Call to avert acceleration of COVID-19 from India's Sabarimala pilgrimage of 25 million devotees

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On August 7, 2020, India emerged as the third largest contributor to COVID-19 cases globally. India is also facing significant challenges to COVID-19 mitigation from the Monsoon rain-related evacuations due to floods and landslides, emigrant returnees within India, and from international repatriations. Adding to the challenges would be the forthcoming Sabarimala annual Hindu pilgrimage of 41 days duration normally held during the months of November to December at the Sabarimala peak, at 4,133 ft above sea level in the state of Kerala.[1] The event is attended by an average 25 million pilgrims, though pilgrim volume of 40 millions were reported for some years.

As the Sabarimala pilgrimage calls for pious observance, most pilgrims refrain from the use of formal accommodations (and rest at temples, roadside shaded areas, or camps) and transportation means, adhere to a minimalist vegetarian diet during the preceding 41 days, trek barefoot the mandatory 5 kilometres of ascent to the peak of the mountain in addition to walking the entire distance from their home locations for several weeks, and queue for the divine sighting of the deity often for 8-12 hours. The majority (65%) of pilgrims originate from the neighbouring States of Tamil Nadu, Karnataka, and Andhra Pradesh (See Supplementary file for the Figure). Data on the health challenges of the Sabarimala mass gatherings are emerging. Poor sanitary conditions and makeshift accommodations en-route predisposes pilgrims to respiratory (39%), and gastrointestinal (22%) conditions. Compounded by heat, stress, and exhaustion, medical emergencies are also frequent.[1]

In addition to the general health challenges of this arduous pilgrimage, if allowed to proceed status-quo in 2020, and even if some pilgrims self-select not to participate, the event stands to erase the gains achieved by the host State of Kerala's storied and fragile COVID-19 mitigation success.[3] Additional implications include spill over transmission from pilgrims that will potentially add to the already escalating outbreak in other states of India and in

countries with significant international commercial links to Kerala State (Supplementary file).

Despite being the first state to confirm a COVID 19 case in India on 30 January 2020, the State of Kerala maintained infection to double digits through May 2020, including 5 days in May with no infections detected.[3] Cases spiked after 4th June when repatriation flights carrying stranded emigrant workers of Kerala were allowed to return home. Informed and enabled by the Nipah virus outbreak and related contact tracing infrastructure in a well-functioning decentralized health care system, and with strong political commitment and social mobilization early in the COVID-19 outbreak, the State oversaw extensive and well-documented contact tracing, quarantine, and mitigation efforts including mandatory face coverings.[3] Despite the continuous repatriation accounting for 25% of India's total repatriation flights (though Kerala's population is only 2.6% that of India's), open interstate borders with other States of India, and monsoon rain-related natural disasters, Kerala still maintains the lowest (among Indian states) daily rates of COVID-19 rates (weekly average of 388 or 1/100,000) and test positivity (2.2%)[3].

Currently, for the routine non-mass gathering visits to Sabarimala, the State Government requires all pilgrims to submit a negative SARS-CoV-2 antigen test result through the online queue system. But this may be impractical and insufficient when 25 million devotees or more congregate during the annual pilgrimage. Unlike the Hajj pilgrimage which is international and quota based and restricted through the visa process, being a domestic event, participation in Sabarimala pilgrimage is uncoordinated and required no registration for participation until last year. We welcome the Kerala state government decisions to make the virtual queue system into a mandatory requirement for this year's pilgrimage and to restrict the number of pilgrims in *Sannidhanam* (the main temple premise) to 50 at a time. However, without a blanket restriction on number of pilgrims who can register through the queue system, even

this may result in stranding of thousands of registered pilgrims elsewhere on the way to temple. Also, the pilgrimage site being located in a forest, illegal routes may be formed by eager pilgrims.

If held unrestricted, disease importation can happen via pilgrims originating from majority pilgrim contributing States that also hold 2nd, 4th and 5th places in COVID-19 burden in India[5] (Supplementary file). Kerala has the highest per capita health care expenditure in India, low per capita gross domestic product (GDP), and a high public debt (30% of GDP).[6] 10% of Kerala's 35 million are international migrant workers whose remittances contribute significantly to Kerala's income.[6] Majority (89%) of the migrants serve in the Gulf Cooperation Council (GCC) countries. Therefore, increasing COVID-19 rates in the State can adversely affect their international employment prospects and subsequently the State's economy. Though we lack data on international participation in Sabarimala pilgrimage, (by Kerala's emigrant returnees or Hindu diaspora in other countries), the high volume of international emigrants from Kerala (average, one person per 8 households) coupled with Kerala's population density and air linkages would be sufficient to accelerate international transmissions.[7]

The next two months are critical for all stakeholders including the Government of Kerala State and the temple authorities to carefully assess the two options: event cancellation versus a highly restricted, organized, and managed event as was done with the 2020 Hajj.[8] Cancellation of the religious event can cause resentment among a section of the community**,** whereas an escalation of COVID-19 cases from a poorly managed pilgrimage can erode people's trust in government and compliance fatigue of mitigation advisories.

Event cancellation is the best option to avoid all event related transmission of COVID-19,[8] and the least expensive option as it only requires manpower to block access to the Sabarimala

peak and risk communication. However, if the authorities prefer an alternate option, the authors recommend a highly restricted event by reducing the number of pilgrims to 5,000 over the 42 day period selected using a lottery method, to fully comply with COVID-19 mitigation principles while respecting the religious sentiments surrounding the event.[9,10] [See table 1 for the Panel of recommendations]. This recommendation is based on the existing World Health Organization guidelines on mass gathering in general and based on the criteria used during the restricted Hajj2020.[9,10] The Hajj mass gathering normally accommodates over 3.5 million pilgrims but was restricted to 1,000 this year.[8] The Hajj 2020 implemented pre- and post-event testing and quarantine, supervised transportation, and monitoring of mitigation by health authorities. The authors are cognizant of the enormous logistical and financial burden to host a managed event that fully respects public health principles. Kerala State's legacy of steering the COVID-19 mitigation offers hope for overcoming such challenges through public private partnerships and civic society engagement.

Sabarimala pilgrimage has continued for centuries and the involvement of health sector in its management so far has been reactive. The emerging science on mass gatherings and COVID-19 can serve as an impetus to develop a Sabarimala public health framework.

Acceleration of COVID-19 transmission through religious gatherings in Malaysia and India stands as a warning.[11,12] No doubt, the COVID-19-relevant modifications to the Sabarimala pilgrimage can will help Kerala sustain course with its legacy of COVID-19 mitigation, avoid further case seeding in other Indian States, and assure COVID-19 free pilgrimage experience for the many pilgrims. Doing so would be the State's unique contribution to countries with extensive economic and transportation linkage to Kerala.

Highlights

India has the third-highest COVID-19 burden. Hosting the Sabarimala pilgrimage of an estimated 25 million can compromise the near-mitigated but fragile COVID-19 status of the host State of Kerala, accelerate the ongoing outbreaks in other states of India, and potentially in multiple countries with emigrants from Kerala.

References:

1. Rajasekharan Nayar K, Fazaludeen Koya S, Mohandas K, et al. Public health implications of Sabarimala mass gathering in India: A multi-dimensional analysis to be published in: Travel medicine and infectious disease [published online ahead of print, 2020 Jun 16]. Travel Med Infect Dis. 2020;101783. doi:10.1016/j.tmaid.2020.101783
2. Government of Kerala. Department of health. Covid-19 dash board, available from https://dashboard.kerala.gov.in/index.php
3. Government of India. COVID-19 State wise Status. Ministry of health and family welfare, available from https://www.mohfw.gov.in/
4. PRS legislative research. Kerala Budget Analysis 2020-21 PRS India. 2020, available from: https://www.prsindia.org/
5. Zachariah KC, Mathew ET, Rajan SI. Impact of Migration on Kerala's Economy and Society. International Migration. 2001 Mar;39(1):63–87.
6. Ebrahim, S.H., Zhuo, J., Gozzer, E., Ahmed, Q.A., Imtiaz, R., Ahmed, Y., Doumbia, S., Rahman, N.M., Elachola, H., Wilder-Smith, A. and Memish, Z.A., 2020. All hands on deck: a synchronized whole-of-world approach for COVID-19 mitigation. Int J Infect Dis. 2020 Sep; 98: 208–215. doi: 10.1016/j.ijid.2020.06.049
7. Memish ZA, Ahmed Y, Alqahtani SA, Ebrahim SH. Pausing super spreader events for COVID-19 mitigation: International Hajj pilgrimage cancellation [published online ahead of print, 2020 Jul 13]. *Travel Med Infect Dis*. 2020;36:101817. doi:10.1016/j.tmaid.2020.101817
8. World Health Organization. WHO Health Emergency Dashboard. WHO (COVID-19) Homepage, available from https://covid19.who.int/region/emro/country/sa
9. Che Mat NF, Edinur HA, Abdul Razab MKA, Safuan S. A single mass gathering resulted in massive transmission of COVID-19 infections in Malaysia with further international spread. *J Travel Med*. 2020;27(3):taaa059. doi:10.1093/jtm/taaa059
10. Sarita Azad, PhD, Sushma Devi, MSc, Tracking the spread of COVID-19 in India via social networks in the early phase of the pandemic, *Journal of Travel Medicine*, , taaa130, https://doi.org/10.1093/jtm/taaa130

Panel: Suggested list of actions to ensure a safe pilgrimage in Sabarimala

Preparation

- Establishing a COVID 19 command and control centre exclusively for Sabarimala. Develop website/mobile app for online registration of pilgrims interested in lottery draw in Malayalam, Tamil, Kannada, Telegu, and Hindi followed by District level in-person registration venues.
- Restrict the total pilgrims to 5,000 in-state pilgrims staggered during the 6 weeks of scheduled pilgrimage. Of the 5,000 pilgrims allocate 60% to persons of other State origin residing in Kerala at the time of registration. Each of the 6 weeks of pilgrimage season could be designated to districts to enable ease of transportation organization and future contact tracing if needed.
- Age: Completed 20 years of age (the first day of scheduled departure for Sabarimala) and not exceeding 50 years on the last day of scheduled end of pilgrimage period.
- Comorbidities: Exclude persons with a persons with a verified medical history of uncontrolled diabetes mellitus, hypertension, chronic renal failure, liver failure, congestive heart disease, chronic obstructive pulmonary disease, coronary artery disease, immunodeficiency, and obesity. The mobile application/website should have a feature for uploading self-declared information. Priority given to COVID-19 recoverees.

Health visit

- Persons who are selected via the lottery receive invitation for health verification and testing 15 days prior to the scheduled date of departure. Placement of individually identifiable electronic non-removable monitoring tools on all registered and accepted pilgrims, to enable compliance monitoring of home isolation for 14 days prior to Sabarimala and 10 days post-pilgrimage and to aid contact tracing when needed.

Transportation to pilgrimage sites

- Kerala State Department of Health (DoH) or Sabarimala Temple Authority designated transportation beginning with district level pick up at the beginning and drop off after completion accompanied by disease control officer.
- COVID-19 testing prior to departure, with mandatory face coverings, temperature measurement, and hand sanitizer use throughout the trip and during rituals monitored by designated disease control officer.
- Restriction of mingling or group dining permitted, and compliance monitored by designated DoH personnel
- All pilgrims provided with packed food and drinking water by the Kerala state government at a nominal cost, ensuring safe disposal of the waste. No restaurants to be allowed.
- Pilgrims use the same seats in the same buses throughout the journey.
- Physically distanced en-route and on-site accommodation arranged by organizers to assure physical distancing.

Crowd management

- Restrict the permission to designated number of pilgrims per day, in the high crowd potential areas in *Sannidhanam* (the main temple) like *pathinettaampadi* (the '18 steps' leading to the deity), *mandapam* (the halls), and the *balikalpura* (the altar), and during *Neyyabhishekam* (pouring of ghee over the deity).
- Quota system to be extended to other temples where pilgrims visit, primarily the Pampa Ganapathi temple, and Nilakal Mahadeva temple. DoH to maintain health posts in all these temples with facilities for temperature measurement and hand sanitizer.

Ritual site measures

- Religious offerings (*Prasadam including appam*) to be packed and given to pilgrims only when they board the return buses
- Only the temple priests and staff to attend the *Harivarasanam* (the evening prayer while closing the temple).
- No other gathering allowed during any days, including the day of '*Makaravilakku'.*
- No touching or kissing of ritual surfaces

- All solid surface ritual areas are periodically disinfected

Symptomatic pilgrims

- Isolation and quarantine at site hospital and exclusion from rituals

Post event measures

- COVID-19 tests done at the end before departing for home quarantine and at the end of home quarantine.

All pilgrims are quarantined and monitored using the e-bracelet

- Mandatory home quarantine for 10 days for pilgrims with no prior history of COVID-19 and pilgrims with symptoms are tested and triaged as per DOH protocol
- Pilgrims with the previous history of confirmed COVID-19 are home quarantined for 7 days