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Short Communication

Health Management and Policy Section

COVID-19 Prevention Protocol for an Organised Mass Gathering-An Essential Requisite in Pandemic and Post-pandemic Phase

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ABSTRACT

Coronavirus Disease 2019 (COVID-19) pandemic has stirred up chaos in the whole world. After prolonged lockdowns, finally, society is opening again for business and day-to-day life. Mass gatherings are undoubtedly again expected to start, but carry additional risks for transmission of the virus. We designed a concept model that was validated in about 1000 people gathering in a convocation ceremony at the beginning of the COVID-19 outbreak. A protocol was made, a risk assessment was done, and attendees followed-up. The emphasis on thermal screening, hand hygiene, physical distancing, open-air ventilation, refusing attendees having Influenza-Like Illnesses (ILI), and other preventive measures were the means to contain the potential transmission in an organised mass gathering of this magnitude. The dictum "prevention is better than cure" held amidst this outbreak. As a result of this well-structured mass gathering, the event was quite successfully conducted. Further event planning in the COVID-19 scenario or other outbreaks of similar infections must be managed in this way for the prevention of spread.

Keywords: Convocation, Coronavirus disease 2019, Hand hygiene, Questionnaire, Thermal screening

INTRODUCTION

The COVID-19 pandemic has stirred up hype and hysteria all over the world. Evidence-based studies still suggest that it is an ILI and requires preventive measures to contain the droplet, contact, and rarely airborne transmissions. Prevention becomes an essential strategy more so with the current pandemic since definitive treatment is still in its inception. The protocol for mass gathering drawn well before assembly is usually an effective measure for preventing COVID-19. Heightened awareness and stringent precautions are the only means to curb the spread of the impending disease. The World Health Organisation (WHO) has collaborative centres on mass gatherings and global health security which work towards achieving the goals of risk assessment in outbreaks and communicable disease prevention in mass gatherings [1]. In a populous country like India, mass gatherings are bound to happen; however, to avoid an outbreak, we need a strong prevention model in place.

Mass gatherings have a lot of people concentrated in a specific location for a specific purpose for a defined period [2]. They may include a single event or a combination of several events. In the scenario of the ongoing pandemic of COVID-19, these mass gatherings hold the ability to amplify the transmission of the virus and potentially disrupt the response capacity. The transmission of coronavirus is mainly via droplet and contact. The popular physical distancing is a result of this only, in which people are expected to stay at least a metre away from each other. For Healthcare Workers (HCWs), mass gatherings take further importance in the form of various conferences and Continuing Medical Education (CME) events; though new innovative ways like the webinar and other online interactive programs have been introduced. It must be noted that the communication on screen has its limitations. Attending a webinar over the entire day session, seated in a chair, and looking at the screen display is tedious and discouraging sometimes. Furthermore, network interruptions and disconnections in the transmission of the webinar compounds the problem. These types of events have become essential for medical professionals to update their knowledge, network, and earn credit hours for certification. Various educational and training events for the current COVID-19 pandemic also need to be conducted for the HCWs [3].

The importance and necessity of the event should be considered in great detail.

Hence, to conceive a prevention protocol for an organised mass gathering during the time of an outbreak or in the postpandemic era, we formulated a protocol which is validated in 934 people in a convocation ceremony at the beginning of the COVID-19 outbreak.

Objectives of the prevention protocol were:

- To develop a protocol for the prevention of transmission of COVID-19
- To evaluate the risk assessment and preventive measures for COVID-19 during the gathering by mass health screening (online and physical)
- To follow-up the attendees for the next 28 days and observe and manage the COVID-19 symptoms

MATERIALS AND METHODS

Preventive Protocol

1. Command plan for the convocation- Role of the Chief Coordinator, Convocation Committee, Nodal Officer (outbreak preparedness), and screening team were specified
2. Structured risk assessment online and physical questionnaire for responses from participants one week before the Convocation
3. Assessment of the responses and activating the screening team for further needful action
4. Analysis of the results and follow-up until 28 days of the event

Command Plan

The coordination committee of the convocation tasked the Nodal Officer (COVID-19 outbreak preparedness) to prepare a prevention protocol for the 14th March gathering at our institute. WHO had already declared COVID-19 a pandemic on 11th March. All aspects of preparation for the event were in place, with the involvement of students and parents from all over the country. As cancellation was not an option, the protocol was prepared.

The communication and coordinating mechanisms were well-incorporated in the blueprint. A protocol was made by the committee

with members being nodal officers, the central coordinators for the entire convocation, and the clinical team including resident doctors, public health specialists, and nursing officers. The logistics and equipment required were laid down in the protocol.

The Layout of the Venue

The convocation ceremony was held in temporary tents, made on an aluminum hanger structure, erected specially for the purpose. Four major tents or gathering areas were constructed. The main tent which also contained a stage had seating for 1500 persons and covered 20,000 ft^2 area. The tent had five entry points. This tent had a high ceiling and was well-ventilated: tower air-conditioning was provided for the stage area. Two more tents were erected for dining purposes: the main dining area of 12,450 ft^2 and a small area of 2100 ft^2, to accommodate about specific 100 guests. This area also had ventilation on two sides along with air conditioning. Lastly, there was another tent of 2500 ft^2 for the kitchen area where all the cooking for the event was done. This was also open on three sides. Arrangements were made for toilet facilities with portable toilets and changing rooms in the nearby building of the nursing college.

Clear cut understanding of the risks and the description of the mass gathering including the type of the gathering, the level of audience involvement, the level of knowledge about the disease, the likely immunity of the age group of the attendees to potential infections, the ventilation at the venue, and the accommodation sites were ascertained.

Profile of Participants

The convocation was a university graduation ceremony to award degrees to students and honorary graduates. In this gathering, the main attendees were the students who were being awarded degrees. Besides, it included various ministers, their security and attending staff, doctors from the institute, residents, office workers, parent/family members of awardees, and other personnel involved in the conduction of the ceremony. There were also the engineering staff and event manager teams and catering staff. The target number of gathering was about 1000 people. The students were all health care professionals who were coming in from all over the country including Delhi, Maharashtra, Rajasthan, Kerala, Tamil Nadu, Uttar Pradesh, and other states.

Screening and Clinical Assessment

A line listing of all attendees was done. The risk assessment of the attendees was done using screening measures. It had two phases: screening questionnaire and clinical assessment.

1. A pertinent online screening questionnaire, specifically directed towards the COVID-19 outbreak, including travel history, contact exposure, and symptomatology during the incubation period specified in days were distributed both in online and physical form as required.
2. The affirmative responders were then sorted out and the clinical screening including temperature checking by digital forehead thermometer was done for the suspect cases and for those who could not submit the online questionnaire. The team assessed the risks as per their likelihood of occurring, their potential consequences, and the possible measures that could be taken to control them. The clinical team further undertook definitive screening as per the case under investigation. All attendees were informed to contact the clinical team if any symptoms developed after the event until 28 days.

RESULTS

A total of 934 responses were received from the screening questionnaire circulated before the event day to the diverse population participating in the convocation from all over India [Table/Fig-1]. The age-wise distribution showed 60.2% in 21-40 years age group, 35.5% in 41-60 years age group, and 4.2% in 10-20 years and >60 years age groups. The responses were mostly negative for the questionnaire. Fifty-five people had affirmative responses were contacted again for detail clinical screening in the morning before the event started, and finally cleared for attending the convocation except one who had been hospitalised since she had a severe acute respiratory illness but later on found to be COVID-19 negative. Although the number of travellers to foreign countries was 14, the positive responders for the history of international travel to the COVID-19 areas were only two then. They were promptly advised to stay at home and it was ensured that they did. The clinical screening was also carried out among the suspect cases especially illiterate ground workers (cooks, tent workers, etc.) one day before the event. One worker was febrile but without any presenting complaints, hence hospitalised, but later on home isolated and recovery was seen.

Questionnaire/Responses	Yes	No
1. Have you suffered from any of the following symptoms (Fever, cough, cold, throat pain, or breathlessness) in the past 14 days?	27	907
2. Have you visited any Indian area/state after COVID-19 positive cases being detected in that area in the past 14 days?	14	920
3. Have you visited any foreign country in the past 28 days?	14	920
4. Have you been in close contact (being within approximately 6 feet of a COVID-19 case for a prolonged period (>10 min) without wearing PPE) in the past 14 days?	0	934

[Table/Fig-1]: Responses to the questionnaire by the attendees.

Children were not allowed inside along with the attendees having chronic illnesses (previously informed through E-mails/WhatsApp/SMS). We had placed ample units of sanitisers for liberal use throughout the convocation venue and its use was mandatory at all the entry and exit sites. Everyone underwent thermal scanning for temperature recording and the suspects were also subjected to extensive history and examination before they were allowed to attend the event. Seating arrangements were such that all were seated with adequate distance between them. Repeated announcements were made regarding physical distancing, cough etiquette, and hand hygiene, along with the placement of multiple eye-catching banners regarding preventive steps. As per the clinician's discretion, masks were provided, mostly to the elderly and all 55 high-risk attendees. Few attendees were found to be coughing, cough etiquettes were taught, and face masks offered. The gathering ended within four hours. Till 10th April 2020, no attendees were hospitalised or found to be COVID-19 positive.

DISCUSSION

Among 930 people in the gathering of average four hours, no one developed any COVID-19 symptoms or positivity till 28 days of follow-up. This suggests near about 100% effectiveness of our prevention protocol for an organised mass gathering. Meticulous planning and efficient administrative work led to the successful conduct of a very large gathering. Instead of altogether stopping the gatherings, the conduction of gatherings in a planned and professional way as described is the way forward.

COVID-19 pandemic has deepened its roots in the world as of now. Despite months of lockdowns and restrictions, the pandemic is still on as of yet. Initial strategies were directed towards isolation and quarantine; the economies had suffered badly. People were facing dire shortages of food and all the necessary supplies. Therefore, the need of the hour was to re-open the society, although with restrictions. Hence, social gatherings were started. Instead of putting restrictions over gatherings, especially organised ones, they need to be managed systematically. Any decision to restrict, modify, postpone, cancel, or proceed with holding a mass gathering should

be based on a rigorous risk assessment exercise, undertaken by the local authorities [2].

According to WHO guidelines (which were published after our gathering), the exercise should take into consideration the following points:

I. The normative and epidemiological context in which the event takes place- the existing regulations on public health and social measures to control the spread of COVID-19

II. Evaluation of risk factors associated with the event

III. Capacity to apply prevention and control measures

All these points were taken into consideration in the above planned mass gathering. WHO has also issued a risk assessment scoring system for evaluating the conduction of mass gatherings, which may be quite useful in this [4]. This is an operational tool that offers guidance for organisers holding meetings during the COVID-19 outbreak and this should be accompanied by the WHO COVID-19 generic risk assessment Excel file available on the WHO website [5]. Let's apply this to our mass gathering risk assessment [Table/Fig-2].

Will the event take place in a host country with documented active local transmission (community spread)?	0*
Will the event include attendees from countries that have documented active local transmission (community spread)?	0
Will the event include a significant number of attendees at higher risk of severe disease (e.g., people>65 years of age, people with underlying health conditions)?	0
Will the event be primarily indoors and/or will people be in close contact with one another for a prolonged period?	0
Total COVID-19 risk score	0

[Table/Fig-2]: WHO Risk Assessment before planning a mass gathering {Score-Yes (1)/No (0)}.
*At the time of conduction of the convocation, India did not have any active local transmission

Mitigation measures reduce the risk of COVID-19 virus transmission. Together with the risk assessment scores, the mitigation measures contribute to the decision matrix and influence the assessment of the total risk of transmission and further spread of COVID-19, and the recommendation as to whether the mass gathering should be held or not. They cover various aspects, including an understanding of the COVID-19 situation by the organisers, emergency preparedness and response plans, risk communication, and public health awareness of COVID-19 before and during the event. Our event's organisers had quite a grasp on the ongoing COVID-19 pandemic, with excellent risk communication skills. Hence, the decision matrix result for this event could be considered "Very low risk", which was excellent.

According to the Centers for Disease Control and Prevention (CDC) guidelines, various factors need to be considered before determining the need to postpone or cancel a large gathering: the overall number of attendees, the high-risk groups like older adults and persons with severe pre-existing health conditions who may be at an increased risk, the density of attendees within a confined area (virus mostly spreads person-to-person among close contacts within 6 feet), economic impact on attendees, staff, community, and local community level transmission to name a few [6]. All efforts should be made to significantly decrease the number of attendees. At a minimal-to-moderate level of community transmission, it is recommended to cancel community-wide mass gatherings (for example, >250 people; the cut-off threshold is at the discretion of community leadership based on the current circumstances the community is facing and the nature of the event) or move to smaller groupings. If the population belongs to a high-risk group, it is recommended to cancel gatherings of more than 10 people.

The CDC calls for the provision of COVID-19 preventive supplies to event staff and attendees including hand sanitiser with at least 60% alcohol, tissues, trash baskets, disposable facemasks, and cleaners and disinfectants. These supplies are essential for all mass gatherings. An older study demonstrated that the prevalence of viruses and bacteria increased from 7.4% and 15.4% before the Hajj to 45.4% and 31.0% after the Hajj [7]. This was due to the acquisition of rhinovirus, coronaviruses, influenza A H1N1, *Streptococcus pneumoniae, Haemophilus influenzae,* and *Staphylococcus aureus*. It was concluded that crowded conditions during mass gatherings such as the Hajj may contribute to the globalisation of respiratory pathogens after cross-contamination. During this COVID-19 outbreak, many such mass gatherings have resulted in an outburst of cases. Due to lack of prior publication of any protocol like ours, we couldn't compare the results. However, in an organised gathering, it is expected to have better prevention than in an unorganised gathering. However, this protocol can be considered as proof of concept for all types of organisational gatherings. That doesn't mean it can't be used in an unorganised gathering since each gathering is actually a planned one by participants. Only awareness and practice of this protocol will help in preventing infections.

Limitation(s)

Our model had limitations. Our questionnaire did not include the attendees' co-morbidities or any underlying conditions, however, through initial gathering notice; all were advised not to attend the event. Attendees could have fabricated false answers just to be able to attend the event. Hence, physical examination and temperature recordings of the attendees are quite important, just like we did. Because of asymptomatic transmission, this can fail the purpose. Also, adequate negative pressure ventilation could not be arranged for such a large gathering.

CONCLUSION(S)

Although much of the scenario has changed since March 2020 and the total COVID-19 cases have surpassed the 1,00,00,000 mark in India, a well-planned and controlled gathering using the preventive protocol is a feasible and workable option. The present careful and meticulous planning of screening with a questionnaire, detailed examination of suspects and taking proper action, executing all possible precautions at the event, thermal screening of all entries, health education during the event, and follow-up till 28 days as done by us will certainly go a long way in averting a mass outbreak of cases. This prevention protocol can be used widely in organised gatherings. Any event to be held must be essential and unnecessary ones must be avoided, as the danger of mass exposure is still there. But the ones which are conducted should undergo proper planning and management as described. Only then can we start learning to live with this coronavirus scare. The farmers protest that has been staged in outskirts of the national capital of India is a glaring example of how disorganised and chaotic it can become as regards to the transmission of COVID-19. Heightened awareness coupled with the strategic plan of prevention needs to be inculcated among the masses who engage in protest, to prevent further damage. Many such strategies can be formulated keeping in mind the decreased awareness and motivation among mass gatherings among the specified gentry.

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