

SMART E-LEARNING OPTIONS FOR STUDENTS IN MEDICAL RESIDENCY AND CLERKSHIP DURING THE COVID-19 PANDEMIC

¹Andy Zulfiqqar, ¹Ahmad Zulfan Hendri, ¹Indrawarman Soerohardjo.

¹ Division of Urology, Faculty of Medicine/University of Gadjah Mada, Sardjito General Hospital, Yogyakarta.

ABSTRACT

Objective: This study aimed to evaluate medical resident and clerkship preferences for a variety of available Smart e-Learning options to better cope with this global pandemic. **Material & Methods:** This cross-sectional study using a web-based national survey was conducted between the 10th-20th of June 2020. As many as 91 of 200 (45.5% response rate) residents and clerks, who were randomly invited, responded to the survey and rated the available modalities for Smart e-Learning. **Results:** Generally, respondents choose morning scientific online meetings (rated 7.61/10), webinars on case discussion (7.58/10), and pre-recorded tips and tricks on surgery (7.32/10) as their favorite modalities of Smart e-Learning. **Conclusion:** Scientific meetings among faculty and video based learning are both equally favorite modalities of Smart e-Learning during this pandemic. Meanwhile, morning reports are the least favorite due to the majority of cases are emergency cases that lack interactive discussion. This study may provide more insights for medical faculties into how to better cope with this pandemic and continue to deliver high quality education in the 'New Normal' Era using Smart e-Learning options.

Keywords: e-Learning, resident, clerkship, New Normal Era.

ABSTRAK

Tujuan: Studi ini bertujuan untuk mengevaluasi preferensi residen medis dan kepaniteraan untuk berbagai pilihan Smart e-Learning yang tersedia untuk mengatasi pandemi global yang lebih baik. **Bahan & Cara:** Studi potong lintang dengan menggunakan survei nasional berbasis web ini dilakukan antara tanggal 10-20 Juni 2020. Sebanyak 91 dari 200 (45.5% response rate) warga dan pegawai yang diundang secara acak menanggapi survei dan menilai modalitas yang tersedia untuk Smart e-Learning. **Hasil:** Umumnya, responden memilih pertemuan ilmiah pagi online (diberi peringkat 7.61/10), webinar tentang diskusi kasus (7.58/10), dan tips dan trik yang direkam sebelumnya tentang pembedahan (7.32/10) sebagai modalitas Smart e-Learning favorit mereka. **Simpulan:** Pertemuan ilmiah antar fakultas dan pembelajaran berbasis video sama-sama menjadi modalitas favorit Smart e-Learning di masa pandemi ini. Sedangkan laporan pagi menjadi yang paling tidak disukai karena sebagian besar merupakan kasus darurat yang kurang interaktif dalam diskusi. Studi ini dapat memberikan lebih banyak wawasan untuk fakultas kedokteran tentang bagaimana mengatasi pandemi ini dengan lebih baik dan terus memberikan pendidikan berkualitas tinggi di Era 'New Normal' menggunakan opsi Smart e-Learning.

Kata Kunci: e-Learning, residen, kepaniteraan, Era New Normal.

Correspondence: Andy Zulfiqqar; c/o: Division of Urology, Department of Surgery, Faculty of Medicine/Gadjah Mada University, Sardjito General Hospital. Jl. Kesehatan No.1, Senolowo, Sinduadi, Mlati, Sleman, Daerah Istimewa Yogyakarta 55281, Indonesia. Email: andyzulfiqqar@gmail.com.

INTRODUCTION

Identified as a global pandemic in early March 2020, the Coronavirus Disease 2019 (COVID-19) has devastated almost every healthcare system worldwide and continues to overwhelm the resources of hospitals and especially personnel in intensive care units (ICU) and emergency departments.¹ The current practices of most surgery

and urology departments have recommended reducing all non-emergency procedures and limiting surgeries to only non-deferrable procedures based on recent recommendations for stricter protocols until sometime in the future.²

As a result, there has been a dramatic decline in the clinical activities for medical residents such as students in urology and surgery programs, including decreased daily case discussions, no observations of

actual operations except post-operative procedures posted online, and only a few selected residents are permitted in the emergency department during their rotation.³ In addition, most special case discussions, regular departmental meetings, and annual meetings have been canceled to comply with the social distancing rules involving large gatherings of people together in one room.

These challenging problems continue to constrain the learning curve of the training programs, particularly those in urology and surgery.⁴ But just like the saying that every storm cloud has a silver lining, every problem always offers a solution to adapt with the current issues. Smart e-Learning options have recently become available in most major cities in Indonesia due to a nationwide initiative to promote and apply the available online technologies. Smart City designs in Indonesia, which provide online access through nationwide broadband services (currently 4G networks), have widened the possibilities of e-Learning options with numerous technological applications and innovations.

During the last three months, the use of online meetings, webinars, case discussions, and podcasts has been significantly increasing. These innovative technologies offer various alternatives to continue the traditional learning process with a 'New Normal' approach and provide different types of Smart e-Learning modalities that have been introduced worldwide. In Oman, the Smart City designs have been applied to city planning, energy production, and distribution, as well as medical education through e-Learning opportunities at the level of national universities, such as the prestigious Sultan Qaboos University that hosted the 1st Biomedical Science Conference in Muscat on January 6th, 2020.

OBJECTIVE

This study aimed to describe clerkship students' and residents' preferences for online Smart e-Learning modalities to better cope with their reduced learning curve due to the recent restrictions in surgery and training programs. By evaluating the current conditions, potential solutions can be identified which could lead to a demand-oriented approach to better deal with the present limitations due to the global pandemic.

MATERIAL & METHODS

This cross-sectional study was conducted on an online platform, using a systematic survey questionnaire that was shared randomly to medical residents and clerks, including surgery and urology students. The platform pooled participants from available names of medical trainees and students in their clerkship. For this study, participants were selected by convenience sampling from current medical residents in Indonesia. A total of 91 (45.5%) of 200 of the invited respondents completed the online survey form.

The survey questionnaire was distributed using the What's App platform, and the questionnaire was available as an attached message to registered users in our national system. The survey was conducted from the 10th until 20th of June, 2020. The survey method was chosen because it has more visibility and reduces any risk from physical contact during the pandemic. In addition, residents were mostly working from home during this period so it would be difficult to reach them through conventional paper surveys. The messages were sent only once and the respondents were given 5 days to complete the survey. Participants were required to register their official email to avoid any double registered data.

In the questionnaire, the medical students in their residency and clerkship were asked to rate from 1-10, from least to most preferred, 15 Smart e-Learning options that they considered suitable to their learning process during the current pandemic. To clarify the scale, instructions were provided that explained the range of point selection as follows: Select point 1 when the methods were considered least suitable to their preferences and select 10 when the methods were most suitable to them.

The data were exported from the Google survey form into SPSS 24.00 using standardized entry codes. Descriptive data were presented as means and standard deviation (SD). Statistical significance was set at $p < 0.05$. All analyses were conducted using SPSS version 21 (IBM SPSS, Inc., Chicago, IL).

RESULTS

The mean of participants age was 27.2 (3.9) years, and most of the respondents were in their clerkship (33.7%), followed by 1st year medical

residents (29.2%) and the least proportion was 5th year medical residents (4.5%). The majority of respondents were in medical specialty programs, followed by urology interns, general practitioners in surgery department rotation, and trainees in general surgery.

Among the Smart e-Learning options during the pandemic, the overall preferences of respondents in their residency and clerkship rated the following options: morning scientific online meeting (mean rate 7.61/10), webinars on case discussion (mean score 7.58/10), and pre-recorded tips and tricks on surgery (7.32/10) as the top three modalities for their

Smart e-Learning during the pandemic, while morning online reporting was rated as the least preferred modality during the pandemic.

In this study, respondents in their clerkship rated pre-recorded tips and tricks, interactive webinars, and webinars on case discussion as their top three favorite Smart e-Learning strategies during this COVID-19 pandemic. Additionally, respondents in their residency preferred morning online scientific meetings, prerecorded procedures of illustrated surgery, and videos of surgery tips and tricks as their favorite modalities of Smart e-Learning.

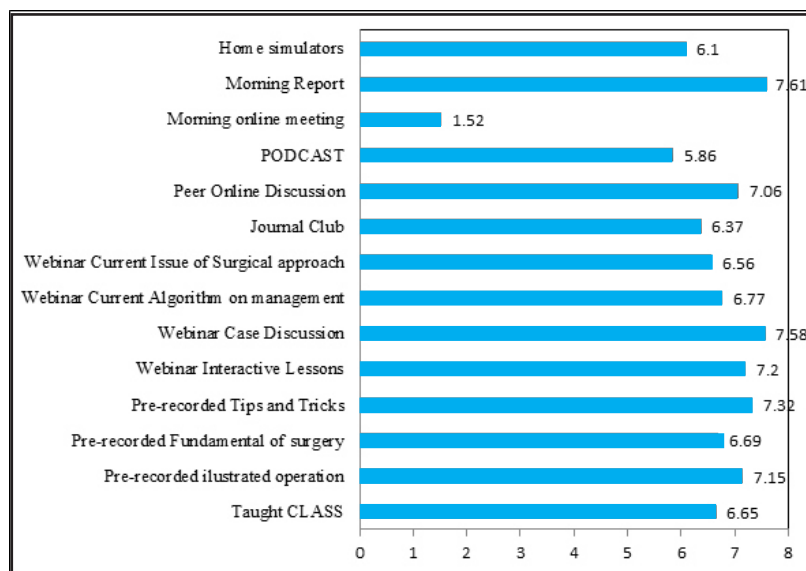


Figure 1. Resident and Clerkship strategies preferences for Smart e-Learning during the pandemic COVID-19.

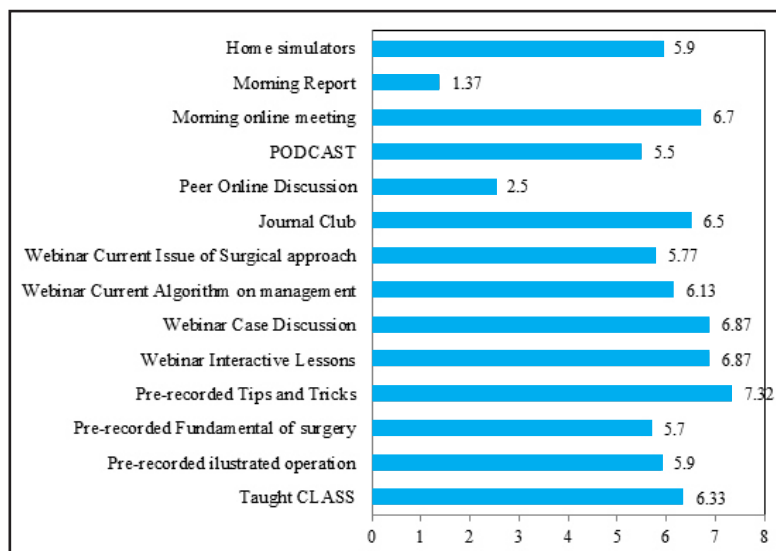


Figure 2. Clerkship preferences on Smart learning strategies during the pandemic COVID-19.

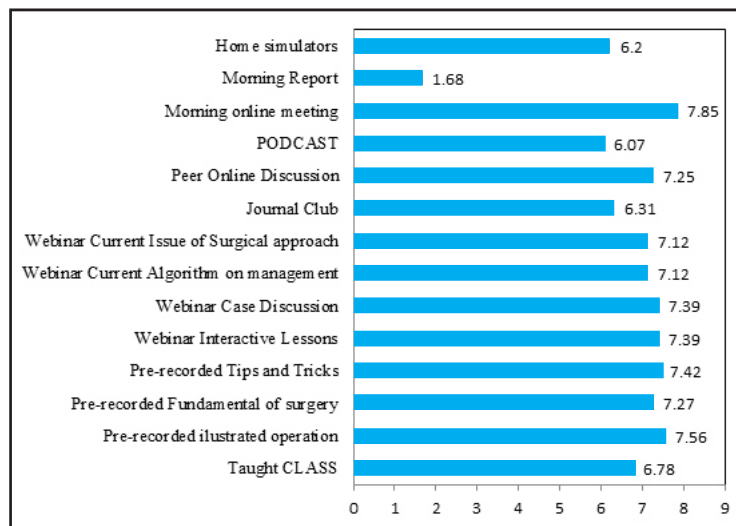


Figure 3. Resident Preferences on Smart learning strategies during the pandemic COVID-19.

DISCUSSION

The COVID-19 pandemic has changed the 'Old Normal' and continues to significantly affect our medical practices in all aspects including the student learning process in departments such as surgery and urology.⁵ The social distancing recommendations during the Covid-19 pandemic have seriously limited the traditional approaches to learning in internships and residency in surgery education.^{4,6-7} The majority of elective surgeries have been stopped in response to the international recommendations that aim to ensure enough beds for patients with COVID-19 (2) and reduce ICU usage in surgery departments. While guided by the best intentions, these recommendations have also slowed down the learning curve among medical residents to learn particular surgery techniques.

In terms of the 'New Normal' for health care systems, the safety and well-being of students in their residency and clerkship are key considerations behind reducing their engagement in non-essential clinical services.³ The current protective approach to management of schedules for those students in residency and clerkship is by reducing their time in the outpatient clinics, and most in-patient clinics are adopting a post-call management strategy to allow residents to have one-day 'on call' schedule alternating with one rest day.

Even though these considerations in response to COVID-19 are instituted in order to protect the student's safety, the main concern about this strategy among those students in their medical

residency and clerkship is that they will not be able to fulfill their competency requirement for their training, which could lead to other major issues including burnout and depression. The long-term impact of this pandemic on medical training needs immediate solutions. Smart e-Learning strategies provide convenient solutions that have been successfully applied in many education programs. A systematic review reported that students can gain significantly more practical knowledge through e-learning compared to traditional teaching methods.⁸ Another report also demonstrated that Smart e-Learning is relevant in terms of surgery training and can save time in the busy clinical workload of medical residents.⁹⁻¹⁰

Among different Smart e-Learning options during this pandemic, the majority of respondents in their residency and clerkship selected and rated morning scientific online meetings (mean rate 7.61/10), webinars on case discussion (mean score 7.58/10), and pre-recorded tips and tricks on surgery (7.32/10) as their top three favorite methods to cope with the current situation. These results indicated that residents are still trying to sharpen their theoretical learning by evaluating their current perspectives on several issues including surgical approaches.

The differences between respondents in their clerkship and those in residency in terms of preferred modalities for Smart e-Learning were statistically insignificant in this study. Meanwhile, although the main experiential focus of clerkship is usually gained with 'dummies' in their introduction

to specific surgical practices, both the residents and students in the clerkship preferred more detailed methods such as morning online scientific meetings, prerecorded procedures of illustrated surgery, and videos with surgery tips and tricks as their favorite modalities of e-Learning.

One limitation of this study is the cross-sectional method that did not evaluate the impact of the various Smart e-Learning strategies. This study focused more on evaluating the perspectives and preferences of respondents in their residency and clerkship concerning Smart e-Learning modalities during the current pandemic. However, while providing both current and future perspectives as well as discussing the possible negative effects of the present restrictions, we hope this survey will be valuable to faculty involved in medical residency training in struggling to deliver high quality education with trainee safety as their paramount priority. While working together to win the battle against this global catastrophe, it would be unfair to limit the residency and clerkship learning curves when innovations such as Smart e-Learning strategies are widely available and easily accessible.

CONCLUSION

Scientific meetings among faculty and video based learning are both equally favorite modalities of Smart e-Learning during this pandemic. Meanwhile, morning reports are the least favorite due to the majority of cases being emergency cases that lack interactive discussion. This study may provide more insights for medical faculties into how to better cope with this pandemic and continue to deliver high quality education in the 'New Normal' Era using Smart e-Learning options.

REFERENCES

1. Liu Y-C, Kuo R-L, Shih S-R. COVID-19: The first documented coronavirus pandemic in history. *Biomed J*. 2020.
2. Ribal MJ, Cornford P, Briganti A, Knoll T, Gravas S, Babjuk M, et al. European Association of Urology Guidelines Office Rapid Reaction Group: an organisation-wide collaborative effort to adapt the European Association of Urology guidelines recommendations to the Coronavirus Disease 2019 era. *Eur Urol*. 2020 Jul 1; 78(1): 21-8.
3. Amparore D, Claps F, Cacciamani GE, Esperto F, Fiori C, Liguori G et al. Impact of the COVID-19 pandemic on urology residency training in Italy. *Minerva Urol Nefrol*. 2020.
4. Porpiglia F, Checcucci E, Amparore D, Verri P, Campi R, Claps F, et al. Slowdown of urology residents' learning curve during the COVID-19 emergency. *BJU Int*. 2020; 125(6): E15-7.
5. Fauci AS, Lane HC, Redfield RR. Covid-19 : navigating the uncharted. *N Engl J Med*. 2020 Feb 28; 382(13): 1268-9.
6. Das De S, Puhaindran ME, Sechachalam S, Wong KJH, Chong CW, Chin AYH. Sustaining a national surgical training programme during the COVID-19 pandemic. *Bone Jt Open [Internet]*. 2020 May 1; 1(5): 98-102.
7. Teoh JY-C, Ong WLK, Gonzalez-Padilla D, Castellani D, Dubin JM, Esperto F, et al. A global survey on the impact of COVID-19 on urological services. *Eur Urol*. 2020; S0302-2838(20): 30371-7.
8. Jayakumar N, Brunckhorst O, Dasgupta P, Khan MS, Ahmed K. e-Learning in surgical education: a systematic review. *J Surg Educ*. 2015; 72(6): 1145-57.
9. Ruiz JG, Mintzer MJ, Leipzig RM. The impact of e-Learning in medical education. *Acad Med*. 2006; 81(3).
10. Schmidt MW, Kowalewski K-F, Trent SM, Benner L, Müller-Stich BP, Nickel F. Self-directed training with e-learning using the first-person perspective for laparoscopic suturing and knot tying: a randomised controlled trial. *Surg Endosc*. 2020; 34(2): 869-79.