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Evaluation of Advantages and Disadvantages of the Virtual Morning Report Compared To the Classic Face-To-Face Method from the Perspective of the Paediatric Interns and Residents

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Abstract

Background: Morning reports were held virtual after the outbreak of the novel coronavirus (COVID-19) in the world and Iran. We used the Skyroom platform, which was not used previously. The novelty of this method caused us to evaluate the learners' opinions about the advantages and disadvantages of the virtual method compared to the classic face-to-face one.

Methods: This was a descriptive-analytical cross-sectional study during 2021. The population included the interns and residents of Pediatrics. Their opinions were assessed through a questionnaire at Bahrami Children's Hospitals, Children's Medical Center, and Valiasr Hospitals in Tehran regarding the two methods of holding the morning report. The questionnaires were distributed and completed in a period of 6 months in 2021.

Results: A total of one hundred and twelve interns and residents were included. According to them, the virtual method had a higher score in terms of increasing information technology skills and easier interpretation of the paraclinical results. The advantages of the virtual method were: no need for physical presence, availability, ease of use of the application, and time-saving as well as better prevention and protection of COVID-19. The only disadvantage of this method was the occasional low-quality of audio and video. Also, in the virtual method, there was less possibility of participating in the discussion. More than half of the participants wanted to hold face-to-face meetings with the possibility of virtual participation in future.

Conclusion: Virtual training platforms have been able to eliminate some of the face-to-face training problems. Online morning reports can be a satisfactory complement to face-to-face ones.

Key Words: Coronavirus, Learners, Medical education, Morning Reporting, Skyroom, Virtual Education.

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1- INTRODUCTION

The morning report is the clinical session with the highest ranking in the medical education program. These sessions are based on student-teacher interaction and applying reasoning to real patients (1). With the outbreak of the pandemic (COVID-19) in 2019 and the requirements for social distancing, the morning report sessions changed from face-to-face to virtual, which was unprecedented in our country. The use of virtual education platforms produced a new opportunity for multi-center collaboration (2).

In Iran, after the pandemic outbreak, the morning report sessions were held virtually. The novelty of this method and the limited number of previous studies led us to evaluate the learners' opinions about the advantages and disadvantages of this method and compare it with the traditional one (face-to-face). In this study, we used the Skyroom platform which has not been evaluated in any study, so far.

Virtual classes have been studied in the past, but the results of these studies cannot be generalised to the morning report (due to the inherent difference of these classes). Virtual classes have some advantages such as flexibility and cost reduction, and some disadvantages, such as insufficient virtual teaching skills, lack of effective learning, weak student planning, invalid evaluation, software problems, and low internet quality (2-5). Learners in the virtual class do not have emotional-eye contact; they interact less with each other; on the other hand, they have enough time to master a subject. Virtual education provides learning in a personal environment away from the judgement of others (6, 7). It also increases learning by 25% compared to traditional classrooms (8). The durability of learning is the same in every method (9, 10). Most students are satisfied with virtual education (2, 11). In the morning report, usually a number of patients are presented by the students, and then their diagnosis and treatment are discussed. Face-to-face morning report sessions have shortcomings: for example, their atmosphere is stressful and there is no feedback condition (12-14). After the Covid-19 pandemic, these meetings were transferred to the virtual space; and they were held online or offline via audio or video sessions.

The experience of virtual meetings led to a high satisfaction on the part of the students and they demanded its continuation (15). They cited easy access and increased flexibility as advantages of this method. Some students (30%) considered this method to be disruptive to learning (16). There are many studies on virtual classrooms, but not on virtual morning reports. The covid-19 pandemic and the necessity of virtual meetings made us conduct research on this issue. In the children's hospitals of Tehran University of Medical Sciences, a virtual morning report was held on the platform of Skyroom. After the covid-19 vaccination; meetings were held both virtually and Face-to-Face and learners could choose how to participate.

2- MATERIALS AND METHODS

2-1. Study design

This was a cross-sectional, descriptive-analytical study. The students' opinions about the morning report sessions methods (face-to-face and virtual) were evaluated during 6 months (from September 2021 to March 2022) in the children's hospitals of Tehran University (Bahrami Children's Hospital, Valiasr Medical Center, and Children's Medical Center).

2-2. Inclusion and Exclusion criteria

Inclusion criteria encompassed interns or residents of Pediatrics who had participated in the morning report sessions for at least 1 month, and had experienced

at least 10 sessions of participating in both virtual and face-to-face meetings. Exclusion criteria were incomplete questionnaires.

2-3. Sample size

The sample size was calculated according to Albert's study (17), 114 students (interns and residents).

The data were collected by questionnaire. It was distributed to all eligible learners and completed. The questionnaire was designed and prepared based on a review of previous studies (1, 14 17-20), interviews with a number of professors of Tehran University of Medical Sciences who were responsible for the morning report sessions in Paediatrics and consultation with a statistician. It included three sections, demographics, structure, and effectiveness of meetings. At the end, it was possible to determine the positive, negative and satisfactory features of the meetings by assigning a score (out of 10 points). A Likert scale was used to evaluate the learners' opinions about the benefits of the virtual morning report compared to the face-to-face method (score 1: much less, 2: less, 3: equal, 4: more, 5: much more).The opinions of the experts were used to determine the content validity of each question, in terms of "relevance", "simplicity" and "clarity", and the average validity index of the questionnaire was calculated as 0.92. To calculate the reliability, the questionnaire was completed by a number of students and Cronbach's alpha was calculated as 0.75.

2-4. Statistical Analysis

The data was analysed by SPSS version 24. Descriptive data were reported by descriptive statistics (mean, standard deviation, frequency and relative frequency). The normality of quantitative data distribution was checked by Kolmogorov-Smirnov test. Qualitative variables between intern and resident groups were compared by Chi-square test. Quantitative variables between both groups were compared by Student samples t-test; and if the distribution was not normal, by Mann-Whitney test. The significance level was determined as 0.05.

3- RESULTS

In total, out of 314 students, 120 individuals were willing to participate in the study and completed the questionnaire. Eight of these questionnaires were removed due to incompleteness. A total of 112 questionnaires were completed and analysed. 69 were women (61.6%) and 43 men (38.4%), the average age was 26.52±3.39 years (age range 21-37 years). Seventy-three interns (65.2%) and 39 residents (34.8%) participated. Seventy-nine percent (n=89) of them had participated in more than half of the virtual sessions. The characteristics of the participants of the morning report sessions are summarised in **Table 1**.

Table-1: Demographic characteristics of the participants in the study (N=120)

Characteristics		Number (%)	Interns (%)	Residents (%)
Gender	Male	43 (38.4)	37 (50.7)	6 (15.4)
	Female	69 (61.6)	36 (49.3)	33 (84.6)
Age (Year)	Mean ± SD	26.52±3.39	24.64±1.63	30.05±3.00
Frequency of	Less than 50%	23 (20.5)	13 (17.8)	10 (25.6)
participation	50%	29 (25.9)	16 (21.9)	13 (33.4)
in sessions	More than 50%	60 (53.6)	44 (60.3)	16 (41.0)

There was no significant difference between the number of interns and residents attending the morning report sessions (p=0.15). The results showed that the structure of the sessions in both methods was the same in terms of the manager and presenter, number and duration of the presented patients, along with the duration and content of the discussion. On the other hand, the number of participants was higher in the virtual method and the participation in discussions was more seen in the face-to-face method. **Table 2** shows the educational effectiveness of each of the meeting methods from the learners' perspective.

Table-2: Mean scores of the paediatric interns' and residents' opinions regarding the comparison between virtual and face-to-face morning report sessions

Effectiveness	Likert score (Mean ± Standard deviation)*			P-Value
	Total (n=112)	Intern (n=73)	Resident (n=39)	
Improving individual educational abilities	2.72±0.94	2.75±0.95	2.66±0.92	0.644
Participation in discussions	2.69±1.05	2.85±1.05	2.89±1.04	0.141
Communication between learners	2.69±0.95	2.34±0.93	2.71±0.97	0.048
Patient management	2.73±0.82	2.72±0.82	2.74±0.84	0.915
Quality of patient presentation	3.00±0.88	3.09±0.88	2.84±0.90	0.161
Appropriate interpretation of laboratory/imaging results	3.23±1.00	3.34±1.01	3.02±0.95	0.112
Improving Information technology skills	3.68±0.81	3.75±0.84	3.56±0.75	0.244

*A score less than 3 means that the effectiveness of the virtual meeting is less than the face-to-face meeting, a score equal to 3 means that the effectiveness of both methods is equal, and a score greater than 3 means that the effectiveness of the virtual meeting is greater.

In the virtual method, the scores of "increasing information technology skills" and "easier interpretation of laboratory and imaging results" were higher than those in the face-to-face method (Likert scores above 3) (**Table 2**). The scores for the "quality of presentation" were the same in both methods. The scores of "response to individual educational needs", "facilitation of participation in patient-related topics", "facilitation of communication between learners" and "knowledge and skills of patient management" of the virtual method were lower as compared to the face-to-face method. The opinions of paediatric interns and residents regarding the virtual morning report sessions in comparison to the in-person ones were shown in **Table 2**. The advantages and disadvantages of virtual meetings compared to the face-to-face method are summarised in **Table 3**.

The participants believed that "saving time" in virtual sessions is significantly more than that in the face-to-face ones (P=0.007). Other positive features of virtual meetings included the possibility of recording meetings, better view of images, less stress for the presenter, less noise pollution and distraction. Some negative features of virtual meetings were as follows: occasionally, the sound was not clear, and some questions in the chat room remained unanswered. The mean scores of satisfaction with face-to-face and virtual sessions were 7.13±1.97 and 6.75±2, respectively (out of 10 points), which did significantly differ between the two methods (P=0.12). There was no

significant difference between the groups of interns and residents in terms of satisfaction with the face-to-face and virtual meeting (P=0.75 and P=0.168, respectively). According to our results, 58 learners (51.8%) were interested in using both face-to-face and virtual meetings, 32 (28.6%) preferred only virtual and 22 (19.6%) only face-to-face morning report meetings; however, this difference between interns and residents was not significant (P=0.421) (**Table 4**).

Table-3: Advantages and disadvantages of virtual morning report sessions from the perspective of paediatric learners

Characteristics	How many agree with this feature?			P-Value
	Interns (n=73)	Residents (n=39)	Total (n=112)	
No need to be physically present	57 (78.1)	31 (79.5)	88 (78.6)	0.861
Availability	53 (72.6)	22 (56.4)	75 (67.0)	0.083
Easy to use	57 (78.1)	25 (64.1)	82 (73.2)	0.000
Time saving	51 (69.8)	17 (43.5)	68 (60.7)	0.007
High educational quality	15 (20.5)	4 (10.2)	19 (17.0)	0.167
Greater safety in a pandemic	66 (90.4)	31 (79.5)	97 (86.6)	0.106
Lack of face-to-face communication	19 (26.0)	10 (25.6)	29 (25.9)	0.965
Poor sound/image quality	42 (57.5)	28 (71.8)	70 (62.5)	0.138
Low internet speed	31 (42.5)	21 (53.8)	52 (46.4)	0.250
Inappropriate platform	21 (28.8)	8 (20.5)	30 (25.9)	0.342
Lack of skills with virtual facilities	20 (27.4)	6 (15.4)	26 (23.2)	0.151
Expensive	12 (16.4)	3 (7.7)	15 (13.4)	0.195
Low educational quality	19 (26.0)	10 (25.5)	29 (25.9)	0.965

Table-4: The opinion of paediatrics' learners about the methods of conducting morning report sessions

Morning report sessions methods	Interns	Residents	Total	P-Value
Face-to-face	12 (16.4)	10 (25.6)	22 (19.6)	0.421
Virtual	23 (31.5)	9 (23.1)	32 (28.6)	
Both at the same time	38 (52.1)	20 (51.3)	58 (51.8)	

4- DISCUSSION

In the morning report, patients who have been specified previously by the senior resident are presented. This presentation can be made in face-to-face sessions or in virtual meetings by showing videos or slides. Face-to-face meetings are not without defects. Its disadvantages include the requirement to be present, discomfort from loud discussion, insufficient knowledge for participation, stressful atmosphere, fear of asking, fear of being questioned, expert discussion between professors, students' becoming passive and not providing feedback to the presenter (12 -14, 18).

According to the present study, in the virtual method, paraclinical results were easier to interpret, due to better clarity of the images and the possibility to look at them longer. Bogoch's study had similar results, probably due to the use of similar virtual platforms (21). The positive characteristics of our virtual meetings were

"availability", "no need for physical presence", "time saving" and "easy to use", which is similar to Penner's report. Of course, in Penner's study, there was no comparison with the face-to-face method (13). It seems that these features are liked by the audience in all virtual training sessions, whether it is a class or a morning report session. Baczek, similarly, reported the possibility to stay home, constant access to online material, and a comfortable learning environment, as advantages of the virtual classroom; and the lack of interaction with patients and technical difficulties with the equipment, as disadvantages of them (22). In that study, there was no statistical difference between face-to-face and virtual methods in terms of "increasing knowledge" (22). This finding was contrary to ours. We found that the virtual method got a lower score than the face-to-face method in "increasing knowledge". To justify this difference, we can point to the difference in the study environment (classroom compared to the morning report session). The other finding of our study was that the learners believed that they can acquire better "management skills of the patients" in face-to-face meetings as compared to the virtual meetings. Nineteen percent of the learners believed that the virtual method has a higher educational quality while 25.9% of them believed that this method has a lower educational quality. This issue requires more investigation on the components of educational quality.

Some researchers expressed the lack of physical presence as a negative feature of virtual meetings. Gregory's study showed that listening to the audio of the morning report sessions [by the CPSolvers (Clinical Problem Solvers) website] strengthened the clinical schema. He stated that physical presence encourages students to consider the morning report as a dedicated activity (23). On the other hand, he believed that virtual meetings have been able to change medical culture, model humility in interactions, and create a fun and stress-free learning environment.

Contrary to the results of Bagewadi (24) and Albert (17), our research showed that the virtual method had a lower score than the face-to-face in terms of "facilitating communication between learners" and "participation in discussion". Bagwadi depicted that the virtual method facilitated group discussion and provided time flexibility and encouraged fearless participation in discussions (24). Albert's study also reported that in the virtual meeting, the learner participation increased and responding to his/her questions became more appropriate (17). These findings were different from our results. These differences can be due to the difference of virtual platforms. Albert's study was about morning reports among 14 American educational centers. Forty-two percent of the learners preferred face-to-face and 18% virtual methods. The rest considered both methods the same. Of course, most of the learners believed that face-to-face meetings were preferable in terms of "better participation", "friendship" and "group discussion". Albert's internet platform was not clear, but the possibility of chatting, video participation, better response to the audience and smart board/tablet were among the positive features of his platform. Most of the learners in this study (72%) believed that virtual sessions should continue simultaneously with face-to-face sessions (17), which was similar to our results. Ponti's study also showed the same issue proposing that the virtual meetings could lead to the formation of clinical reasoning (15). The students believed that in the future, virtual education will be used more in spite of bedside education (15).

It seems that virtual education platforms have been able to eliminate some of the face-to-face education problems. For example, there is no space limit and often

an unlimited number of learners can participate in a virtual session, educational items are written on the virtual board, and the sessions are recorded and saved. On the other hand, these sessions also have some problems. According to Penner's report, hackers have attacked virtual meetings several times, and shared inappropriate comments and images. Moreover, it is difficult to satisfy all audiences due to their large numbers. In addition, the comments of some passive learners may be critical or disrespectful (13). Virtual platforms make training possible anywhere while saving time. This advantage can be used especially in the decentralised clinical department. However, creating a good group atmosphere and reflecting on the non-verbal aspect of conversation in these platforms requires more attention. From the point of view of professors, it is difficult to establish emotional communication by the use of body language and eye contact in virtual meetings. This issue was investigated in the present study. 25.9% of the learners complained about the lack of face-to-face communication.

One of the features of virtual education is having the option not to follow the online classroom arrangement. According to Roy's study, 53% of students stated that they could not follow the progress of daily classes. In another study, students requested to reduce the number of sessions so that they could plan by themselves (25).

5- CONCLUSION

The virtual morning report is a desirable and satisfying method for the audience and is a suitable supplement for face-to-face meetings; therefore, it is recommended to use both face-to-face and virtual sessions for morning report meetings.

5-1. Limitations of the study

The present study was conducted on the students of one university and there is no information about the status of virtual morning reports in other universities. The situation may be different there. Therefore, its results may not be generalised to other medical groups.

6- ETHICAL CONSIDERATIONS

The students' information was confidential and did not affect their educational process and grades. They were not deprived of education and additional burden was not imposed. This study was approved by the ethics committee of Tehran University of Medical Sciences (Ethics Code: IR.TUMS.CMHC.REC.1401.007).

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8- CONFLICT OF INTEREST

None.

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