

Psychiatry Residents' Use of Educational Websites: A Pilot Survey Study

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Abstract

Objective Psychiatry residents have numerous online educational resources readily available to them although currently there are no data regarding residents' use and perception of such websites.

Methods A survey was offered to 62 residents from all four years of training as well as recent graduates of a single psychiatry residency training program.

Results Residents reported utilizing online resources on average 68 % of the time, in comparison to 32 % on average for printed materials. Residents reported UpToDate, PubMed, and Wikipedia as the most visited websites and ranked each highly but for different purposes. Thirty-five percent of residents felt that insufficient faculty guidance was a barrier to use of these educational websites.

Conclusions Pilot data indicate psychiatry residents use online resources daily for their education in various settings. Resident perceptions of individual website's trustworthiness, ease of use, and sources of clinical decision-making and personal learning suggest potential opportunities for educators to better understand the current use of these resources in residency training. Reported barriers including lack of faculty guidance suggest opportunities for academic psychiatry. Further study is necessary at multiple sites before such results may be generalized.

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Technology use by psychiatry residents for education and clinical care is a topic of evolving interest. Although there is growing recognition of the need to ensure that psychiatry residents use social media, e-mail, and online medical records in an appropriate manner in order to avoid compromising patient privacy and safety [1], less attention has been focused on the educational aspects of technology in psychiatric education. The importance of this topic was recently underscored by an article exploring how a disparity between residents' use of e-mail and social media and supervisors' lack of knowledge about such use may lead to both poorer patient and teaching outcomes [2]. Despite recognition of the need to better understand how residents are using technology for their education and clinical duties, there still remains a dearth of data on the topic. It is common knowledge that psychiatry residents turn to the Internet as a source of learning and use websites, such as UpToDate, but to what extent, in which contexts, and with what perceptions? Do residents view certain websites as more accurate or trusted? In this paper, we aim to explore this topic and provide novel pilot data regarding residents' use of Internet-based educational websites.

The topic of technology in psychiatric education is timely because residents are faced with a plethora of online educational resources. The issue is not unique to psychiatry, however, and there are few data regarding how residents or medical students, in any field of medicine or surgery, use non-print-based resources. One study of 130 third-year medical students in an internal medicine setting noted that up to 64 % of students utilized online resources to prepare for rounding or

admitting a patient, whereas less than 10 % utilized printed resources such as textbooks or handbooks [3]. A study of internal medicine residents in 2010 found that they utilize electronic resources more than books [4], although no similar data exists for psychiatry residents. A study of 74 surgical residents and medical students regarding their preferred sources of medical information demonstrated that 58 % preferred electronic resources and utilized a variety of websites; however, the results were not presented separately for residents versus medical students [5]. Psychiatry residents face a similar situation, with many educational websites offering relevant content. As more psychiatry information migrates online, exemplified by UpToDate creating a psychiatry section in 2012, it will become increasingly important, and challenging, to maintain the accuracy and educational value of these resources. Yet at this point, there are no data regarding how psychiatry residents use or perceive these websites.

Given that each psychiatry residency program and each psychiatry resident's set of experiences are unique, it is difficult to generalize how online resources are utilized without a multisite nationwide study of psychiatry residents. In an effort to spark discussion on the topic and provide pilot data, we surveyed psychiatry residents at one program from all four training years, as well as recent graduates, regarding their experience with online psychiatry educational resources. Given the lack of a clear gold standard for trustworthiness of educational websites, we focused on residents' perceptions and experiences with these websites.

Methods

We surveyed all psychiatry residents, postgraduate year (PGY) one through four, and immediate graduates at the Harvard Longwood Psychiatry Residency Training Program. The study was reviewed and approved by the Institutional Review Board and granted exempt status. Participation was voluntary and no compensation in any form was provided.

A paper survey (Fig. S1) was distributed to all residents during a 1-week period, and during the same time window the survey was e-mailed to those residents who had just graduated. The survey was anonymous; the only identifying information was residents' year in training. The survey was distributed by two of us (RO and JF), who briefly explained the purpose and voluntary nature of the study to residents.

Residents were instructed to report answers on the basis of their experiences both inside and outside the hospital and while at work and at home. Residents were asked to consider websites as psychiatry specific if they only featured psychiatry topics and psychiatry non-specific if they featured many

disciplines, such as UpToDate. No further clarification was provided or requested, such as specifically defining *education*, *learning*, and *knowledge*. The overall participation rate was 92 % ($n=57$), with 86 % of postgraduate year (PGY)-1 residents ($n=13$), 80 % of PGY-2 s ($n=12$), 100 % of PGY-3 s ($n=12$), 100 % of current PGY-4 s ($n=10$), and 90 % of recent graduates ($n=9$; graduates who fast-tracked were not included) responding. Note that neither the three resident authors, nor the recent graduates who fast-tracked into child and adolescent psychiatry participated in the study.

Specific online resources were included in the survey on the basis of author consensus of those most utilized by residents because there did not exist any data to otherwise guide selection. Similar studies surveying medical trainees' use of electronic resources have also utilized consensus-based methods, and do not cite any gold standard, for inclusion of specific websites [4, 5].

We entered the survey results manually into a Microsoft Excel database, and computed all statistics in Excel. We also examined relationships between residents' ratings of ease of use and trustworthiness with ratings of clinical decision-making and source of personal learning by using Spearman rho correlations.

Results

Residents and immediate graduates reported that overall they utilize print resources on average 32 % of the time (95 % CI [27–37 %]) and electronic resources on average 68 % of the time (95 % CI [63–73 %]). When reporting frequency of use of electronic resources for studying outside of the hospital, the mode was daily. For emergency room, inpatient, and consult work, however, the mode was several times per day. For those residents with outpatient clinics, the mode of frequency of use was also several times per day.

Residents were asked to only evaluate electronic resources that they have used in the last 12 months and the results of resident use are shown in Fig. 1. Residents evaluated electronic resources on the basis of ease of use, source of personal learning, utility in clinical decision-making, and trustworthiness of recommendations (Fig. 2). Of respondents, 86 % ($n=49$) reported they felt there is a need for more psychiatry-specific online resources, and 79 % ($n=45$) noted that online resources should be more visual and interactive. In identifying barriers to use of online resources, 43 % ($n=25$) reported insufficient time, 35 % ($n=20$) insufficient faculty guidance, and 43 % ($n=25$) that resources were not targeted to psychiatry. Residents' perceptions of each resource's ease of use and trustworthiness correlated to their perception of that as a source of personal learning and clinical decision-making are presented below in Table 1.

Number of Residents Using Each Resource

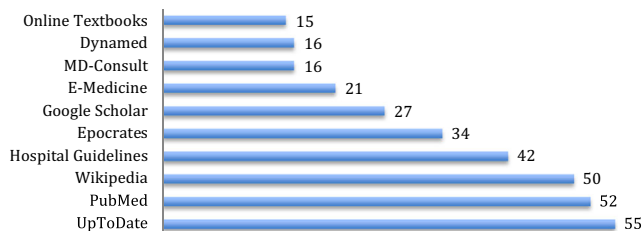


Fig. 1 Survey results of resident use of specific educational websites

Discussion

Our results indicate that psychiatry residents at the study site rely more on online educational resources than traditional printed resources such as textbooks. Residents reported using online resources in nearly all aspects of training, ranging from reading at home to working in the emergency department, inpatient unit, outpatient clinic, and consult service. UpToDate, PubMed, and Wikipedia were the three most utilized resources by residents and reflect the varied nature of the resources available to residents today.

UpToDate, a secondary source, was the most utilized resource, and residents gave it the highest rating for trustworthiness of recommendations. PubMed, a primary source, received the highest rating as source of personal learning but a lower ranking as a source of clinical decision-making in comparison to UpToDate. This may reflect residents' appreciation of the high quality of primary source literature but also the difficulty in directly applying such to clinical cases. Wikipedia received the highest ranking for ease of use but low rankings for clinical decision-making and trustworthiness, likely reflecting that residents appreciate the Wikipedia format more than its content. Oddly, all responses for online textbooks

were identical, which in part may reflect the small sample size of those residents utilizing such but, nevertheless, is difficult to explain, given how we verified that individual responses were indeed distinct.

For resident ranking of UpToDate, PubMed, and Wikipedia, our data suggest that an ideal online resource for psychiatry residents would combine the easy-to-use format of Wikipedia with the primary sources of PubMed and the clinical translation and summary from UpToDate. With 79 % of residents noting that they would like more interactive and visual-based online resources and 86 % reporting that there is a need for more psychiatry-specific resources, there is opportunity for improvement of online psychiatry education resources. Interestingly, a recent study on what features of an educational website that a group of pediatric residents would most value reported that 100 % of respondents cited images, 93 % interactivity, 89 % videos, 89 % links to articles and research, and 86 % graphics and animation [6]. Although our study, specifically question 5, was not designed or intended to address features of website design, this is an interesting topic deserving further exploration.

Our study did not focus on barriers to use, but it is worth underscoring that the primary perceived barriers, both with 43 %, were insufficient time and resources not targeted toward psychiatry. Insufficient time surprised us because, theoretically, electronic resources may be expected to save residents time. Our survey does not provide data to understand this barrier; we speculate that perhaps residents are spending considerable time switching between websites in order to find desired information and that a more compressive website may be of use. The barrier of websites not targeted to psychiatry, which was clarified in the survey instructions to refer to a website specifically devoted to psychiatry, is also interesting and deserves further exploration. Thirty-five percent of respondents felt that insufficient faculty guidance was a barrier to use. Although we did not survey faculty, it seems logical that faculty may not be able to guide residents regarding online resources because there are so many potential resources that residents may utilize and so little data to guide best practices for use. Further research into these and other barriers will be informative.

The results of our correlations must be interpreted with caution but offer several interesting points. Although Wikipedia ranked highest for ease of use, there was no significant correlation for residents' perception of Wikipedia's ease of use to it as a source of clinical decision-making and a low correlation coefficient (0.3) for source of personal learning. UpToDate, which had the second highest ease of use ranking also did not have strong correlation between ease of use and source of clinical decision-making (0.535) and source of personal learning (0.60). Thus, it is likely that residents' perception of ease of use of a resource may not correlate with their perception of its clinical or didactic utility. Similarly, UpToDate was ranked highest for trustworthiness, although

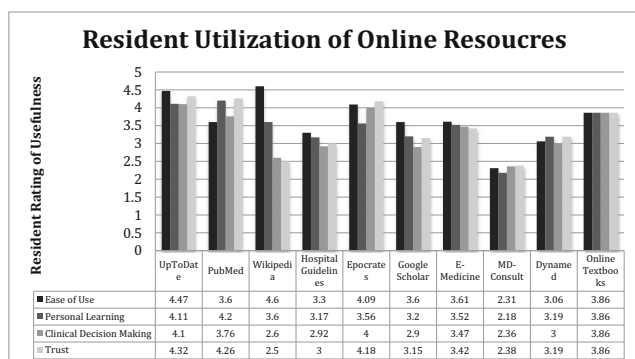


Fig. 2 Survey results of resident perception of specific online resources based on factors including ease of use, source of personal learning, source of clinical decision-making, and trust

Table 1 Resident perceptions of each resource's ease of use and trustworthiness

Resource	Ease of use		Trustworthiness	
	Clinical decision-making ^a	Personal learning ^a	Clinical decision-making ^a	Personal learning ^a
UpToDate	0.535 (<0.001)	0.60 (<0.001)	0.61 (<0.001)	0.36 (0.0065)
Pubmed	0.61 (<0.001)	0.59 (<0.001)	0.35 (<0.001)	0.25 (0.07)
Wikipedia	0.21 (0.16)	0.30 (0.035)	0.65 (<0.001)	0.49 (0.0039)

^a[Rho, (p)]

its trustworthiness was correlated moderately with clinical decision-making (0.61) and more poorly as a source of personal learning (0.36). PubMed was the second highest rated for trustworthiness, but the correlation between its trustworthiness to source of personal learning was actually not statistically significant and the correlation to source of clinical decision-making was poor (0.35). The lack of strong correlations between trustworthiness and perceived clinical and didactic utility is difficult to explain and suggests that residents likely take other variables into account when evaluating these online resources.

Our study has several limitations. First, and most important, this study was only conducted at a single psychiatry residency program, and thus results may reflect unique educational experiences of that site, which are not representative of other programs or residents. It will be important that this work be replicated at other residency sites across the USA before any firm conclusions are drawn. Second, this study is based on resident self-reported data and does not capture actual use patterns, which would likely provide more accurate data. Third, our survey was not exhaustive and did not include all available educational websites, such as PsychInfo or PsychCentral. Fourth, we did not include any open-ended questions, which might have allowed residents to provide information on resources other than those specified in the survey.

Our study raised several interesting questions that would provide further important data for psychiatric educators. Knowing what kind of information residents access from these websites, such as readily available information on drug dosing versus primary literature to help formulate a differential diagnosis, would be informative. In addition, understanding academic faculty's perspective on these websites may help inform best practices and provide a more complete picture of their use in the academic psychiatry setting. Such a study would have to account for heterogeneity in faculty's experience, familiarity, and use of technology. An interesting question that arose in the course of this study was the potential and utility of an expert faculty committee to provide ratings or vetting of content for these educational websites. Finally, as alluded to above, understanding the features of website design

that residents value is an intriguing topic with numerous educational implications.

In summary, our results indicate that psychiatry residents utilize a variety of online resources for their education in a variety of settings on a daily basis. As these online resources continue to proliferate, academic psychiatry has the potential to utilize such for educational and didactic purposes and our data suggests several areas of opportunity. Further study is necessary at multiple sites before these results may be generalized.

Implications for Educators

- Psychiatry residents may utilize online educational resources more frequently than printed materials such as textbooks.
- Knowing which websites residents utilize will help educators better understand how residents are developing a knowledge base.
- Understanding factors that residents value in educational websites will help educators to better teach residents.

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References

1. Torous J, Keshavan M, Gutheil T. Promise and perils of digital psychiatry. *Asian J Psychiatr*. 2014;10:120–2.
2. Hilty DM, Belitsky R, Cohen MB, et al. Impact of the Information Age on Residency Training: Communication, Access to Public Information, and Clinical Care. *Acad Psychiatry*. 2014.
3. Cooper AL, Elnicki DM. Resource utilization patterns of third-year medical students. *Clin Teach*. 2011;8(1):43–7.
4. Edson RS, Beckman TJ, West CP, et al. A multi-institutional survey of internal medicine residents' learning habits. *Med Teach*. 2010;32(9):773–5.
5. Egle JP, Smeenge DM, Kassem KM, Mittal VK. The Internet School of Medicine: Use of Electronic Resources by Medical Trainees and the Reliability of those Resources. *J Surg Educ*. 2014
6. Batthish M, Bassilious E, Schneider R, Feldman BM, Hyman A, Tse SM. A unique, interactive and web-based pediatric rheumatology teaching module: residents' perceptions. *Pediatr Rheumatol Online J*. 2013;11(1):22.