

Original Research Article

Detailing Health and Safety measures during the organization of a major international sporting event in Eastern India: an observational review

Abstract

Sports have ~~long been~~ neglected in our country ~~both~~ in terms of excelling in any sport and hosting events. Even if the country hosts, usually the opportunity goes to the capital city or other metros. Covid 19 pandemic ~~has~~ further compounded the stalemate over the last two years due to evidence against crowd events. But, Odisha state has ~~surprised everyone~~ ~~taken everyone by surprise~~ by hosting the World cup men's hockey. ~~The and the~~ study is a basic observational showcase of health-related safety measures ~~that were~~ ascertained during the matches. The event not only let ~~three~~ cities in the state, namely Bhubaneswar, Rourkela, and Cuttack get a makeover in terms of tourist destinations, but also a fast track check was done on the safety preparations within the stadium. ~~The tool~~ used was a self-devised pre-tested checklist as per Event management standards. ~~The and the~~ results were that almost international standards were adhered to in terms of crowd management for parking, entry points, sitting arrangements, water, and toilets. Covid appropriate behavior was disregarded due to zero case reporting for over a year. ~~The public~~ was also satisfied with the preparedness, and there was a renewed enthusiasm for sports for all age groups. ~~This, which~~ was a welcome sight after the restricted activity during Covid. The state has taken baby steps towards establishing itself on the Global map as a city that could take up Global sporting events effortlessly. It has added advantage of propagating the rich heritage and culture of the state as well as promoting sports among the public.

Introduction:

~~WHO defines a mass gathering~~ ~~A mass gathering is defined by WHO~~ as a planned or spontaneous event that gathers substantial numbers of attendees who might strain the health planning and response capacities of the host community, city, or country.[1] Mass gatherings can pose significant public health challenges

Comment [MOU1]: what is the purpose of this research? how to retrieve and process data? How many respondents were taken in this study?

related to the health of attendees, of the host country population and a burden on their health services. In most countries, such gatherings are confronted during ~~the-the~~ hosting of popular games/ sports, which far exceed any other conglomeration. Covid-19 turmoil has made it mandatory for sports to set the foundation of a new era responsible for upkeeping the safety of the natural disease disabling environment.

The COVID-19 pandemic in 2020 caused unprecedented disruption to the global economy and world trade, with production and consumption falling dramatically in many economies. Organizations around the world responded in many ways, from implementing working from home and restricting non-essential employee travel to ~~cancelingcanceling~~ events.[1] In light of the threat ~~to~~ the health and safety of all people in South Africa, the City of Cape Town ~~decidedtook the decision~~ to revoke all permits for previously approved events (African News Agency, 2020. [2]) Similar restrictions were imposed for ~~mostalmost all~~ of the world's major sporting events~~major sporting events of the world~~. Participants in mass gathering events were perceived to be at risk of acquiring imported and locally endemic infectious diseases. ~~With-and with~~ the fear still lurking, it has now become a mandate for the organizers to strategize for preparedness for health safety.[3]

In India, with the steep decline in ~~the number of~~ COVID-19 cases and stepwise reopening post-lockdown, with the added benefit of robust mass vaccination, events warranting gatherings and large transits are getting conditional permission. It is also ~~a quicka brisk~~ response to revive the ~~economiceconomical~~ and social (reclusive) damage conferred by the pandemic. The local bodies ~~and as well as~~ the central and regional governments are proactively preparing standard operative modules as per the local needs for the events but at par with international standards[4]. Depending on the present National guidelines, a safe and evidence-based gradual resumption of training and sports was deemed essential, ~~something~~ which was neglected before[5]. Importance of hand hygiene, cough, and sneeze etiquette, social distancing, use of mask while not exercising hard, other good public hygiene practices, staying home if sick, frequent cleaning and disinfection of frequently touched surfaces, early detection, isolation and adequate treatment for the positive cases and strictly following government guidelines are now compulsory (6).

~~OnceOdisha, once~~ considered one of the country's most backward states, Odisha has recently ~~most backward states of the country, has in recent days~~ made ~~significantgreat~~ progress in all fields, including sports[7]. ~~DevelopingDevelopment of world-classworld class~~ stadiums with a ~~particularspecial~~ focus on hockey and football has been a key ~~areas of~~ focus of the Government of Odisha. Odisha ~~recently in the recent past~~ hosted the 2018 Hockey Men's World Cup followed by Khelo India-University Games in 2019. In 2021-22 Odisha hosted the FIFA Women's Under-17 Football World Cup in the state capital of Bhubaneswar. Thus, ~~post-pandemicpost pandemic~~ too Odisha, continued to be the forerunner to host the Hockey Men's World Cup 2022-23 for the second time on a much grander scale than the previous edition, in its cities of Bhubaneswar and Rourkela. Apart from the main sporting event, the inaugural ~~of the~~ event has been held in yet another prominent destination, Cuttack. Seizing an opportunity to arrange for one of the largest sporting events hosted in India, post-pandemic restrictions, all eyes were on the state once known for its dismal developmental parameters.

The current article essays an observational summary of the preparedness in the stadiums of Bhubaneswar, Rourkela, and Cuttack in the event of the hockey matches and the administrative pre and post-

preparations, even in the eye of another wave of the pandemic. The descriptives also would detail the adherence of the crowd, [staff,staffs](#) and management authorities of the event to the various health and safety protocols.

Materials & Method:

Setting and Population

[An observational](#) ~~Observational~~ survey was conducted between [January 13](#) ~~January 13,~~ 2023, to [January 29](#) ~~January 29th~~ 2023. World cup hockey took place in two cities of Odisha-Bhubaneswar and Rourkela, and the inaugural was held in Cuttack. Three Stadiums Kalinga stadium, Bhubaneswar and Birsa Munda stadium, Rourkela and Barabati Stadium Cuttack were the study areas. Being a [completely](#) ~~complete~~ public event, with no intervention planned, ethical clearance was waived off. Public health specialists were a part of the organizing team invited to view the matches and augment the morale of both crowd and players.

Outcome Measures

The present study examined the level of awareness, [and](#) preparedness toward [the](#) prevention of COVID-19, Emergency response, rescue services, arrangements for the hockey, and the cleanliness and hygiene of stadium.

A short opinion from the different stakeholders of the event, from players to authorities and [the](#) audience, was also collected.

Study Tool

A self-designed structured checklist was developed based on the standard operating protocols set by the State health and sports authorities[8].The checklist had sections that offered insight into the preparedness during the world cup hockey matches[9]. Sections on crowd management, security, parking areas, cleanliness and hygiene in the stadium, IEC material on the awareness and [appropriate](#) ~~covid~~ [appropriate](#) behavior in the stadium, Emergency response, [and](#) rescue services were noted in all [three](#) ~~3~~ stadiums, where the games were held. A team of researchers visited on the day of starting, mid, and close to final matches to document the survey information, which was done only on observation.

A small section of the audience was asked a self-reported questionnaire. The first part of the questionnaire was designed to obtain background information, including demographic characteristics (age, gender, level of [education](#) ~~educational~~, and occupation). The second part of the survey consisted of questions that [addressed](#) ~~address~~ awareness concerning COVID-19 (a reliable source of information on the opinion and perception towards the arrangements of the hockey stadium population).

Data Collection and Analysis

Data were collected using a convenient sampling method and [analysed](#) ~~in~~ the department of Community Medicine of the medical [college](#).

Comment [MOU2]: What means with this word?

Comment [MOU3]: how to process data?

Results& Discussions:

General Preparedness of Stadium:

Table 1 shows the general observations at Kalinga Stadium Bhubaneswar, Birsa Munda Stadium Rourkela and Barabati Stadium, Cuttack.

Table 1: Observation of facilities at the hockey match venues			
Assessment Criteria	Kalinga Stadium	Birsa Munda Stadium	Barabati Stadium (Only for inauguration day)
A. Crowd Management			
Stadium Established	2010	2022	1958
Stadium Capacity	16,000	21,000	45,000
Expected footfall	18,000	25,000	30,000
No. of Gate	09	09	15
Separate entry and Exit Gates	Yes	Yes	Yes
Average No. people entering through each gate in 5 mins	140-150	160-180	80-100
Queue barricades present	No	No	Yes
B.COVID Appropriate Behaviours			
Is it mandated to use mask	No	No	No
Sanitisers present at entrance/exit	Yes	Yes	No
Awareness of IEC for Covid-19 appropriate behaviors/behaviours through Boards	No	No	Yes
Social Distance being maintained at entry and exit points	No	No	No
Social Distance being maintained in seated areas	No	No	No
Pan/Tobacco/Spit marks present	No	No	Yes
Do people maintain hygienic etiquettes while coughing	No	No	No
Dustbins properly placed at ample distances	No	Yes	No
Sale of Food items inside the stadium	Yes	Yes	No
Litters seen in Stadium	No	No	Yes
Separate drinking and washing area	No	Yes	No

Comment [MOU4]: What the meaning of this word?

The three stadiums are some of the best facilities in Odisha with all modern amenities. As evident from the table, Hockey world cup 2023 is the first event which is being organized with no compulsory covid

restrictions but still some were practiced in the newly built Birsa Munda Stadium at Rourkela, which is the world's largest sitting capacity stadium for hockey, wherein the infrastructure is modern and contemporary. There is better management of water and hygiene in Rourkela than in the other two venues. This area needs reinforcement as it could offer a chance for spread of infections. The stadiums had ample gates for separate entry and exit ensuring that no point of time there was congestion in crowd movement, which is the main concern of any large-scale event. After a match sanitization of the crowd area was also reported and that should be made a practice for all sporting events.

Table 2 depicts the security and parking facilities at the venues. Adequate security personnel from Odisha Police were deployed inside and outside the stadium. There were adequate arrangements for disaster management. Mock drills were practiced before every match in Bhubaneswar and also before the inauguration in Cuttack. In Rourkela, though facilities were available there was not many mock drills, due to its distance from the capital. Special provisions for media vehicles and journalists were made in the stadiums with separate annexures for their sitting and movement. The parking areas of Rourkela and Cuttack were at least 1.5km away from the main stadium gate however in Kalinga Stadium the parking area is just 500m away from the stadium gates. This also is a way of decongesting the crowd and giving space for walking and moving out of the stadium. The lack of alarm system and bomb squad speak of the relatively peaceful [ambiance/ambience](#) of the state, with law and order in a proper place. [However, however](#) should be looked into in [the](#) future.

Assessment Criteria	Kalinga Stadium	Birsa Munda Stadium	Barabati Stadium
Type of Security	Odisha Police+ Private security	Odisha Police	Odisha Police
Covid Vaccination of security personnel/personnel's	Yes	Yes	Yes
Fire extinguisher and exit(functional and updated)	Yes	Yes	Yes
No.of Fire Brigades	5	3	2
Alarm system available	No	No	Yes
Bomb Squad	No	No	No
Special provision for controlling of holism/hoolism and unruly behavior/behaviour	Yes	Yes	Yes
Parking Areas	03	03	05
Parking Area distance from entry gate(in Kms)	0.5	02	1.5

Table 3 depicts the [healthcare/health-care](#) facilities in the stadium. For the match officials and players, the official hospital partner of the event had made arrangements near the player dugouts. For others, the first aid [center/centres](#) were available in both Kalinga Stadium and Birsa Munda Stadium. There [was/were](#) mobile medical unit attached to only [in](#) Kalinga Stadium. The medical [personnel/personals](#) from the nearby government hospitals were available. In Cuttack, since only the inauguration ceremony was only being held so, there was not many medical facility arrangement there.

Assessment criteria	Kalinga Stadium	Birsa Munda Stadium	Barabati Stadium
First Aid centereentre available	Yes	Yes	No
Mobile Medical Unit	Yes	No	Yes
Ambulance Facility	Yes	Yes	Yes
Nearby Referral Hospital	Capital Hospital, Apollo Hospital	IGH hospital, Hi-tech Medical College	SCB MCH
Wheel Chair Facility	Yes	No	Yes

The practicePractie of the General Public:

A small representative population of the audience who came to see the match were asked a few questions related to their personal preparedness for attending the function. Figure 1 depicts the adherence to Covid appropriate behaviorsbehaviours of the supporters. Women and children were in nearlynear equal proportions, which highlights the generalized increase in interest in sports in our country, which a decade back was considered a choice of men and few elite women. All age groups were spotted among the attendees, but 20-40 years were more common. SeatSeats arrangements were made for people of all socio-economic strata; hence, and hence all attendees were satisfied with the availability of tickets. An outdoorOutside stadium and within 10km of aerial LED television sets on high stands also offered a good view of the matches; for those who would want to avail the opportunity besides live telecast of matches over various television channels. Children's excitementExcitement of children was palpable as, after a long time, they could view a live event on the ground and wanted desperately to break free of the forced pandemic home-boundhome bound times. Along with the euphoria, a newly imbibed discipline of the mask, maintaining cleanliness, and hand etiquette werewas also observed among all age groups. However, washroom hygiene and rampant throwing of rubbish could not be controlled adequately.

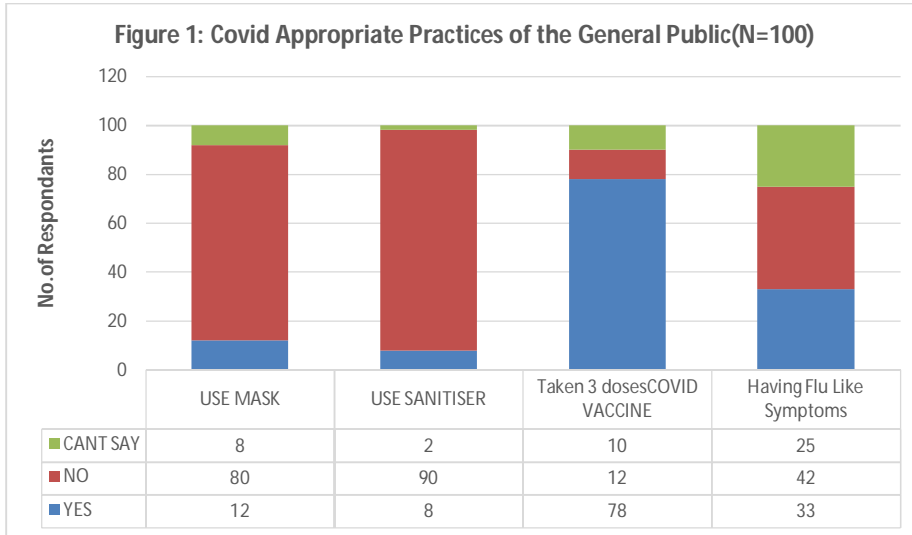
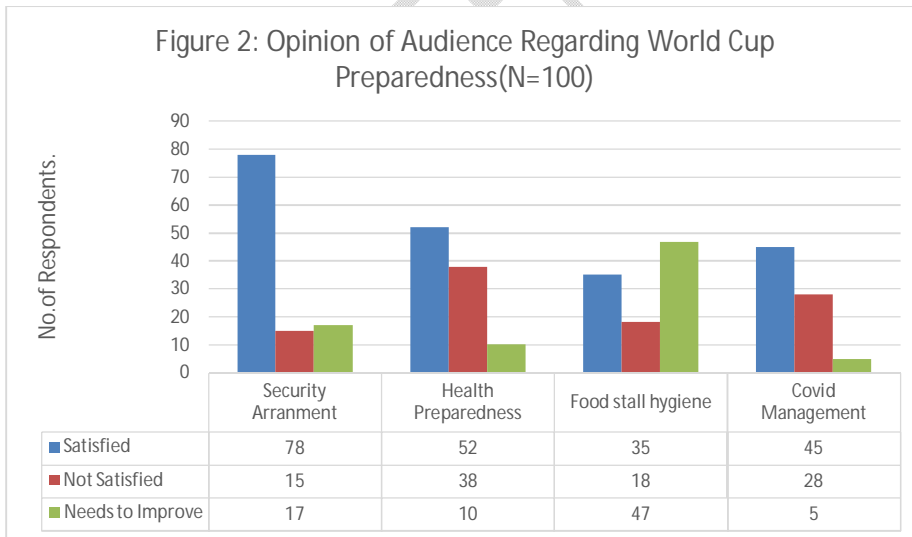


Figure 2 shows that most of the visitors who visited the stadiums were satisfied with the safety and security, crowd management, and health preparedness facilities at the stadiums



Sporting events held during the COVID-19 pandemic in the professional leagues, international federations, and the summer and winter Olympic Games. For example, at the Tokyo Olympic Games, impactful countermeasures included (1) physical distancing, hand hygiene, [mask-wearing](#), and enhanced room ventilation; (2) rigorous testing, contact tracing, and isolating of positive cases and

(3) a worldwide vaccination distribution ~~program~~programme for National Olympic Committees showed good results in containing the spread of COVID-19 with almost less covid positive cases[10]. Odisha was almost the first state in India to have opened up for ~~hosting~~ of sports events as early as June 2020. ~~Since and since~~ then, the state government and ~~the~~ sports authorities ~~in particular~~ have hosted many events under strict guidelines[11]. ~~The state~~State achieved the remarkable feat of hosting this event for the second time in a row, ~~which~~ ~~which itself~~ speaks of the states preparedness to host such mass events.[12]. In the long run, it seeks to give a fillip to international sports tourism by attracting more international tourists to attend sporting events (there has been a rise ~~in of~~ both domestic and international tourists during sporting events)[12].

Comment [MOU5]: What is the meaning?

Studies(Murray ~~et al.~~et.al 2022) ~~suggests~~suggests that outdoor sports carried a lower risk of transmission of SARS-CoV-2 due to physical distancing and ventilation than indoor ~~games~~; thus, outdoor sporting events were re-introduced at the earliest in many parts of the globe[13]. Countries (~~e.g.~~eg, New Zealand and Australia) that had eliminated the virus or had lower community transmission of cases could sometimes introduce ~~total~~full or >50% spectators' capacity ahead of widespread vaccine roll-out. With ~~the~~ global vaccine roll-out, countries ~~could~~were able to move towards ~~total~~full audience capacity, despite high community transmission, as evidenced by the English Events Research Programme.

Conclusion and Recommendation:

Professional sport provides cultural, economic, and employment benefits. Outdoor training ~~presents~~present a low or in 'bubble environments' with robust risk assessment and risk reduction and with no, or very limited, spectators on-site. Domestic events did not increase transmission, while very low case rates and transmission were seen in international sports, including the delayed 2020 Tokyo Summer Olympic and 2022 Beijing Winter Olympic Games [14]. But in all these events, regular testing was a mandatory thing during the ~~post-lockdown~~post-lockdown phase.

Limitations were that the international and national players could not be interviewed for their satisfaction, ~~it~~having special ethical requisites, and ~~were~~being beyond the scope of the ~~fast-track~~fast track study. ~~Geo-mapping~~Geo-mapping of hotels, hospitality, and health centers to seek information on the comforts of travel and tourism encouraged due to the event could not be explored. Foreigners were only 10% of the attendees, which expresses the need to upgrade our standards of care to global standards, holistically to attract foreign visitors. However, all cities hosting the event revamped their look in terms of roads, cleanliness, and civic amenities; ~~thus, and thus~~ such events have a public health reach too.

Collaboration between governments, their public health authorities, and sports organizations ~~has~~have successfully allowed sports events to recommence, using guidance based on the best available science and practical considerations[15]. The pandemic distanced people who now want to come back to regular lives, but ~~exercise~~exercising caution that has been ~~learned~~learned the hard way. Once ~~in the limelight~~in limelight for wrong reasons, now state of Odisha steals the limelight to showcase maiden efforts and is showing the way of reversing Covid damage with conviction. It has set the stage for ~~the~~renaissance of sports, especially Hockey, which is the National ~~sports~~sports of the country, by recreating the love for the sports ~~in public~~in the public, preparing its stadiums to host the biggest event in this sports World cup hockey and also by pulling it off with a touch of the spirit of Nationalism and sportsmanship. This article is dedicated to showcase the big efforts of this small state, which has rekindled the love for a sport, which had been ebbed over the times by choosing other commercial

sporting events. It is recommended that if such events are tagged with infectious diseases serosurveillance mapping, we would also have some knowledge about the circulating infection strains in the community and also being newly introduced by visitors.

Comment [MOU6]: Where is the conclusion?

References:

1. Memish, Z. A., Steffen, R., White, P., Dar, O., Azhar, E. I., Sharma, A., & Zumla, A. (2019). Mass gatherings medicine: public health issues arising from mass gathering religious and sporting events. *Lancet (London, England)*, 393(10185), 2073–2084. [https://doi.org/10.1016/S0140-6736\(19\)30501-X](https://doi.org/10.1016/S0140-6736(19)30501-X)
2. Bizzarri C, Giuntarelli P. Sport Events and Tourism for the Sustainable Local Development Post COVID. In *Tourism Destination Management in a Post-Pandemic Context 2021* June 11 Jun 11 (pp. 219-229). Emerald Publishing Limited
3. BIṬAN GE, OLARU SM, HASSANI Y, COSTACHE IC. Approach to development of an integrated plan to ensure business continuity in the post-pandemic period, based on international management Systems standards. *Ecoforum Journal*. 2020 Aug 21;9(3).
4. Yanagisawa N, Wada K, Spengler JD, Sanchez-Pina R. Health preparedness plan for dengue detection during the 2020 summer Olympic and Paralympic games in Tokyo. *PLoS Negl Trop Dis*. 2018 Sep 20;12(9):e0006755. doi: 10.1371/journal.pntd.0006755. PMID: 30235211; PMCID: PMC6147396.
5. Triantafyllidis S. Environmental change, the sport industry, and Covid-19. In *Sport and the Pandemic 2020* Sep 28 (pp. 24-32). Routledge.
6. Ramya G, GURU CS, BANODHE GK, DOMINIC D, SHARMA HB. Resumption to Swimming Post COVID-19 Lockdown. *Journal of Clinical & Diagnostic Research*. 2021 Jan 1;15(1).
7. Sporting events continue to be priority of Odisha Government Available from <https://www.newindianexpress.com/sport/2020/jun/08/despite-covid-19-sporting-events-continue-to-be-priority-for-odisha-minister-2153816.html>
8. Considerations for sports federations/sports event organizers when planning mass gatherings in the context of COVID-19 by WHO in April 2020 available from WHO/2019-nCoV/Mass_Gatherings_Sports/2020.1 https://apps.who.int/iris/bitstream/handle/10665/331764/WHO-2019-nCoV-Mass_Gatherings_Sports-2020.1-eng.pdf
9. Standard Operating Procedure (SOP) for Organising Tournaments & Events by Hockey India available from <https://www.hockeyindia.org/static-assets/waf-images/uploadfile/3b/2a/d0/f4c9aa15-cb32-4a88-b972-1d717ef57148.pdf>
10. Mountjoy M, McCloskey B, Bahr R, *et al* Hosting international sporting events during the COVID-19 pandemic: lessons learnt and looking forward *British Journal of Sports Medicine* 2023;**57**:3-4.
11. Odisha Becomes first state in India to host sports event post lockdown; Available from <https://www.eventfaqs.com/news/ef-16709/odisha-becomes-the-1st-state-to-resume-sports-event-in-india-post-lockdown-hosts-t10-league>
12. Odisha's Thrust on Sports tourism available from <https://thegeopolitics.com/odishas-thrust-on-sports-tourism-and-entrepreneurship/>
13. Murray A, Pluim B, Robinson PG, *et al* The journey so far: professional sport during the COVID-19 pandemic *BMJ Open Sport & Exercise Medicine* 2022;**8**:e001362. doi: 10.1136/bmjsem-2022-001362
14. Schumacher YO, Tabben M, Hassoun K, Al Marwani A, Al Hussein I, Coyle P, Abbassi AK, Ballan HT, Al-Kuwari A, Chamari K, Bahr R. Resuming professional football (soccer) during the

COVID-19 pandemic in a country with high infection rates: a prospective cohort study. *British journal of sports medicine*. 2021 Oct 1;55(19):1092-8.

15. Smith JA, Hopkins S, Turner C, Dack K, Trelfa A, Peh J, Monks PS. Public health impact of mass sporting and cultural events in a rising COVID-19 prevalence in England. *Epidemiology & Infection*. 2022;150.

UNDER PEER REVIEW