Virtual Grand Rounds in Medical Education During COVID-19 Pandemic: A Review

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Abstract- Medical grand rounds as a key teaching exercise originating from the bedside rounds conducted by prominent clinicians. Traditional (face-to-face) Ground Rounds have been robust in medical education that can update students 'information and help students' clinical decisions in treating their patients. Due to the Coronavirus Disease of 2019 (COVID-19) pandemic and its effects on different aspects of life, including education, most medical universities have begun to use online education as a new way to provide medical education, and online classes have become one of the common teaching methods. Virtual Grand Round sessions were implemented to facilitate continuity of care. Implementing virtual grand rounds during the pandemic period and considering the results and effectiveness from the perspective of students as direct benefactors can provide a good understanding of the potential of this method of e-learning. This article provides an overview of which medical disciplines have used the virtual Grand Round program for education during the COVID-19 pandemic and what are the benefits and results.

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Introduction

Historically the practice of Grand Round (G.R.) back to several centuries, but its sources are unknown exactly (1). During a medical G.R. (or clinical meeting), doctors discuss clinical cases of one or more patients in collaborative work leading team members to share individual experiences, clinical and scientific evidence-based knowledge, and responsibilities from the surgical decision-making (2). Traditional (face-to-face) G.R.s have been robust in medical education for more than a century that leading to continuing medical education credit as well as a forum for the socialization of medical students (3). The GR is not just an educational source but also a policy for the propagation of information to a large cohort of doctors (4). It was where most experts regularly interacted with cross-fertilization of ideas, reproduction of arguments, and integration of workforce (5) and can be exciting, informative, and enjoyable (6), update students 'information and help students' clinical decisions in treating their patients (7,8).

G.R.s are still considered a valuable educational activity (9). Due to the Corona virus Disease of 2019 (COVID-19) pandemic and its effects on different aspects of life, including education, most medical universities have begun to use online education as a new way to provide medical education, and online classes have become one of the common teaching methods (10). Also, a temporary decrease in case volume, a shift to COVID-19 care and deployment to other areas of the hospital, and the reduction in in-person teachings (e.g., Grand Rounds, workshops, simulation labs) have left trainees concerned about the impact on their training (11-13). To facilitate continuity of care, the Virtual Grand Round (VGR) sessions were implemented (14), which can be held in online software such as Skype, Sky room, Zoom, WebEx, and Adobe Connect (15,16).

To our knowledge, no study has been conducted to review of implementation and benefits of virtual grand rounds in different medical disciplines in Iran. And

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concerning the importance of virtual education in the COVID-19 pandemic, the purpose of this study is to answer two questions: Which medical disciplines have used the VGR program for education during the COVID-19 pandemic, and what are the benefits and results?

Materials and Methods

Various databases (e.g., PubMed, Google Scholar, Medline, and ISI Web of Knowledge) were searched for the terms such as "virtual grand round," "online grand round," "medical education," "clinical education," and "COVID-19" to identify studies on the Virtual grand rounds in medical education during the COVID-19 pandemic. All studies that include these purposes are listed according to the fields discussed below.

Orthopedics

Residency program websites, VGRs, and virtual interviews are recommended as a summarized plan to promote online programs for residents during the pandemic era (17).

Urology

In a recent study, VGRs presented by urology applicants following separate surveys which were designed for students and faculty/residents generally indicated positive comments from most of them, including more learning and interaction with minimal distractions, a relatively time-consuming commitment option, satisfaction, a useful addition to residency application, no - a requirement which may lead VGR to continue to be a useful means for students to search for more programs without geographic limitation. Hence, VGR, as a useful means, may help in choosing urology applicants (16).

Combining the collective resources of different institutions may provide a more varied and quality education for residents. For example, for an effective and important procedure that many providers of institutions lack experience in this surgery and need steep learning, currently teaching hundreds of residents might occur with minimal loss of time and no cost with the availability of cross-institutional virtual collaborations. This plan could also be performed as "virtual grand rounds" once a week or month, leading to the assurance that it is not overly exhausting (18).

A study in Canada reported quick adaptation to online teaching for both the lecturers and residents during the COVID-19 pandemic. Online platforms like Zoom facilitate grand rounds and other traditional didactic teaching sessions with the feasibility of all membrane participation due to omitting displacement problems (19).

In another study, weekly VGR was one of the materials in a 2-week curriculum that included both asynchronous and synchronous content implemented for students. The survey following the course indicated a significant increase in students' scores in self-perceived urologic knowledge, confidence in naming urologic conditions, comfort with urologic evaluations performance, and confidence in placing consults for urologic conditions. Generally, virtual medical student rotations may be an effective means for clinical learning supplementation or promotion (16).

Pediatrics

In a study, eight multidisciplinary reflective rounds within a children's hospital were held before the COVID-19 pandemic, and then a virtual round was implemented during the pandemic era. According to collected feedback forms completed by attendance, not only would virtual rounds be implemented at a low cost, but they also had the same effect compared to face-to-face reflective practice. Following excellent feedback toward the virtual round, further virtual rounds are set (20).

Nursery

It is suggested that VGRs received high due to making questions and answers, and recording VGRs led to accessibility for registrants who could not attend. Furthermore, nursing VGRs advantages include both continuing nursing education and showcasing discussions that many may not otherwise expose (21).

Medicine

A TED-style presentation was designed for performing a series of ground rounds at 11 hospitals in London to increase the awareness of biases affecting clinical decisions. Results revealed that unlike low participant rates and the unmet need for more training in managing biases before the pandemic era, more attendance rates at Grand Rounds could attend via online platforms, and also the opportunity for local attendance to participate in a national VGR is provided (22).

Otolaryngology

In a study, the experiences of medical students and surgeons were assessed during the pandemic by

participating in a 2-week new interactive virtual surgery that included G.R.s as a part of virtual didactics. Two surveys were collected, indicating this virtual professional program was valuable and improved students' knowledge; also, it was a way to be linked with department faculty (23). Another study that designed a virtual sub-internship (VSI) curriculum that included VGRs as one composition concluded that VSIs are useful and convenient, especially for students with travel limitations, and also suggested this may become more common in the future (24). Also, a study about Virtual electives, like grand rounds, revealed the same benefits during the pandemic era, although it noted it is important to make practical approaches for continuing Otolaryngology education (25).

Emergency medicine

VGRs converted from grand rounds due to the COVID-19 pandemic, increased medical emergency physicians' knowledge and participation, and also easement (26). Similarly, another study revealed convenience because of synchronous virtual traveling of VGR speakers to many institutions (27).

Dermatology

Planning educational programs for medical students and dermatology residents in Italy continues to perform weekly grand rounds but in virtual form to discuss difficult and challenging cases as an effective tool with the advantage of following health protocols during the pandemic era (28).

Rehabilitation

VGRs implementation for physiotherapy, speech therapy, audiology, and occupational therapy students mostly demonstrated moderate to high effectiveness concluded from both questioners and online exams, which showed increased knowledge after VGRs implementation (15,29). It is suggested that VGRs should be held in other clinical fields in medical sciences in a mixed form with in-person clinical education due to its possible effectiveness, especially during pandemics when attendance is limited and with the time and energy-saving advantages (15,29). VGRs, similar to other online education, could be better held by providing appropriate structure, including audio-visual interaction, suitable internet, and platform (15). Not only clinical skills but also training for physical medicine and rehabilitation students as well as other medical students may be promoted by planning virtual rotations curriculum. This leads to developing a strong continuous educational basis not only during the pandemic era but also beyond the pandemic and growing the specialty's attendance in the virtual world (30).

Ophthalmology

G.R.s: An enrolled student is required to present at least one case during the elective at the institution's Neuro-Ophthalmology G.R.s via video conference. The student should confer with fellows and/or the attending physician to find an appropriate case to present, cumulating in a formal slide deck presentation. The presentation should include an introduction slide with a "focused stem" summary, relevant past medical and ocular history, physical examination including images where possible, representative imaging studies and pathology (if event), diagnostic procedures, and a "take-home message" summary slide (31).

One study stated that G.R.s and other live didactics delivered remotely and later available online are now more accessible than ever to medical students. Programs should be prepared to transition to virtual offerings at a moment's notice, should the need arise because of another pandemic. Although this pandemic has pushed our field to engage students virtually, we also must be vigilant that the best part of our small field, high-quality human engagement, is not diminished permanently (32).

Another study showed that G.R.s was conducted via online platforms during the COVID-19 crisis. This has opened new facilities to invite national and international faculties to share their knowledge and discuss the cases at reduced cost and travel time (33,34). And another positive outcome of mandatory stay-at-home orders and physical distancing is increasing learning opportunities with outside institutions, both in the United States and abroad. Programs across the country have opened their virtual doors to their grand rounds and teaching sessions, and several programs from larger United States cities grouped to develop shared lecture series (35). A disadvantage is that online grand rounds reduce the opportunity for residents to network with senior ophthalmologists, some of whom may become fellowship preceptors. The long-term impact is that online G.R.s are likely to continue, but only as a component of the curriculum because physical interaction and networking remain important.

Anesthesiology

Anesthesia education programs conformed to social distancing standards by moving virtually all didactics like G.R.s to online formats. The COVID-19 crisis has led to rapid growth in anesthesia education and

replacing old slides with attractive online learning environments. These appropriate and effective approaches should guide anesthesia education as a guide to national standards and goals (36).

Surgery

Many studies have been conducted on the use of educational G.R.s in the field of surgery (13,37-44). One of the studies stated the zoom platform is mainly used to hold G.R.s. This template allows faculties and assistants to continue interacting and asking questions while maintaining safe social distancing measures. The American Society of Plastic Surgeons has launched VGRs for renowned professors from across the country on its subject matter. This dynamic lecturing format enhances traditional educational conferences and educates residents outside of their home program (40). Another study shows that many plastic surgeons are rapidly beginning to conduct VGR through virtual platforms such as Skype, WebEx, or Zoom. For presenters, this type of training gives them the opportunity to share knowledge with a wider audience and increase training efficiency. For some, this is the only way to communicate with international experts and discuss difficult cases. Virtual platforms, on the other hand, carry potential security risks such as unauthorized recording, "meeting hijacking," and possible breaches of patient privacy (13).

Another study using VGRs found that participants preferred VGRs to traditional ones. Based on their current experiences, participants strongly agree with continuing to use VGRs after the epidemic has subsided. In addition, they agreed to replace VGRs with traditional post-epidemic G.R.s, possibly because of the availability, low cost, and convenience of VGRs (41).

The high percentage of satisfaction of participants in VGRs, increasing students' knowledge level by comparing test scores before and after G.R.s, wider use of effective technologies to facilitate communication, the possibility of more people attending the sessions, holding Meetings in appropriate contexts such as Sky room and Zoom, Adobe Connect, Skype and WebEx, no need to travel specialists who were invited to a college or institution in traditional and old G.R.s, and the possibility of attending various medical professionals in a VGR and reduce costing are among the benefits and success factors in holding of VGRs. Findings indicate the necessity to implement VGR, as an effective and continuous method in training and e-learning in a variety of clinical disciplines of medical sciences during the impossibility of attending and gathering students following the pandemic situation. In addition to holding VGRs during the COVID-19 outbreak, these sessions can be held in the post-COVID era as a combination of face-to-face and online platforms.

References

1. Al-Shahi Salman R, Stone J, Warlow C. What do patients think about appearing in neurology "grand rounds"? J Neurol Neurosurg Psychiatry 2007;78:454-6.
2. Bulcão-Neto RF, Sankarankutty AK, Macedo AA, Azevedo-Marques P, Wichert-Ana L, Camacho-Guerrero J, editors. Supporting ethnographic studies of ubiquitous computing in the medical grand round experience. Proceedings of the 2008 ACM Symposium on Applied Computing (SAC), 2008 March. 16-20:1642-6.
3. Hull AL, Cullen RJ, Hekelman FP. A retrospective analysis of grand rounds in continuing medical education. J Contin Educ Health Prof 1989;9:257-66.
4. Stanyon M, Khan SA. Requiem for the grand round. Clin Med (Lond) 2015;15:10-1.
5. Dolcourt JL, Zuckerman G, Warner K. Learners' decisions for attending Pediatric Grand Rounds: a qualitative and quantitative study. BMC Med Educ 2006;6:26.
6. Kassirer JP, Kopelman RI. Clinical problem solving at grand rounds. Hosp Pract (Off Ed) 1990;25:51, 54-5, 58-9.
7. Valizadeh L, Zamanzadeh V, Namadi M, Alizadeh S. Nursing grand rounds: an integrative review. Med Surg Nurs J 2019;8:e97107.
8. Van Hoof TJ, Monson RJ, Majdalany GT, Giannotti TE, Meehan TP. A case study of medical grand rounds: are we using effective methods? Acad Med 2009;84:1144-51.
9. Parrino TA, White AT. Grand rounds revisited: results of a survey of U.S. Departments of Medicine. Am J Med 1990;89:491-5.
10. Rajab MH, Gazal AM, Alkattan K. Challenges to Online Medical Education During the COVID-19 Pandemic. Cureus. 2020;12:e8966.
11. Caruana EJ, Patel A, Kendall S, Rathinam S. Impact of coronavirus 2019 (COVID-19) on training and well-being in subspecialty surgery: A national survey of cardiothoracic trainees in the United Kingdom. J Thorac Cardiovasc Surg 2020;160:980-7.
12. Fuller S, Vaporciyan A, Dearani JA, Stulak JM, Romano JC. COVID-19 Disruption in Cardiothoracic Surgical Training: An Opportunity to Enhance Education. Ann Thorac Surg 2020;110:1443-6.
13. Cho MJ, Hong JP. Plastic Surgery Education during the COVID-19 Outbreak: Leveling the Playing Field. Plast

Reconstr Surg Glob Open 2020;8:e2925.
14. Fasbinder DJ, Heys DR, Holland GR, Keerthy A, Murdoch-Kinch CA, Inglehart MR. Grand rounds for dental students: an exploration. J Dent Educ 2015;79:510-22.
15. Amiri M, Hamedi D, Moradi N, Taheri F, Akbari M, Bayat A, et al. Evaluation and Comparison of the Effectiveness of an Online Grand Round between Audiology and Occupational Therapy Students of Ahvaz Jundishapur University of Medical Sciences during the COVID-19 Pandemic. Future Med Educ J 2021;11:37-42.
16. Xu L, Ambinder D, Kang J, Faris S, Scarpato K, Moy L, et al. Virtual grand rounds as a novel means for applicants and programs to connect in the era of COVID-19. Am J Surg 2021;221:956-61.
17. Tang OY, Ruddell JH, Hilliard RW, Schiffman FJ, Daniels AH. Improving the online presence of residency programs to ameliorate COVID-19's impact on residency applications. Postgrad Med 2021;133:404-8.
18. Smigelski M, Movassaghi M, Small A. Urology Virtual Education Programs During the COVID-19 Pandemic. Curr Urol Rep 2020;21:50.
19. Ding M, Wang Y, Braga LH, Matsumoto ED. Urology education in the time of COVID-19. Can Urol Assoc J 2020;14:E231-2.
20. Baker J, Savage A, Pendleton S, Bate JM. Implementation of multidisciplinary reflective rounds within a children's hospital before and during the COVID-19 pandemic. J Paediatr Child Health 2021;57:1044-8.
21. Goodwin MM, Baptiste DL, Davidson PM. Cultivating clinical-academic partnerships through a Virtual Nursing Grand Rounds series. J Clin Nurs 2021;30:e21-2.
22. Chen Y, Nagendran M. Postgraduate medical education after COVID-19: reflections on decision-making and the state of UK medical Grand Rounds. Postgrad Med J 2020;98:e94-5.
23. Byrnes YM, Luu NN, Frost AS, Chao TN, Brody RM, Cannady SB, et al. Evaluation of an interactive virtual surgical rotation during the COVID-19 pandemic. World J Otorhinolaryngol Head Neck Surg. 2021;24:10.
24. Bernstein JD, Ball LL, Nardone ZB, Watson D. A virtual sub-internship for otolaryngology-head and neck surgery. Laryngoscope Investig Otolaryngol. 2021;6:952-7.
25. Go B, Rajasekaran K. Effect of COVID-19 in selecting otolaryngology as a specialty. Head Neck 2020;42:1409-10.
26. Peterson A, Rose S, Solbak NM, Zaver F, Dowling SK. Virtual grand rounds in the Calgary Emergency Medicine Department. CJEM. 2021;23:414.
27. Gottlieb M, Landry A, Egan DJ, Shappell E, Bailitz J, Horowitz R, et al. Rethinking Residency Conferences in the Era of COVID-19. AEM Educ Train 2020;4:313-7.
28. Cinelli E, Megna M, Di Guida A, Greco V, Annunziata MC, Fabbrocini G. Teledermatology for patient management, dermatology education and research during the COVID-19 pandemic. Australas J Dermatol 2020;61:e471-2.
29. Saadat M, Moradi N, Yazdi MS, Orakifar N, Beydokhti MH, Behdarvandan A, et al. The Effect of a Virtual Grand Round on Satisfaction and the Level of Learning of Physiotherapy and Speech Therapy Students During the Coronavirus Pandemic. Med Educ Dev 2021;16:47-54.
30. Huang LY, McKenty N, Alvarez A, Gober J, Irwin R, Molinares D, et al. Virtually Possible: Medical Student Rehabilitation Rotations During a Pandemic. Am J Phys Med Rehabil 2021;100:831-6.
31. Wendt S, Abdullah Z, Barrett S, Daruwalla C, Go JA, Le B, et al. A virtual COVID-19 ophthalmology rotation. Surv Ophthalmol 2021;66:354-61.
32. Duong AT, Van Tassel SH, Alzaga Fernandez AG, Amin A, Chadha N, Dagi Glass LR, et al. Medical Education and Path to Residency in Ophthalmology in the COVID-19 Era: Perspective from Medical Student Educators. Ophthalmology 2020;127:e95-8.
33. Parija S, Das S. COVID-19 and the medical education system in ophthalmology - Lessons learned and future directions. Indian J Ophthalmol 2021;69:1332-3.
34. Wong TY, Bandello F. Academic Ophthalmology during and after the COVID-19 Pandemic. Ophthalmology 2020;127:e51-2.
35. Mishra K, Boland MV, Woreta FA. Incorporating a virtual curriculum into ophthalmology education in the coronavirus disease-2019 era. Curr Opin Ophthalmol 2020;31:380-5.
36. Anwar A, Seger C, Tollefson A, Diachun CAB, Tanaka P, Umar S. Medical education in the COVID-19 era: Impact on anesthesiology trainees. J Clin Anesth 2020;66:109949.
37. Abi-Rafeh J, Azzi AJ. Emerging role of online virtual teaching resources for medical student education in plastic surgery: COVID-19 pandemic and beyond. J Plast Reconstr Aesthet Surg 2020;73:1575-92.
38. Cho MJ, Hong JP. The emergence of virtual education during the COVID-19 pandemic: The past, present, and future of the plastic surgery education. J Plast Reconstr Aesthet Surg 2021;74:1413-21.
39. Ellison EC, Spanknebel K, Stain SC, Shabahang MM, Matthews JB, Debas HT, et al. Impact of the COVID-19 Pandemic on Surgical Training and Learner Well-Being: Report of a Survey of General Surgery and Other Surgical Specialty Educators. J Am Coll Surg 2020;231:613-26.

40. Kania K, Abu-Ghname A, Agrawal N, Maricevich RS. Four Strategies for Plastic Surgery Education amid the COVID-19 Pandemic. Plast Reconstr Surg 2020;146:252e-3.
41. Lazaro T, Srinivasan VM, Rahman M, Asthagiri A, Barkhoudarian G, Chambless LB, et al. Virtual education in neurosurgery during the COVID-19 pandemic. Neurosurg Focus 2020;49:E17.
42. Sutzko DC, Martin CA, Chu DI. Development and implementation of virtual grand rounds in surgery. Am J Surg 2021;221:46-8.
43. Tomlinson SB, Hendricks BK, Cohen-Gadol AA. Editorial. Innovations in neurosurgical education during the COVID-19 pandemic: is it time to reexamine our neurosurgical training models? J Neurosurg 2020:1-2.
44. Tuma F, Nituica C, Mansuri O, Kamel MK, McKenna J, Blebea J. The academic experience in distance (virtual) rounding and education of emergency surgery during COVID-19 pandemic. Surg Open Sci 2021;5:6-9.