

# Online Clinical Briefing for Radiologic Technology Students in Covid-19 Pandemic Outbreak: Efficiency, Application, and Feedback of Students

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**Objective:** To evaluate students' satisfaction and efficacy of online clinical briefing for radiologic technology students. The study aimed to evaluate the efficiency, the possibility of application, and students' feedback with the new form of clinical briefing during the COVID-19 pandemic outbreak.

**Methods:** A cross-sectional survey was conducted on 120 full-time radiologic technology students after participating in online clinical briefing sessions at the Department of Radiology, Hue University of Medicine and Pharmacy Hospital. This training approach was implemented for students from April to July 2021. During the briefing, participants were asked to discuss on cases that were prepared by the previous on-duty nightshift students with the consultant of the senior staff. The discussion focused on the technical aspects, challenges, and clinical implementation of each technique. Descriptive statistics were used to analyze the responses of students using the Likert scale (1. Complete disagree, 2. Disagree, 3. Satisfy, 4. Partial agree, 5. Complete agree).

**Results:** Our findings show that 76.5% of students were very satisfied and/or satisfied with the online clinical briefing. In particular, the mean score for satisfaction with teaching resources and platforms, and assessment tools were 4.21; less fear in giving feedback than on-site briefings were 3.57; satisfaction with faculty accessibility and availability in giving feedback as well as answering questions for students was 4.29; satisfaction with student's performance and final grade was 3.55. 94.2% of students were willing to continue studying online during the COVID-19 breakout or similar circumstances.

**Conclusion:** Online clinical briefing is an appropriate teaching approach during a prolonged COVID-19 breakout. However, it cannot completely replace traditional teaching methods in providing essential clinical skills for radiologic technology students due to the unique characteristics of medicine and medical imaging teaching which require a substantial amount of clinical practice.

**Keywords:** online clinical briefing, radiologic technologist students, satisfaction

## Introduction

The COVID-19 pandemic began in China in 2019 and rapidly spread to throughout the world.<sup>1</sup> Under the impact of the COVID-19 pandemic, online learning has become the new normal in many medical and health science universities worldwide.<sup>2,3</sup> While online learning is a useful tool for many subspecialties, its efficacy in health science, especially in medical subspecialties which require a great amount of practice such as surgery, orthopedics, anesthesia, and radiologic technology is still arguable.<sup>4</sup> The outbreak of the COVID-19 pandemic has changed medical education in an unprecedented way.<sup>5-7</sup> Traditional hospital placement becomes impractical during outbreak waves of the virus. Many universities worldwide have moved to online teaching after the pandemic outbreak.<sup>8,9</sup> Satisfaction with online learning is an important aspect of successful educational processes.<sup>9</sup> Our study aimed to evaluate students' satisfaction and efficacy of online clinical briefing for radiologic technology students during the COVID-19 pandemic outbreak.

## Methods

A cross-sectional survey was conducted on 120 full-time radiologic technology students after participating in online clinical briefing sessions at the Department of Radiology, Hue University of Medicine and Pharmacy Hospital. This training approach was implemented for students from April to July 2021. During the briefing, participants were asked to discuss on cases that were prepared by the previous night shift on-duty students with the consultant of the senior staff. The discussion focused on the technical aspects, challenges, and clinical implementation of each technique. Students' performance was evaluated using Bloom's Taxonomy.<sup>10</sup> Descriptive statistics were used to analyze the responses of students using the Likert scale (1. Complete disagree, 2. Disagree, 3. Satisfy, 4. Partial agree, 5. Completely agree). The study was approved by the Ethics committee of the University of Medicine and Pharmacy, Hue University. All participants gave consent to participate.

## Results

Our findings show that 76.5% of students were very satisfied and/or satisfied with the online clinical briefing. In particular, the mean score for satisfaction with teaching resources and platforms, and assessment tools were 4.21; less fear in giving feedback than on-site briefings was 3.57; satisfaction with faculty accessibility and availability in giving feedback as well as answering questions for students was 4.29; satisfaction with student's performance and final grade was 3.55. 94.2% of students were willing to continue studying online under the COVID-19 breakout or similar circumstances (Table 1). There is a statistically significant improvement in students' performance, especially in students' understanding of various aspects of the radiologic techniques (Table 2). Our results show that the main reasons for the favor of online clinical briefing are the safety concerns during COVID-19 pandemics, the ability to repeat the recorded lectures, the reduction in time and cost for studying, the interactive nature of the online class, and the proactive in self arrange of the studying time (Figure 1). On the other hand, our survey also shows that the online briefing session can be compromised by different factors such as the facilities, the difficulty in teamwork, and the difficulty in practice online (Figure 2).

**Table 1** Student Experience of the Online Clinical Briefing Sessions (n=120)

| Specific Items  | 1                   | 2                | 3             | 4     | 5                |
|---|---------------------|------------------|---------------|-------|------------------|
|   | Completely Disagree | Partial Disagree | Partial Agree | Agree | Completely Agree |
| 1. There was clear communication of class assignments   | 0%                  | 4.1%             | 9.1%          | 33.1% | 53.7%            |
| 2. Feel being a part of the class and the online session                                      | 2.5%                | 12.4%            | 31.4%         | 28.9% | 24.8%            |
| 3. Students are satisfied with faculty accessibility and availability                         | 1.0%                | 1.7%             | 15.7%         | 28.9% | 52.9%            |
| 4. Students are satisfied with online discussion platform (Google meet / Zoom/ LMS/ Moodle)   | 2.5%                | 4.1%             | 22.3%         | 33.9% | 37.2%            |
| 5. Students are satisfied with the quantity and duration of online clinical briefing sessions | 0.0%                | 4.2%             | 19.2%         | 31.7% | 45.0%            |
| 6. Clinical briefings are timed to match practice time at the hospital                        | 0.0%                | 4.1%             | 16.5%         | 30.6% | 48.8%            |
| 7. Students are satisfied with the self-directed responsibilities assigned                    | 0.0%                | 8.3%             | 21.5%         | 35.5% | 34.7%            |
| 8. Student enjoyed working on projects during online clinical briefing sessions               | 2.5%                | 12.5%            | 27.5%         | 35.8% | 21.7%            |
| 9. Students are satisfied with the quality of interaction with lecturers and classmates       | 0.8%                | 7.4%             | 20.7%         | 33.9% | 37.2%            |

(Continued)

**Table 1** (Continued).

| Specific Items  | 1                   | 2                | 3             | 4     | 5                |
|---|---------------------|------------------|---------------|-------|------------------|
|   | Completely Disagree | Partial Disagree | Partial Agree | Agree | Completely Agree |
| 10. Students are satisfied with collaborative activities during online clinical briefing sessions | 0.0%                | 6.6%             | 22.3%         | 37.2% | 33.9%            |
| 11. Students can relate their level of understanding to other students'.                          | 0.0%                | 9.2%             | 25.0%         | 40.8% | 25.0%            |
| 12. Students feel comfortable with participating in online clinical briefing sessions             | 0.8%                | 5.8%             | 21.7%         | 42.5% | 29.2%            |
| 13. Students are satisfied with their performance in clinical briefing report                     | 0.8%                | 20.8%            | 18.3%         | 40.8% | 19.2%            |
| 14. Students are satisfied with their final grade   | 5.0%                | 16.8%            | 18.5%         | 40.3% | 19.3%            |
| 15. Students are willing to register in other available online sessions                           | 2.5%                | 7.5%             | 16.7%         | 52.5% | 20.8%            |

**Table 2** Pre-Test and Post-Test for Online Clinical Briefing Sessions (n=120) (Bloom's Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, Create)

| No. |  | Remember |           |        | Understand |           |         |
|-----|--|----------|-----------|--------|------------|-----------|---------|
|     |  | Pre-Test | Post-Test | P      | Pre-Test   | Post-Test | P       |
| 1   | Gross anatomy  | 31%      | 56%       | 0.019* | 30%        | 68%       | <0.001* |
| 2   | X-ray anatomy or sectional anatomy                           | 40%      | 70%       |        | 16%        | 57%       |         |
| 3   | Indications and contraindications of each specific technique | 35%      | 50%       |        | 37%        | 62%       |         |
| 4   | Strengthen the general protocol                              | 45%      | 49%       |        | 8%         | 46%       |         |
| 5   | A separate note for each case with a specific illness        | 48%      | 49%       |        | 6%         | 45%       |         |
| 6   | Parameter's alignment  | 54%      | 54%       |        | 15%        | 42%       |         |
| 7   | Radiation protection   | 42%      | 53%       |        | 22%        | 53%       |         |
| 8   | Recognize abnormal signs                                     | 52%      | 58%       |        | 10%        | 42%       |         |
| 9   | Identify image artifacts                                     | 51%      | 62%       |        | 8%         | 40%       |         |
| 10  | Suggest ways to fix each image artifact                      | 57%      | 53%       |        | 7%         | 34%       |         |

Note: \*Paired-Samples t-test.

## Discussion

Radiologic technology is a specialty that requires a substantial amount of training, especially training placement in clinical practice. Clinical experience is of utmost importance for students to be successful in their future work.<sup>11,12</sup> Students can obtain clinical skills through various resources, varying from clinical placement to simulation with AI enhancement.<sup>13-17</sup> Since the outbreak of COVID-19 in 2019, clinical placement becomes impractical in many universities due to excessive pandemic control policies.<sup>3,4</sup> Therefore online teaching is an optimal alternative solution during the pandemic outbreak.<sup>5,9</sup> Our study reveals important aspects of online clinical briefing for radiologic technology students. The results proved that online clinical briefing can be a problem solving for other future pandemics outbreaks.

### Online clinical briefings take place effectively because:

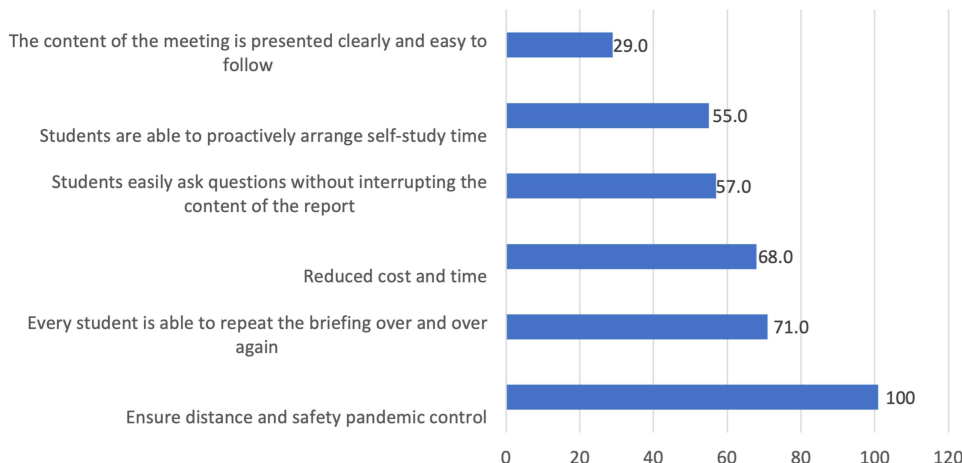


Figure 1 Reasons drive online clinical briefings effectively under the COVID-19 pandemic.

### Difficulties students facing in the online clinical briefing sessions

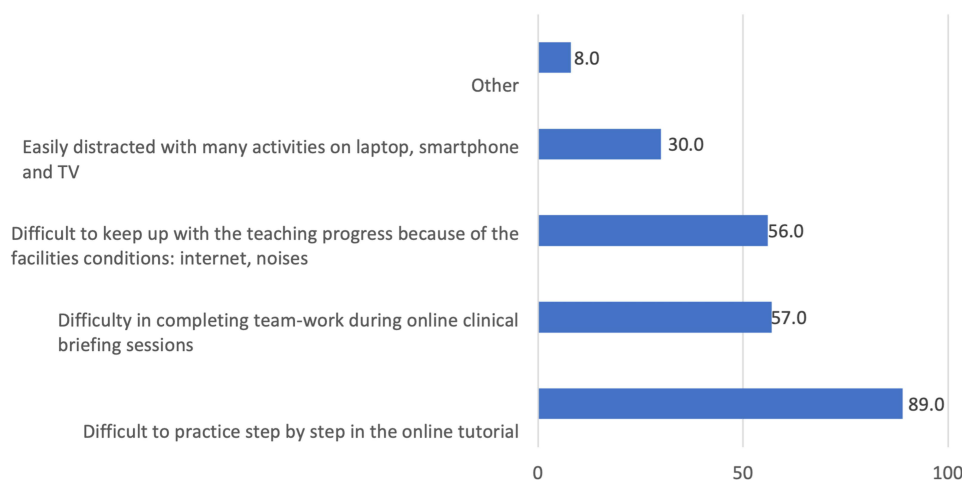


Figure 2 List of difficulties in attending online clinical briefings.

## Conclusion

The online clinical briefing is an appropriate teaching method for radiologic technology students. The feedback from the students was overall positive. The efficacy of the method was good. This can be an alternative teaching method for medical universities during COVID-19 outbreaks.

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## Disclosure

The authors report no conflicts of interest in relation to this work.

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