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Original

Educational Effects of a Webinar about COVID-19 Prevention by a Regional Core Hospital for Therapists Working in Local Facilities

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Summary

Background: A new role of a regional core hospital for educating medical personnel through a regional therapy association has been previously reported in the COVID-19 crisis. In the present study, physical (PT), occupational (OT), and speech language hearing therapist (ST) and physiatrists, who have been providing COVID-19 rehabilitation in a regional core hospital, were instructed how to control infection via a webinar. The purpose of this report was to investigate the effects of webinars on therapists working in local facilities. **Methods**: The webinar was sponsored by the Wakayama Physical Therapy Association. A PT, OT, ST, and physiatrist from Wakayama Medical University Kihoku Hospital, who had been providing rehabilitation for mildly and/or moderately infected COVID-19 patients. All participants answered the 18-item online questionnaire after the webinar to assess the educational effects. **Results**: There were 41 participants in this region and 30 participants from 19 facilities responded the questionnaire (valid responses ratio was 73%) and 30% of the respondents had experienced COVID-19 rehabilitation. Most responders (83%) felt that difficulty level of the contents was appropriate and 80% of the respondents replied that rehabilitation was necessary for the patients. 70% of the respondents replied that got confidence after this webinar, even 7 of the 13 respondents (43%), who attended the webinar about infection control of COVID-19 for the first time, were involved. **Conclusion**: A webinar from therapists and physiatrists in a regional core hospital, who had experiences to provide COVID-19 rehabilitation, were satisfactory and effective for the education of regional therapists.

Key Words: SARS-CoV-2, therapists, physiatrist, infection control, regional facilities

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Introduction

In the occurrence of disasters, roles of a university hospital for education would be changed[1]. A university hospital is responsible for the education of medical personnel as well as providing highly specialized medical care for regional residents and developing advanced medical treatments.

Following the emergence of pneumonia of unknown origin in early December 2019 in Wuhan, China[2], the novel coronavirus disease (COVID-19) has spread rapidly across the world. The first case of the infection in Japan was reported on the 16th January 2020. The World Health Organization (WHO) declared COVID-19 a pandemic in March 2020. In July, the number of infected people increased once more throughout Tokyo and neighboring prefectures in Japan, recognized as the 2nd wave. The same situation occurred in the United States and Australia. The WHO reported that over 32 million people were infected and that there were 98 thousand deaths by 25th September across the world[3]. In Japan, 80 thousand people were infected and 1.5 thousand deaths were confirmed[4]. In the Wakayama region, the first infected person was reported on 13th February and 228 of cases were confirmed by 25th September 2020[5].

Patients experience a variety of problems resulting from the infection, such as a marked reduction in physical fitness and cardiopulmonary function during and/or after the infection. The Italian Thoracic Society, Association for the Rehabilitation of Respiratory Failure, and Italian Respiratory Society have shown that the treatment for COVID-19 should include respiratory rehabilitation therapy by physiatrists and skilled therapists, depending on the condition of each patient from the early phase[6]. The Pan American Health Organization and the WHO jointly announced the necessity of rehabilitation interventions in the medical care for COVID-19[7]. In the recent prospective randomized control study for COVID-19 patients in China, 6-week respiratory rehabilitation improved respiratory function and 6-min walking but remained unchanged for the age-matched control group (no rehabilitation)[8]. Rehabilitation therapy has been recognized as an essential part to overcome these problems from the early phase of the infection[6-8]. As severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is highly infectious and another waves of COVID-19 is worrisome, rehabilitation should be provided even in a regional area to comply with correct infection control[9].

Wakayama Medical University Kihoku Hospital accepted 44 COVID-19 patients who were mildly or moderately infected until the 23rd of September in 2020. All patients could receive rehabilitation therapy under strict infection prevention, unless they rejected it. However, therapists were less experienced in using correct way to put on personal protective equipment (PPE) or to remove PPE, if they did not work on an acute care and tertiary emergency medical facility[10,11]. Few therapists in regional area have experienced rehabilitation treatment for the patients and therefore information was limited.

The Wakayama Physical Therapy Association held a free and urgent web seminar for all physical therapists in the Wakayama region on the 16th of May in 2020, in cooperation with the department and division of rehabilitation medicine comprising physiatrists and registered physical therapists in Wakayama Medical University Hospital[11]. The contents were: 1) an overview of SARS-CoV-2; 2) the necessity of rehabilitation therapy for the patients; 3) a demonstration of putting on and taking off a PPE; 4) case reports from the Kihoku Hospital. Participants in this urgent webinar had high satisfaction[1]. The 2nd webinar was held on the 27th of September in 2020 for occupational (OT) and speech language hearing therapist (ST) as well as physical therapists (PT) in Wakayama region. By the webinar, participants received real information regarding the significance of rehabilitation for patients and countermeasures against the SARS-CoV-2 infection in clinical sites from a physiatrist and therapists in the Kihoku Hospital, who had provided rehabilitation for the patients. Although this type of webinar would be expected to be highly educational for regional therapists, there was no assessment about its educational effects. This document reports the results of a post-webinar survey of therapists in these regions regarding their understanding and satisfaction with the 2nd webinar.

Methods

The Wakayama Physical Therapy Association held this webinar for members of the association of PT, OT,

Table 1 A 18-item questionnaire after the present webinar.

1	Age
2	Sex
3	Occupation
4	How many people did you participate with?
5	Do you provide rehabilitation for patients with COVID-19 in your facilities or division?
6	If you answered yes in question 5, please answer: Are you worried about infection during rehabilitation for patients with COVID-19?
7	Do you think it is necessary to provide rehabilitation to the patients?
8	Were any webinars or seminars about COVID-19 held in your facilities or division?
9	If you answered yes in question 8, please answer: How often?
10	Have you ever attended any webinar about COVID-19?
11	If you answered yes in question 10, please answer: Which webinars did you attend?
12	Have you ever given a lecture about COVID-19?
13	Was the difficulty level of the present webinar appropriate?
14	How much confident do you get to provide rehabilitation for the patients after the present webinar?
15	How much confident do you have to instruct staffs who have never attended this kind of webinar?
16	Would you like to attend this kind of webinar in the future?
17	If you answered yes in question 16, please answer: How often is it appropriate to hold it?
18	If you have any other comments or suggestions about the present webinar, please describe here.

The 18-item online questionnaire was administered using Google Forms® (Google LLC, Mountain View, CA). Seven reviewers checked the validation.

and ST in Wakayama region and began preparations from the 12th of August, 2020, requesting four lecturers, namely, a PT, OT, ST, and physiatrist from the department of rehabilitation in Wakayama Medical University Kihoku Hospital, who had been providing rehabilitation for mildly and/or moderately infected COVID-19 patients. A notification of this webinar was made on the 26th of August. The Wakayama Physical Therapy Association sent notifications to the three associations; then, each rehabilitation facility in Wakayama region was informed about this webinar. The theme of this webinar was "Considerations for implementing rehabilitation treatment for patients with COVID-19." The content of each lecture concerned the effects and benefits of rehabilitation for these patients from each standpoint: infection control of SARS-CoV-2 during rehabilitation in the Kihoku Hospital from the perspectives of a PT, OT, and ST and clinical importance of rehabilitation intervention for the patients. The contents of the meeting were: (1) Overview of COVID-19 and its significance in rehabilitation treatment for patients (30 minutes, by a doctor); (2) A demonstration of personal protective equipment during rehabilitation therapy and infection control in a hospital and rehabilitation center (30 minutes, by a PT); (3) Case reports from occupational therapists conducted on infected patients (course and menu of rehabilitation treatment, with videos and images) (30 minutes, by an OT); (4) Points to note during swallowing and vocal training, meal assistance, oral care, and examination (swallowing videofluorography) and case studies (30 minutes, by a ST).

The investigators designed an 18-item self-administered online questionnaire using Google Forms® (Google LLC, Mountain View, CA). Dichotomous and multiple choice were combined, followed by the Likert response scale questions with options added for further free text responses to each question by respondents[12]. The questionnaire included an explanation of the study purpose. For validation of the questionnaire, we invited four doctors and three PT to the initial survey draft. The questionnaire was modified based on their feedback[13] (Table 1).

Participant consent and ethical considerations

The organizer informed the purpose of the present

Table 2 Characteristics of the respondents. (N = 30)

	Number	%
Age, years		
20 - 29	7	23.3
30 - 39	9	30.0
40 - 49	10	33.3
50 - 59	4	13.3
Sex		
Female	7	23.3
Male	23	76.7
Occupation		
Physical therapist	16	53.3
Occupational therapist	8	26.7
Speech language hearing therapist	6	20.0

Numbers and ratios of work categories in the participants.

study before reporting the questionnaire. After guaranteeing voluntary participation for all participants and not collecting any identifying information, participants were reported to answer the 18-item online questionnaire after the webinar. The confidentiality and privacy of their responses were guaranteed. Because questionnaire was anonymous and no questions, which gave mental distress to responders, were involved, the review of the ethics committee was unnecessary.

Results

There were 41 therapists (PT, 24; OT, 10; ST, 7) from 19 medical and welfare facilities in Wakayama region. Thirty participants (PT: 16, OT: 8, ST: 6) answered the anonymous questionnaire (a ratio of valid responses: 73%). Characteristics of the respondents are shown in Table 2.

As shown in Table 3, 21 respondents (70%) had never provided rehabilitation for patients infected with COVID-19, and 15 respondents worked in facilities that were not equipped to provide rehabilitation for COVID-19 patients (Q6). Nine respondents (30%) had provided rehabilitation for patients and 3 of the 9 respondents answered that they were very or slightly nervous about infection during rehabilitation. However, 24 participants replied that rehabilitation was necessary for the patients (Q7; 80%; PT 12, OT 8, ST 4).

Seventeen respondents (57%) replied that they had held a webinar or seminar about COVID-19 in their division or facilities (Q8). Thirteen respondents (43%) had not participated in webinars concerning COVID-19 before the present webinar (Q10).

Twenty-five respondents (83%) replied that the difficulty level of the content of the webinar was appropriate (Q13; Fig. 1-a). As shown in Fig. 1-b, 21 respondents (70%) replied to get the confidence to provide rehabilitation for the patients after the present webinar. Thirteen respondents replied that this was the first time to attend a webinar regarding of COVID-19, 7 had received enough confidence to provide rehabilitation for the patients (Q14). Furthermore, 23 respondents (77%) replied that they had the confidence to instruct staff who had never attended this kind of webinar or seminar (Q15) for the prevention of COVID-19 during rehabilitation after the present webinar (Fig. 1-c).

Twenty-five respondents (83%) answered that they would like to attend this kind of webinar in the future (Fig. 2-a) and 17 respondents (68%) replied that they would like the webinar to be held once every 2 to 3 months (Fig. 2-b; Q16).

In Table 4, the free comments from the six participants are shown: they thought that the present webinar from all types of therapists was really meaningful, and a significance of rehabilitation therapy in COVID-19 patients seemed to be re-recognized. One of the participants described that he had longed for the next webinar. There were no severe critical comments.

Discussion

Previously, a new role of a regional core hospital in educating regional therapists using webinars has revealed in the COVID-19 crisis[1]. In the present study, educational effects of this type of webinar on regional therapists were assessed. A survey of 209 domestic institutions conducted by the Japanese Society of Physical Therapy for members from the 17th of April to the 6th of May in 2020 showed that 62 institutions were accepting patients with COVID-19 and 14 were providing rehabilitation[14]. Unfortunately, there was no more precise information about COVID-19 rehabilitation in Japan as of February 2021. Cases of early rehabilitation, which was meant as the onset of exercise therapy before decreased physical fitness and/or developing into the disuse syndrome, were few in Japan. Therefore, educational effects of the present webinar were high, especially 7 of the 13 participants who attended the

Table 3 Answers to the present questionnaire. (N = 30)

Questions & Items of answer	Numbers	%
5 Do you provide rehabilitation for patients with COVID-19 in your facilities or division?		
Yes	9	30.0
No	15	50.0
No, not accept	6	20.0
6 If "Yes", are you worried about infection during rehabilitation for patients with COVID-19?		
Yes, really nervous	1	
Yes, but little nervous	2	
Neither	2	
No, not really	4	
No, not at all	0	
7 Do you think it is necessary to provide rehabilitation to the patients?		
Yes, absolutely	13	43.3
Prefer to say "Yes"	11	36.7
Neither	5	16.7
Prefer to say "No"	1	3.3
No, not at all	0	
8 Were any webinars or seminars about COVID-19 held in your facilities or division?		
Yes	17	56.7
No	13	43.3
9 If "Yes", how often?		
4 times or more per month	1	5.9
1 to 3 times per month	6	35.3
1 to 3 times every two to three months	6	35.3
1 to 3 times every three to four months	4	23.5
10 Have you ever attended any webinar about COVID-19?		
Yes, I attended before the pandemic	4	13.3
Yes, I attended after the pandemic.	13	43.3
No, the present webinar was the first time.	13	43.3
11 If "Yes", which webinars did you attend?		
The webinar on 16th of May		
Others		
12 Have you ever given a lecture about COVID-19?		
Yes, I did it before the pandemic.	1	3.3
Yes, I did it after the pandemic.	4	13.3
No.	25	83.3

Numbers of the answers and the ratios of the each number divided by 30 respondents are shown.

webinar regarding rehabilitation for COVID-19 patients had gained the confidence to implement rehabilitation for COVID-19 patients.

The majority of experts in respiratory medicine, critical care medicine, and rehabilitation medicine strongly recommend providing early rehabilitation for patients with COVID-19 during admission[15]. As reported from a rehabilitation and functional recovery department of a hospital in Italy, the COVID-19 rehabilitation unit was organized after acute-phase units were developed and rehabilitation was provided for stable and paucisymptomatic patients after discharge from the acute units. The main aim was to restore deconditioning of aerobic capacity and deficits of muscle strength, ADL, balance, and cognition[6]. Furthermore, because COVID-19 patients have also psychiatric problems, symptoms of cognitive decline, and dysphagia[16], OT and ST rehabilitation treatment is necessary for these patients[17]. Therefore, the authors planned and held the 2nd webinar for PT, OT and ST with reference to the 1st webinar.

According to an American Nurses Association survey of over 30,000 nurses who worked on the front lines during the COVID-19 crisis, about 60% of respondents were afraid of personal safety and worried about the safety of friends and family[18]. It is difficult for the

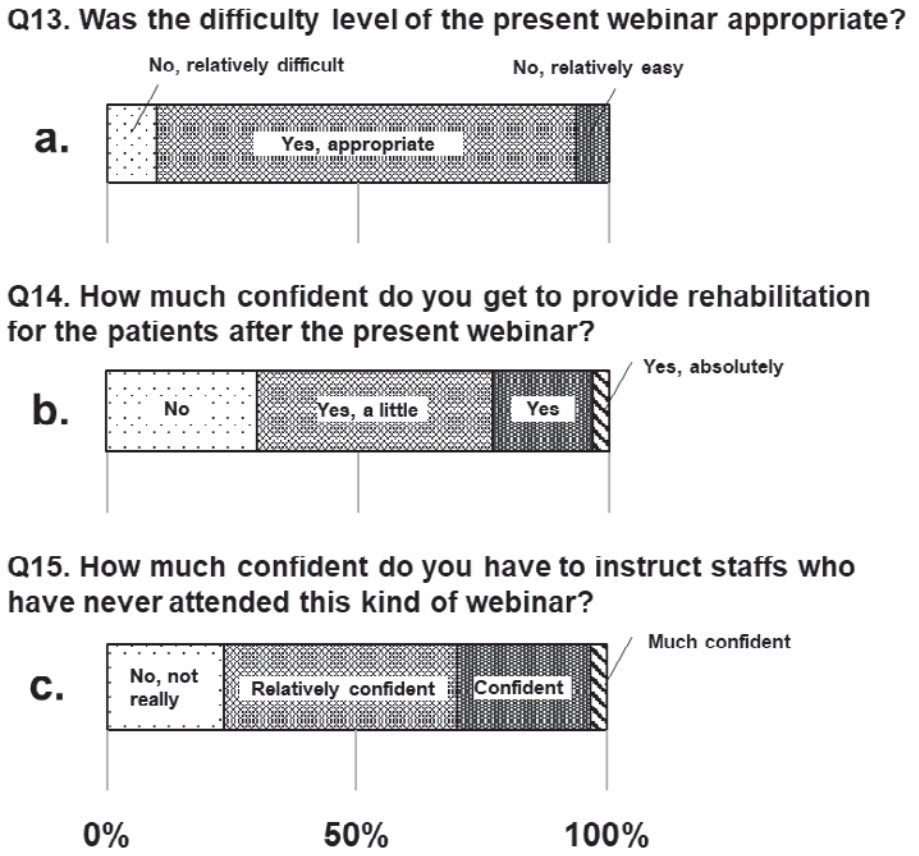

Figure 1 Answers about educational effects from 30 respondents (Question 13, 14, and 15).

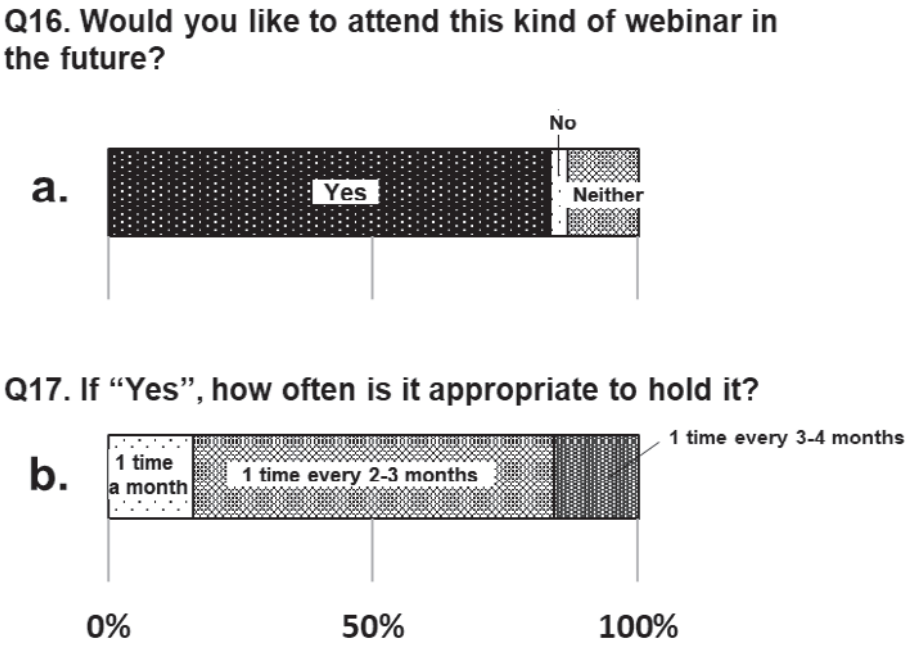

Figure 2 Answers about future webinars from 30 respondents (Question 16 and 17).

therapist to have less contact with the patient compared to other medical staff, because providing rehabilitation treatment such as resistance exercise, exercises of daily living, standing position, and gait training

Table 4 Answers to the present questionnaire #18. (N = 6)

	Occupation	Age	Sex	Question: If you have any other comments or suggestions about the present webinar, please describe here.
1	OT	22	M	I have learned so much.
2	PT	40	M	I'd like to know about important reminders in-home medical care.
3	PT	36	M	It was very good to listen to the lectures from all types of therapists, such as a PT, OT, and ST, being engaged in COVID-19 rehabilitation. Thank you so much.
4	ST	34	F	I had a good chance to learn how dealing with rehabilitation in COVID-19 patients from a ST as well as a PT and OT.
5	PT	36	M	I'm not confident yet right now if I could perform rehabilitation therapy for COVID-19 patients while preventing the spread of infection. However, I have realized again a significance of rehabilitation for COVID-19 patients.
6	OT	25	M	I'd like to say thank the present organizers for preparing very meaningful lectures and to participate in the next online trainings if it would be held in the future.

PT: Physical therapist, OT: Occupational therapist, ST: Speech language hearing therapist.

spend time in direct contact with the patient. ST had exposure to secretions and aerosols from the patients[19]. As previously reported, healthcare professionals recognize a lack of understanding of the pathology of COVID-19 and training on how to use PPE[20]. Therefore, all rehabilitation staffs should learn the skills to use PPE to reduce the risk of infection appropriately[21]. In the Kihoku Hospital of Wakayama Medical University, mildly or moderately infected COVID-19 patients without the need for oxygen supply have been performing endurance exercise training as rehabilitation therapy and there were no staffs in the rehabilitation division who were infected.

Online education such as e-learning has been essential since the COVID-19 pandemic[22]. This type of system has the advantages of delivering uniform information to several participants, lowering costs, and saving travel time compared to offline learning such as face-to-face education[23]. Another report concerning medical education suggests that the effect of online learning on results of a test is the same as that of offline learning[24]. A video lectures on how to use PPE lead to higher skill scores compared to traditional lectures by face-to-face[25]. On the other hand, more than 80% of medical students in the United Kingdom felt that practical clinical skills could not be completely learned online, because of reduced interaction among participants, inability to discuss at workshops, and difficulty in controlling student motivation[23]. Despite these disadvantages, this type of education system would be necessary for clinicians providing rehabilitation and help regional therapists to confidently care for the patient. A webinar such as the present one for the regional therapists allows for making more specific mention and closer communication between lecturers and participants based on each regional situation, resulting in letting information from a webinar sink in regional facilities where participants belong to. Furthermore, this kind of webinars would make further cooperation among institutions and/or facilities possible, especially between a core hospital and the other facilities in the regional area[1]. The present webinar for the regional therapists have some advantages as mentioned above, and prior reviews of nursing students supports the idea; it has reported that community-based educational programs strengthen professional and other skills[26].

Most respondents thought that the difficulty level of the material presented by each of the instructors was appropriate in the present study. Twenty-four respondents recognized the significance of rehabilitation therapy for COVID-19 patients. Thus, motivation to learn in the therapists who attended to the present webinar would be also high. Most respondents felt that they would be happy to attend another webinar. The contents of the webinar itself were rare and valuable for rehabilitation staff who had never provided COVID-19 rehabilitation. Therefore, the present webinar was successful. In addition, a hybrid education system, which is a method that utilizes both face-to-face and online education might be recommended[27], while considering how the programs are implemented and evaluated[28]. This study's findings could be applied to develop learn-

ing methods for physical and rehabilitation medicine in the future.

Limitations

This study did not have a comparison control setting and no statistical tests were performed. Therefore, the criteria for judging the educational effectiveness of training sessions are subjective.

Conclusions

A new role of a regional core hospital in education of regional therapists through a regional association using webinars has been recognized in the COVID-19 crisis. In the present study, educational effects of this type of webinar on regional therapists were assessed. The present webinar could provide real experiences of responsible therapists and physiatrists, and its educational effects on therapists and physiatrists would be high. To disseminate information of early COVID-19 rehabilitation, this kind of webinar is recommended.

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What is Known/What is New

• What is Known

New roles of a regional core hospital in educating regional therapists revealed in the COVID-19 crisis.

• What is New

A webinar from medical staffs in a regional core hospital, who had experiences to provide COVID-19 rehabilitation, would be highly effective for education of regional therapists.

Conflict of interest

All authors have no conflict of interests.

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