A Longitudinal Examination Of Mobile App Usage In Medical Students

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Abstract

- **Objective:** The objective of this study is to determine both the usefulness of librarian instruction on mobile apps and student preference for mobile apps during 3rd and 4th year clinical rotations.

- **Methods:** An electronic RedCap survey was administered to students for the purpose of gathering baseline information on library-provided mobile apps and instruction. This brief survey was given to 3rd year medical students at the beginning of this school year (2021-2022) with a second follow-up survey scheduled for later in the academic year (Spring 22). The students were asked questions about their mobile app usage and preferences as well as how often they reach out to librarians for assistance. The follow-up survey will assess any changes in preferences for or comfort with apps and will monitor any changes to the number of self-reported interactions with library staff.

Abstract

○ **Results:** Results of the initial survey confirmed that students are largely comfortable with the technical aspects of mobile app use both in and outside of the medical sphere; however, they may require more guidance on app content to determine which apps are most useful for researching different topics or different styles of questions. DynaMed was chosen by students as their favorite medical mobile app so far likely due to its wide coverage of topics and content. While the library instruction session increased student confidence with using medical mobile apps, students showed a lack of history of contacting librarians for assistance.

Abstract

◦ **Conclusions:** This survey confirms librarian suspicions that students may require guidance not on how to use apps, but on which apps are recommended for use in which scenarios. Although students report that library instruction is beneficial for their understanding of app use, they also report that they do not frequently ask librarians for assistance. This may be due to various reasons such as student insecurity, lack of perceived time, or lack of understanding about which questions may be asked or what apps to ask questions about. The follow-up survey will gather information on these topics and will seek to address student knowledge of which apps to use in different clinical scenarios as well as whether contact with librarians has increased or whether faculty recommendations in clinical settings change student app preferences.

Background

- Historically students at East Tennessee State University's Quillen College of Medicine (ETSU QcoM) have taken two years of traditional classes followed by two years of clinical rotations.

- Between the second and third years of school students go through a "transitions" course designed to help acclimate them to the change from traditional classes to clinical rotations.

- A library lecture focused on mobile apps for use during clinical rotations has traditionally been a part of this "transitions" course.

- Through this lecture, librarians hope to provide students with knowledge of mobile apps, subscription based or otherwise, that may help students with the process of clinical decision making while they learn the ropes of working with patients and physicians in a clinical environment.

Background

- In recent years, the library lecture has been modified for an online environment and has been accompanied by a graded activity assessing student understanding of the material presented.

- Although ETSU librarians teach students in several other classes embedded further along in their clinical rotations, historically we have not assessed student knowledge and preference with mobile apps, or if these things change through their two years of rotations.

- This paper marks the initial plans and process of establishing a study at ETSU for this purpose.

Overview of Project and Survey Content

- This study consists of two surveys
  - an initial baseline survey given to students during their transitions course prior to clinical rotations
  - a second survey given to the same group of students after they have already taken part in rotations
- The intent is to run these surveys for several years to collect data on student preferences for apps, faculty recommendations on apps as communicated to students, and library instruction impact on student understanding of app use.
- Both surveys were approved by ETSU IRB with the first survey being given to students in July of 2021.

Results of Baseline Survey

- 47/79 (59%) students answered our baseline survey.

- This survey was voluntary and designed to collect initial information from students just prior to starting their clinical rotations.

- It was administered after a 20-minute lecture accompanied by a handout and 10-minute activity on medical mobile apps.

- This lecture, handout, and activity were provided by librarians at ETSU QcoM's Library. The survey, activity, and lecture were all administered virtually.

Results of Baseline Survey

- **Responses to questions administered are listed as follows:**

- How frequently do you use mainstream mobile apps ('mainstream' = YouTube, Facebook, Instagram, mobile games, etc.)?
    - Daily = 29/47, Frequently = 9/47, Occasionally = 5/47

- I feel comfortable with my ability to use mainstream mobile apps ('mainstream' = YouTube, Facebook, Instagram, mobile games, etc.).
    - Strongly Agree = 24/47, Agree = 21/47, Neither agree nor disagree = 2/47

- I use library provided mobile apps ('library provided' = DynaMed, VisualDx, Micromedex, etc.).
    - Occasionally = 18/47, Rarely = 17/47, Frequently = 7/47, Never = 3/47, Daily = 2/47

Results of Baseline Survey

- I feel comfortable with my ability to use library provided mobile apps ('library provided' = DynaMed, VisualDx, Micromedex, etc.).
  - Agree = 27/47, Disagree = 7/47, Neither agree nor disagree = 7/47, Strongly agree= 3/47, Strongly disagree = 3/47

- I have a good understanding of which library databases contain which types of content. (For example, you know which databases are best for finding articles vs ones that are best for finding clinical guidelines, textbooks, or images, etc.).
  - Agree = 25/47, Neither agree nor disagree = 10/47, Disagree = 9/47, Strongly disagree = 2/47, Strongly agree= 1/47

Results of Baseline Survey

- How often in this academic year have you contacted a librarian for assistance?
  - Never = 34/47, Only once = 8, Approx. 2-3 times = 4/47, Approx. more than 5 times= 1/47

- This library instruction session has given me increased confidence when working with medical mobile apps.
  - Agree = 29/47, Disagree = 1/47, Neither agree nor disagree = 10/47, Strongly agree= 6/47, Strongly disagree = 1/47

Results of Baseline Survey

○ What are your favorite medical mobile apps? These may be library-provided mobile apps, like DynaMed, or free medical apps that you enjoy, like MedScape.

- ○ DynaMed = 32/47, Micromedex = 11/47, NA= 7/47, Uptodate = 4/47, VisualDx = 3/47, Epocrates = 3/47, Micromedex from computer = 2/47, DynaMed from computer = 2/47, Medication apps = 1/47, Drug Ref = 1, MedScape = 1/47, Emboss knowledge = 1/47, Amboss = 1/47, Preventive Recommendations = 1/47

Discussion of Survey Results

- Results of the initial survey confirmed that students are largely comfortable with mobile app outside of the medical sphere with over 80% of respondents stating that they use mobile apps either *daily or frequently* and 96% of respondents stating that they feel comfortable with using mainstream mobile apps.

- This was an expected result, but important to confirm before assessing student comfort levels with medical mobile apps.

Discussion of Survey Results

◦ On the other hand, 74% of students reporting using library provided medical mobile apps only *occasionally or rarely*.

◦ This was also somewhat expected as this survey was given to students who have not yet started clinical rotations and who may have had limited reason to use point of care tools or medical mobile apps up until this point. Despite lack of experience with medical mobile apps, 64% of students reported feeling comfortable with their ability to use medical mobile apps.

◦ This is a good sign as it indicates that students are largely technologically proficient in this era and generally my not need technical assistance when it comes to mobile app use.

Common Information Need	Resources Recommended for Quick Info Retrieval

Articles
- **need a current review article or guideline**
	DynaMed
	  - Check the references in DynaMed for links to current review and guideline articles
	Librarians
	  - If you spend more than 10 minutes looking for an article, email librarians at medref@etsu.edu for help.

Background Questions
- **need general info on a topic or textbook style information**
	AccessMedicine
	ClinicalKey
	Stat!Ref
	  - These three ebook collections contain textbooks, pocket guides, and more for authoritative background info on conditions
	DynaMed
	  - Check for background info on conditions

Calculators - **Clinical, coding, etc.**	EE + - Contains more calculators than DynaMed including a coding wizard

Diagnostic info	DynaMed
	  - Search for condition and see Diagnosis section in column on left
	EE+
	  - Search for condition and see diagnosis tab
	Visual Dx
	  - Contains a differential builder
	  - Especially helpful with derm conditions
	AccessMedicine Diagnosaurus
	  - Under Quick Reference, DDx
	PubMed Clinical Queries
	  - Search for condition and choose Diagnosis from the category drop down

Drug info - **Includes dosage information, side effects, adverse effects, medication reconciliation, safety in pregnancy or lactation, etc.**	Micromedex Epocrates Lexicomp Natural Medicines - Specifically for supplements and traditional medicines

Discussion of Survey Results

◦ On the other hand, only 53% of students felt that they had a good understanding of which apps to use for different types of queries. This question sought to collect feedback on information conveyed during our library transitions lecture and activity.

◦ (For example, librarians suggested that students use a resource like PubMed when looking for articles, versus a resource like DynaMed when looking for treatment guidelines or epidemiological information. Although one may be able to use PubMed to find treatment guidelines, DynaMed would likely be the faster option for students to use. By showcasing several apps in several scenarios, librarians sought to impart understanding of which tools were best used for which jobs, so to speak.)

Discussion of Survey Results

- Although this is still a positive response as it reflects that over half of students report understanding of library database content, it also shows that this is a somewhat newer concept to students as student confidence is not as strong with medical apps and databases as it is with mainstream/non-medical apps.

- Fortunately, 62% of students reported that the library session provided did assist in increasing their confidence in working with medical mobile apps.

Discussion of Survey Results

◦ Other questions asked were how often students have contacted librarians during the past academic year and what their favorite medical mobile apps were.

◦ These questions provide baseline information so that we may see if students contact librarians more or less during clinical rotations and if students preferences for specific apps change as they use the apps more in a clinical setting.

◦ The majority of students (68%) did not contact librarians in the past academic year for academic assistance. This is not terribly surprising for a variety of factors...

Discussion of Survey Results

○ During the first two years of medical education at ETSU students focus predominantly on coursework and knowledge acquisition rather than information seeking and interpretation. This naturally lends itself to personal study of provided resources rather than questioning librarians for new resources.

○ Another factor that likely plays into this was our limited library hours and interaction with students over the past year due to the pandemic and socializing restrictions. We hope to garner more interaction with students through their clinical rotations that may be reflected in our follow-up survey. As we teach several classes integrated into clinical rotations, this is a possible goal to work towards.

Discussion of Survey Results

- Our final note was that students chose DynaMed as their favorite medical mobile app for the time being.

- One reason for this may be that DynaMed is an easy tool for students to use to find a wide variety of information. Although our students have access to Essential Evidence Plus, which is another point of care database, this database is provided, though us, in e-book form and, as a result, may not be as user friendly to students.

- We currently do not provide access to UpToDate; however, there is a chance that students will interact with it and other tools as they rotate and receive input from residents and attendings on which tools they prefer to use. We await responses to our future survey to see if any additional tools become more preferred by students as they begin to work more actively with physicians and patients.

Conclusions and Future Research

◦ Overall, we are pleased with our current findings considering that this is the first time that we have ran this survey and we have only collected baseline information thus far.

◦ Most encouraging is that students found the library session on using medical mobile apps to be helpful.

◦ Some additional written feedback noted that organizing apps by use (for example, use VisualDx as a symptom builder or to identify dermatological conditions, etc.) was helpful for students to conceptualize when to use which tool. This survey also leaves room for improvement and increased interaction with students as they move forward in their educational endeavors.

Questions?

Feel free to contact me with questions at:

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Thank you!