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Creating Evidence-Based Practitioners: Bridging the Gap between the Classroom and Clinic

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Abstract

Occupational therapy (OT) academia is responsible for educating students about evidence-based practice (EBP). Unfortunately, students rarely see the connection between academic assignments related to research and application in clinical practice. Academicians need to explore instructional methods to help students bridge the gap between the classroom and being able to apply them in a clinical setting. Stube and Jedlicka (2007) noted that teaching strategies and methods that incorporate what students perceive as being clinically relevant promotes learning and utilization of evidence into practice. The purpose of this paper is to report the outcomes related to combining the concepts of problem-based learning (PBL) to teach students in an OT program how to utilize clinically relevant evidence to address case-based client problems and how students translated the concepts to actual client care.

Keywords: evidence-based practice, problem-based learning, pedagogy, clinical application

Creating Evidence-Based Practitioners: Bridging the Gap between the Classroom and Clinic

Traditional OT didactic curricula often fail to pique students' interest; therefore, academicians must explore other pedagogical methods to foster students' understanding and adoption of evidence-based practice (EBP) into clinical practice. The purpose of this paper is to describe the instructional methods used in teaching OT students how to apply EBP in level I clinical experiences. The authors will also describe how to incorporate EBP into problem-based learning (PBL) that allows students to develop interventions that are supported by the best available evidence. This will enable students to translate knowledge regarding EBP to clinical application through active learning experiences with guidance and mentorship from the faculty. The *Accreditation Council for Occupational Therapy Education* (AOTA, 2011) standards specify that academic programs must teach students to be able to select assessments and interventions based on the best available evidence. The implementation of the educational modules used in this project were developed to facilitate clinical application of evidence and to meet these standards.

Background

Without question, every health care profession strives for recognition in the medical community as a profession deeply rooted in science and research. Occupational therapy can be validated by supporting our interventions and proving the effectiveness with evidence (Holm, 2000). Being able to effectively utilize evidence in practice should be a priority for every healthcare professional. It is evident that OT practitioners who have not received formal training in EBP lack the skills and confidence to use evidence to support or drive practice (Welch & Dawson, 2007; Cameron et al., 2005). It can be hypothesized that this lack of use of evidence in

practice is likely due to insufficient training and inadequacy of skills in searching, locating, appraising and applying evidence.

With the enacting of the Patient Protection and Affordable Care Act ([PPACA], 2010), the healthcare community has become more concerned with justifying its place for the future. The PPACA charged the Patient-Centered Outcomes Research Institute with comparing the effectiveness of healthcare treatments, and implementing EBP. Although the *Accreditation Council for Occupational Therapy Education* standards indicate minimal criteria for educational programs, they offer no suggestions of how EBP should be taught and reinforced for students to be able to translate this information from the classroom to clinical practice. Being able to successfully incorporate evidence into the occupational therapy process requires the student to understand the concepts of EBP, identify the problem to be researched, be proficient in locating applicable evidence, and determine if the evidence is valid and applicable for the client in question (Guyatt & Meade, 2008).

Cameron et al. (2005) noted that although 98% of the occupational therapists who responded to their survey indicated that they believed that research helps to grow the profession, the same group chose not to utilize research in their practice. They also found that as the educational level and years of experience of the therapists increased, the use of research to guide practice decreased (Cameron et al., 2005). Welch and Dawson (2006) found that therapists were not confident in implementing EBP, and therefore, relied more heavily on traditional treatment approaches and personal knowledge.

Obviously, the first step to creating a profession that is inextricably linked to and validated by research and evidence is to reach the students who are unbiased by opinion-based decisions for client care (Cameron et al., 2005). Mentoring these students through the process of

EBP to support or refute assessments and interventions will help to reinforce the methods that can be employed by clinicians, not just academicians. In addition to shedding a positive light on the profession of OT, clients will stand to benefit from evidence-based interventions as EBP may help to improve client outcomes (Holm, 2000). OT students need to be comfortable with researching and discussing evidence to become the advocates that the profession needs.

Methods

Introduction of Evidence-based Practice Methods

Instructional methods employed in educating health professionals has traditionally consisted of lecture based courses where the instructors impart knowledge to the students without actively engaging the students (Graffam, 2007). Passive pedagogical methods have their role in higher education; however, they do not allow the student to engage and interact with the information and skills that are being taught (Graffam, 2007). The student's knowledge of information is generally assessed by having the student reproduce the facts on written examinations. Although this is an effective method for objectively assessing the student's skills for memorization of the information presented, it does little to assess the student's ability to apply the information in the clinical setting (Lisko & O'Dell, 2010).

Although clinically based, the OT program at the University of Louisiana at Monroe (ULM) did not provide an opportunity for the students to integrate the steps of the EBP process into clinical cases, or learn how to appraise or utilize evidence to drive or support occupational therapy services. The faculty became motivated to increase the opportunity for OT students to learn about and participate in evidence-based decision-making and EBP. EBP was introduced during the first semester of the OT program in a research methods course. A lecture and learning

module on the EBP process was developed and presented to the students via didactic format. PowerPoint® and handouts were used to supplement the instruction. The learning module consisted of an overview of the EBP process, levels of evidence, demonstration of databases to be used during the search for evidence, and methods for critically appraising evidence. Tutorials involving database searches were developed by the faculty. Students were required to search various databases to locate answers to questions located within the tutorial.

In the semester following the introduction to EBP, students were required to locate evidence relevant to an OT intervention that was of interest to the student. Critical appraisal forms available from the Centre of Evidence-Based Medicine ([CEBM], 2019) were reviewed by faculty and considered for the students' use. They were felt to be incongruent with the students' level of knowledge; therefore, new critical appraisal forms and instructions for completion were developed based on information from CEBM's website and the *Users' Guides to the Medical Literature-Essentials of Evidence-Based Clinical Practice* (Guyatt, Rennie, Meade, & Cook, 2008). Completed samples of critical appraisals were provided and reviewed with the students. In addition, the instructors guided the students through an appraisal of a randomized controlled trial. The next step in the process would need to focus on application of the evidence under the direction of the faculty.

Problem-based Learning

PBL is a pedagogical method developed by Howard Barrow in the 1980s for medical education at McMaster University. The premise of PBL is to develop problem-solving and clinical reasoning skills through patient case-based problems (Barrows & Tamblyn, 1980; Jay, 2014). This requires active learning as the student is tasked with solving patient problems by

drawing on background knowledge and previous experience, and locating relevant information to fill in the knowledge gaps to develop clinically relevant solutions (Barrows & Tamblyn, 1980).

According to Miflin, Campbell, and Price (2000), students need support and guidance to foster self-directed learning, which is the basis of mentored PBL. Learning is facilitated through PBL as the student identifies learning issues/objectives and learning is student-directed to the areas where there is a self-identified lack of knowledge (Jay, 2014). In addition, PBL facilitates the use of evidence, as it requires the learner to locate the proper resources to fill in the gaps of knowledge. The educator models, then coaches, and finally monitors and intervenes only as necessary to ensure optimal learning (Miflin, Campbell, & Price, 2000). Lin, Murphy, and Robinson (2010) noted that interactive, case-based pedagogies are more effective than passive methods of teaching EBP. Combining EBP and PBL marry the concepts to foster the students' clinical reasoning skills by having them solve clinical problems based on the best available evidence.

During the process of PBL, students are given the opportunity to extensively search the literature, develop the skills necessary to perform clinical reasoning, and make educated decisions that will be actualized once they become occupational therapy practitioners (Lusardi, Levangie, & Fein, 2002; Scaffa & Wooster, 2002). In a study by Hammel et al. (1999), OT students reported that PBL promoted their ability to synthesize information rather than memorize it, helped them to be active learners rather than passive, and made them want to learn more. The ULM faculty decided that PBL would be an appropriate pedagogy to implement evidence-based decision-making.

The greatest challenges of using PBL identified by Hammel et al. (1999) were the time-consuming process in finding relevant evidence and difficulty accessing information. They also

reported that sometimes the facilitators were too quick to offer answers or suggestions, rather than allow the students to formulate opinions. Information gleaned from research aided the faculty in the development of strategies to support student learning, and appropriately facilitate and augment learning without providing unnecessary help or opinions.

As previously noted, students in the OT program at ULM received traditional lecture-based instruction regarding EBP, which was followed by clinical decision making activities related to patient care through short scenarios provided by the instructors. However, this experience was not translating to practice. As part of this project, the need for experience was addressed by redesigning the adult and pediatric Level I OT clinical courses to include problem-based learning through case studies. Faculty served as models, facilitators, and mentors through the dissection of in-depth client cases. Students were taught how to use evidence to guide clinical decisions as they searched for evidence and discussed their findings. Using methods established by CEBM, they were taught to appraise the evidence for reliability, validity, and quality. Decisions were then made for patient care based on the best evidence. However, the authors realized that something was still missing. Students needed experience in applying the evidence with clients.

Clinical Application

The psychosocial Level I clinical course was selected as the optimal venue to incorporate clinical application of evidence. Students within this course develop client-centered treatment plans and implement therapeutic groups based on the needs of the client population. Students were charged with finding evidence to support and guide the OT process. Knowledge, experience, and skills gained through previous coursework would be applied in the clinical setting. Students researched the diagnoses of assigned patients, searched for evidence related to

the patient's occupational performance issues and critically appraised the evidence to extract appropriate interventions to support best practices. Students discussed the findings with the clients and facility staff to make informed clinical decisions on which methods to employ. Finally, they applied the evidence to create client-centered intervention plans to promote independence in occupation.

Students compiled a wellness program of the evidence-based interventions that were developed and utilized with the clients during the group sessions at the psychosocial settings. The students composed an opening letter regarding their experiences, which included a summation of the evidence that they utilized. This was placed in the front of the wellness program. They also provided references for the research that supported the interventions and some students placed the actual journal articles in with the program.

During the last scheduled clinic session at the level I psychosocial clinical sites, each of the groups presented their evidence-based wellness program to the program directors or a person designated by the program director. For example, at one Alzheimer's residential facility, the program director felt that the presentation would be best directed to the activities director. The students discussed their interventions and the supporting research in a casual, round table discussion with the facility representative. Communicating the information to consumers can be intimidating. This allowed the students to practice this skill in a supportive, supervised environment.

Feedback from the program and activity directors was positive. One of the activity directors stated that the wellness program would be very useful to her with the residents. At one facility, the program director voiced her appreciation to the students for the information and suggestions stating she often felt at a loss with developing activities to keep the residents active.

Results

Quantitative Data

A pre-post education assessment developed by the authors of this paper was used to gather students' perceptions of their knowledge of EBP. The overall results from the post-education self-assessment indicated that the students felt more knowledgeable and confident about EBP compared to the pre-education self-assessment ratings (See Figure 1). There was no change in students' perception of the importance of EBP, as 100% of the students agreed or strongly agreed with this statement on the pre- and post-assessments. On the post-education assessment, fewer students (3%) indicated that utilizing evidence in practice was too time consuming and that OT clinicians have a limited role in EBP. Additionally from pre- to post-assessment, a greater percentage of students felt that reimbursement is linked to evidence (7%), EBP improves client outcomes (4%), and EBP is client-centered (9%). The most significant improvement was that 26% more students disagreed that EBP had limited value in OT than prior to the educational modules. However, on a negative note, 4% more students indicated that all published research is valid and reliable.

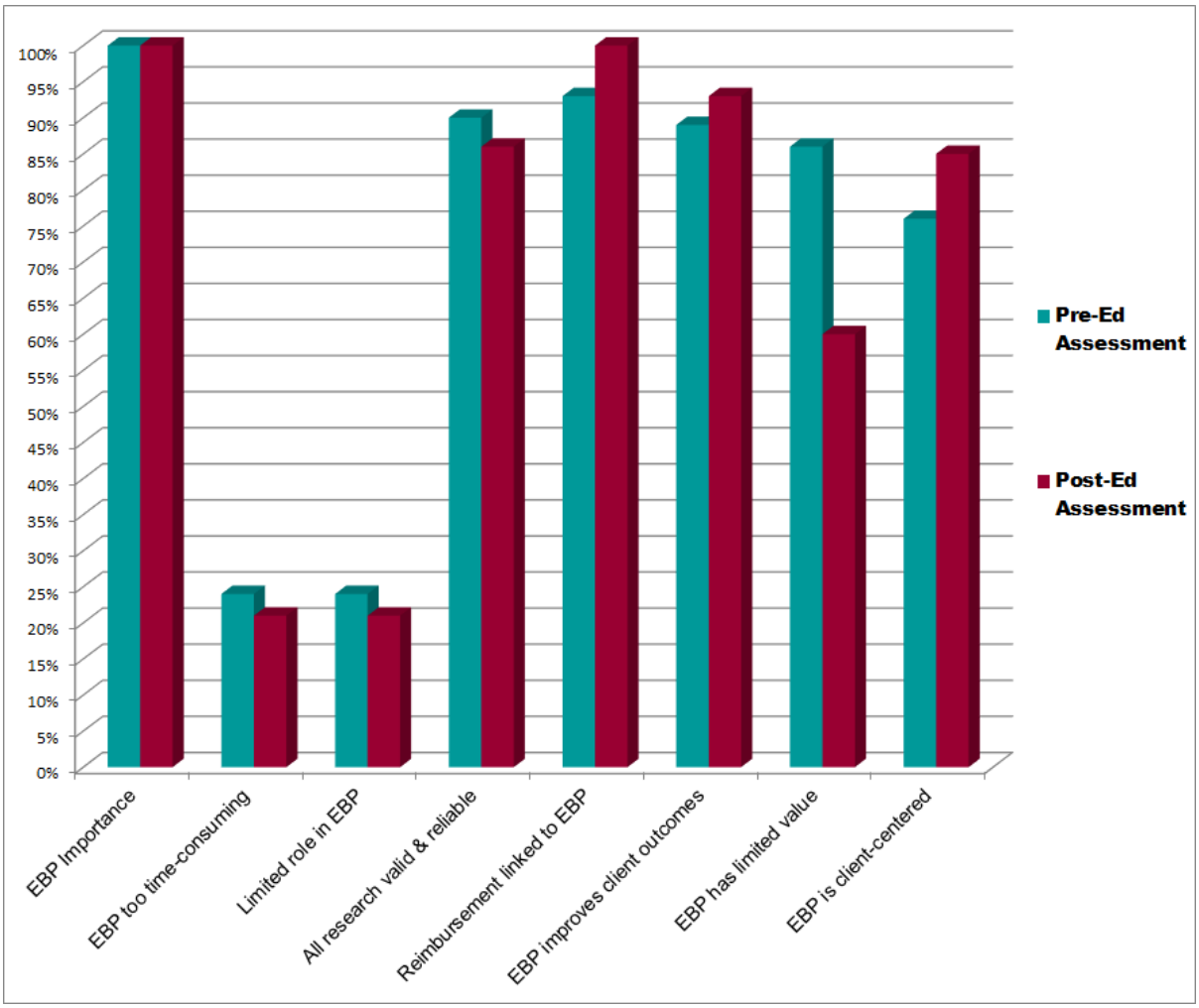

Figure 1

A large increase in the number of students who were very confident in their ability to conduct a literature search using search engines (200%) and databases (175%) was noted from the pre- to post-assessment. Moreover, a significant increase in the confidence levels of students was also noted in their ability to determine the level of evidence (500%) and appraising evidence for validity (400%). See Figures 2a and 2b.

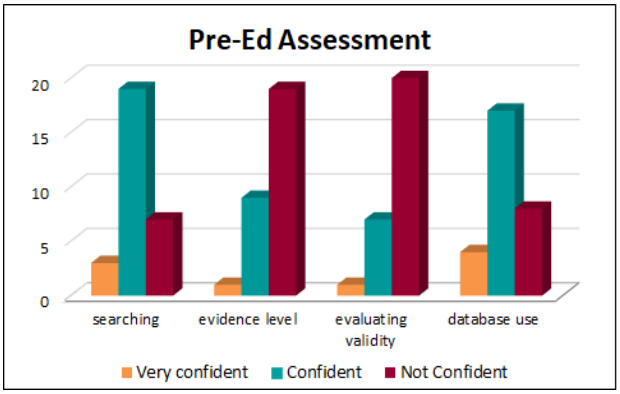

Figure 2a

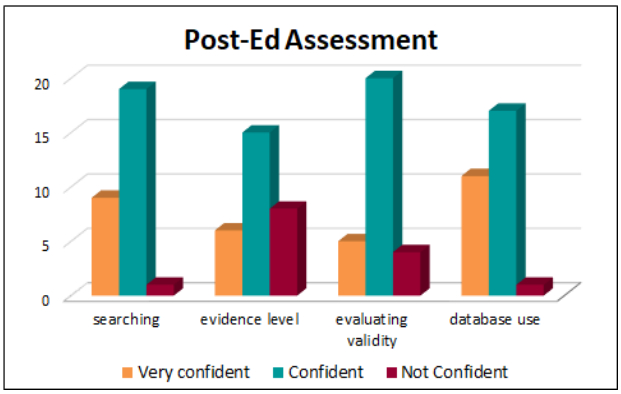

Figure 2b

Students were asked to provide feedback on the post-education self-assessment regarding the most effective teaching and learning methods on how to utilize EBP. Fifty-eight percent of the students indicated that application of EBP aided them in learning about and becoming more confident with EBP and 21% indicated that one-on-one instruction and demonstration from the instructors benefited them.

They were also asked to provide suggestions for improving instructional methods to future students. Sixty-two percent of the students recommended no changes in the instructional methods, whereas, 10% indicated they would have liked more one-on-one instruction, and 10% felt that a greater amount of time should be dedicated toward critical appraisal of evidence. Twenty-two of the 29 students in the class indicated that they believed that they would be evidence-based practitioners. Five indicated that they may possibly be evidence-based practitioners and the remaining two students did not feel that they would incorporate evidence into their clinical practice.

In response to the question, “How do you plan to use these skills when you are a practicing clinician?,” the majority of students (83%) said they would use the skills learned

through this educational experience to plan interventions and 14% indicated they would use them to support their interventions for reimbursement.

In an effort to help the students see that evidence must support interventions, but interventions must also be appropriate for the client, the following question was posed to the students: "*Although the interventions developed for this level I fieldwork were supported by evidence, do you feel they were appropriate for the clients' abilities/contexts? Would you replicate this treatment for similar clients? If not, how would you modify it?"* All of the students indicated that they felt that the interventions were appropriate for their client groups and they felt that they would replicate these interventions with similar clients. They also noted that they would modify the activities as appropriate to meet the individual needs of the client.

Qualitative Response

During a group discussion, some of the students stated that initially they were overwhelmed by the information presented in the educational modules. This statement was supported by the authors' observations. Initially, students required one-on-one guidance through the EBP process, including searching databases for evidence. The amount of one-on-one instruction decreased throughout the semester. Toward the end of the semester, the students were locating and utilizing evidence to plan interventions with only occasional assistance. When assistance from the instructors was required, it was most often to interpret the statistics included in many of the research articles used to support the students' interventions.

One student reported that she utilized EBP to develop interventions for a client with selective mutism during a Level I pediatric clinical rotation at an outpatient clinic. She reported that she utilized the process taught in PBL to research the diagnosis and locate evidence-based,

effective interventions for this client. The interventions that were located through research differed significantly from the interventions being employed with this client at the time. The student provided the supervising clinical instructor with the evidence and the intervention plan was modified.

Implications for Occupational Therapy Practice

The future of the profession of OT rests on the shoulders of today's OT and occupational therapy assistant (OTA) students. With the increasing demand from third party payers to support OT assessments and interventions with evidence, the importance of teaching students to incorporate evidence into the clinical setting is a priority. In addition to justifying services for reimbursement, producing evidence-based practitioners will help to maintain, if not build, the reputation of our profession as being ethical, valid and competent.

OT curricula should incorporate active learning strategies to facilitate translating what may appear to the student to be an academic exercise into the clinical setting. The key to bridging the gap between evidence-based practice in academia and clinical application lies in our ability to equip students with the skills to effectively utilize evidence in clinical practice. It is anticipated that by teaching students to be evidence-based practitioners there will be a domino effect with the students teaching practicing clinicians who may not have experience with EBP.

The instructional methods described in this paper produced positive attitudes towards EBP. Anecdotally, the faculty who supervised and mentored the students through this process felt that the students were better equipped to be evidence-based practitioners and will be more likely to incorporate evidence into their clinical practice. The student opinions reported on the post-educational assessment echoed the instructors'. It is the authors' hope that these students

utilize the EBP skills gained from this level I clinical experience and incorporate them into their level II clinical and in their future clinical practice. It is also our hope that these students mentor other clinicians to develop skills in EBP to propel OT forward as a profession rooted in science and evidence.

Newton, McKenna, Gilmour, and Fawcett (2010), assert that pedagogical approaches that integrate research and clinical experience assist students to become evidence-based practitioners and more comfortable users of research in practice. By educating OT students and increasing their EBP skills, they are more likely to integrate evidence into clinical practice. As a profession, OT will gain respect and notoriety as an evidence-based profession.

Summary

It is critical to equip OT students with knowledge of EBP and clinical reasoning skills that will prepare them to be the competent, well-informed, and skilled practitioners who will influence the OT profession to be evidence-driven, occupation-based, and client-centered. OT needs to remain at the forefront of healthcare and utilize research to remain viable during healthcare reform. Current OT and OTA students are the future practitioners who will likely be most prepared to effect a positive change toward EBP. Therefore, students must be allowed the opportunity to search for, appraise and make recommendations based on evidence under the guidance of faculty mentors in order to become proficient EBP practitioners. The students will also be an extended EBP outreach to clinicians and practice sites that academia cannot individually impact. Hopefully, the interests of the clinical supervisors and peers will be piqued as the students incorporate EBP into treatment and outcome measures. While these students are currently the mentees, they can become the mentors in areas where minimal EBP is being practiced. Providing EBP education early in these future practitioners' careers can help bridge

the gap between research and practice. As these students transition to Level II clinicals, the knowledge that they have gleaned from this course can help them become more prepared for evidence-based decision-making in the clinical setting.

The ULM OT faculty is optimistic that the students will be compelled to contribute to and participate in research as a result of finding limited high levels of evidence. More importantly, the authors' hope that they lead the students to be judicial consumers of research and incorporate it into practice by educating patients via the best available evidence.

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