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## EVENT STYLE PREFERENCES IN MEDICAL EDUCATION AND RESEARCH MEETINGS IN JAPAN

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### Abstract

**Purpose:** With the spread of COVID-19, medical education and research events have either been cancelled or shifted to online or hybrid mode. However, there are no accurate records containing the exact number of these events in new modes. This study explores trends in event modes of medical education and research in Japan using registered event data from a web service. **Methods:** We collected event data from January 2019 to December 2021. Text mining was used to extract and classify data into categories such as on-site and online events. Then, the annual and monthly numbers of categories were counted. **Results:** The total number of events in March 2020 was drastically reduced, but it recovered in November 2021 to a level equivalent to that of the peak month in 2019. The majority of the events were online by December 2020, increasing in number from March 2020. Hybrid events that integrate on-site and online modes later outnumbered online events and accounted for approximately 20% of the total in June, October, and November 2021. **Conclusions:** The online and hybrid modes ensured the continuation of medical education and research events during the pandemic. Though online events may reduce after COVID-19, the hybrid mode could become a popular mode that offers diversity.

**Keywords:** tele-education; hybrid meeting; online meeting; text mining

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### Introduction

The COVID-19 pandemic has accelerated the adoption of online communication tools worldwide. In the case of Japan, the first state of emergency was announced in April 2020,<sup>1</sup> leading to the adoption of online communication to prevent infection. Videoconferencing applications that enable real-time interaction through audio and video inputs and presentation slides are being used in formal and informal situations. It is also useful for education and research events which instigate discussions and presentations. Videoconferencing allows medical professionals to learn the latest knowledge without fear of infection. Medical sciences specifically required this technology as its research activity was to be accelerated in collaboration with other institutions, as declared by the Director General of WHO in February 2020, referring to the recommendations of the Emergency Committee.<sup>2</sup> Online events ensure access to participants with health and mobility issues too.<sup>3</sup> A hybrid style that integrates on-site and online modes was mentioned as one of the ideal ways for future events as it provides the social experience for on-site attendees and the flexibility of participation for online

attendees.<sup>4-7</sup> It is assumed that online and hybrid events have replaced most on-site events during the COVID-19 pandemic. However, the data on different event styles has not been properly recorded, and it is not clear how many of these online and hybrid events have been implemented. There are only implementation reports of individual activities.<sup>7-13</sup> Recognising the relevance of the area, we evaluated trends in academic events in the field of medical education and research in Japan. This study explores how COVID-19 impacted the number of events and what the ratio of each event style was during the COVID-19 pandemic.

### Methods

We examined the data posted on the event calendar of m3.com Gakkaikenkyukai, a web service for medical professionals in Japan.<sup>14</sup> As one of the largest web services in Japan, it has data on various medical education and research events, from local and regional meetings to national conventions. Organisers of medical education and research events can register and update their information in this service for promotion. From the event calendar, we collected

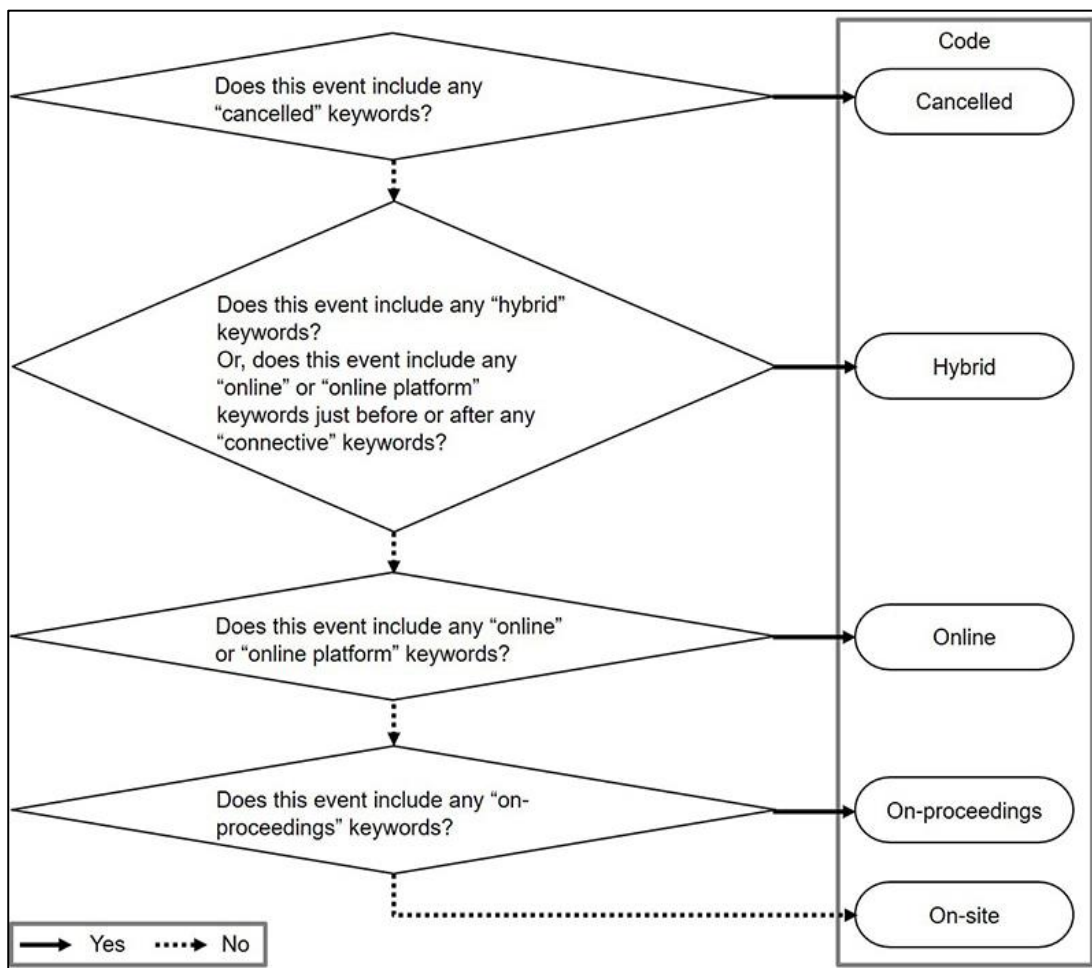
**Table 1:** Keyword list.

Category	Keyword (Similar expression and Japanese equivalent)
Hybrid	Hybrid (ハイブリッド, ハイブリット)
Online	Internet (インターネット)  On demand (オンデマンド, オン・デマンド)  Online (On line, On-line, オンライン)  Remote (リモート)  Streaming (配信)  Web (ウェブ)  Webinar (e-seminar, Webnar, Webiner, ウェビナー, ウェブセミナー)
Online platform	Cisco WebEX (WebEX)  Medinar  Microsoft Teams (Teams, Microsoft Team, Microsoft Teams)  YouTube, Zoom
On-proceedings	On-proceedings (誌上)
Cancelled	Cancelled (中止, 休止, 休会)  Postponed (延期)
Connective	+ /  And (および, 及び, 併設)

the commencement date, name, region in Japan and venue of each event from January 2019 to December 2021. This data collection was conducted for six days, from December 19 to 24, 2021.

There was no mandate to indicate the mode of events as on-site or online in the calendar. So, descriptions of the mode of the event varied depending on each organiser’s vocabulary. Therefore, the text mining technique was used for data processing. Keywords were extracted using KH Coder.<sup>15</sup> A pre-processing function decomposed the collected text data (name, region in Japan, and venue of each event) into words. Words related to event style were extracted by authors with KWIC (Key Words in Context) Concordance function. The data in the event calendar was written in Japanese, but there were some English keywords. The extracted keywords were classified into six categories (Table 1). Under the “online platform” category, there were five types of platforms: Cisco WebEX, Medinar, Microsoft Teams, YouTube, and Zoom.

Based on these six categories, coding rules were created as shown in Figure 1. Each code represented a type of event



**Figure 1:** Coding rule.

which could be classified as hybrid, online, on-site or cancelled. In addition, the code: “on-proceedings” was used to represent events that were cancelled, but the proceedings were distributed to registrants. Codes except for “cancelled” were treated as “carried-out” events. Coding rules were applied to the data on name, region in Japan and venue of each event using Microsoft Excel VBA (Visual Basic for Applications). Then, the annual and monthly numbers of events for each code were counted. In addition, the number of each keyword in the “online platform” category was counted to find the ratio of platforms too.

**Results**

**Comparison by year**

The number of each type of event held per year is shown in Table 2.

**Table 2.** Numbers of each type of event per year.

Events	2019	2020	2021
Total	2503	1614	2075
Cancelled	7	170	6
Carried-out	2496	1444	2069
- Hybrid	0	16	309
- Online	6	281	1163
- On-proceedings	0	7	2
- On-site	2490	1140	595

The number of carried-out events dramatically decreased in 2020, then recovered in 2021 but was still less than that in 2019. Both the numbers of online and hybrid increased from 2019 to 2021, but that of on-site events decreased.

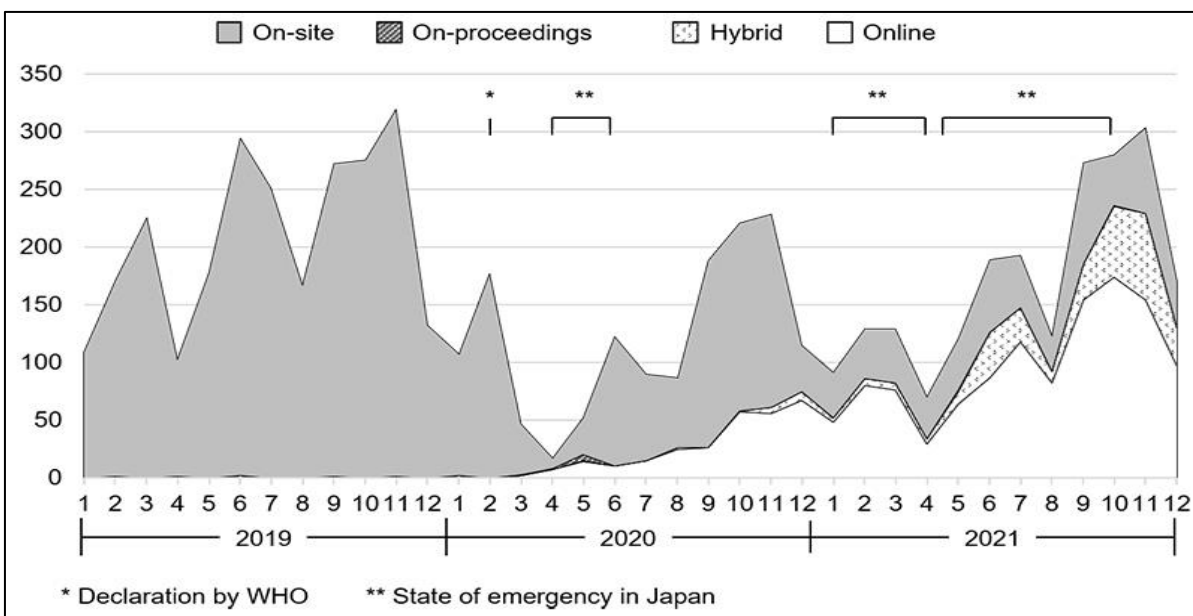
**Comparison by month**

Figure 2 shows the number of events carried out in each month from January 2019 to December 2021. The monthly number of events carried out decreased to less than 50 in March, April, and May 2020. This period includes the first month after the declaration by WHO, and the first state of emergency due to COVID-19 in Japan. In November 2021, this total number recovered to the level of the peak month in 2019 (319 in November 2019 and 304 in November 2021). The first month to exceed five online events was April 2020, and the same for hybrid events was in November 2020. After that, online and hybrid events increased in number.

Figure 3 shows the monthly ratio of the event types. Most events were on-site in 2019 and in the first two months of 2020. In March and April, the majority of the events were cancelled, but the trend of cancellations reduced to less than 10% from June 2020. The ratio of online events increased in May and June 2020 and became the mode of the majority of the events by 2021. The number of hybrid events started increasing in November 2020; and was more than 20% in June, October, and November 2021.

**Platforms**

The total number of platforms extracted from the analysis was 333. Zoom was used for the majority of the events (294, 88.3%), followed by Microsoft Teams (26, 7.8%) and Cisco WebEX (6, 1.8%). The other two platforms (YouTube and Medinar) were used only in seven events (2.1%). While the three major platforms offered videoconferencing that enabled real-time audiovisual interaction, the other two were one-sided broadcasting.



**Figure 2.** Monthly stacked chart of carried-out events.

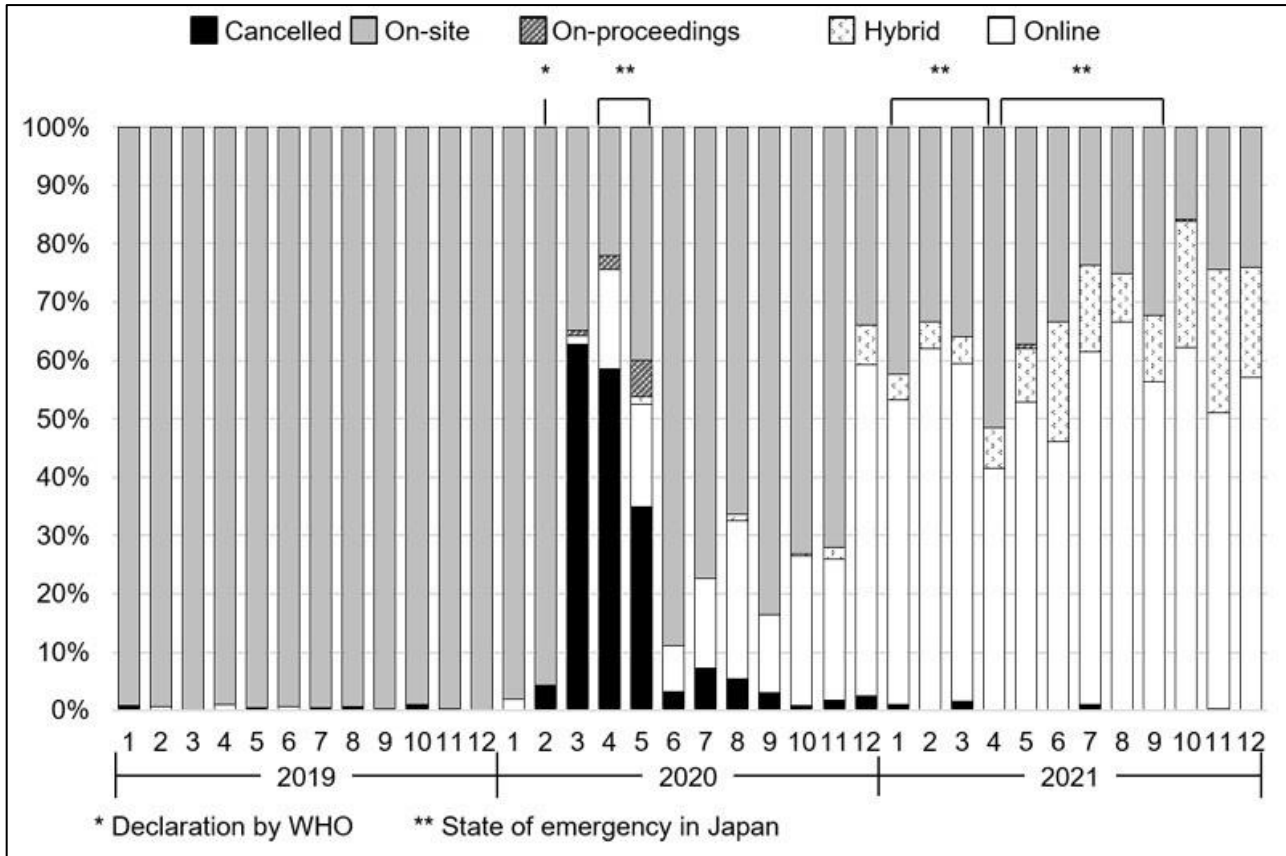


Figure 3. The monthly ratio of events.

### Discussion

The study investigates trends in the delivery of medical education and research events during the COVID-19 pandemic in Japan. It is assumed that the pandemic and state of emergency led to the cancellation of multiple events. In the spring season of 2020, the monthly number of carried-out events was less than 50, which is approximately a quarter of its average in 2019. It seems that the social situation changed so rapidly that many organisers felt they had no other choice but to cancel during this period. However, some of the pioneers were looking for a new way to organise events, and online delivery began to increase. Online became the predominant event type in 2021 due to the COVID-19 situation. The monthly number of carried-out events in November 2021 had recovered to the level of 2019, in which more than 75% were online or hybrid. These results indicated the contributions of online platforms in conducting education and research events in the medical field in Japan.

Hybrid began to increase later than online and became the third largest category in 2021. Despite being considered an ideal mode for academic events,<sup>4-6</sup> hybrid was not used in the majority of events. Travel restrictions due to the pandemic could have led to that. The total duration of the state of emergency in 2021 was 230 days in Japan.<sup>2</sup> Priority

preventative measures were also adopted depending on the situation in each region. As a period without any travel restrictions in Japan in 2021 was rare, the organisers could not schedule face-to-face events, including partial ones such as hybrids. The difficulties in technical setup for hybrids were also a barrier. Personal devices such as laptops, smartphones and tablets usually have audiovisual interfaces (display, camera, speakers, and microphone) and are regularly used by people. Therefore, it is not difficult to participate in online events on individual devices. However, hybrid events require a venue for multiple participants with external device arrangements and technology experts, as mentioned in previous studies.<sup>12,16-18</sup> Past studies on synchronous hybrid learning identified the transmission of audio to both on-site and online students as one of the technological challenges.<sup>6,19</sup> Outsourcing these technical requirements is not feasible for small events like regional meetings with low budgets. The past surveys indicated a preference for hybrid over online in future international events in the field of hand surgery, which may become a trend in academic groups.<sup>20</sup> Thus, it is important to adopt unchallenging technical methods for future hybrid events.

Videoconferencing was used in 97.9%, and one-sided broadcasting was preferred for 2.1% of online events. The consistently low numbers in the on-proceedings category hint at the significance of interaction among participants in



education and research events. The preference for the videoconferencing platform Zoom in the majority of events echoes other reports in medical education.<sup>21,22</sup> Previous research on radiology education identified various functions exclusive to Zoom as compared to other platforms.<sup>23</sup> Another study of radiology education selected Zoom due to its security policy.<sup>24</sup> Other than function and security, usability and social backgrounds, plus other dynamic factors also influence platform selection. A previous study on distance medical education that described platform selection contained none of the platforms listed in the current results.<sup>25–28</sup> This shows the importance of the organisers updating their knowledge about platforms and technology.

Trends in event styles changed drastically during the COVID-19 pandemic. It is expected to continue evolving after the pandemic without restoring the older patterns. Online is necessary when social and physical difficulties hinder on-site participation, especially in international events. Thus, the ratio of online will not be reduced even if on-site is recovered. Despite the technical disadvantages and high cost, hybrid, which meets various requirements, has the potential to be the norm.<sup>29</sup> Future discussions on event styles should consider the perspectives of organisers and participants.

The research used text mining, a popular method in research reports in Educational Technology<sup>30</sup>, for the quantitative analysis and classification of data on event styles from one of the largest web services for medical professionals in Japan, and the number of each event style was calculated. Keyword extraction using KH Coder is considered appropriate for the original raw data. However, there are two limitations to this approach. The first is the inaccuracy of subject data. As each event data is updated manually, often with specific event homepages that do not synchronise with the subject, some event information may be inaccurate. The number of on-site events in the result of this study is assumed to be higher since its coding rule classified only those events that had no keywords in any category. The other limitation is detailed classification. Online event styles can be divided into videoconferencing, webinars, live streaming, and video on demand. However, because the rules for listing event styles were not standardised, a considerable number of events were described as just “web” or “online.” It is desirable to unify the rules for classifying online event styles as it would provide comprehensible information to the participants and would incentivise online and hybrid-style events.

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