



The Different Preferences of Learning among Emergency Medicine Residents in Riyadh, during their Residency Program

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Traditional teaching approaches are giving way to new ones in medical education. Residents' interest in readily available educational resources is causing instructors to rethink their teaching strategies. This study aims to find which of these ways of learning is preferred by residents. A descriptive survey study was distributed among emergency residents who doing their program in

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Riyadh during the period from April 2021 to September 2021. All Saudi board emergency medicine residents R1, R2, R3, R4, and post-training residents within the last two years in Riyadh were included. Data were collected using an electronic survey (SurveyMonkey) using a validated questionnaire. This study analyzed 202 residents and post-graduated and ER residents regarding their learning sources and preferences. Participants were at different levels of training as 23.8% were in their first year of residency, 22.8% were in their second year, 19.3% were in their third year, 22.3% were in their fourth year and 11.9% finished their training during the last two years. The majority of the participants 57.4% claimed that they spend 1-2 hours of their extracurricular time on educational material.

Keywords: Education; emergency medicine; residents.

1. INTRODUCTION

Traditional teaching approaches are giving way to new ones in medical education. Residents' interest in readily available educational resources is causing instructors to rethink their teaching strategies. The era of chalkboard, PowerPoint presentations, and hour-long lectures is passing as technology becomes more prevalent in the medical school learning environment. Medical instructors and students are starting to adopt asynchronous education as a way to tap into the Millennial Generation's preferred method of information intake, while seemingly trailing behind other disciplines in higher education [1,2]. Asynchronous education is a student-centered teaching approach that encourages peer-to-peer engagement and involves distributing online learning materials. An increasing number of studies indicate that asynchronous education is not only preferred by students but also more efficient [3,4].

According to a study conducted in Qatar, 25 out of 38 emergency medicine residents favored conventional didactic lectures over integrated learning, and this preference was statistically significant. The fact many EM residents have graduated from medical institutions in the Middle East and Asia, where conventional teaching and clinical methods are firmly intertwined, may be one explanation for this. The use of antiquated teaching techniques in undergraduate medical school may lead to medical residents favoring these techniques over modern ones in postgraduate medical education [5].

It is essential to have a solid understanding of the available strategies and procedures for clinical teaching since it is an essential instrument in the education and development of all medical trainees. In a study with an emphasis on emergency medicine, a recommendation for best practices was provided and they stated that

firstly, promoting asynchronous teaching and procedural skill is the best practice. Secondly, using just-in-time training instructional films; Thirdly, using a range of stimuli (such as imaging, electrocardiograms, and ultrasound movies) in clinical shifts to improve teaching and learner engagement; Fourthly, taking into account using in situ simulation as an efficient instructional technique while instructing in the clinical setting; Think about utilizing telemedicine and wearable technologies like Google Glass to improve instruction and feedback during healthcare sessions [6].

A paradigm change in medical education appears to be being brought about by students from the Millennial Generation. As indicated by the three million plus downloads of the Emergency Medicine Critical Care (EMCrit) and the more than 15,000 members of Emergency Medicine Reviews And Perspectives (EM:RAP). Moreover, Podcasts and online tools for asynchronous learning are expanding exponentially [7,8]. However, there hasn't been much study done to find out how often asynchronous learning is among emergency medicine residents.

Saudi Program of Emergency Medicine (SPEM) is a 4 years residency training program, distributed in 4 major cities in the Kingdom (Riyadh, Dammam, Jeddah, and Abha), under the supervision of the Saudi Commission for Health Specialties (SCFHS). During the adult emergency program in Riyadh, residents can get learning by teaching inside shifts and outside shifts which include academic half-days, morning reports, simulation sessions, and other lectures. This study aims to find which of these ways of learning is preferred by residents.

2. MATERIALS AND METHODS

A descriptive survey study was distributed among emergency residents who doing their

program in Riyadh during the period from June 2022 to July 2022. All Saudi board emergency medicine residents R1, R2, R3, R4, and post-training residents within the last two years in Riyadh were included. While residents who are doing their residency program outside Riyadh city and any resident who is not in an emergency resident program or rotating in the Emergency department were excluded. Data were collected using an electronic survey (SurveyMonkey) using a validated questionnaire.

Data related to Variables' age, level of training, extracurricular time spent engaging in educational materials, organization of topics accessed at a given time, evaluation of the quality of evidence or read citations/references, and preferred mode of the study were collected from the residents using an online survey and entered into an Excel spreadsheet and statistical analysis was done by SPSS Analyses.

All data were collected and analyzed by using the Statistical Package for Social Sciences (SPSS) to generate statistics and generalize the results to a wider population. Categorical variables were summarized as frequency and proportion. Continuous variables were presented as mean and standard deviation. Between comparisons, Fischer exact test and Chi-square test (categorical variables) were used. A p-value cut-off point of 0.05 at 95% CI was used to indicate statistical significance. The data were analyzed using Statistical Packages for Social Sciences (SPSS) version 26 Armonk, NY: IBM Corp.

3. RESULTS

This study analyzed 202 residents and post-graduated and ER residents regarding their learning sources and preferences. As described in Table 1, participants were at different levels of training as 23.8% were in their first year of residency, 22.8% were in their second year, 19.3% were in their third year, 22.3% were in their fourth year and 11.9% finished their training during the last two years. The majority of the participants 57.4% claimed that they spend 1-2 hours of their extracurricular time on educational material. Thirteen 6.4% of the participants always evaluated the evidence and/or read the references, 16.3% did the evaluation half of the time while 5.4% never evaluated evidence.

The organization of topics accessed was Based on recent patients seen in 26.2%, while 18.8% residency conference didactics schedule, and 47.0% claimed that it was not organized and completely random. The prevalence of the educational materials used was as follows; 53.0% from Reading textbooks, 68.3% from listening to podcasts, 41.1% from watching online videos, and only 3.5% used Wikipedia. The most beneficial use of participant time educational material was mostly listening to podcasts 70.8%, reading textbooks 61.4%, and 36.6% watching online videos.

Fig. 1 represents the electronic material the residents used for extracurricular education, the most used website EMRAP was 57.9%, WikiEM was 28%, EMCRIT was 20.8%, and Google was 20.3%.

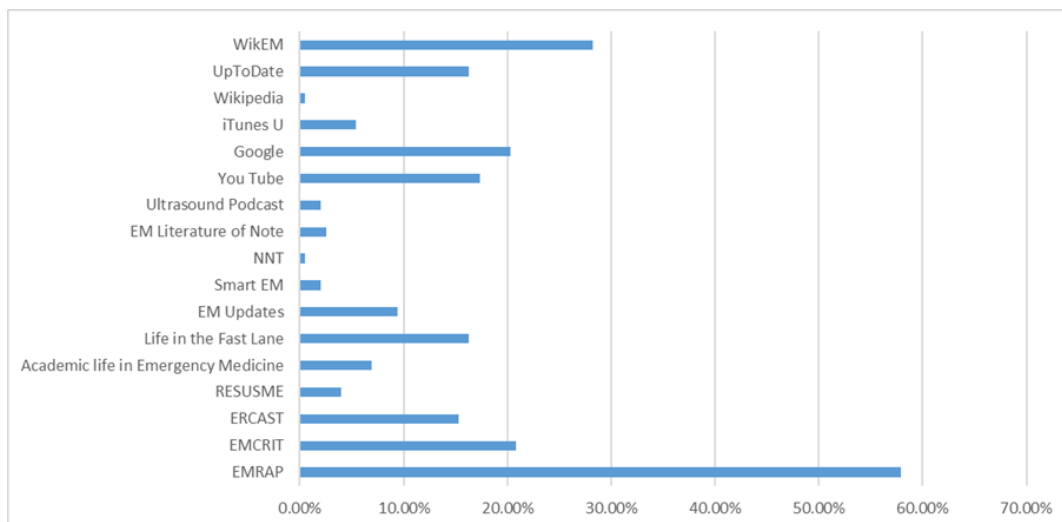


Fig. 1. Specific electronic or multimedia materials used for extracurricular education (n=202)

Table 1. Demographic and characteristics of the participants (n=202)

Study data	N (%)
Age group in years (mean ± SD)	29.0 ± 2.88
Level of training	
• post-graduate in the last 2 years	24 (11.9%)
• R1	48 (23.8%)
• R2	46 (22.8%)
• R3	39 (19.3%)
• R4	45 (22.3%)
Extracurricular time spent engaging in educational materials	
• >6 hours	12 (5.9%)
• 1-2 hours	116 (57.4%)
• 2-4 hours	50 (24.8%)
• 4-6 hours	09 (4.5%)
• none	15 (7.4%)
Evaluation of the quality of evidence or read citations/references	
• Always	13 (6.4%)
• Half of the time	33 (16.3%)
• Most of the time	17 (8.4%)
• Never	11 (5.4%)
• Rarely	127 (62.9%)
Organization of topics accessed at a given time	
• Based on recent patients seen	53 (26.2%)
• Following podcast/blog schedule	16 (7.9%)
• Residency conference didactics schedule	38 (18.8%)
• There is no organization, it is completely random	95 (47.0%)
Educational materials used outside of the conference	
• Reading textbooks	107 (53.0%)
• Reading blogs	47 (23.9%)
• Listening to podcasts	138 (68.3%)
• Watching online videos	83 (41.1%)
• Listening to recorded lectures	42 (20.8%)
• Searching the web via a search engine such as	50 (24.8%)
Google	
• Searching or reading Wikipedia	7 (3.5%)
Most beneficial use of participant time educational material	
• Reading textbooks	124 (61.4%)
• Reading blogs	40 (19.8%)
• Listening to podcasts	143 (70.8%)
• Watching online videos	74 (36.6%)
• Listening to recorded lectures	44 (21.8%)
• Searching the web via a search engine such as	35 (17.3%)
Google	
• Searching or reading Wikipedia	7 (3.5%)
• They are all of equal benefit	6 (3.0%)
• I do not use these methods of learning	2 (1.0%)

In Table 2, a breakdown of sources used by a resident was provided. Reading blogs was preferred by most residents moderately and mostly by postgraduate 62.5% (p<0.05). R1 and R4 used reading textbooks mainly as a source of education 64.6% and 64.4%

respectively (P value= 0.017). Additionally, watching online videos was preferred by year one residents by 75.0% (p<0.05). the least used educational source was Wikipedia and the difference in usage was not statistically significant (p>0.05).

Table 2. Used sources of extracurricular educational material by residents (n=202)

Variables	N (%)					P-value [§]
	Postgraduate	R1	R2	R3	R4	
Reading Blogs	15 (62.5%)	10 (20.8%)	8 (17.4%)	6 (15.4%)	8 (17.8%)	0.000**
Reading textbooks	13 (54.2%)	31 (64.6%)	21 (45.7%)	13 (33.3%)	29 (64.4%)	0.017
Listening to podcasts	16 (66.7%)	29 (60.4%)	31 (67.4%)	29 (74.4%)	33 (73.3%)	0.625
Watching online videos	5 (20.8%)	36 (75.0%)	12 (26.1%)	15 (38.5%)	15 (33.3%)	0.000**
Listening to recorded lectures	2 (8.3%)	20 (41.7%)	3 (6.5%)	4 (10.3%)	13 (28.9%)	0.000**
Searching the web (Google)	5 (20.8%)	23 (47.9%)	5 (10.9%)	9 (23.1%)	8 (17.8%)	0.000**
Searching or reading Wikipedia	1 (4.2%)	1 (2.1%)	1 (2.2%)	1 (2.6%)	3 (6.7%)	0.734

[§] P-value has been calculated using Chi-square
 ** Significant at p<0.05 level

4. DISCUSSION

According to our research, emergency medicine residents would rather listen to podcasts (68.3%) than study textbooks (53.0%) or listen to recorded lectures (20.8%). Although academics often see these peer-reviewed sources of information as having a higher academic caliber, emergency department residents at our hospital don't appear to like them. Furthermore, the majority of students either never or seldom examined the sources included in Internet-based instructional content. This result is similar to a study conducted in the United States [4]. The importance of this new advance in the preference of study sources is the credibility of the new materials, since there is an expanding corpus of free and open access educational resources, residents must develop a filter that allows them to assess the quality of knowledge.

Nearly half of the residents had their decisions on the topic selected to be read with no trigger. This suggests that residents prefer to gain knowledge based on their interests. Our findings imply that self-learning activities may be the best method for teaching residents about subjects they deem crucial or that are connected to their most recent patient experiences. This is backed up by a pile of research that reinforced that self-education is the most beneficial method of learning [9,10,11]. Our findings imply that medical learning may be shifting away from traditional resources like textbooks and journal articles and toward electronic multimedia tools like blogs and podcasts. This is similar to the CORD study, which suggests an intentional

combination of both traditional and non-traditional methods of education while acknowledging the many benefits and drawbacks of both synchronous and asynchronous learning modes [12].

A breakdown of sources used by a resident was studied in our research. Reading blogs was preferred by most residents moderately and mostly by postgraduate 62.5% (p<0.05). the trend in medical blogs and the easier and clearer language used by bloggers draw millennial residents to it. However, reading textbooks was the main source of education for R1 and R4 residents. Additionally, the use of newly emerged media has a significant impact on the preference of the source of education as watching online videos and listening to podcasts were preferred by year one residents. The impact of the podcast was studied in a survey of medical residents in 2016 and according to the survey's findings, the majority of residents listen to podcasts at least once a month, prefer episodes that are under 30 minutes long, have a variety of reasons for choosing them, and say that they have a positive impact on clinical practice [13]. Finally, the least used educational source was Wikipedia and the difference in usage as Wikipedia is a low credibility source of information although it is free and open source and not designed to be used by health care providers [13].

Our results unmistakably point to a group of emergency medicine residents who favor internet blogs and podcasts over periodicals and textbooks as information sources. We have to think about integrating the use of internet

resources into our conventional learning settings. More than ever, it is our responsibility to teach people how to evaluate materials critically and determine the reliability of their supporting data. Finally, it appears that residents prefer to learn about topics based on their interests, which suggests that incorporating self-directed learning and resident-inspired topics into the traditional didactic schedule may enable residents to devote more time to the educational subjects that are most significant to them [14].

This exploratory study has some limitations. This was a brief survey that was only given to resident programs in emergency medicine. Although we did contemplate distributing the survey more widely, many residents refused to take part, restricting our capacity to fully cover residents. This may be because of residents' busy schedules and our unwillingness to financially support their participation. Another potential limitation is that residents who use traditional educational resources like textbooks and periodicals are underrepresented in our survey, even though we do not foresee considerable fluctuation in replies from those who chose not to complete the survey. Additionally, the survey approach precluded us from gathering qualitative information about how or why individuals used certain resources.

5. CONCLUSION

In conclusion, the majority of the participants 57.4% claimed that they spend 1-2 hours of their extracurricular time on educational material. Additionally, emergency medicine residents would rather listen to podcasts (68.3%) than study textbooks (53.0%) or listen to recorded lectures (20.8%). Future national and international studies with more participants are needed.

ETHICAL APPROVAL AND CONSENT

Ethical approval and waivers of consent were attained from the institutional review board (IRB) at KSMC with the reference number (H-01-R-53). All the forms were kept confidential and managed according to the requirements of the research center. No residents' names or private information were mentioned in this study. All the data was stored. Only the investigators, statisticians, and data collectors had access to it.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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