



3-31-2017

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DOI: 10.15453/2168-6408.1311

### Recommended Citation

Dmytryk, Louis F. and DeAngelis, Tina M. (2017) "Awareness and Use of Electronic Health Records in Entry-Level Occupational Therapy and Occupational Therapy Assistant Curricula," *The Open Journal of Occupational Therapy*: Vol. 5: Iss. 2, Article 11.  
Available at: <https://doi.org/10.15453/2168-6408.1311>

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# Awareness and Use of Electronic Health Records in Entry-Level Occupational Therapy and Occupational Therapy Assistant Curricula

## **Abstract**

The *Accreditation Council for Occupational Therapy Education (ACOTE)* requires programs to instruct entry-level occupational therapy (OT) and occupational therapy assistant (OTA) students in technology that may include electronic documentation systems, distance communication, virtual environments, and telehealth (standard B1.8). At this time, there are no publications describing if and how electronic health record (EHR) instruction is implemented in entry-level OT and OTA programs. The purpose of this study is to investigate awareness and use of EHRs in entry-level OT and OTA curricula. Respondents from 76 nationally accredited entry-level programs (two OT doctoral, 24 OT masters, two OT combined bachelors/masters, and 48 OTA) completed a survey. The findings showed inconsistent and incomplete EHR instruction in entry-level OT and OTA education. This study provides a baseline for investigating best practices in EHR education for entry-level OT and OTA students.

## **Keywords**

Curricula, education, electronic health records, occupational therapy, occupational therapy assistant, teaching

## **Cover Page Footnote**

The authors would like to thank the following persons for their contributions: Dr. Catherine Piersol, PhD, OTR/L, for serving as a clinical informatics content expert; Dr. Mary Jane Mulcahey, PhD, OTR/L, for providing guidance on developing research objectives, outcomes, measurement tools, and criterion for analyzing results; Dr. Susan Toth-Cohen, PhD, OTR/L, for providing objective feedback as an independent faculty reviewer; Dr. Carolyn Giordano, PhD, for functioning as an independent survey consultant to ensure face validity; and Jennifer Fisher Wilson, MS, ELS, for providing editorial feedback on this manuscript.

Knowledge of electronic health records (EHRs) has become essential for clinical practice in the United States (Mahon, Nickitas, & Nokes, 2010). The EHR is a repository of digital data used for setting objectives, formulating interventions, documenting patient care, accessing outcomes, supporting decisions, and planning policies (Häyrinen, Saranto, & Nykänen, 2008).

Predisposing factors driving the adoption of EHRs include government initiatives, health safety, cost containment, and a mobile society (Gartee & Beal, 2012). As a result, occupational therapy (OT) and occupational therapy assistant (OTA) practitioners are increasingly using EHRs to document their services (Collmer, 2015).

Guidelines for documenting OT services require therapists, assistants, and students to abide by EHR management standards (American Occupational Therapy Association [AOTA], 2013). Mismanaging EHR data causes ethical and quality pitfalls, such as inadequate notes, misleading information, and confidentiality breaches (Bernat, 2013). Despite these risks, OT practitioners have reported knowledge gaps when transitioning from paper-based to electronic documentation (Dunal, Murchison, Tenenbaum, Colquhoun, & Waltman, 2005). Those who fail to use EHR technology proficiently struggle in recording objective data that show the clinical and economic value of their services (Morley, 2014).

The Accreditation Council for Occupational Therapy Education (ACOTE, 2012) requires programs to instruct entry-level OT and OTA students in technology, which may include electronic documentation systems, distance

communication, virtual environments, and telehealth (B.1.8). EHRs have become the dominant technology in health care (Borycki, Joe, Armstrong, Bellwood, & Campbell, 2011). To prepare students to use health information technology, academic programs should provide EHR training in their curricula (Leland, Crum, Phipps, Roberts, & Gage, 2015). At this time, there are no publications describing if and how EHR instruction is implemented in entry-level OT and OTA programs.

The literature documents some of the different methods that have been used to incorporate pre-licensure EHR instruction into allied health education for other disciplines. These include partnerships between nursing programs and EHR vendors for product demonstration, recommendations, and purchase (Gardner & Jones, 2012). The authors suggest classroom use of academic EHR software for teaching students how to navigate health information technology. These simulated charting programs help learners to develop electronic documentation skills in preparation for point-of-care application. The authors recommend extensive faculty training 4 to 6 months prior to initiating student usage.

Nickitas et al. (2010) described a similar process for teaching electronic documentation. A public university nursing program obtained authorized remote access to a mirror EHR training account from a partner health care system. Students used the software at their college laboratory to achieve data management competencies defined in the literature. Faculty believed that the collaboration was beneficial because students

learned how to access patient records, develop care plans, and document based on evidence.

Mahon et al. (2010) explored faculty beliefs about teaching electronic documentation skills to undergraduate nursing students. Qualitative interviews using closed- and opened-ended questions were conducted with professors to capture their views. Respondents stated that EHR instruction is mainly taught in clinical areas using a demonstrate-return-demonstration method where students view documentation samples, write draft notes, and edit the samples based on feedback. The lack of EHR training in school was reported to put students at a disadvantage because on-site instruction was time consuming for preceptors. The investigators concluded that faculty development of EHR teaching strategies is necessary for planning and standardizing curricula.

Bani-issa and Rempusheski (2014) studied the congruence of nursing educators' beliefs and EHR teaching strategies. Objectivism (using a passive approach) was associated with a constrained and limited perception of technology, which contributed to negative attitudes toward using EHRs. Constructivism (using an active approach) was connected with embracing health information technology and a futuristic view of the EHR. The authors encourage faculty to adopt a constructivist perspective using experiential, contextual, collaborative, and student-centered teaching strategies for EHR competency.

Hersh et al. (2014) recognized the need to define EHR competencies in medical education. Faculty members from different perspectives (informatician, internist, family doctor, and critical

care physician) participated in an action research project to transform their curriculum. Searching, locating, applying, and protecting electronic data were among the skills flagged for inclusion in curricula. Results indicated that EHR education should include instruction on clinical informatics because health professionals interact with information systems in diverse ways.

Clinical informatics has been defined as computer literacy (understanding hardware and software applications), information literacy (locating, evaluating, and using data), and information management skills (collecting, processing, and presenting data) by the Technology Informatics Guiding Educational Reform (TIGER) initiative (2009). The TIGER initiative was formed by a collaborative team of stakeholders committed to improving nursing education with health information technology (Miller, Budd, Landers, & Langham, 2015). Nursing educators are encouraged to frame EHR instruction with the TIGER recommendations because they address the skills needed for application (Hebda & Calderone, 2010). Standard procedures for instructing OT and OTA students in EHR use, however, is lacking. The authors surveyed nationally accredited entry-level programs to learn more about current practices for EHR instruction in OT and OTA education.

## **Method**

### **Sample**

A purposive sample of 360 entry-level programs (7 OT doctoral, 151 OT masters, and 202 OTA associates) was gathered from the AOTA (2016) website listing of nationally accredited programs. The authors emailed surveys to program

directors and their representatives using contact information obtained from college and university websites.

### **Instrumentation**

The survey questions were developed from a review of the literature related to EHR competencies in health education. The survey content focused on identifying (a) if and how entry-level OT and OTA programs prepare students to use EHRs, (b) barriers and facilitators of EHR instruction, (c) academic resources used to teach EHR subject matter, (d) components of clinical informatics used to frame EHR instruction, and (e) faculty perspectives on EHRs in academia. Prior to deploying the survey, a university project mentor, content expert, outcome measure specialist, and survey consultant reviewed the questions, and the authors made revisions based on their feedback to establish construct, content, and face validity. The final survey contained 30 questions with multiple choice and open-ended questions.

### **Procedures**

This project received Institutional Review Board exempt status from the university's Office of Human Research. The online survey was deployed November 16, 2015 through December 8, 2015 using SurveyMonkey ([www.surveymonkey.com](http://www.surveymonkey.com)). Recruitment letters were emailed to program directors or their representatives with informed consent and a link to the survey. An initial contact request to participate in the survey was followed up with two reminder emails at weekly intervals.

### **Data Analysis**

Descriptive statistics were used to analyze data and interpret results. Narrative responses and

participant feedback to open-ended questions were organized into categories that reflected faculty perspectives on EHRs in academia.

## **Results**

### **Program and Respondent Demographics**

Of the respondents from the 360 entry-level programs contacted, 76 completed the survey (21% response rate): two in OT doctoral programs, 24 in OT MS programs, two in OT combined BS/MS programs, and 48 in OTA programs. The survey results showed that 11 of the programs had no courses that include EHRs in the curricula, 62 programs threaded EHR instruction through one to four courses, and three programs threaded EHR instruction through five to nine courses. The number of entry-level program faculty ranged from one to five and 16 to 20 members. The class size of students enrolled in these programs varied from one to five to 75 plus. Academic experience as an OT or OTA educator ranged from 1 year to 30 plus years. Of the 75 respondents who reported on their experiences with EHRs, 55 (73%) stated that they had personally used the EHR.

### **EHR Instruction in Entry-Level OT and OTA Curricula**

Of the 73 respondents who reported on whether their program teaches students about EHRs, 61 (84%) indicated that they provided EHR instruction, and only 12 (16%) stated that they did not. The reported methods of EHR instruction included pre-requisite courses; online courses via vendors; interprofessional, OT, and OTA courses; and labs. Several of the respondents reported that their programs provided minimal EHR instruction while other respondents cited the use of academic

EHR software, template screen shots, simulated examples, and case studies to teach students. The survey respondents also identified using outside experts to provide EHR-focused lectures and reported relying on fieldwork to meet EHR instruction needs.

### Barriers to EHR Inclusion

Of the 21 respondents who identified reasons for excluding EHR instruction from aspects of current curricula, 18 (86%) reported their

programs lacking EHR teaching resources as a barrier (see Figure 1). Of the 26 respondents who reported that there was a plan to include EHR instruction in future curricula, five (19%) stated their programs intended to have an EHR course, 15 (58%) stated that their programs intended to thread EHR instruction through multiple courses in the curricula, and six (23%) stated that their programs do not have a current plan to include EHR instruction in the curricula.

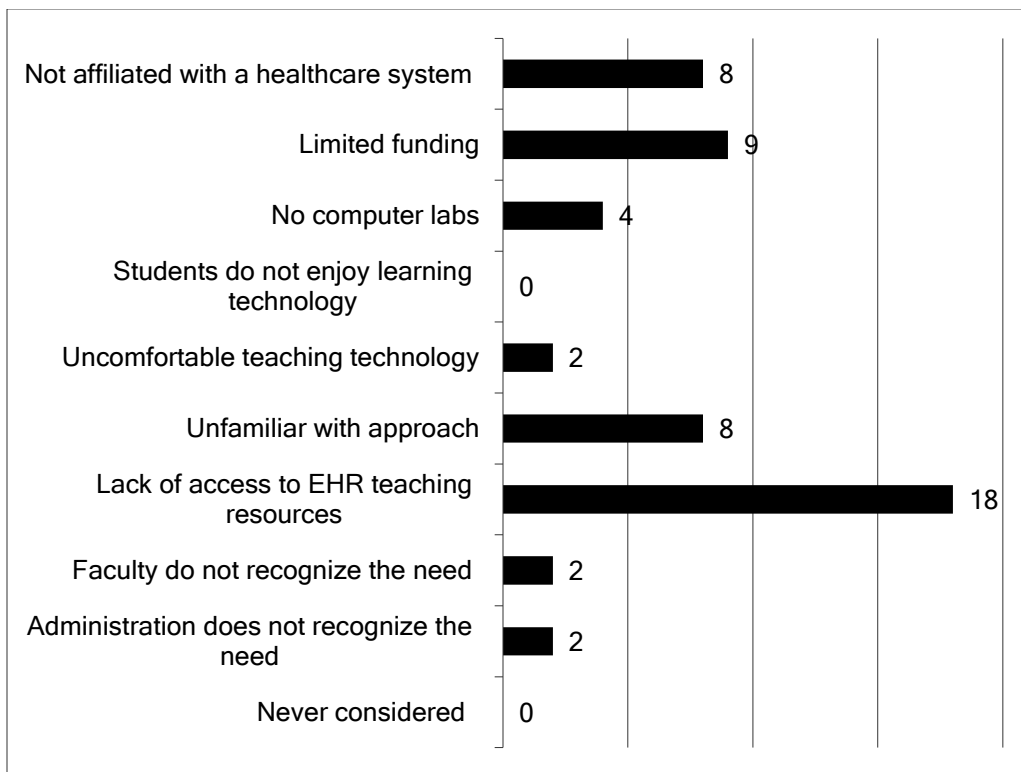


Figure 1. Reasons why EHR instruction is excluded from curricula (n = 21). \*55 participants did not respond.

### Facilitators of EHR Instruction

Most of the respondents reported that it was very important to include EHR instruction in the curricula. Of the 22 respondents who identified facilitators of EHR instruction, 16 (73%) reported time, 13 (59%) reported technological resources, 13 (59%) reported financial resources, and seven (32%) reported support from administration as

potential enablers. Respondents from 59 programs reported on supports of EHR instruction, and 54 stated that it was facilitated by faculty who recognized the need to incorporate this subject matter into syllabi. Reasons for incorporating EHRs into curricula included teaching students how to effectively document and interpret electronic data (see Figure 2). Fifty-eight of the respondents

identified courses that include EHR instruction, with clinical skills and intervention courses most

commonly named, followed by reliance on Level II fieldwork (see Figure 3).

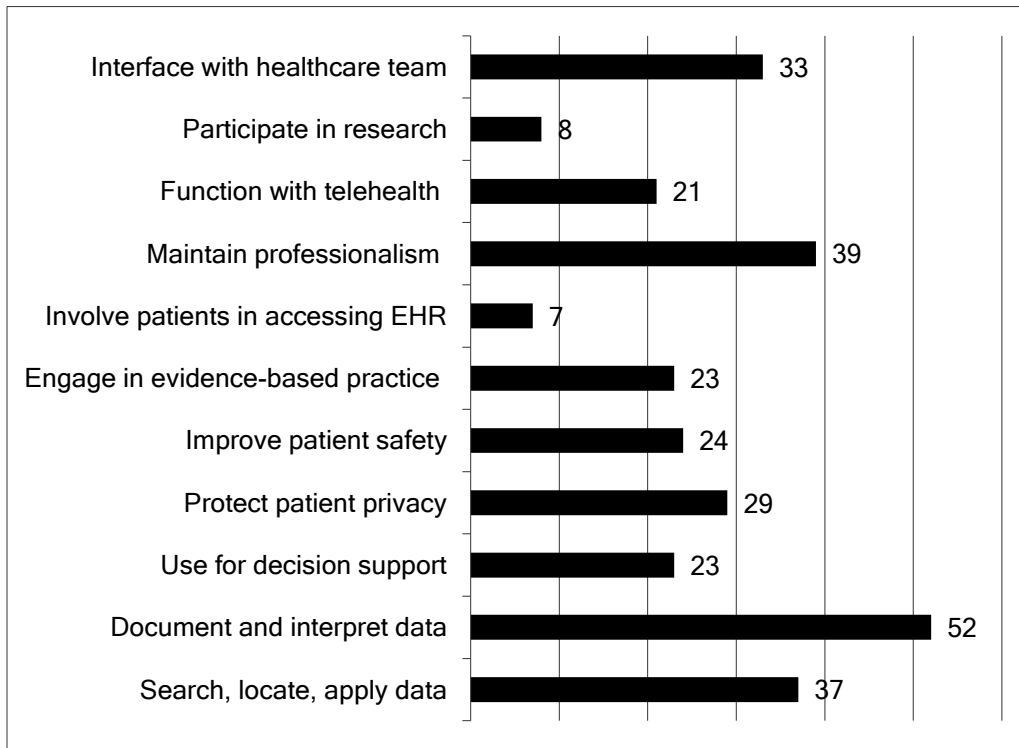


Figure 2. Reasons for incorporating EHR instruction in curricula (n = 60). \*16 participants did not respond.

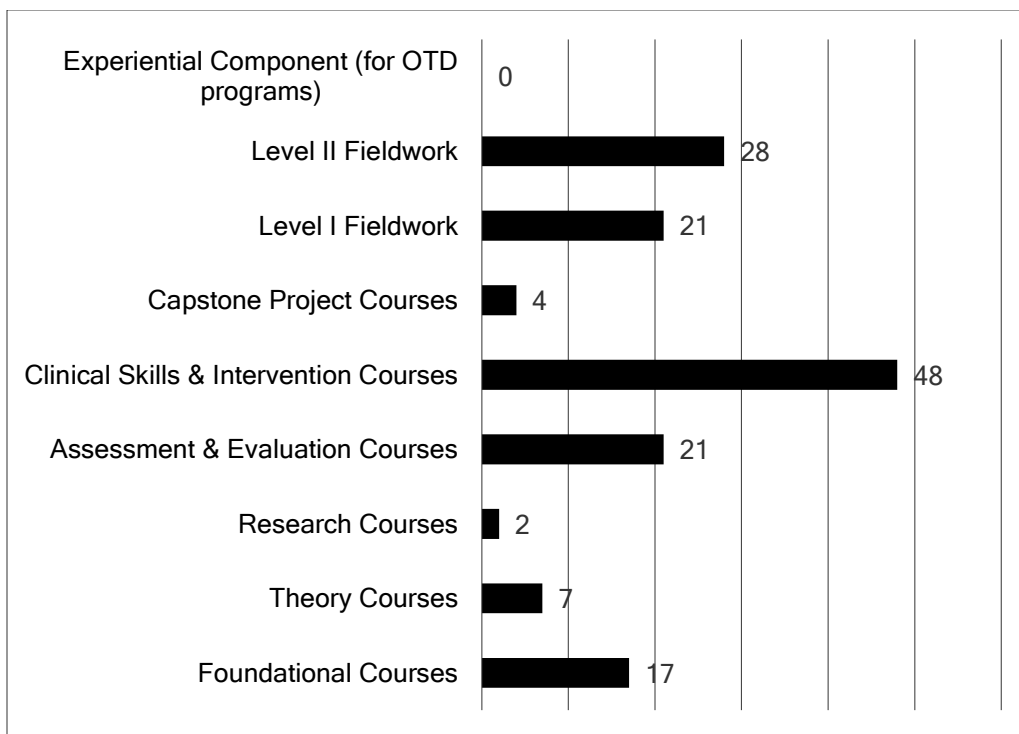


Figure 3. Courses that include EHR instruction in curricula (n = 58). \*18 participants did not respond.

## **Academic Resources Used to Teach EHR Subject Matter**

To capture information on academic resources used to teach EHR skills, the survey collected narrative responses to open-ended questions. Respondents from three programs stated that they did not have any resources to teach electronic documentation and that this hindered inclusion. Others cited the use of custom-made templates created by faculty or made available through books, media (videos and vendor sample CD/DVDs), hardware (portable computers, iPads, and laptops), and technology (computer labs, cloud-based EHR systems, and Blackboard [Blackboard, Inc., 2016]). The software used included Casamba (2015), Neehr Perfect (Archetype Innovations, n.d.), E-LINK Systems (Biometrics, Ltd., 2015), Home for Life (2015), Rehab Optima (Optima Healthcare Solutions, LLC, 2016), and WebPT (2016). The respondents also reported collaborating with stakeholders (nursing programs, local OT programs, local clinics, health information technology programs, adjunct faculty, software vendors, simulation lab coordinators, outside experts, and

clinicians) to incorporate EHR education into the curriculum.

## **Components of Clinical Informatics Used to Frame EHR Instruction**

Thirty-seven out of 64 respondents reported that they were unfamiliar with the term “clinical informatics,” and respondents from 50 out of 58 programs stated that they did not rely on it to provide EHR instruction. This may indicate that clinical informatics is under used to inform EHR education in entry-level OT and OTA curricula. However, one respondent commented “we do not use the term ‘clinical informatics’ but the content is included in curriculum.” Fourteen out of 51 respondents in programs that do teach clinical informatics reported that information literacy was taught most often for EHR competency (see Figure 4). Simulated EHR software was the primary method reported to develop clinical informatics skills, although some of the respondents voiced accessibility concerns due to limited availability, lack of vendor support, expense not included in program budgets, and technical conflicts with university computer systems.



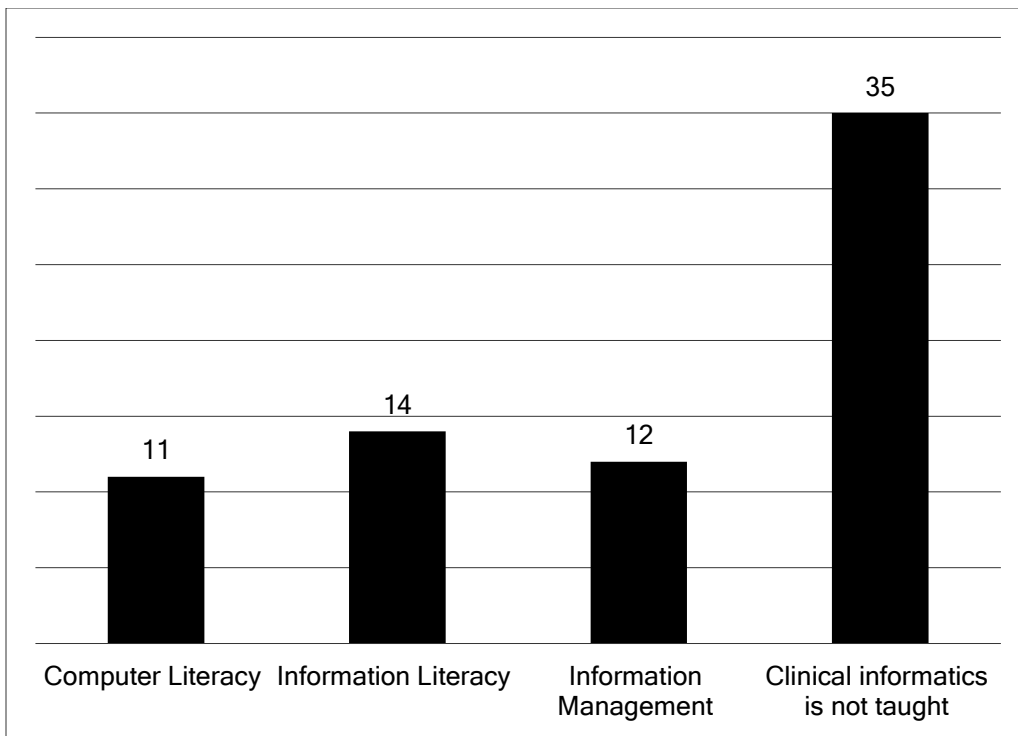


Figure 4. Clinical informatics components taught for EHR competency (n = 51). \*25 participants did not respond.

### Faculty Perspectives of EHRs in Academia

Nine of the respondents shared verbatim feedback about including EHRs in entry-level OT and OTA curricula. Five of them identified that they do not recognize a need to teach EHR skills and that they do not include them in their curricula. One respondent stated that “students are already tech savvy” and “will learn the specifics in their job setting.” Another respondent stated “the most important thing is that students learn good documentation skills, using [the EHR] is simply a different method of recording information, so I don't feel students need specific [EHR] instruction.”

Four of the respondents identified that they do recognize the need for EHR instruction and are working toward inclusion. One respondent stated that “it is a huge area of need for us considering the increase[ed] use of technology at [the] point of

service.” Another respondent stated that “EHRs are here [and] must be learned.” However, challenges due to system variations and software affordability were expressed.

### Discussion

The management of health information has trended toward EHRs to improve patient care and reduce costs associated with service delivery (Morreale, 2011). Traditional paper-based health records no longer meet industry and societal needs due to their episode-oriented format that fails to capture a holistic view of patients (Hebda, Czar, & Mascara, 2005). To keep pace with industry changes and prepare students to meet current practice requirements, informatics curriculum developers are encouraged to examine and match their curricula with emerging trends in health care (Koong, Ngafeeson, & Lui, 2012). Surveying the

academic community is an essential step in assessing curricula for strengths, weaknesses, and potential revisions needed to better prepare students for the workforce (Diamond, 2008).

Data gathered from this survey indicates inconsistent and incomplete EHR instruction in entry-level OT and OTA education, which suggests that these programs are lagging behind other disciplines who teach this skill. The fact that not all entry-level OT and OTA programs surveyed incorporate EHR subject matter into the curricula indicates potential non-compliance with ACOTE (2012) standards. Knowledge of electronic documentation systems is an entry-level OT program expectation listed in the ACOTE standards (2012), yet specific competencies are not clearly defined in the standards document. This lack of clarity may explain why less than 15 of 51 respondents incorporate clinical informatics skills, such as computer literacy (11), information literacy (14), and information management (12) into courses that include EHR content.

The College of Occupational Therapists (2014), a subsidiary of the British Association of Occupational Therapists that sets OT education standards in the United Kingdom, also recommends including informatics training on research, evidenced-based practice, and decision support in curricula. Clinical informatics components, such as information literacy and management, overlap with the research process. The EHR contains coded data that is available for authorized users to conduct research (Menachemi & Collum, 2011). OT researchers who use the EHR as an emerging data source can build on existing evidence to justify their

decisions (Leland et al., 2015). For example, standardized assessments embedded in EHR software produces objective data to validate OT outcomes and inform decisions about the therapy process (Morley, 2014). However, not many respondents in this study reported teaching students about using the EHR to participate in research (eight of 60), engage in evidence-based practice (23 of 60), and support occupation-based decisions (23 of 60). As a result, only a small number of programs reported threading EHR instruction through research (two of 58) and assessment and evaluation courses (21 of 58).

Survey findings have also raised concerns about fieldwork. The literature suggests that managing productivity requirements in the field makes documentation challenging for entry-level OT students and their supervisors (Farniok, 2016). Yet in this study, 49 of 58 respondents reported using fieldwork to provide EHR instruction to OT and OTA students. This indicates that many entry-level programs may be depending too much on fieldwork experiences to teach electronic documentation. As a result, fieldwork educators may be burdened with the task of introducing the skill, which could potentially distract them from other responsibilities.

Many entry-level OT and OTA students also lack training in patient privacy requirements, despite the fact that they are required to protect EHRs. Occupational therapy personnel must follow the Health Insurance Portability and Accountability Act (HIPPA) guidelines when safeguarding electronic communications (AOTA, 2010). Files containing personal health information need to be

password protected and hardware must be kept secure from theft (Kyler, 2014). In addition to this, patient privacy must be maintained by preventing inappropriate record sharing (Bernat, 2013).

Despite these mandates, data collected from this study shows that only 29 of 60 survey respondents reported teaching students about protecting patient privacy with the EHR.

Failure to use EHRs appropriately can also compromise patient safety (Sittig & Singh, 2012). For example, copying and pasting secondhand data may perpetuate errors of fact that impact quality of care (Bernat, 2013). The Health Information Technology for Economic and Clinical Health Act of 2009 requires clinicians to be knowledgeable in using EHRs to improve health care quality and safety (Gartee & Beal, 2012). Despite the need to address safety concerns unique to EHRs, only 24 of 60 respondents reported instructing students on this topic. In addition to this, there were no narrative responses about teaching students how to improve patient safety or engage them in using the EHR.

Access to personal health records stored on digital media is expected to improve patient engagement in health care (Anthony & Campos-Castillo, 2013). Using the EHR to engage patients through personal health records is also a meaningful use criteria of the Office of National Coordinator for Health Information Technology (healthIT.gov, 2015). The personal health record is an emergent tool designed to promote health management (Cocosila & Archer, 2014). They contain patient-entered data that is later validated by providers and exchanged with the EHR (Häyrinen et al., 2008). Research shows that clients feel empowered and

make more use of preventative care services when communicating with the personal health record (Lusignan et al., 2014). Communication management (sending, receiving, and interpreting electronic information) is an instrumental activities of daily living addressed by OTs and OTAs (AOTA, 2014). Yet, only seven of 60 respondents in this survey reported teaching students about involving patients in accessing their EHR in their program.

Findings from this survey also suggest that access to EHR teaching resources is limited and faculty knowledge of electronic documentation systems is lagging in OT and OTA education. Barriers to EHR instruction in entry-level programs included lack of technological (reported by 33 of 74 respondents) and financial resources (reported by 38 of 73 respondents). One respondent stated, “we have some EHR resources, but we could be doing much better updating our resources.” Some of the respondents (22 of 75) admitted that they did not have enough knowledge to include EHR instruction in syllabi, and others (28 of 74) were uncomfortable teaching the subject matter to students. This data indicates that faculty training is needed to support EHR instruction in entry-level OT and OTA programs.

Concerns about adequate time to integrate EHR instruction into curricula have been raised by nursing faculty in the literature (Johnson & Bushey, 2011). In this study, almost a third of the respondents (22 of 74) also reported that they did not have enough time to include EHR content in their courses. To address this issue, administration may need to adjust teaching loads for instructors

immersed in EHR curricular design so they have time to learn the approach (Johnson & Bushey, 2011). Since most survey respondents (51 of 74) stated that they have administrative support to include EHR instruction in syllabi, it is conceivable that time will be allowed for faculty development and gathering resources for lesson planning.

The TIGER collaborative (2009) recommends specific clinical informatics resources to educators who are planning EHR lessons. These include the Healthcare Information Management System Society (2016), a health informatics training program with e-learning, testing, and certification platforms; the Association of College and Resources Libraries (2016), which reports on information literacy competency standards in higher education for syllabus and lesson planning; the Information Literacy in Technology (n.d.), a commercially available test to measure proficiency in accessing, evaluating, incorporating, and using information; Health Level 7 (2016), which provides information management standards and competencies that could be used for curriculum development; and the Digital Patient Record Certification (n.d.), which is endorsed by the American Medical Informatics Association for testing the ability to accurately, dependably, and legally manage an EHR.

### Limitations

This study has several limitations. Only 21% (76/360) of the emailed surveys were completed, indicating that results may not be generalizable to entry-level OT and OTA programs in the United States. Some of the respondents skipped survey questions, thus limiting data

collection available for analysis. Respondents from 48 entry-level OTA programs and 28 entry-level OT programs responded to the EHR survey. As a result, findings may correlate more closely with entry-level OTA program awareness and use of EHRs than with entry-level OT programs.

### Conclusion

For the profession of occupational therapy to excel in the digital age, educators must provide informatics training for EHR instruction in curricula (College of Occupational Therapists, 2014). The results of this survey indicate that entry-level OT and OTA education has not kept pace with the demand for EHR trained clinicians in the workforce. A national dialogue is needed to build consensus on best practices in EHR education for entry-level OT and OTA students. This study provides an objective baseline to begin that conversation.

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