Since 2002

Emergency Medicine Registrar's Extracurricular Learning

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Abstract

BACKGROUND: Recently with the evolution of interest and electronic devices, education was changed greatly to be easier, effective, and reasonable. Emergency medicine is a sensitive part of medicine which need rapid stabilization, examination, diagnosis, and even management of the participant.

AIM: In this study, we focused on emergency medicine registrars at King Saud medical city to know their preferred learning methods during extracurricular time. Furthermore, we investigated the relationship between certain demographic characteristics and preferred learning modality.

METHODS: We used validation questionnaire design and tested by UTAH University in the United States of America, it was a simple survey designed to cover all important points in short time. We distributed the survey using online tool (survey monkey).

RESULTS: Our study results found that podcasts was the most modality chosen by participants as beneficial and they expend their time more on podcasts. Age of participants was shown to be associated with use of internet and Google as leaning tool. We hope that researcher investigates this area of gab and future learning methods during emergency medicine doctors as well as other specialties of medicine.

CONCLUSION: We found that participants chose podcasts as a learning channel more than other modalities in our study of emergency medicine registrars at all levels and their extracurricular educational programs. Age was substantially correlated with less use of Google and online searches for educational purposes.

Introduction

With the development of the internet, particularly email and the World Wide Web (WWW), it became possible to electronically deliver education to distances while achieving a good degree of interaction within the technology's constraints to create a financially advantageous teaching and learning process [1]. Therefore, the WWW facilitated online education, which is defined as the use of technologies for communication and collaboration in an educational context [2].

Since the advent of the internet, electronic learning has evolved as a resource for medical education. The COVID-19 epidemic has reduced clinical exposure for medical students and driven educators to replace traditional learning materials with electronic learning.

Electronic learning provides special benefits that traditional learning cannot, whereas in general, trainees have access to electronic learning whenever they want and wherever they are. Electronic learning makes it easier and more flexible for students to acquire information, which empowers them to take charge of their own learning. In addition, electronic learning can incorporate platforms that are more engaging for users, moving away from the didactic models seen in conventional, teacher-centered materials [3], [4].

Given the extensive knowledge base needed to stabilize, examine, diagnose, and manage a range of patients, emergency medicine poses challenges to medical professionals. However, not all trainees are exposed to the same clinical training due to differences between hospitals in terms of the scope of practice and educational resources of various EDs [5]. Given the occasionally unpredictability of an ED, having a formal and structured electronic learning platform that students can use at their convenience could greatly improve access to information and free up limited in-person teaching time to concentrate on other skills

like interpersonal interaction or the practical application of skills [6].

Podcasts are audio files that are shared asynchronously over the Internet. Those interested in highly customizable learning materials perfect for graduate medical education can subscribe to podcasts (for automatic download) (GME). The "who," "what," and "when" of a user's learning experience are now completely up to them. The length of podcasts might vary, and they can release new episodes every day or once a month. In comparison to other asynchronous resources, the use of podcasts has increased rapidly, with students spending the most time listening to them and considering them to be a more valuable resource than traditional books and journals [7], [8]. The number of EM instructional podcasts has grown significantly in recent years. There has not been much study done on podcasting in EM [9].

EM: RAP is an educational material, lectures, in-studio productions, reviews, and viewpoints all in a lighthearted, humorous fashion [10]. Our aim is to find which of these ways of learning is preferred by residents and the results can make a change to focus on the preferred way to teach the residents.

Objective of study

In this study, we focused on emergency medicine registrars at King Saud medical city to know their preferred learning methods during extracurricular time. Furthemore, we investigated the relationship between certain demographic characteristics and preferred learning modality.

Methods

This is a descriptive study using an electronic survey (survey monkey) which was distributed among emergency residents who doing their program in Riyadh, tertiary and teaching hospital.

The study was covered the residents of Saudi Program Emergency Medicine in Riyadh. All Saudi board emergency medicine resident R1, R2, R3, R4 and post-training residents within the last 2 years in Riyadh make the study population.

The questionnaire that we used in our study was designed and used before in UTAH University among Emergency Residents in United States of America. The survey was pilot tested with other residents at the University of Utah to assess for validity, clarity, and understanding of the survey questions [11]. The survey designed to take fewer than 5 min to complete, consisted of eight questions eliciting information on resident demographics, how residents spend their extracurricular time especially in regard to educational

endeavors, it is an electronic questionnaire (survey monkey) which was sent to Emergency residents. The survey is available on online to use and no need for specific permission.

The number of Saudi board Emergency resident in Riyadh around 400 residents in our study we took 207 residents which is a large sample and offered added value to be calculated data includes all residents that fulfill the inclusion criteria. Convenient sample was used as a sampling technique in this study. Larger sample size higher to reveal the effects under investigation. Larger sample size offers added value to be calculated.

Having found that the instrument is valid and reliable, the researchers seek for approval from Institutional Review Board off KSMC research Centre. We get the approval from IRB (H1RI-05-Jun22-01), then we administered the survey through online Survey Monkey.

The data were be analyzed using Statistical Packages for the Social Sciences (SPSS) Version 24 Armonk, NY: IBM corp. Descriptive statistics were calculated to present numbers and percentages. Frequency and percentages were used for categorical variables. The relation between learning modality (beneficial/most commonly used) and demographic characteristics was assessed using Pearson correlation, while we used Chi-squire with Fisher's exact test to show the correlation between study hours and level of training. A p-value cutoff point of 0.05 at 95% CI was considered to determine the statistical significance.

Investigators assure the IRB committee that all the processes of this study were by the Good Clinical Practice standards, regulations, and inconsistence with the declaration of Saudi Arabia ministry of health. The rights, safety, and well-being of the trial subjects were considered. This study is considered confidential and disclosed to the listed investigators. Investigators assured the IRB committee that freely given informed consent was obtained from every subject before participation in this study.

Results

A total of 207 participants was included in our study with mean age of 28.4, SD 2.7 years. The participants seem to be equally distributed between training levels. Table 1, 56% of them expend 1–2 h as extracurricular time in the educational materials, Table 1. Listening to podcasts was rated as the most time consuming educational material (by 67.6% of our participants), while the least one is searching or reading the Wikipedia.

Table 1: Frequency and percentages

Variables	Frequency	Percent
Level of training		
Postgraduate in the past 2 years	24	11.5
R1	48	23.1
R2	46	22.1
R3	42	20.2
R4	47	22.6
How much extracurricular time (outside of conference) do you spend engaging in educational materials?		
None	15	7.2
1–2 h	117	56.5
2–4 h	52	25.1
4–6 h	11	5.3
>6 h	12	5.8
Of the following educational materials, which are the most beneficial use of your time?		
Reading textbooks	126	60.9
Reading blogs	40	19.3
Listening to podcasts	145	70
Watching online videos	78	37.7
Listening to recorded lectures	45	21.7
Searching the web with a search engine such as Google	36	17.4
Searching or reading Wikipedia	7	3.4
They are all of equal benefit	6	2.9
I do not use these methods of learning	2	1
Of the Internet-based resources that you use, how often do you evaluate the quality of evidence or read citations/references?		
Never	12	5.8
Rarely	128	61.8
Half of the time	34	16.4
Most of the time	18	8.7
Always	14	6.8
Please list any specific electronic or multimedia materials you use for extracurricular education		
EMRAP	121	58.5
EMCRIT	43	20.8
ERCAST	32	15.5
RESUSME	8	3.9
Academic life in Emergency Medicine	15	7.2
Life in the Fast Lane	35	16.9
EM Updates	19	9.2
Smart EM	4	1.9
NNT	1	0.5
EM Literature of Note	5	2.4
Ultrasound Podcast	4	1.9
You Tube	38	18.4
Google	43	20.8
iTunes U	11	5.3
Wikipedia	1	0.5
UpToDate	35	16.9

Two of the study participants did not use any method of the included materials in learning. Regarding the benefits from educational materials, listening to podcasts came at the first rank (chosen by 70% as the most beneficial methods), Table 1.

Of the internet-based resources, 61.8% rarely evaluate the quality of evidence or read citations and references, while 6.8% always do, Table 1. EMRAP was the most specific multimedia used by participants for extracurricular education. On the other hand, NNT and Wikipedia were the least, Table 1.

Time spent on extracurricular education was tested using Pearson correlation to show its correlation with level of

Table 2: Pearson correlation test result

Variables	How much extracurricular time (outside of conference) do you spend engaging in educational materials?	Watching online videos	Searching the web with a search engine such as Google
Age			
P Correlation	0.067	-0.232-**	-0.156-*
Sig. (2-tailed)	0.335	0.001	0.025
n	207	207	207
Level of training			
P Correlation	0.366**		
Sig. (2-tailed)	0.000		
n	207		

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).

Table 3: Chi-squire test for training level and time spent on extracurricular education hours

How much extracurricular time (outside of conference) do you spend engaging in educational materials?					
Postgraduate in the past 2 years	11	10	2	0	1
	45.8%	41.7%	8.3%	0.0%	4.2%
R1	2	29	12	3	2
	4.2%	60.4%	25.0%	6.3%	4.2%
R2	1	34	11	0	0
	2.2%	73.9%	23.9%	0.0%	0.0%
R3	0	27	13	2	0
	0.0%	64.3%	31.0%	4.8%	0.0%
R4	1	17	14	6	9
	2.1%	36.2%	29.8%	12.8%	19.1%

training the two variables that were found to be positively correlated (Pearson correlation 0.366, p = 0.000) Table 2. Training level was negatively associated with spending time on reading blogs (P correlation −0.173, p = 0.031).

Age of participants was negatively correlated with watching online videos and searching the web with a search engine such as Google (P correlation 0.232-, 0.156-, p-value 0.001, 0.025) respectively. We also found positive association between listening to recorded lectures, searching or reading Wikipedia as beneficial methods and extracurricular time spent in education.

Chi-square test was performed to correlate level of training and time spent on extracurricular educational hours (Figure 1), most of residents in R1 training level spend 1–2 h in extracurricular education, while 4.2% of them spent more than 6 h, Table 3.

Discussion

Our study concluded that 56% of emergency medicine trainees spend <2 h in extracurricular educational materials. We also found that listening to podcasts was the most educational material consuming time and benefits, on the other hand, Wikipedia came in the button of time consumption. In a study conducted by Cadogan *et al*., (2002–2013) they also found that one of the most extensively used digital instructional resources is the emergency medicine (EM) educational podcast, which has grown in popularity as a learning aid. The EMCrit (Emergency Medicine Critical Care) Podcast's over 15 million downloads and EM: more RAP's than 24,000 paying subscribers attest to its
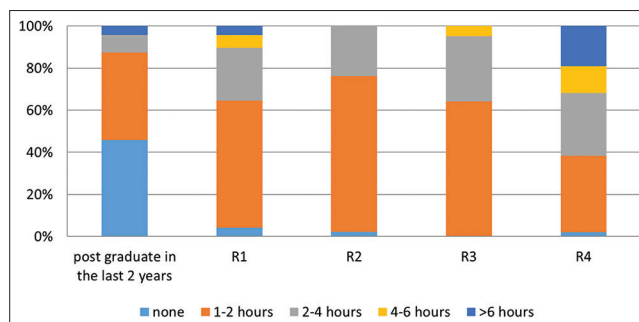

Figure 1: Time spent versus training level

exponential development (Emergency Medicine: Reviews and Perspectives) [10], [12]. According to a 2014 study on asynchronous learning in U.S. emergency medicine (EM), residents spend a greater proportion of their time listening to podcasts than using other instructional resources such as textbooks and periodicals. In addition, they rated podcasts as the time-saving activity [11]. About 90% of EM residents utilize podcasts on a monthly basis, according to a similar poll of Canadian doctors. Despite their widespread use, little is known about this phenomena, prompting EM educators to demand for a deeper comprehension of the ways in which and reasons behind which trainees use podcasts [13]. While the number of EM instructional podcasts has dramatically increased recently. There is little study on podcasting in the EM setting [7], [9].

In this study, we have concluded that most of residents do not evaluate references quality. Regarding multimedia use by participants EMRAP was the most commonly used while NNT and Wikipedia were the least utilized? The two most popular podcasts that EM trainees listen to, EMRAP and EMCrit, are renowned more for cutting-edge analysis and discussion of contentious new subjects than core content, according to a study by Riddell *et al*., (2017). EM: RAP has just reintroduced core content through the C3 Project [14]. About 29.2% (EM Basic) and 18.0% (FOAM cast) of residents consistently listened to the two most popular podcasts that focused on fundamental content. This might point to a discrepancy between what residents think they are hearing and what they are actually hearing [14]. Small survey studies in medical education, anesthesia, and nursing training are conducted outside of emergency medicine, but they do not offer any insight into the distinctive educational environment in EM [15], [16]. Our study found that as the training level proceeded, time spent on extracurricular educational increase.

In addition, we found that age was inversely correlated with searching in web and Google use. Same as our study, Dabaj (2009 study showed that age is inversely related to use of online education [17]. This may be attributed to many factors such as older participants may not be well trained in electronic device use, as they learned using text books during their university years. The fact which make them more adopted to use text books or journals more than online educational materials, this will not be applied to younger participants.

Conclusion

Our study focused on emergency medicine registrars in the all levels and their extracurricular educational programs, we concluded that the participants preferred podcasts as a learning modality more than other modalities. Age was significantly associated with decreased internet search and Google use as educational material.

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