

# Knowledge Dissemination for Indonesian Dental Communities Through Telemedicine - A Report

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Knowledge dissemination in dental science is a routine activity required by dentists in Indonesia. Through scientific updates, dentists can increase their capacity and lead to the health service quality improvements. To gain quality knowledge dissemination, it often takes time and cost to attend scientific meetings, so we need a breakthrough to help with this problem. Since 2016 the Faculty of Dentistry, Airlangga University, in collaboration with the Telemedicine Development Center of Asia (TEMDEC) has initiated international dental telemedicine which is performed on a regular basis, featuring both national and overseas speakers to discuss particular topics. These activities are expected to support dentists to get knowledge updates easily, as they are available in video streaming. From the questionnaires, it was concluded that the dental telemedicine program brought the benefits of knowledge dissemination to Indonesian dental communities and improved the value of the institutions involved.

**Key words:** *telemedicine, dentistry*

## Background

Dissemination of dentistry is an important requirement for dentists in Indonesia to update and improve their scientific capacity. This increased capacity is strongly correlated with an increase in the quality of dental service. In general, the knowledge dissemination is obtained by attending scientific meetings, that requires time and cost. Innovative technological developments have led to dramatic changes in every line of life. Medical science is no exception, and information technology has brought advances in the medical arena and methods

of providing health services. This has led to a new phenomenon of health services where medical practitioners, hospitals, health centres, and medical insurance work together in a digital environment to improve the quality of medical service distribution. The use of information technology in the field of medical and health care produces great potential to improve the quality and effectiveness of work carried out by the stakeholders. Telemedicine comes as a solution to meet the need for the flow of expert medical knowledge from medical institutions, to remote locations where knowledge is needed but there is a lack of medical experts, costs, and accessibility problems.<sup>1</sup>

In a broader context, telemedicine has been widely used in online seminars, medical learning, and even remote surgery. In this paper, we want to specifically report on the utility of telemedicine in dental science dissemination to Indonesian dental communities that we have been doing since 2016.

### **Knowledge Dissemination**

Since 2016, the Faculty of Dental Medicine Universitas Airlangga, in collaboration with Telemedicine Development Center (TEMDEC) Kyushu University Hospital, have initiated a program that is subjected to develop knowledge dissemination for Indonesian dental communities. Knowledge dissemination in the field of dentistry is organised twice a year on a regular basis. These activities are the part of the Asia-Pacific Advance Network (APAN) meetings as Dental Telemedicine sessions. APAN is the organisation that represents its members, and the backbone network that connects the research and education networks of its member countries/economies to each other and to other research networks around the world. APAN members are the entities representing research and education network interests in the countries/economies of Asia and Oceania. As the not-for-profit Association that is the legal entity created to undertake the activities on behalf of APAN members, APAN coordinates activities related to network technologies, services, and applications among its members and with its peer international organisations. APAN is also a key driver in promoting and facilitating network-enabled research and education activities. These include research collaboration, knowledge discovery and sharing, tele-health and natural disaster mitigation.<sup>2</sup>

These activities are technologically supported by the Telemedicine Development Centre of Asia (TEMDEC) International Medical Department, Kyushu University, Japan. The meeting topics and teleconference system were determined by the organiser program and discussed with TEMDEC in several preparatory meetings before the meeting was held. The program organiser also determines speakers who are scientifically suitable with the topics that have been determined. Speakers come from leading universities from Japan, Indonesia and Taiwan and conveyed the results of their clinical experience and current research according to the topics. The program organiser also announced the knowledge disseminations on various Indonesian dental communities and invited to join through video streaming<sup>3</sup>.

The meeting duration was 90 minutes, started with the introduction, followed by presentations, discussion, comments, and closing remarks, which are all delivered in English. The meeting topics and participants are listed in the following table.<sup>3,4,5</sup>

Table 1. The list of our Dental Telemedicine sessions, including topics, venues, and connected institutions.

No	Meeting	Date	Topics	Venues	Connected Institutions
1	APAN 42	August 2, 2016	Endocrine disturbances as related to periodontal disease	Hong Kong, China	<ol style="list-style-type: none"> <li>1. Hong Kong University</li> <li>2. Universitas Airlangga</li> <li>3. Kyushu University</li> <li>4. Hiroshima University</li> <li>5. University of Sumatera Utara</li> <li>6. Brawijaya University</li> <li>7. Hang Tuah University</li> <li>8. University of Malaya</li> <li>9. National Taiwan University</li> <li>10. Universitas Indonesia</li> </ol>
2	APAN 43	February 15, 2017	New Milestone in Oral Cancer Prevention	New Delhi, India	<ol style="list-style-type: none"> <li>1. Universitas Indonesia</li> <li>2. Universitas Airlangga</li> <li>3. Hang Tuah University</li> <li>4. Brawijaya University</li> <li>5. Kagoshima University</li> <li>6. Tohoku University</li> <li>7. National Taiwan University</li> </ol>
3	APAN 44	August 30, 2017	Developing Integrated Dental Treatment for the Handicapped	Dalian, China	<ol style="list-style-type: none"> <li>1. Universitas Airlangga</li> <li>2. Kagoshima University</li> <li>3. National Taiwan University</li> <li>4. Hiroshima University</li> <li>5. Hang Tuah University</li> <li>6. Universitas Indonesia</li> <li>7. Taibah University</li> <li>8. Brawijaya University</li> <li>9. Harapan Kita Mother and Children Hospital</li> </ol>
4	APAN 45	March 28, 2018	Forensic Dentistry: Reveals the truth in silence through the oral cavity	Singapore	<ol style="list-style-type: none"> <li>1. Hiroshima University</li> <li>2. Tohoku University</li> <li>3. University of Sumatera Utara</li> <li>4. Universitas Indonesia</li> <li>5. Universitas Airlangga</li> <li>6. Brawijaya University</li> <li>7. National Taiwan University</li> <li>8. Padjadjaran University</li> <li>9. Kagoshima University</li> </ol>

5	APAN 46	August 7, 2018	The Latest Surgical Management Strategies of Oral Cancer	Auckland, New Zealand	<ol style="list-style-type: none"> <li>1. Patan Academy of Health Sciences</li> <li>2. Tohoku University</li> <li>3. University of Sumatera Utara</li> <li>4. Universitas Indonesia</li> <li>5. Kyushu University</li> <li>6. Brawijaya University</li> <li>7. National Taiwan University</li> <li>8. Kagoshima University</li> <li>9. Syiah Kuala University</li> </ol>
6	APAN 47	February 21, 2019	Periodontal Medicine: A Global Trend In The Window of General Health	Daejeon, South Korea	<ol style="list-style-type: none"> <li>1. Indonesian Dental Association (Surabaya Chapter)</li> <li>2. Hiroshima University</li> <li>3. Tohoku University</li> <li>4. Kyushu University</li> <li>5. National Taiwan University</li> <li>6. Kagoshima University</li> <li>7. Syiah Kuala University</li> <li>8. Brawijaya University</li> <li>9. Universitas Indonesia</li> </ol>
7	APAN 48	July 22, 2019	Current Advances of Diagnostics in Oral Medicine	Putrajaya, Malaysia	<ol style="list-style-type: none"> <li>1. Universitas Airlangga</li> <li>2. Brawijaya University</li> <li>3. Tohoku University</li> <li>4. Kagoshima University</li> <li>5. Kyushu University</li> <li>6. University of Sumatera Utara</li> <li>7. Universitas Putra Malaysia</li> </ol>
8	APAN 49	Mar 03, 2020	Viral Diseases in Oral Cavity	Kathmandu, Nepal	<ol style="list-style-type: none"> <li>1. Universitas Airlangga</li> <li>2. Brawijaya University</li> <li>3. Kyushu University</li> <li>4. University of Sumatera Utara</li> <li>5. Universitas Indonesia</li> <li>6. Padjadjaran University</li> </ol>

There are two pillars in establishing a quality telemedicine, doctors and engineers. Both of them have important responsibilities in telemedicine. The doctors plan the topic of discussion, make a presentation and participate in the discussion. Engineers determine the video conference system, carry out connection tests several days before the meeting, and overcome various possible technical problems that occur during meetings. All communications between roles (Table 2) were performed through the mailing list.<sup>6</sup> Table 2 describes the role and job description of actively involved persons in our telemedicine sessions.<sup>7</sup>

Table 2. List of roles and job descriptions in our Dental Telemedicine sessions.

No	Roles	Job descriptions
1	Program organiser	<ul style="list-style-type: none"> <li>- Plan the topics</li> <li>- Plan the speakers</li> <li>- Invite the speakers</li> <li>- Make program evaluation</li> </ul>
2	Chair	<ul style="list-style-type: none"> <li>- Conduct and moderate the meetings</li> <li>- Conduct and moderate the discussion sections</li> </ul>
3	Venue moderator	- Officially start and end the sessions from the venues (in case the chair does not present at the venue)
4	Speaker	- Deliver presentations and answer questions from the audience.
5	Chief engineer	<ul style="list-style-type: none"> <li>- Determine the teleconference system</li> <li>- Conduct connection tests</li> <li>- Control the video streaming systems</li> <li>- Help local engineers to resolves technical problems</li> </ul>
6	Local engineer	<ul style="list-style-type: none"> <li>- Prepare instruments and connections in the connected institutions</li> <li>- Resolve technical problems</li> </ul>

Time management is a very critical factor to achieve a successful telemedicine session. The program organiser has to schedule and organise preliminary meetings to ensure the readiness of all parties in carrying out this activity.<sup>8</sup> An evaluation meeting is also important to systematically assess the plan and implement results of the sessions for the purposes future quality improvement. After a meeting is completed, the program organiser sends emails to the all parties containing questionnaires in Google Form.<sup>9,10</sup> The survey results are the significant factors for the evaluations. The survey results can be seen in the following charts.

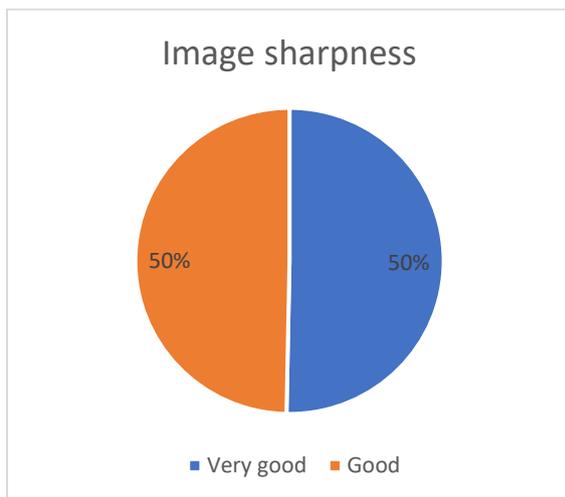


Figure 1. The image sharpness rating of all stations.

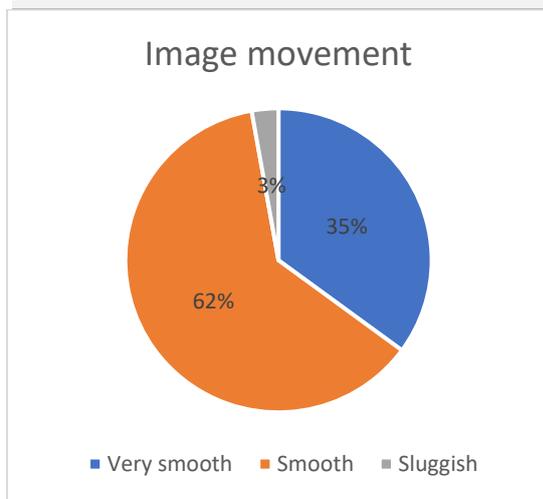


Figure 2. The image movement rating of all stations.



Figure 3. The sound quality rating of all stations.

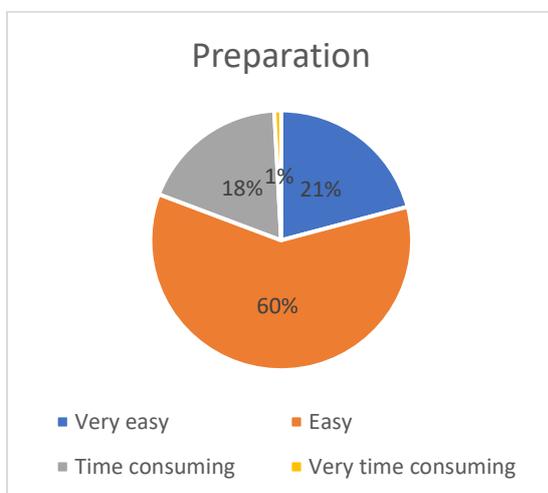


Figure 4. The preparation rating of all stations.



Figure 5. The program quality rating of all stations.

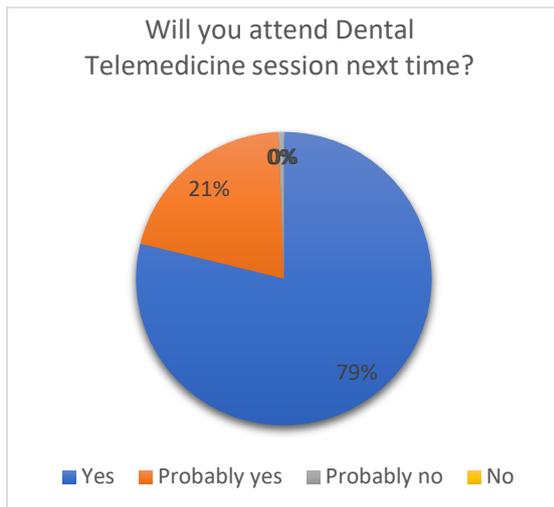


Figure 6. The wishes to rejoin the next dental telemedicine session of all stations.

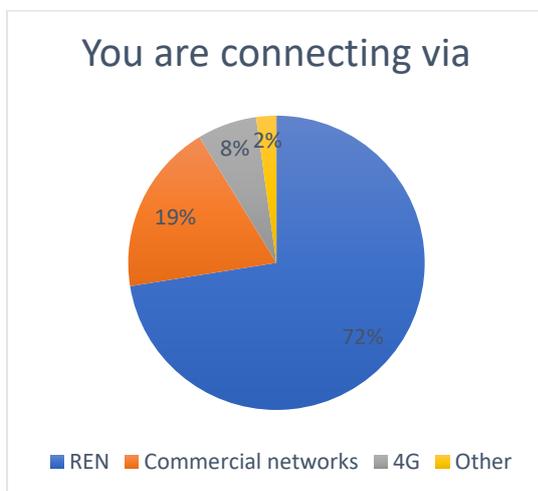


Figure 7. The connecting methods of all stations.

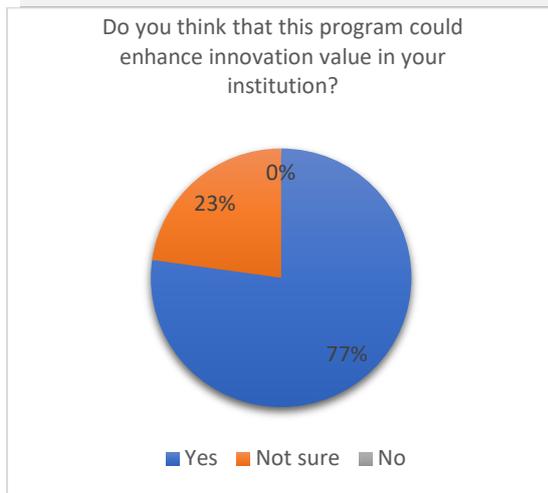


Figure 8. The institutional value enhancement of all stations.

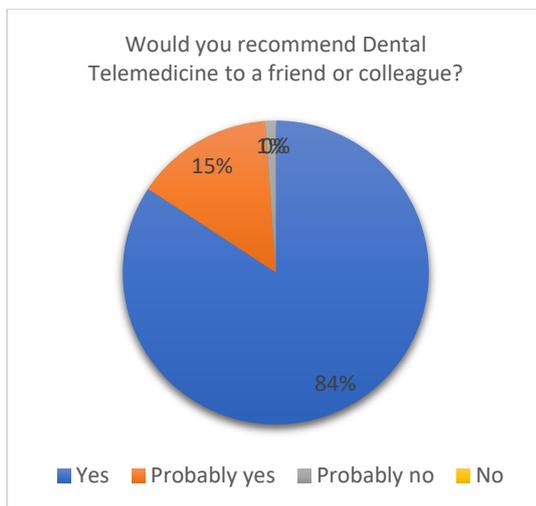


Figure 9. The recommendation of this program to friends or colleagues of all stations.

## Discussion

Telemedicine activities in Indonesia have received recognition from the Indonesian government. Through the Regulation of the Minister of Health of the Republic of Indonesia No. 20 of 2019 it is stated that in order to bring specialist health services closer and improving the quality of health services in health care facilities especially in remote areas, various efforts have been made, one of them through the use of information technology in consultation between health service facilities through telemedicine. Our telemedicine programs were not problem-based activities, but they were regular base online meetings to discuss particular topics, just like the same program that has been successfully conducted on a regular basis in Thailand.<sup>11</sup>

We have a standard of operating procedures in conducting the knowledge dissemination through telemedicine, containing the job description of all persons in charge and schedules of



each stage. In general, that standard is obtained from training organised by TEMDEC, which makes telemedicine activities highly planned, programmed, and makes it a meaningful online meeting, not just interconnection between institutions.<sup>12</sup>

Telemedicine stands on two sturdy legs. The first leg is an engineer whose work is focused on technical aspects, connection tests, controlling networks and equipment. The second leg is a doctor who focuses on the quality of topics, medical knowledge, presentations, and discussions. Engineers and doctors do not overlap in each function. Each party is responsible for their respective roles. Unlike other telemedicine activities which generally show the role of doctors rather than engineers, we give the same credit to engineers as doctors, so that the positions and roles of both are exactly the same.<sup>13</sup>

Although 28% of all respondents did not connect via Research and Education Network (REN), the feedback evaluation showed that almost all participants rated audio and image quality were good and very good. This achievement of technical quality is determined by the performance of the engineers. Preparations and communications among the engineers are the significant technical factors to assure the quality of the sessions. Inadequate technical quality is an important factor to affect the success of online meetings. No matter how wonderful the topic is discussed, it won't be interesting if the audio-visual quality doesn't meet the requirements.<sup>14</sup>

19% of respondents stated that the preparation of this telemedicine was time-consuming. This can be understood because our telemedicine implementation standards require a long preparation both in technical and scientific aspects. All persons in charge are required to attend several preparatory meetings and connection tests. The intensive preparations lead to good quality in technical aspects as well as scientific content.<sup>12</sup>

Good preparation, strong communication established between all parties, and discipline in carrying out their respective roles, are the keys that determine the assessment of the quality of the program, which is considered good by 99% of respondents. This also made almost all respondents state that they expected to rejoin the same session in the future and recommended this activity to their colleagues. 77% of respondents even stated that this activity could increase the value of innovation in their respective institutions. Since the participants may feel the benefit of our dental telemedicine program, 84% of them would recommend the program to their colleagues.

Finally, it can be concluded that the dental telemedicine program in Indonesia brings significant benefits to the Indonesian dental community in the viewpoint of the ease of gaining quality knowledge updates regularly and easily to improve institutional innovation values.



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