



# The perceived need for evidence-based COVID-19 management and Tele-education in the North-East region of India: a cross-sectional survey

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## Abstract

Due to the sudden rise in the cases of COVID-19 in the North-Eastern region of India, this study was conducted to survey the felt needs of the medical professionals with regards to education on the evidence-based management of COVID-19. A total of 25 North-East leaders were recruited and a baseline survey was conducted through the digital medium. Out of 25 North-East leaders, 52% were undergoing training in evidence-based medicine in the capacity-building program for evidence-based child health. Participants (48%) strongly agreed and 40% agreed on the possibility of enhanced care by capacity building in the areas of COVID-19 management through discussing cases. Out of 25 North East leaders, 48% agreed to join both as a speaker as well as a participant. Various priority topics on COVID-19 management e.g. childhood, adult, ocular manifestation, ICU management, telemedicine, vaccines, lab protocols, psychological distress, and treatment strategy have emerged. We have presented the findings of the survey which will help guide the mentoring program focusing on evidence-based management of COVID-19 in remote areas through Tele-education.

**Keywords** India · North-East region · Tele-education · Remote areas · COVID-19

## Highlights

- The use of evidence-based medicine in remote areas is increasing.
- Telemedicine and Tele-education can serve the need for capacity building.
- Various priority topics on COVID-19 management have emerged.
- This Survey evaluated the felt needs of medical professionals with regards to education on evidence-based management of COVID-19 through discussing cases.

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## Introduction

A cluster of COVID-19 respiratory infections was reported in late December of 2019 [1]. Fever, weakness, cough, and headache were reported as the major signs and symptoms of COVID-19 infection in humans [1, 2]. COVID-19 symptoms appear after the completion of the incubation period (0 – 24 days) depending on the immune response of the patient, and transmission occurs in close proximity via droplets spreading by coughing [3–5]. To date, many studies have been published on various issues related to the COVID-19 and due to a lack of effective treatment, the most appropriate method to mitigate virus spread is by adopting habits of social distancing, frequent hand washing, wearing a face mask, and self-isolation [4, 6]. In the early phase of the pandemic, every state in India, including the North-Eastern states, adopted precautionary measures like quarantine and isolation upon confirmation of COVID-19 cases [7, 8]. After the rise in the number of COVID-19 cases in the North-East region, this survey was conducted, to assess the felt needs for training in the management of COVID-19 by healthcare professionals in the North-East region of India.

## Methodology

**Study setting** The study setting was across the North-East region of India, encompassing the 7 states namely Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura. An online survey was conducted from the North-East healthcare professionals to prioritize topics for Tele-education in the management of COVID-19 and related issues. Participants were from various medical and regional institutes of the North-East region.

**Study design and sampling** The cross-sectional study utilized an online questionnaire which was circulated via email across the North-Eastern healthcare professionals in July–August 2021. The questionnaire was designed and circulated using Google Forms. We circulated the questionnaire to a cohort of 80 Participants.

**Data Collection** The questionnaire was designed based on the currently available information about COVID-19 according to the literature and available recommendations. The validity of constructs was evaluated by a professional practitioner involved in a healthcare setting. The questionnaire consisted of the working sector, designation, department, field of expertise, previous participation in the capacity building for evidence-based medicine program, interest in COVID-19 case series, possibilities of capacity

building in the areas of COVID-19 through online teaching mode partnering with ECHO, suitable day, suitable time, and topic of interest related to COVID-19 infection.

**Data analysis** All data were exported and analyzed through Microsoft Excel. All the study results are reported in descriptive statistics, numbers, and percentage form.

**Ethical approval and consent to participate** Ethical approval for the study was obtained from the Institutional Ethics board. Electronic consent was taken from all participants. Upon accepting the statements included in the consent form, participants were redirected to the questionnaire.

## Results

**Characteristics of the sample** A total of 25 North-East leaders successfully filled out the online survey. The Male to Female ratio of the participants was 1.27. Both government (72%) and private (28%) sector leaders participated in the survey. The highest participation was seen from basic scientists (24%), clinicians (20%), students (16%), and public health experts (08%) (Table 1). All the participants were from diverse backgrounds covering pharmacology, community medicine, clinicians, and researchers. Most of the respondents were from Assam (68%), Tripura (20%), Arunachal Pradesh (04%), and Manipur (04%). Previous participants of the capacity building for evidence-based child health program were highest from Assam (32%), Tripura (16%), and Arunachal Pradesh (04%) out of the 25 responses. Perceived opportunity for capacity building in COVID-19 management through ECHO platform using digital technology was seen most in Assam [strongly agree (40%), agree (20%), and neutral (08%)], Tripura [strongly agree (08%), and agree (04%), and Arunachal Pradesh [strongly agree (08%)]. Interest in participation as a speaker was highest from Assam (36%) and Arunachal Pradesh (08%). Similarly, interest in joining as a participant was also highest from Assam (16%), Tripura (20%), and Manipur (04%). Suitable days and times to join the online case series for participation, as well as speakers, were Wednesday (56%), Saturday (32%), and post-lunch (80%).

**The topic of interest** From Assam (32%) and Arunachal Pradesh (08%) “COVID-19 in children and adults” emerged as the major topic of interest. Similarly, “COVID-19 and telemedicine” (16%), “Treatment strategies” (36%), “Vaccines in COVID-19” (24%), “Epidemiology” (28%), “Pregnancy and perinatal care” (12%), and “Multisystem

**Table 1** Characteristics of the North-East participants and its frequency

Variables	Assam	Meghalaya	Mizoram	Sikkim	Arunachal Pradesh	Nagaland	Manipur	Tripura
Gender	07 (28%)	-	-	-	02 (08%)	-	-	05 (20%)
• Male	10 (40%)	-	-	-	-	-	01 (04%)	-
• Female								
Working sector	12 (48%)	-	-	-	02 (08%)	-	-	04 (16%)
• Government	05 (20%)	-	-	-	-	-	01 (04%)	01 (04%)
• Private								
Department	01 (04%)	-	-	-	-	-	01 (04%)	03 (12%)
• Pharmacology	02 (08%)	-	-	-	-	-	-	02 (08%)
• Community Medicine	01 (04%)	-	-	-	-	-	-	-
• Physiology	01 (04%)	-	-	-	-	-	-	-
• Pediatrics	01 (04%)	-	-	-	-	-	-	-
• Psychiatry	03 (12%)	-	-	-	-	-	-	-
• Dental & Oral Surgery	01 (04%)	-	-	-	-	-	-	-
• Pharmacy	02 (08%)	-	-	-	-	-	-	-
• Biotechnology	01 (04%)	-	-	-	-	-	-	-
• Research and development	01 (04%)	-	-	-	-	-	-	-
• Anatomy	02 (08%)	-	-	-	-	-	-	-
• Microbiology	01 (04%)	-	-	-	-	-	-	-
• Health & Family Welfare	00 (00%)	-	-	-	01 (04%)	-	-	-
Field of expertise	06 (24%)	-	-	-	-	-	-	01 (04%)
• Basic Scientist/Researcher	05 (20%)	-	-	-	-	-	-	01 (04%)
• Clinician	04 (16%)	-	-	-	-	-	01 (04%)	02 (08%)
• Student	02 (08%)	-	-	-	01 (04%)	-	-	01 (04%)
• Public Health Expert	01 (04%)	-	-	-	-	-	-	-
• Scientist								
Beneficent of capacity building for evidence-based child health program	08 (32%)	-	-	-	01 (04%)	-	-	04 (16%)
• Yes	06 (24%)	-	-	-	01 (04%)	-	01 (04%)	01 (04%)
• No	03 (12%)	-	-	-	-	-	-	-
• Don't know								
Possibilities of capacity building in the areas of COVID-19 through the ECHO platform using digital technology	10 (40%)	-	-	-	-	-	-	02 (08%)
• Strongly agree	05 (20%)	-	-	-	02 (08%)	-	-	01 (04%)
• Agree	02 (08%)	-	-	-	-	-	01 (04%)	-
• Neutral								
• Disagree								
Interested in starting COVID-19 case series in the North-East region	01 (04%)	-	-	-	-	-	-	-
• As speaker	04 (16%)	-	-	-	-	-	01 (04%)	05 (20%)
• As participant	09 (36%)	-	-	-	02 (08%)	-	-	-
• Both	02 (08%)	-	-	-	-	-	-	-
• Not Interested								
Suitable day	02 (08%)	-	-	-	-	-	-	01 (04%)
• Monday	03 (12%)	-	-	-	-	-	-	-
• Tuesday	09 (36%)	-	-	-	02 (08%)	-	01 (04%)	02 (08%)
• Wednesday	02 (08%)	-	-	-	-	-	-	01 (04%)
• Thursday	02 (08%)	-	-	-	-	-	-	-
• Friday	08 (32%)	-	-	-	-	-	-	-
• Saturday								
• Sunday								
Suitable time	-	-	-	-	02 (08%)	-	-	01 (04%)
• Before lunch	15 (60%)	-	-	-	-	-	01 (04%)	04 (16%)
• Post lunch	02 (08%)	-	-	-	-	-	-	-
• Both								

inflammatory syndrome in children” (08%) also emerged as potential topics from North-East region of India (Table 2). Novel topics were also suggested by the survey participants

from Arunachal Pradesh and Assam for discussion. Long COVID, newer drugs, mental illness, COVID-19 in oral, and complications related to the COVID-19 after recovery

**Table 2** Topic of interest on the COVID-19 management

COVID-19 (Theme/Topic)	Assam	Meghalaya	Mizoram	Sikkim	Arunachal Pradesh	Nagaland	Manipur	Tripura
COVID-19 in children/adult	08 (32%)	-	-	-	02 (08%)	-	-	-
COVID-19 and the upper respiratory manifestation	02 (08%)	-	-	-	-	-	-	-
COVID-19 and the ocular manifestation	01 (04%)	-	-	-	-	-	-	-
COVID-19 and ICU management	01 (04%)	-	-	-	-	-	-	-
COVID-19 and Telemedicine	02 (08%)	-	-	-	02 (08%)	-	-	-
COVID-19 treatment strategy	04 (16%)	-	-	-	01 (04%)	-	01 (04%)	03 (12%)
Vaccines in COVID-19	03 (12%)	-	-	-	02 (08%)	-	01 (04%)	-
COVID-19 lab protocols	01 (04%)	-	-	-	-	-	-	-
COVID-19 and the pulmonary manifestation	02 (08%)	-	-	-	-	-	-	-
COVID-19 and epidemiology	04 (16%)	-	-	-	01 (04%)	00 (00%)	00 (00%)	02 (08%)
COVID-19 pregnancy and perinatal care	03 (12%)	-	-	-	-	-	-	-
COVID-19 and psychological issues	05 (20%)	-	-	-	-	-	-	-
COVID-19 and Multisystem inflammatory syndrome in children	02 (08%)	-	-	-	-	-	-	-

were suggested for capacity building and Tele-education (Table 3). Apart from this, the North-East leaders were happy to be a part of the capacity-building program and expressed their interest in joining similar sessions in the future.

**Discussion** Digitalization has played a major role in transforming medical education through Tele-education as well as through Telemedicine. With the rise in the cases of COVID-19 in the North-East region of India, it was a felt need of the healthcare professionals to build evidence-based COVID-19 management strategies and Tele-education in remotes areas. This cross-sectional study presents the findings of an online survey that will guide the mentoring as well as build capacity for evidence-based COVID-19 management.

There have been studies before the COVID-19 pandemic, in which the impact of capacity building [9] and Tele-nursing education [10] has been reported. During the COVID-19 pandemic, it was realized that healthcare professionals were facing pressure to provide clinical care as well as follow the education and training curriculum [11]. To address these issues, Telemedicine and Tele-education have gained much

attention [11]. One study, conducted across 10 countries, has reported that the Tele-education environment fosters student satisfaction [12]. Tele-education has a huge potential in capacity building, which is supported by the previous studies on the knowledge and the perception among healthcare workers [13, 14]. We observed that “COVID-19 and Telemedicine,” “treatment strategies,” “vaccines,” “perinatal care,” “multisystem inflammatory syndrome” are the major topics of interest. Similar studies on the perceived needs showed interest in the topics like “COVID-19 and children with cancer [15],” “psychological impact on healthcare workers and its mitigation strategies [16],” “determinants of COVID-19 vaccine acceptance [17, 18],” “perceived stress, anxiety, and depression [19],” “COVID-19 in critical care units [20],” “COVID-19 Racism and mental health [21],” “patient education in triage during COVID-19 [22],” “the impact on Ophthalmology residency training [23],” and “nurses perception about the care needs of patients with COVID-19 [24].”

This study found Wednesday, Saturday, and post-lunch the most suitable day and time for Tele-education. Similar time preferences have been reported in a study by T.

**Table 3** Novel topics suggested by survey participants

COVID-19 Topic of Interest	Assam	Meghalaya	Mizoram	Sikkim	Arunachal Pradesh	Nagaland	Manipur	Tripura
Long COVID	-	-	-	-	02 (04%)	-	-	-
Newer drugs in COVID-19	01 (04%)	-	-	-	-	-	-	-
COVID-19 in severely mentally ill	01 (04%)	-	-	-	-	-	-	-
Treatment using medications for COVID-19	01 (04%)	-	-	-	-	-	-	-
The maxillofacial region in patients of Guwahati, Assam	02 (08%)	-	-	-	-	-	-	-
Signs & Symptoms of COVID-19 in Oral	02 (08%)	-	-	-	-	-	-	-
Complications related to COVID-19 after recovery	02 (08%)	-	-	-	-	-	-	-

Muthuprasad [25] during the pandemic on Indian students' perception and preference for online education.

In previous studies, authors have raised concern over the efficacy of Tele-education in medical settings [26–28]. Limited resources, poor infrastructure, and technical difficulties are major barriers to adapting the Tele-education, [8, 11] especially in remote areas. Some novel topics e.g. long COVID, newer drugs, and complications related to COVID-19 after recovery were also suggested by the healthcare professionals.

**Strength of the study** These findings from a cohort of thought leaders residing in remote areas of the country can be applied to similar settings, where Tele-education has a huge opportunity to strengthen medical education.

**Limitation of the study** One major limitation of this study is its sampling technique. We approached a cohort of healthcare workers in the North-East via email and the response received was limited. Most of the responses were from the participants of the capacity-building program as reported above. The highest need was reported from a few states only, while others were not able to fill the survey link. This might be due to their posting/residence in remote areas where network issues could be a major barrier. In future studies, we plan to address such limitations targeting a wider and more diverse sample of the population.

**Conclusions** This exercise was focused on the North-East region of India, in starting the newer case series and building capacity by evidence-based case discussions among healthcare professionals. Assam, Tripura, Arunachal Pradesh, and Manipur healthcare professionals were found to be more enthusiastic and showed their interest to join the case series. We recommend that Tele-education and evidence-based COVID-19 management need be incorporated in remote areas through the digital medium, seeing the current COVID-19 situation worldwide.

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**Code Availability** Not applicable.

## Declarations

**Conflict of interest /competing interest:** None.

**Ethics approval:** PGI/IEC/2018/000943.

**Consent to participate:** Not applicable.

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