–12]. There have also been reports of social media misused to spread false rumors and unscientific remedies regarding COVID-19. All of these combined with scarcely available data and research over COVID-19 give the scope for parental concerns and apprehensions, which ultimately affect not only the parenting but also the children's health.

As parents are guardians for their children, they are also the custodians to ensure that their children's rights are upheld and protected, especially the right to health [13]. During the time of this COVID-19 pandemic, strong bonds between parents and children are essential to strengthen families, respond, care, and protect the children's future [14].

Aim

The aim is to study the knowledge, attitudes, practices, and concerns of parents of children aged ≤ 12 years toward the 2019 novel COVID-19 in South India

Methodology

A cross-sectional study was conducted on parents of children aged ≤12 years from South Indian states of Tamil Nadu, Karnataka, Telangana, Andhra Pradesh, Kerala, Goa, Maharashtra, and Pondicherry. The geographical distribution of study participants is shown in Figure 1. The study was conducted from 12th March 2020 to 18th March 2020, 1 week just after the WHO declared that COVID-19 as a pandemic. With the moral responsibility of flattening the curve, it was decided to collect the data online (via Google Forms) assuring the practice of the preventive measure of social distancing to combat COVID-19 and managing things well with available resources in this situation of global emergency. The study was carried out, according to the international guidelines of Strengthening the Reporting for Observational Studies in Epidemiology [15].

A total of 1,107 parents were enrolled in the study. The chain referral sampling technique was used to include the study participants. The link of the Google Form was shared with the visitors of Meenakshi Medical College Hospital and Research Center, Kanchipuram, India. The visitors comprised of the residents of Kanchipuram and its surrounding villages as well as tourists from different parts of South India visiting the area. They were urged to forward the link to the people they knew, who were parents of children ≤ 12 years. About 997 responses were collected by day 3, and the number of responses rose to 1,107 by day 8. The data collection was not continued further because of the saturation of responses.

The study followed the principles of the Helsinki Declaration, and the ethical committee's approval was obtained from the Institutional Ethics Committee, Meenakshi Medical College Hospital and Research Center, Kanchipuram India. (Ethical Committee Approval Number: 2020/03-006). The participant information sheet and informed consent form were included in the Google Form itself, without reading the participant information sheet and subsequently clicking the option "Yes" (to the question—do you give informed consent for the study?, and to the specific question—do you have a child whose age is less than or equal to 12 years), and the subsequent sections of the form were not accessible to the participant. Each participant could submit a response only once, avoiding duplication of data. E-mail IDs of the participants were collected for sharing reliable references [17,18] regarding preventive measures to be taken for COVID-19. Care



Figure 1. Geographic distribution of study participants.

was taken not to disclose the E-mail IDs to the third party by single blinding the data.

The questionnaire was constructed based on the theory of planned behavior [16] and considered inputs from the COVID-19 frequently asked questions page of the WHO [17] and the Ministry of Health and Family Welfare (MoHFW), India [18]. A content validation of the questions included in the questionnaire was carried out by the experts from the Department of Pediatrics, Meenakshi Medical College Hospital and Research Center, Kanchipuram, India. An internal consistency in the domains of knowledge, attitude, and concerns of the parents of children ≤12 years regarding COVID-19 was tested by calculating the Cronbach's alpha.

The questionnaire is comprised of three parts. The first part comprises demographic details. The second part of the questionnaire comprises questions regarding the knowledge of the parents toward COVID-19. The third part is comprised of parental practices in awake of COVID-19. The questionnaire is included in Appendix-1. At the end of the questionnaire, awareness was imparted to the participants regarding safe personal protective measures against COVID-19, and the prevalent doubts were clarified individually. The collected data were coded, validated, and analyzed using Statistical Package for the Social Sciences (SPSS), version 22. Frequencies and proportions were used to present the data. The *p*-value of <0.05 was considered as statistically significant and was calculated using SPSS, version 22.

Results

The Cronbach's alpha for the domains of knowledge, attitude, and concern was 0.73, 0.77, and 0.76, respectively, signifying that the questions had good internal consistency in each domain. The mean age of the study population was 34.5 ± 9.1 years. A total of 1,107 participants were enrolled, of which 865 (78.1%) were females, and 242 (21.9%) were males. The demographic distribution of the population is shown in Chart 1.

The age-wise distribution of kids and the number of children of the study population are shown in Table 1.



Chart 1. Pie chart showing the demographic distribution of the study population.

Table 1. Distribution of age and number of children ofstudy participants.

Age group	<	5 year	s	5–12 years			
Number of children	1	2	≥3	1	2	≥3	
Frequency (n)	570	94	4	454	105	2	

Almost all of the population, 99.5% (n = 1,101), had heard of COVID-19, and their source of information is shown in Table 2.

There was no significant association between parental age and awareness regarding COVID-19 (p-value = 0.07). There was also no significant association between parental gender and awareness regarding COVID-19 (p-value = 0.08).

The data revealed that 99.4% (n = 1,100) of the subjects knew that the causative organism of COVID-19 was a virus, whereas 0.4% (n = 5) of the population responded that they thought that the causative organism of COVID-19 was a bacteria. Only 0.1% (n = 2) of the participants responded that they had no idea regarding the causative organism of COVID-19.

In addition, 98.7% (n = 1,093) of the participants responded that they believed COVID-19 to be a disease of the respiratory system, whereas 1.1% (n = 12) said that they did not know about the systemic involvement of COVID-19.

Furthermore, 99.3% (n = 1,099) of the study population knew that the COVID-19 outbreak began in Wuhan, China, and 94.1% (n = 1,043) were aware that the WHO had declared COVID-19 as a pandemic.

The responses of the participants on the perception of the reliability of the source of information are depicted in Table 3.

The responses of the participants on the symptoms of COVID-19 are summarized in Table 4.

The perception of the participants about the mode of spread of COVID-19 is shown in Table 5.

 Table 2. Source of information regarding covid-19 of study participants.

Source	Social media	Newspaper	Television	Doctors	Healthcare workers	Hoardings	Family/friends/relatives
Number	990	959	618	163	184	227	442
Percentage (%)	89.9	87.1	56.1	14.8	16.7	20.6	40.1

Table 3.	Perception of	study population	regarding the r	eliability of sources	of information	regarding COVID-19.
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Course	Social Media				wнo	CDC	Ministry of Health and	Doctors	Other Health	
Source	WhatsApp	Facebook	Twitter	Others	Website	Website	Family Welfare Website	Doctors	Care worker	
Number	937	848	286	211	193	85	42	385	109	
Percentage (%)	84.6	76.6	25.8	19	17.4	8.5	3.7	34.7	9.8	

 Table 4.
 Knowledge regarding symptoms of COVID-19 as told by study participants.

Symptom	Low Grade Fever	High Grade Fever	Fatigue	Cough	Cold	Breathlessness	Sore Throat	Ache/ Pain	Stuffy nose	Sneezing	Diarrhea
Number	174	1,043	688	474	413	620	190	85	174	151	43
Percentage (%)	15.7	94.2	62.1	42.8	37.3	56	17.1	7.6	15.7	13.6	3.8

The data also revealed that 96.6% (n = 1,069) of the participants knew that the incubation period of COVID-19 was 2–14 days and most commonly on the 5th day, whereas 2.1% (n = 23) did not know about the incubation period.

The participants' response to the preventive measures against COVID-19 is shown in Table 6.

This study also shows that awareness regarding the symptoms and preventive measures of COVID-19 was associated with the educational status of the parents. The details are presented in Table 7.

The collected data also indicated that 85.6% (n = 948) of parents were worried that their children were at risk of contracting COVID-19, and 84.6% (n = 936) of parents attributed social media toward increasing their apprehension toward COVID-19. The results of this study show that the higher the age of the parent, the higher was the apprehension regarding COVID-19 (p-value = 0.02).

The data also lead to the fact that 8.1% (n = 90) of parents were not worried at all that their children were at risk of contracting COVID-19, and 7.9% (n = 88) of parents responded that social media did not contribute to their apprehension toward COVID-19.

The study also revealed that only 9.4% (n = 104) of parents said that they came forward to discuss their concerns with their child's pediatrician. Of these parents, 63.4% (n = 66) said that their concerns were satisfactorily addressed, whereas the

remaining 36.6% (n = 38) were not satisfied by how concerns were addressed.

The data also revealed that 99.3% (n = 1,099) of parents said that they would consult a pediatrician immediately if their child developed symptoms of COVID-19, whereas 0.7% (n = 8) said that they would manage on their own.

The survey also indicated that 23.8% (n = 262) of parents would not allow their children out to play given the COVID-19 outbreak, 61.3% (n = 680) would allow with protective measures such as face mask, and 15% (n = 165) would allow as it is.

The data from this study also revealed that 93.7% (n = 1,037) of the parents would strictly enforce handwashing, and 80.8% (n = 895) would periodically change their children's face masks at appropriate intervals. Of these parents, 98.5% (n = 1,090) were aware of the correct disposal technique to prevent further spread of infections.

Of the study population, 98.3% (n = 1,088) were willing to vaccinate their children voluntarily with a vaccine against COVID-19 (as and when developed and available for administration). Furthermore, 33.3% (n = 368) of the study population are open to vaccinate their child voluntarily with a vaccine against COVID-19 (as and when developed and available for administration) only if they felt that the cost was affordable, whereas only 1.7% (n = 19) of the subjects were not willing to vaccinate their

Mode of spread	Respiratory droplets	Touching infected objects/surfaces	Through pets	Foodborne	Others				
Number	1,086	1,027	24	57	70				
Percentage	98.1	92.7	2.1	5.1	6.3				

Table 5. Perception of study of participants toward the mode of spread of COVID-19

Table 6. Perce	ption of study	 participants 	towards	methods of	f prevention o	f COVID-19
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Preventive measure	Using Mask	Using handkerchief	Hand-washing	Social distancing	Avoiding travel	Respiratory hygiene	Others
Number	755	500	915	952	385	194	313
Percentage	68.2	45.1	82.6	85.9	34.7	17.5	28.2

Table 7. Correlation of education of parents with the awareness regarding symptoms and preventive measures of COVID-19.

Education	Aware regarding symptoms and prever	n volvo	Statistical significance	
Education	Yes No			
Primary school level	62	22	0.003	Yes
Higher secondary level	68	10	0.01	Yes
Graduate	749	24	0.004	Yes
Post graduate	169	03	0.006	Yes



Chart 2. Pie chart depicting the response of study participants towards potential vaccination toward covid-19 (when vaccine is developed).

child voluntarily with a vaccine against COVID-19 at all (Chart 2).

Discussion

To the best of authors' knowledge, this is the first study conducted, which assesses parental apprehensions during the 1st week of the COVID-19 pandemic. As COVID19 is a new, emerging disease globally, the global response to the pandemic has had similar approaches concerning practicing social distancing, lockdown measures, and clinical research toward developing a vaccine. It is imperative to understand the apprehensions of parents and understand their attitudes toward COVID-19 to ensure health promotion and promotion of policies that are viable, culturally acceptable, and economically feasible.

Currently, COVID-19 is a topic of daily discussion in mass media and social media among the public. This analysis of the data of this study tries to abstract the information on the prevalent awareness and attitude of a representative parental population of South India toward the prevention and control of COVID-19. The presented findings of this study, which sketch the present perception of a representative parental population with a decent demographic spread, may be of potential utility to the formulation of futuristic initiatives aimed at combating this emerging infectious disease COVID-19.

The study also lends a converging conclusion that there was a good awareness among the study population about the causative organism, mode of spread, and personal protective measures to curb the spread of COVID-19. This can be attributed to a wide reach of social media, health advisories in mass media, and updates in mass media such as television and newspaper.

A large proportion of parents (89.9%) felt that social media was the most reliable source of information regarding COVID-19. This can be attributed to the current trends and lifestyle, where social media dominates and has a major influence on the decision-making process. The conventional methods of conveying information regarding public health emergencies such as mass media (newspaper, television), hoardings, and official websites tend to be relatively less popular or appealing. Hence, government agencies and statutory bodies such as the WHO must adopt approaches via social media as well to ensure the dissemination of correct factual information to the public. This has been so during the current outbreak of COVID-19 with the WHO and various governments taking to social media to convey the messages regarding prevention strategies, updates regarding case detection, and containment measures. The WHO developed a way to open a conversation social media WhatsApp to directly provide the necessary information to the people [19].

The majority of the parents (85.6%) surveyed had an apprehension that their children were at risk of contracting COVID-19. This apprehension can be comprehended and explained by the natural fear that any parent would have. Of them, most of the parents (84.6%) had indicated that social media was responsible for increasing their apprehensions. This is explained by many unscientific messages going around for circulation, along with many publicized rumors, resulting in the undesirable spread of false information and beliefs among the public.

A small proportion of the parents (9.4%) surveyed had discussed these apprehensions with their child's pediatrician. Based on the results of this study, it is clear that parents are significantly swayed away and have a greater belief in what

they see in social media than through conventional health care setup. In these times, the role of the pediatrician is not only to treat the children who have sought medical care but also to address the specific concerns of parents, especially during the times of the current pandemic. Adequate counseling and reassurance can result in better compliance with safe and preventive measures, thus curtail the spread of COVID-19, and also assist in the early detection of cases.

There was an association between the educational status of the parents surveyed and the awareness regarding symptoms and preventive measures of COVID-19. Similar findings were noted in the studies undertaken in recent years such as a study by Lino et al. [20] in 2010 during the H1N1 outbreak in Italy, Bener et al. in 2004 [21] during the SARS Outbreak in Qatar, and Fauche et al. in 2015 [22] during the Ebola Outbreak in the Democratic Republic of Congo.

Most of the parents (98.3%) included in the study are willing for voluntary vaccination against COVID-19, as and when developed and made available to the market. About 33.3% of parents said that cost of the vaccine would make a difference in their choice toward voluntary vaccination. This can be attributed to the socioeconomic status of the family. There was also some proportion of parents (1.7%), who were not willing to consider voluntary vaccination at a later date. Although the current immediate focus during the pandemic is focused on preventing transmission of COVID-19, the research toward finding cure and vaccine development and a long-term goal toward making the COVID-19 vaccine accessible, acceptable, and affordable must be considered to prevent the recurrence of another pandemic.

The limitation of the study is that it was conducted in the 1st week of the WHO declaring COVID-19 as a pandemic and that there are substantial updates toward the existing knowledge on COVID-19 every day. Furthermore, the study was conducted among participants from South India, and hence, an apparent global generalization is not logically feasible. Although the challenges faced globally due to the pandemic are similar, the vast social, cultural, and economic differences do not allow for a complete generalization.

Conclusion

Parental apprehension regarding the outbreak of COVID-19 is naturally expected as it is inherent

and has been substantially accentuated by the role of social media. A very small proportion of parents have discussed these concerns with their child's pediatrician. The role of the pediatrician is all the more crucial in these times to address these concerns, retain the confidence and trust of the parents, and thus, maintain children's health from an overall perspective. The results of this study also showed that parents are open to and have the willingness for administering COVID-19 vaccination to their children as and when it is ready after the regulatory modalities of clinical research and human trial.

Conflict of interest

None to declare.

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None.

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Appendix 1. Questionnaire format.

Name: **Email ID:** Age: **Gender: City and State of Residence:** Highest Qualification: Post-graduate/Graduate/High school/Primary school Have vou heard about COVID19? Yes/No What is your source of information regarding COVID19? (Can choose more than 1) Social media/Newspaper/Television/Doctor/Healthcare worker/Hoarding/Family How many children do vou have under 5 years? How many children do you have 5-12 years? **COVID-19 is caused by?** Virus/bacteria/fungus/parasite/do not know COVID-19 is a disease of? Respiratory system/cardiovascular system/nervous system/gastrointestinal system/musculoskeletal system/ do not know **COVID-19 began in?** Wuhan, China/UK/USA/India/Do not know Is COVID-19 declared as a pandemic by WHO? Yes/No What is a reliable source of information regarding COVID-19? (Can choose more than 1) WhatsApp/Facebook/Twitter/Other social media/WHO website/CDC website/MoHFW website/Local body website/Healthcare workers What are the symptoms of COVID-19? (Can choose more than 1) Low fever/High grade fever/Fatigue/Cough/Cold/Breathlessness/Sore throat/Diarrhea/Aches and Pains/Sneezing/Running nose What is the period between catching the disease and onset of symptoms? 1-14 days/28 days/42 days/Do not know What are the modes of spread of COVID-19? Respiratory droplets/Touching infected objects/surfaces/Through pets/Foodborne/Others What are the preventive measures against COVID19? Using mask/Using handkerchief/Hand-washing/Social distancing/Avoiding travel/Respiratory hygiene/Others Who are likely to be severe cases of COVID19? Neonates/Children/Adults/Geriatric people/Immunocompromised/Those with pre-existing conditions Are you worried that your child could get COVID19? Yes/No/Maybe Have you discussed these concerns with your child's pediatrician? If yes, were you satisfied with your discussion/convinced with the response? Do you think social media has resulted in increase in your apprehension? What will you do if your child develops symptoms of COVID19? Visit Pediatrician/Manage on your own Would you allow your child out to play during these times? Yes/Yes, but only with mask/No, not at all Will you ensure handwashing if your child returns from play? Yes/No/Maybe If your child wears mask, how often will you change it? Hourly/When soiled/Never How will you dispose the mask? Trash can with lid/Trash can without lid/Anyhow If a vaccine is developed against COVID19, will you voluntarily vaccinate your child?

Yes/Maybe, depending on the cost/No, not at all