Online Platform as an Alternative for International Multidisciplinary Medical Conferences During the Novel Coronavirus Pandemic

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Abstract

Background: The coronavirus disease 2019 (COVID-19) pandemic has stunted medical education activities with most conferences being cancelled or postponed. To continue professional education during this crisis, an alternative is conducting online conferences with live streaming and an audience interaction platform.

Objective: The unprecedented COVID-19 pandemic has affected human connection globally. Conventional conferences have been replaced by online conferences. However, online conferencing has its challenges and limitations. This manuscript reports the logistics and preparations required for converting an international onsite multidisciplinary conference into a completely online conference within 3 weeks during this pandemic.

Methods: The program was revised, and teleconference system, live recording, director system setup, and broadcast platform were arranged to enable the online conference.

Results: We used YouTube and WeChat for the online conference. Of the 24 hours of the conventional conference, 21.5 hours were retained in the online conference (89.6%) with live broadcasting. The conference was attended by 71.7% of the original international faculty and 71.6% of the overall faculty. In total, 61 presentations (92% of the original number) were delivered. A special session “Dialysis access management under the impact of viral epidemics” was added to replace precongress workshops and competitions. The conference received 1810, 1452, and 1008 visits on YouTube and 6777, 4623, and 3100 visits on WeChat on days 1, 2, and 3, respectively.

Conclusions: Switching a conventional onsite conference to a completely online format within a short period is a feasible way to maintain professional education in a socially responsible manner during a pandemic.

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Background: The coronavirus disease 2019 (COVID-19) pandemic has stunted medical education activities with most conferences being cancelled or postponed. To continue professional education during this crisis, an alternative is conducting online conferences with live streaming and an audience interaction platform.

Objectives: The unprecedented COVID-19 pandemic has affected human connection globally. Conventional conferences have been replaced by online conferences. However, online conferencing has its challenges and limitations. This manuscript reports the logistics and preparations required for converting an international onsite multidisciplinary conference into a completely online conference within 3 weeks during this pandemic.

Methods: The program was revised, and teleconference system, live recording, director system setup, and broadcast platform were arranged to enable the online conference.

Results: We used YouTube and WeChat for the online conference. Of the 24 hours of the conventional conference, 21.5 hours were retained in the online conference (90%) with live broadcasting. The conference was attended by 71% (37/52) of the original international faculty and 71% (27/38) of the overall faculty. In total, 61 out of 66 presentations (92% of the original number) were delivered. A special session “Dialysis access management under the impact of viral epidemics” was added to replace precongress workshops and competitions. The conference received 1810, 1452, and 1008 visits on YouTube and 6777, 4623, and 3100 visits on WeChat on days 1, 2, and 3, respectively.

Conclusions: Switching a conventional onsite conference to a completely online format within a short period is a feasible way to maintain professional education in a socially responsible manner during a pandemic.

Keywords: online conference; live broadcast; medical education; dialysis access; coronavirus

Introduction

The coronavirus disease 2019 (COVID-19) outbreak was first reported in Wuhan, China, in December 2019, and it rapidly developed into a pandemic within 3 months.[1] It poses a significant threat to global health. Travel restrictions, bans on mass gathering, and social distancing are some of the main control measures adopted in many countries. As a consequence, almost all medical conferences have been cancelled or postponed since February 2020.

Dialysis Access Synergy (DASy), the official academic conference of the Society of Dialysis Access Specialists (SoDAS) organized in conjunction with Taiwan Association of Vascular and Access Health and Chang Gung University, is a multidisciplinary international meeting focused on dialysis access. The conference was scheduled to be held from March 13 to March 15, 2020, in Taoyuan, Taiwan. By mid-February 2020, 90 international and local faculties had committed to participate in the onsite meeting. More than 300 delegates had registered for the conference. However, in late January 2020, the Taiwan government imposed stepwise strategies to contain the viral outbreak, including the Entry Quarantine System (EQS), which was implemented on 14 February and targeted many Asian countries.[2] These travel restrictions prevented participants from affected countries from attending the conference. Furthermore, those arriving from regions not covered by the EQS had an elevated risk of contracting the disease during travel or conference gatherings. A conflict existed between the goal of advancing professional education and curbing the pandemic.

Under this rapidly evolving global situation, the DASy organizing committee and SoDAS executive committee had to choose between abandoning the conference after a year-long preparation or continuing with the planned conference and bearing the substantial health risk. Eventually, the committee chose to continue with the conference as scheduled but convert it into a completely online

format by using teleconference technology and live streaming over social media. The entire switch was accomplished within 3 weeks. The present article shares the experience of this process.

Methods

Several logistical and practical challenges must be resolved to convert an onsite in-person conference to a completely online format. These include program revision, venue adjustment, and teleconference, audiovisual, recording, and live broadcasting arrangements (Figure. 1) as well as the promotion of the conference and audience engagement.

Figure 1. Flowchart of Logistical Issues Involved in Converting an Onsite Meeting into an Online Conference

Program revision

During the pandemic, many faculty members who are clinicians were busy with the management of sudden health crisis in their home countries and were unable to prepare for the conference. In addition, they may be unable to join the real-time teleconference discussion because of time zone difference or work scheduling. Efficient communication to engage the faculties and to confirm their degree of commitment was the first task for the conversion.

Second, teleconference has its limitations. Hands-on skills teaching typically cannot be run online effectively. Dialysis access involves many procedural and interventional skills. The DASy committee removed the precongress workshops, which was the main session for skills training. Conversely, after assessing the immanent need of medical knowledge during this unprecedented health crisis, the committee added a special session “Dialysis access management under the impact of viral

epidemics.” In this ad hoc session, dialysis access clinicians working in the epicenter Wuhan and other Chinese cities as well as representatives of other countries presented measures taken to maintain dialysis access while protecting healthcare worker safety. Furthermore, national policy, institutional workflow, protocols, and patient flow control were discussed.

Teleconference platform

The teleconference required a real-time stable system, audiovisual clarity, a user friendly platform, accommodation of numerous participants, and broadcasting ease. The organizing team reviewed several available options and decided to use the Zoom cloud meeting system (Zoom Video Communications, Inc.). Conference speakers and session panelists were required to download the Zoom meeting app on their computer or mobile phone. A total of 2 Zoom cloud meeting rooms were established; 1 for the actual conference and 1 for the preparation. The preparation room ensured speaker connection. The actual conference room was used during talks and discussions and was broadcasted live. A rehearsal, which involved the organizing host, audiovisual team, broadcast director, and 14 available faculty members, was conducted 1 week before the actual meeting.

Venue

An online conference requires a much smaller venue than a physical conference does. Hence, a large auditorium was not required, and a 90 m^2 room in Fullon Hotel Linkou in Taoyuan city was used instead. This new venue housed the 10–15 organizers, local faculty members, and the audiovisual team and their equipment. The venue setup included a presentation podium, a table for chairpersons, and a table for moderators (who were physically in Taiwan). Adequate social distancing was required inside the meeting room. The previously planned industry sponsor exhibition hall and slide preview room were omitted. Short videos introducing sponsors’ devices were shown between the conference

sessions. Another small room was required to accommodate the broadcast director, his console, and equipment.

Teleconference proceedings

The broadcast director was responsible for the conference time-keeping and audiovisual signal assignment. The camera was positioned to capture the presentation podium, chairpersons, or moderators during the discussion sessions. All faculties were requested to provide a prerecorded presentation to avoid any complications when switching files during the conference. Few faculties provided their presentations on the meeting date and thus made use of the shared screen function to present live talks. All online speakers and moderators joined the meeting through Zoom. The main screen broadcasted the conference agenda and showed the PowerPoint video with prerecorded narration, real-time faculty presentation, the master screen of all faculties who had logged onto Zoom, or Zoom images of selected faculty members during question and answer sessions. In the preparation room, the assistant of the broadcast director liaised with faculty members to prepare them for joining the meeting at the appropriate time. The conference then continued in accordance with the program agenda with live streaming to the online audience (Figure. 2).

Figure 2. Schematic of the Process of Live Broadcasting Online Conference by Using Teleconferencing Technology

Live broadcasting

To reach the worldwide audience and achieve educational goals, the committee decided to provide free live broadcast over easily accessible social media platforms YouTube channel (Alphabet Inc.) and WeChat platform (Tencent Holdings Ltd.). Links to the live streaming of DASy 2020 were generated and disseminated 10 days before the conference.

Online conference promotion and audience engagement

Teleconferencing can be promoted through email communication, website announcements, and social media chat groups. Due to time constraints, promotion opportunities for this online conference were limited. Nonetheless, the Japan Endovascular Treatment website announced the online conference of DASy 2020 to its members as a gesture of support.

During the live broadcast, both YouTube and WeChat platforms provided a real-time online text-response mechanism. A selected member among the chairpersons was responsible for collecting the questions and comments from the online audience and discussing them during the session. This was to maximize the engagement of online audience during the event.

Both YouTube and WeChat platforms allow individuals to view the conference irrespective of whether they have a registered account. On the YouTube platform, the number of visits and gross geographic location were recorded, and feedback was provided to the organizers. On the WeChat platform, in addition to the visit number and geographic location, the service provider responsible for setting up the live stream captured users' first and last log-in times and their cumulative viewing duration.

Results

The DASy 2020 conference was held in Taiwan as scheduled and broadcasted worldwide. The total duration of this online conference was 2.5 days with a total of 21 hours 33 minutes live streaming (the original onsite conference time was 24 hours). A 2-hour session titled "Dialysis access management under the impact of viral epidemics" involved 6 speakers from 4 countries, including

Wuhan, China, which led to stimulating discussions on this topic. The precongress workshops and grand challenge competitions were cancelled.

In total, 52 international faculties and 38 local Taiwanese faculties were confirmed to attend the original physical meeting. The online conference was attended by 38 overseas faculty members (37 online attendees and 1 physical attendee) and 27 local faculties (13 online attendees and 14 physical attendees). The international faculties that participated were from Australia, Canada, China, Germany, Greece, Hong Kong SAR, Japan, Malaysia, Singapore, South Korea, Thailand, and the United States. The only international faculty physically present was from Indonesia; at that time, the impact of the pandemic was less serious in South East Asia. Switching the conference to an online format led to the successful active participation of 71% (37/52) of our international faculty and 71% (27/38) of the overall faculty in the conference during this COVID-19 crisis. Faculty members were from multiple disciplines, including vascular surgeons, nephrologists, intervention radiologists, urologists, dialysis nurses, and engineers. Originally, 66 presentations were planned for the main conference. However, in the online format, 61 out of 66 planned presentations (92% of original number) were delivered. None of the main conference sessions were cancelled.

On the first day of the event, the conference received 1810 and 6777 visits on YouTube and WeChat, respectively. On the second and third days, the numbers were 1452 and 1008, respectively, on YouTube and 4623 and 3100, respectively, on WeChat. The total number of visits to the DASy 2020 live broadcast was 13 302. The visits continued to increase during the conference live streaming. Individuals from Asia, the Middle East, Australia, Europe, and North America attended the online conference.

The majority of the audience on YouTube were nonregistered. On the WeChat platform, 1605 individuals with a registered account viewed the live broadcast. Of them, 312 watched the broadcast for >10 minutes. The numbers of identified users who had watched the live stream for 10 minutes to 1 hour, 1–3 hours, 3–10 hours, and >10 hours were 174, 69, 49, and 20, respectively. On the basis of the first and last log-in dates of the identified users, 82/312 (26%) attended all 3 days of the conference, 84/312 (27%) attended 2 of the 3 days, and 146/312 (47%) had attended 1 day only.

Discussion

Globalization, cross over, and multidisciplinary collaboration are effective strategies to advance healthcare service in various fields. These require human interaction, preferably face-to-face, in varying group sizes. With the ease of travel and simplification of short-term entry requirements of many countries, international medical conferences represent an essential modality of professional education as well as incubators for new ideas for service improvement and scientific research. DASy, which is a multidiscipline, multinational dialysis access focused meeting, has embraced this concept. The DASy program involves auditorium presentations, podium discussions, hands-on skills training, and competitions based on specific themes. The preparatory work of DASy 2020 started in April 2019. However, the meeting timing coincided with the COVID-19 outbreak. This potentially lethal infectious disease posed huge challenges to healthcare education through conventional meetings. Since February 2020, most international medical conferences have been either cancelled or postponed.[3,4] Indeed, the spread of COVID-19 cluster has been reported to be attributable to business meetings.[5] The healthcare community could opt to forgo training and education during this pandemic or endanger participants' lives with mass gatherings. We considered neither of the approaches desirable. Therefore, we attempted to convert the physical conference into a completely online format, aiming to continue the effort of promoting medical education without imposing additional

risks to the participants. Moreover, this fulfills our social responsibility of restricting disease transmission.

The current COVID-19 outbreak is due to a novel strain of coronavirus with poorly characterized virulence, transmission mode, and infectivity. It first affected the city of Wuhan and then spread throughout China before affecting nearly the whole world. The outbreak statistics, travel warnings, travel ban, and compulsory quarantine requirements in various countries have changed rapidly. Under such an unprecedented infectious disease crisis, “time” was a major challenge for conference organizers. However, “time to act” played a vital role in managing such a challenge. For DASy 2020, although the organizing committee discussed the option of holding the meeting online, the decision to do so was made only 3 weeks before the meeting. To achieve this task within 3 weeks, the organizing team required strong support from the faculty members, adoption of readily available telecommunication and live broadcast technology, information technology and audiovisual experts, and efficient promotion.

Teleconferencing technology has been increasingly used in patient care and medical education and has been proven to be beneficial.[6,7] Good program content and quality audiovisual platforms are essential elements for online conferences.[8] To minimize the potential technical and reception interruptions, all participating faculties were asked to upload a prerecorded PowerPoint file with narration in advance. The few speakers who could not do so delivered their talks live through the Zoom system and shared their screen. The preparation room helped to address any complications during the actual conference.

Many social media and platforms support live streaming and instant chat function, including YouTube, Facebook, Instagram, Twitter, Vimeo, and Podcasts. YouTube was selected because it is

among the top 2 platforms in terms of user penetration in Western countries.[9] Although YouTube is readily accessible and popular for viewing video contents in many parts of the world, it is inaccessible in some Asian countries such as China, which has seen a rapid increase in the need for dialysis over the past decade. Hence, WeChat was selected as an additional broadcast platform. This is a multifunctional social media application that is user friendly and is popular in China. Other options included Tencent online video, Youku, Taobao live, Sina Weibo with Tencent online video, and Taobao live with additional payment function. By broadcasting simultaneously over these 2 platforms, organizers maximized accessibility of the conference to audiences worldwide. Therefore, during the 2.5 days of the conference, a total of 13 302 visits were recorded, which was considerably higher than previous DASy conference attendances (350-400 delegates). Thus, more interested individuals may be reached through online conferences than with similar onsite conferences. However, free registration, the convivence of online viewing, and distractions of individual environments could result in a wide range of attention to conference presentation. On the basis of the WeChat data, numerous individuals viewed the conference for <10 minutes. Although these contributed to visit counts, those users were unlikely to have seriously attended the conference. Nonetheless, the number of online participants who viewed for >10 minutes (312) was still approximately 15 times the number of onsite conference delegates in 2019, which was approximately 20.

Since the occurrence of COVID-19 pandemic in early 2020, the landscape of medical conferences considerable changed—from being postponed or cancelled to being conducted online. The methods and technology used for conducting virtual meetings have consequently evolved and diversified within a short period. Conference organizers may choose the format and platform that best suits the following three objectives: (1) the knowledge and information they aim to convey, be it didactic lectures, focused expert discussions, live procedures, or competitions, (2) the target audience size and

geographical location, and (3) the funding and resources. Currently, the platforms being used for online conferences include the comprehensive commercial solutions, mixed commercial solutions, and custom-made platforms. The comprehensive commercial solutions (eg, EventMobi, Remo conference) can handle many aspects of virtual conferences, including registration, virtual conference space, event app building, instant polling and Q&A, in-app chat, interaction with sponsors, and data analytics. For the mixed commercial solutions (eg, Zoom conference, WeChat livestreaming), conference organizers could select a specific platform for virtual conference, livestreaming, registration, and other functions based on the requirement of the individual event. For recurring virtual conferences or workshops with specific audiovisual or interaction requirements, a custom-made platform may be preferred. The time and cost required to build these three online platforms categories also vary. Depending on the situation of the pandemic, some medical conferences may also consider going hybrid with the onsite and virtual meetings integrating together. Conducting interactions between the onsite and online faculties and participants requires careful planning.

Although online conferences could attract numerous audience members across a wide geographic area, limitations remain. First, skills training is an important objective of medical conferences; it is usually conducted in small group workshops and is seldom successfully delivered through an online modality. Second, vigorous interactive discussions among the faculties and delegates, which are common in conferences, are difficult to replicate online. Third, instant polling from the delegates (online audience) for opinion and practice surveys was impossible over the platforms used for DASy 2020. Obtaining conference evaluation and feedback is difficult. Fourth, delegates could not evaluate new devices and technology relevant to their practice or engage with industry representatives during the online conference.

Furthermore, whether participants were exempted from work hours at their workplace for the online conference was uncertain. Some of these limitations might be overcome with advances in technology for online meetings. For example, online controlled simulator training might be used for skill development, electronic polling may be conducted through a mobile app or specifically designed platform, and industry booths could incorporate video demonstrations. However, specific limitations are likely with regard to online conferencing in the foreseeable future. Therefore, online conferencing currently cannot efficiently replace onsite meetings but could be a feasible and reliable alternative during unpredictable times such as the coronavirus pandemic. Indeed, given the aforementioned advantages, online conferences could be incorporated into all onsite conferences wherever possible. Attention should be paid by conference organizers to online delegates' experience, engagement, interaction, and feedback, so as to maximize the benefits of the online platform. Moreover, onsite conferences may incorporate some virtual presentations and discussions by prominent faculties that have difficulty attending the meeting physically. This would enable the conference organizers to enrich the educational content of the meeting with high versatility.

The organizing committee understood the limitations of online conferencing. Hands-on courses and the grand challenge competition were cancelled to make room for topics that were of most relevance to worldwide dialysis healthcare workers facing the imminent threat of COVID-19. The "Dialysis access management under the impact of viral epidemics" session on the first day of the event involved the first-hand experience of faculty members from various areas hard hit by COVID-19, in particular Wuhan. Meeting analytics revealed a much higher number of online visits on day 1 compared with days 2 and 3. This reflected the worldwide interest in the topics covered during this session.

Time zone differences represented another challenge for the speakers at DASy 2020. Adjusting the program sequence may reduce the problem to some extent. At DASy 2020, several speakers remained online in Zoom during out-of-work hours, with 1 faculty member staying up until 3 am local time. Several speakers opted to submit audio-recorded presentations only because they were unable to join the live sessions.

The Internet was derived from a technology invented by the US government to cope with the threat of the Soviet Union during the Cold War era.[10] Currently, In the current viral pandemic, pathogens are the major problem. Internet technology is an extremely effective tool for tackling some of the major challenges posed by pandemics. Maintaining the ability to disseminate high-quality medical education can be achieved through online conferencing even during an unexpected, sudden global health crisis.

Due to time and budget constraints for this conversion, online polling and audience feedback were not implemented. The conference live broadcast was open for all without the requirement of preregistration. Thus, postconference follow-up was impossible. Furthermore, demographic and viewing data of audience members were incomplete. We suggest that feedback mechanism and polling system should be put into consideration in every online events.

Conclusion

On the basis of our experience with DASy 2020, switching a conference from onsite to online operation within a relatively short period while maintaining its quality is possible. Online medical conferencing during the pandemic delivered the educational goal without risking the safety of individuals. We recommend organizing committees of future medical conferences to consider

switching to an online format as an alternative in the event of unexpected epidemics of infectious diseases. Furthermore, we recommend all medical conferences to broadcast at least a portion of their meeting content online to broaden their educational value worldwide.

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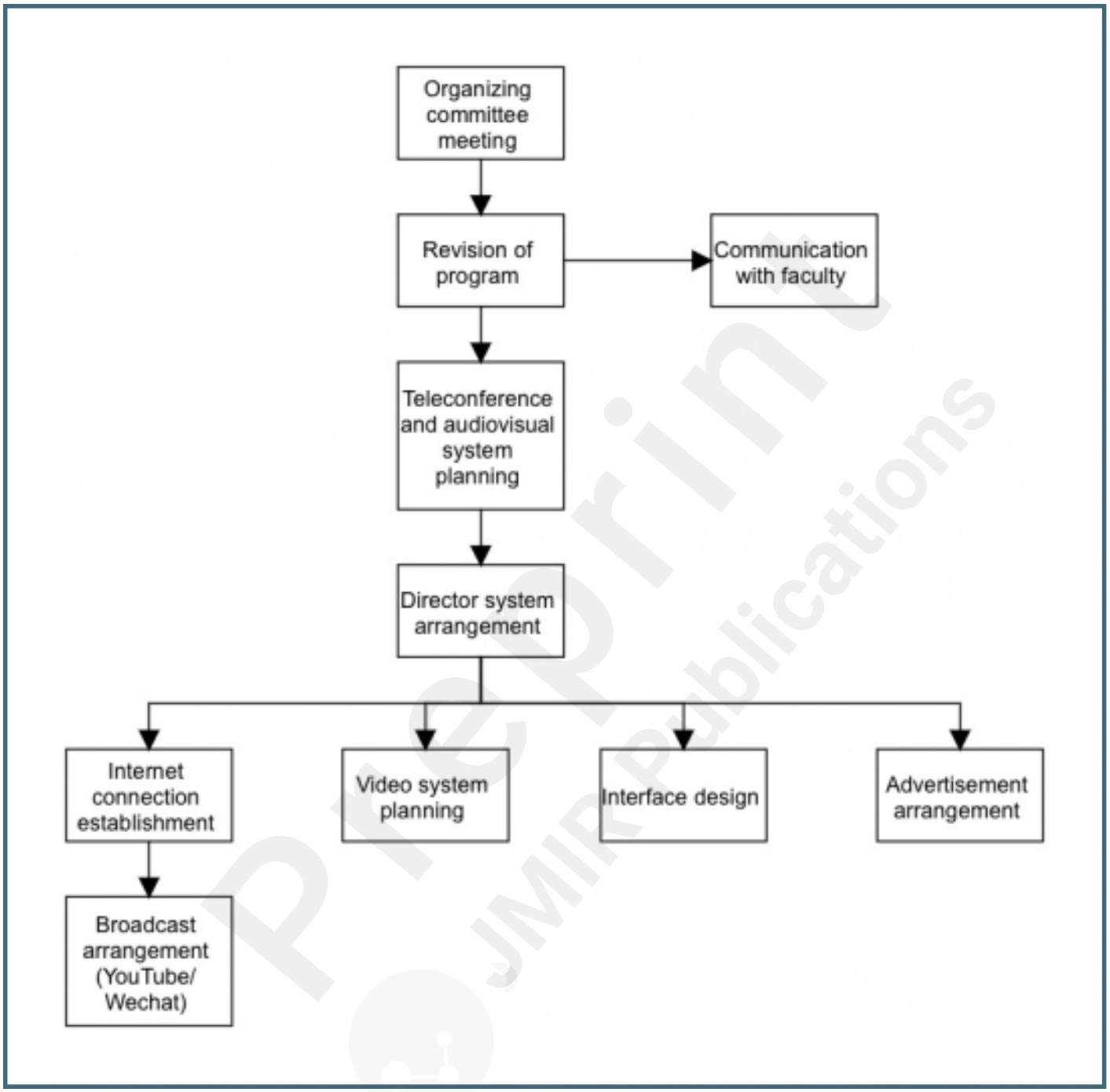
Supplementary Files

Figures

Flowchart of Logistical Issues Involved in Converting an Onsite Meeting into an Online Conference.



Schematic of the Process of Live Broadcasting Online Conference by Using Teleconferencing Technology.