Evidence-based practice work file: A learning strategy for occupational therapy students during clinical placements: a descriptive cross-sectional study

Susanne Johnson (susanne.grodem.johnson@hvl.no)
Høgskulen på Vestlandet https://orcid.org/0000-0002-2500-8952

Else Britt Bruset
OsloMet - storbyuniversitetet Fakultet for helsefag

Kari Margrete Hjelle
Hogskulen pa Vestlandet Avdeling for helse- og sosialfag

Malin Mongs
Oslo universitetssykehus Ulleval

Unni Sveen
OsloMet - storbyuniversitetet Fakultet for helsefag

Research article

Keywords: EBP work file, EBP Beliefs Scale, EBP Implementation Scale, occupational therapy education, clinical placement

Posted Date: December 15th, 2019

DOI: https://doi.org/10.21203/rs.2.18780/v1

Version of Record: A version of this preprint was published on August 6th, 2020. See the published version at https://doi.org/10.1186/s12909-020-02178-2.

Abstract

Background: Healthcare professionals and students are expected to work according to evidence-based practice (EBP). The EBP work file, an online learning tool that covers all steps in the EBP process, is an approach to teaching and learning EBP. The aim of this study was to examine possible differences in occupational therapy students' self-reported attitude, skills, use and implementation of EBP during their second-year clinical placement by comparing students who applied the EBP work file with students who did not use it.

Methods: A descriptive, cross-sectional comparative study was conducted. The sample comprised three cohorts (1, 2 and 3) of second-year occupational therapy students from Western Norway University of Applied Sciences and two cohorts (4 and 5) from Oslo Metropolitan University. Five cohorts in total took part in the study (n = 126 students). The students answered two questionnaires ("EBP Beliefs Scale" and "EBP Implementation Scale") after completing their second-year clinical placement. The analysis was based on descriptive statistics and calculation of the frequencies, percentages, means and standard deviations of all participating students' scores on the two questionnaires. ANOVA with Bonferroni correction was conducted to analyse differences between the mean totals of the questionnaires.

Results: The response rate was 57.3%. The average scores were 56.8 on the EBP Beliefs Scale and 15.8 on the EBP Implementation Scale. Students from cohort 5 (who had extra instruction and assignments via the EBP work file) had statistically lower scores than students form cohort 1 on the Implementation Scale. These students believed that EBP results in the best clinical care for patients, but they lacked confidence in their ability to use EBP.

Conclusions: Additional EBP work-file assignments were insufficient to support students in the implementation of EBP during clinical placements. It is important to teach students EBP skills and to demonstrate how they can use this competency in their work with patients. Including clinical instructors in EBP teaching and learning seems essential.

Background

Occupational therapists are expected to incorporate research findings into clinical practice in order to improve client outcomes (1). Evidence-based occupational therapy is defined as "the client-centred enablement of occupation, based on client information and a critical review of relevant research, expert consensus and experience" (2). Occupational therapists and students are expected to apply evidence-based practice (EBP). To implement EBP, practitioners are advised to follow the five-step EBP process, which includes: 1) acknowledgement and identification of information needs; 2) formulation of questions; 3) searching for relevant articles; 4) critical appraisal of these; and 5) application and evaluation (3). Learning these five EBP steps is an essential part of the learning outcomes of occupational therapy education (4). Students learn and develop their EBP competence in both theoretical and clinical contexts (at university and in clinical placements).

Healthcare students report various barriers to EBP during clinical placements, which include lack of time, high workload, lack of support during clinical placements, students and clinical instructors prioritizing hands-on experience during clinical placements, lack of role models in clinical placements and insufficient autonomy to change practice (5–8). Stronge and Cahill (1) examined the knowledge, attitudes and behaviours of occupational therapy bachelor's students towards EBP. Results revealed a clear understanding of EBP on the part of the students and a willingness to practice it in the future; however, they had trouble finding research evidence. The main barriers were lack of time and clinical instructors not practising EBP. Crabtree, Justiss and Swinehart (9) examined the EBP knowledge and skills of occupational therapy master's-level students before and after clinical placements (9). Results showed that the students' knowledge and skills in EBP increased from pre-course to post-course but declined between post-course and clinical placement. This outcome indicates that master's-level students improved their EBP skills and knowledge after the EBP course, but it did not provide strategies enabling them to retain and use these skills beyond the classroom.

A systematic review by Young et al. (10) found that teaching needs to be multifaceted, related to clinical issues and should include assessments. There are different approaches to teaching and learning EBP, such as standalone or single teaching courses, including workshops, conferences, lectures, journal clubs and e-learning. Additionally, EBP should be integrated across theoretical and clinical courses or into multifaceted teaching (6, 11). Occupational therapy curricula are required to incorporate efficient teaching strategies for EBP in order to provide bachelor's students with appropriate knowledge, skills and attitudes (12). E-learning is a teaching approach that can be used to learn EBP. The EBP work file is an electronic resource that documents the EBP process from clinical questions to answers, covering all key steps (13). The EBP work file is a tool for bachelor's students to learn practical EBP skills (14). The authors were inspired by Kongerud and Vandvik's study (15, 16), who taught medical students how to use EBP work files as a learning tool supporting knowledge management. They observed that students applied basic skills in knowledge management, but they needed further training in critical appraisal.

Questions remain about which strategies are optimal for EBP exposure throughout the occupational therapy curriculum in terms of content, timing, amount and type of training (6, 11). In light of this, the Department of Occupational Therapy at Western Norway University of Applied Sciences (HVL) and Oslo Metropolitan (OsloMet) University introduced Kongerud and Vandvik's EBP work file (15, 16) to occupational therapy students, to be used as a learning tool during their second-year clinical placement. The intervention included an introduction for students, explaining how to use the EBP work file during their clinical placements. Thus, the aim of this study was to examine possible differences in occupational therapy students' self-reported attitude, skills, use and implementation of EBP during their second-year clinical placement by comparing students who applied the EBP work file with those who did not use it.

Methods

This study was designed as a descriptive, cross-sectional comparative study (17).

Study sites

The study was conducted with bachelor's students on two occupational therapy programmes in Norway, located at Western University of Applied Sciences, Bergen (HVL) and Oslo Metropolitan (OsloMet) University.

Study sample

The data collection ran from 2015 to 2017. Five cohorts of second-year occupational therapy students answered two questionnaires ("EBP Beliefs Scale" and "EBP Implementation Scale"). All students (220) had the opportunity to participate in the study. However, a total of 126 second-year occupational therapy students, 72 from HVL (cohorts 1–3) and 54 from OsloMet (cohorts 4–5), answered the questionnaires after their clinical placement (Table 1). Cohorts 1 and 4 did not receive any extra instruction on the EBP work file. Students in cohort 5 (OsloMet) could choose whether or not to use the EBP work file. However, for the students who had a clinical placement in mental health, this was mandatory (cohort 5). In addition, it was mandatory for cohorts 4 and 5 to find and present a research study to their clinical instructors. Additional instructions about the EBP work file were given to cohorts 2 and 3 (HVL) before and during their clinical placement. The EBP work file was voluntary for students in cohort 2; however, for students in cohort 3, it was mandatory. Students in cohort 3 also presented a research article to their clinical instructor.

Description of EBP teaching on the bachelor programmes

In the first semester, the students were given the task of critically appraising various sources of literature. Tutors introduced the EBP, which included research methods and how to search for research articles. In the second semester at HVL, students presented the results of research articles in written exams. During the third semester, they practised search strategies, as well as critical appraisal of two research articles. The curriculum included EBP in the learning outcomes, and the students were expected to implement EBP in group work and exams throughout their three-year period of study. The students attended approximately 10 hours of EBP teaching before their second-year clinical placement. During this placement, the students were not required to do any work specifically related to EBP.

At OsloMet, the students learned to search for research articles in the second semester. The students interviewed people with rheumatoid arthritis, and worked on relevant themes and issues. They prepared a PICO (an acronym for "population, intervention, comparison and outcome") or searchable questions as starting points for focused database searches. The curriculum included EBP in the learning outcomes, and students were expected to implement EBP in group work and exams throughout their three-year period of study. The students attended approximately 16 hours of EBP teaching before their second-year clinical placement.

The occupational therapy students at OsloMet were introduced to EBP through a project undertaken between 2007 and 2009 called “The evidence-based practice project” (18). Together with their clinical instructors, each student was required to formulate a question relevant to their clinical placement. The question was utilized in their literature search and critical appraisal. Finally, the students presented and discussed the results with their clinical instructors and occupational therapy colleagues. Midway through the first clinical placement, the occupational therapy programme provided an EBP seminar to engage students in literature searches and critical appraisal of scientific articles.

In the study by Olsen et al. (6), level of exposure to EBP teaching is defined as low (0–15 hours), medium (16–26 hours) and high (27 hours and up). According to this, the students in our study had between low (HVL) and medium (OsloMet) exposure to EBP teaching before clinical placement and answering the questionnaires. The authors have no information/data on whether the clinical instructors requested EBP from the students’ during clinical placements (either at HVL or OsloMet).

Questionnaires – EBP Beliefs Scale and EBP Implementation Scale

To examine students’ attitudes and behaviours towards EBP during clinical placements, occupational therapy students from HVL and OsloMet answered two standardized questionnaires: the EBP Beliefs Scale and the EBP Implementation Scale (19). The questionnaires (originally in English) were described as having criteria-related and conceptual validity and had been found to be reliable in several studies (19, 20). They were translated into Norwegian in accordance with the World Health Organization’s process of translation and adaptation of instruments (20).

The EBP Beliefs Scale consists of 16 questions about self-reported attitudes towards EBP. The scale’s response categories range from 1 (strongly disagree) to 5 (strongly agree). The total score for the questionnaire ranges from 16 to 80. Higher scores indicate positive attitudes (19, 20).

The EBP Implementation Scale comprises 18 statements measuring to what extent activities related to evidence-based behaviour are performed. The scale’s response categories range from 0 (none) to 4 (> eight times). The total score for the questionnaire ranges from 0 to 72 (19, 20).

Statistical analysis

The analysis was based on descriptive statistics and calculation of the frequencies, percentages, means and standard deviations of the participating students’ scores on the EBP Beliefs and EBP Implementation Scales. Statistical analysis was conducted using ANOVA with Bonferroni correction, to analyse differences in mean totals for the EBP Beliefs and EBP Implementation Scales across all cohorts. For all analyses, the significance level was set at 5%, and statistical analysis was completed using the Statistical Package for Social Science (SPSS) data program, version 25. Two questions on the EBP

Beliefs Scale were negatively formulated, and the values of these two questions were reversed ahead of the analysis.

Results

Of 220 occupational therapy bachelor's-level students, 126 participated in this study, equivalent to a 57.3% response rate. The response rate varied between the different cohorts, from 85.0% to 17.5% (Table 1). Most students (92.1%) were between 20 and 30 years old; 84.9% were women, and 15.1% were men. Of the 126 students, 12.0% had completed a previous bachelor's degree and 6.4% had other health-related education.

EBP with or without the work file as a learning strategy; highly positive attitude and low skills

On the EBP Beliefs Scale, all participating students (n = 126) had a mean score of 56.8 (out of a total possible score of 80) (Table 2). The students revealed a highly positive attitude towards EBP, with a mean score of 4.4 (maximum of 5) on the question about whether they "believe[d] EBP [results] in the best clinical care for patients". The students answered that they had low skills in EBP. For instance, responses to the question on "how to measure the outcomes of clinical care" yielded a mean score of 3.0 (minimum of 1), and they had a mean score of 2.9 for the item indicating that they "believe[d] EBP [was] difficult".

EBP work file as a learning strategy and assessment

Comparison of the cohorts indicated no statistical difference between cohorts 1 and 4 (who had not received additional instruction on the EBP work file) and cohorts 2, 3 and 5 (who had received additional instruction) (Table 3).

EBP with or without the work file as a learning strategy; low skills in terms of implementation

In terms of EBP implementation, all participating students (n = 126) had an average mean total score of 15.8 out of a total possible score of 72 (Table 4). The mean total score of the students was low on the EBP Implementation Scale. They scored highest on the question about using evidence to change their clinical practice, with a mean score of 2.0 (maximum of 4). They scored lowest on the question about accessing the National Guidelines Clearinghouse, with a mean score of 0.0 (minimum of 0).

EBP work file as a learning strategy and assessment; low skills in terms of implementation

Comparison of the five cohorts indicated that students in cohort 5 (who had received extra instruction in using EBP work files) had statistically lower scores on the EBP Implementation Scale than students from cohort 1 (who had not been given extra instruction) (Table 5). The mean score for the Implantation Scale was 20.5 for cohort 1 and 13.1 for cohort 5 (Tables 6 and 7). There was no significant statistical difference between the other cohorts.

Discussion

The occupational therapy students scored highly on the Beliefs Scale but had low scores on the Implementation Scale. The students believed that EBP results in the best clinical care for patients; however, they lacked confidence related to their own EBP competence (Table 2). The scores were highest for the question “I [have] used evidence to change practice” and “[I have] accessed [the] Cochrane Database of Systematic Reviews”. Interestingly, they reported not sharing evidence from research with patients or team members (Table 4). Accordingly, assessing the students with the EBP work file during clinical placements did not strengthen their EBP competence. On the contrary, cohort 5, who completed the EBP work file, had statistically lower scores on the implementation scale than cohort 1, who had not been given additional instruction.

Results obtained from the EBP Beliefs Scale indicated that occupational therapy bachelor’s-level students had a positive attitude towards EBP, with a mean total score of 56.8. Similar average scores in other studies vary from 53.0 to 64.1 (20). In the present study, students believed that EBP results in the best clinical care for patients; that critical appraisal is an important step in the EBP process; that EBP guidelines improve clinical care; and that implementing EBP improves patient care. However, they reported low skills in EBP due to their assumption that EBP is difficult to learn and takes too much time (Table 2). The students believed that EBP is important for patient care, although they did not think they possessed the necessary competence. This indicates that EBP teaching should be targeted at enabling students to overcome these barriers. As Young et al. (10) report, teaching needs to be multifaceted, related to clinical issues and should include assessment of students. In the present study, the authors found that the EBP work file as an assessment is insufficient to enable occupational therapy students to engage in EBP during clinical placements. The assessment needs to be introduced and pursued during clinical placements, with the active involvement of clinical instructors. In terms of student learning outcomes, it is important that clinical instructors have the possibility to collaborate with students during the EBP process. This is in line with previous research indicating that students have trouble retaining and using EBP skills beyond the classroom (1, 9).

Comparison of the cohorts revealed no statistical difference in terms of the EBP Beliefs Scale, regardless of whether students had completed the EBP work file or not (Table 3). Students had low scores on the questions “I believe that EBP is difficult” and “I believe that EBP takes too much time (Table 2). Several other studies have reported lack of knowledge, time and support from clinical instructors as being barriers to students’ EBP in their clinical placement (1, 6, 9, 21). This may be one of the reasons why students experience difficulties applying EBP. Additionally, the lack of teaching strategies to assist students in

closing the gap between their theoretical studies and clinical placements is crucial (9). EBP teaching for occupational therapy students at OsloMet and HVL seems to concentrate on searching for, finding and critically appraising evidence, with less emphasis on integrating and using research evidence together with clinical and user experiences. It is important to enable students to apply all the steps of the EBP process (3) and to integrate EBP into clinical practice.

The results of cohorts 4 and 5 at OsloMet revealed that students had similar scores, irrespective of whether they were introduced to the EBP work file or not. This may be due to the students in both cohorts experiencing demands related to EBP during clinical placements. The students were expected to formulate a question relevant to their clinical placement, together with their clinical instructor. After finding an article, they presented the results to their clinical instructor and occupational therapy colleagues at the placement. This may be a strategy to reduce the gap between theoretical studies and clinical placements, making all relevant parties at the clinical placement aware of the demands related to EBP. According to our experience, it appears to be easier for students and clinical instructors to use and develop EBP competencies during placements, when clinical instructors collaborate with students on their assignment. Being able to contribute by way of EBP may make clinical placements more motivating and meaningful for students (18). This approach accords with the recommendation for teaching to be related to clinical issues and assessments (10).

In our study, the occupational therapy bachelor's-level students obtained an average score of 15.8 on the EBP Implementation Scale. In the study by Stokke et al. (22), healthcare professionals obtained an average score of 7.8. Snibsøer et al. (20) reported that, in American studies, the average score of healthcare professionals ranged from 11.4 to 40.9. Our study has congruent results, with slightly higher scores than those reported by Stokke et al. (22). This may indicate that implementation of EBP is difficult for healthcare professionals and that the scores in our study are not actually that low. The translation of evidence and implementation of EBP in clinical placements is influenced by several factors, such as being aware of the evidence, deciding on its applicability and the need for habits to change. Change takes time, and translation of high-quality evidence into practice may not always happen (10).

The authors have considered whether the questionnaires may have been difficult to answer due to the role of students in clinical placements, especially questions related to implementation, for example, "[I have] [u]sed evidence to change my clinical practice". However, this was the question that students scored most highly on out of all the implementation questions, with a mean score of 2.0 (Table 4). A barrier to working in an evidence-based way is insufficient autonomy to be able to change practice (8). Occupational therapy bachelor's-level students would not be expected to change their practice while on placement, but they could if they chose to (in consultation with their clinical instructor). The students responded to the questionnaires after their second-year clinical placement so naturally scored poorly on this and similar claims. Prior to clinical placement and completion of questionnaires, the students in our study had been exposed to low or medium levels of EBP teaching, as defined by Olsen et al. (6). It is possible that they would have answered differently if they had been asked to rate their competency using the EBP Beliefs and EBP Implementation Scales on completion of their education or after graduation.

Comparison of the cohorts showed that students in cohort 5 (who received additional EBP instruction in relation to their clinical placement) had statistically lower scores than students in cohort 1(who did not receive additional instruction) (Table 5). A possible explanation for this is that when students engage in EBP teaching and learn more about the concept, they might understand that they do not know that much about EBP after all. Targeted teaching is required to adequately support students' EBP learning. Faculty members need to highlight what kinds of difficulties the students may encounter when aiming to implement research in practice. Crabtree et al. (9) suggested overcoming real-world barriers by adopting teaching strategies such as role playing with credible practice scenarios and bringing practitioners into the classroom to identify issues relevant to their practice.

Olsen et al. (5) highlighted that competing demands, learning new routines and gaining practical skills are more than enough for students to handle during clinical placements. They found that both students and clinical instructors believed students should prioritize practice skills over EBP (5). This might indicate why the students had low scores in relation to their perceived ability to engage in and implement EBP after completing their clinical placement. In particular, the students had low scores for questions about sharing evidence with patients or team members (Table 4). Given the assignment based on the EBP work file (necessitating presentation of a research article to the clinical instructor), this result is surprising. This may be due to students only presenting the article to their clinical instructor and not to patients or other team members.

Implications for occupational therapy education

This study has revealed that the teaching of EBP should be multifaceted, related to clinical issues and should include assessments (10, 11). There is still a question over which strategies are optimal for EBP exposure throughout the curriculum, in terms of content, timing, and the amount and type of training (6, 11). We would argue that including an EBP-based assessment during clinical placements is insufficient to boost students' confidence in engaging with EBP. Teaching and assessment of EBP must be thoroughly evaluated and requested. It is important to include clinical instructors in the planning and delivery of EBP curricular activities during clinical placements (9). For example, it is important to discuss with clinical instructors how students can be given opportunities to present and discuss the results of research articles and implement EBP in their clinical placements.

Study limitations

Participants in this study included bachelor's students from two different occupational therapy programmes in Norway, giving a broader picture of students' self-reported attitude, skills, use and implementation of EBP. This study's limitations include a limited sample size and the lack of a control group. This may have led to differences in the results according to confounding variables. However, the use of ANOVA with Bonferroni correction has controlled for confounding variables. Some items in the questionnaires were probably difficult for students to answer, which might have affected the results. The occupational therapy students answered the questionnaires after their clinical placement (approximately

midway through their bachelor's-level education). The actual timing probably affected the students' answers and hence the results. They attended about 10–16 hours of EBP teaching prior to their second-year clinical placement. Still, it is important to teach students the concept of EBP early on in a bachelor's programme in order to help them become evidence-based practitioners after graduation. Acquiring the ability to apply and implement EBP in a clinical context takes time.

Conclusion

This study's findings indicate a positive attitude towards EBP on the part of occupational therapy bachelor's-level students; however, they find it difficult to practise and implement EBP during clinical placements. Simply giving students an EBP-based assignment using the EBP work file does not enable them to implement EBP when on placement. This fact underlines the importance of teaching students EBP skills and enabling them to use EBP when working with patients. It seems important to include clinical instructors in the planning and teaching of EBP during clinical placements (9). Future research could use control groups and interviews with both students and clinical instructors to investigate further how to implement EBP teaching strategies during clinical placements.

Declarations

Ethics approval and consent to participate

The students were informed about the purpose of this study, and all information was anonymized. By answering the questionnaires, the students agreed to participate in the study. The authors asked participants to provide information about their age, sex and previous education. The authors did not collect sensitive information, so ethical approval was not required under Norwegian regulations.

Consent for publication

Not applicable.

Availability of data and material

The dataset used and/or analysed during this study is available from the corresponding author upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

This study was funded by the institutions where the authors work.

Authors’ contributions

SGJ, EBB, KMH, MM and US designed the study. SGJ, EBB and US collected the data. SGJ analysed and interpreted student data from the EBP Beliefs and EBP Implementation Scales. All authors read and approved the final manuscript.

Acknowledgements

The authors would like to thank all participating students for making this study feasible.

References

1. Stronge M, Cahill M. Self-reported Knowledge, Attitudes and Behaviour Towards Evidence-based Practice of Occupational Therapy Students in Ireland. Occupational Therapy International. 2012; 19(1): 7–16.
2. Taylor RR, Kielhofner G. Kielhofner's research in occupational therapy: methods of inquiry for enhancing practice. Second edition. ed: F.A. Davis Company; 2017.
3. Dawes M, Summerskill W, Glasziou P, Cartabellotta A, Martin J, Hopayian K, et al. Sicily statement on evidence-based practice. BMC Medical Education. 2005; 5(1).
4. Moyers PA, Finch Guthrie PL, Swan AR, Sathe LA. Interprofessional evidence-based clinical scholar program: learning to work together. The American Journal of Occupational Therapy: official publication of the American Occupational Therapy Association. 2014; 68 Suppl. 2: S23.
5. Olsen NR, Bradley P, Lomborg K, Nortvedt MW. Evidence-based practice in clinical physiotherapy education: a qualitative interpretive description. BMC Medical Education. 2013; 13(1).
6. Olsen NR, Lygren H, Espehaug B, Nortvedt MW, Bradley P, Bjordal JM. Evidence-based Practice Exposure and Physiotherapy Students' Behaviour During Clinical Placements: A Survey. Physiotherapy Research International. 2014; 19(4): 238–47.
7. Aglen B. Pedagogical strategies to teach bachelor students evidence-based practice: A systematic review. Nurse Education Today. 2016; 36: 255–63.
8. Solomons N, Spross J. Evidence-based practice barriers and facilitators from a continuous quality improvement perspective: an integrative review. Journal of Nursing Management. 2011; 19(1): 109–20.
9. Crabtree JL, Justiss M, Swinehart S. Occupational Therapy Master-Level Students' Evidence-Based Practice, Knowledge and Skills Before and After Fieldwork. Occupational Therapy in Health Care.

2012, Vol 26 (2–3), pp.138–149.

10. Young T, Rohwer A, Volmink J, Clarke M. What Are the Effects of Teaching Evidence-Based Health Care (EBHC)? Overview of Systematic Reviews. PLoS One. 2014; 9(1): e86706.
11. Kyriakoulis K, Patelarou A, Laliotis A, Wan AC, Matalliotakis M, Tsiou C, et al. Educational strategies for teaching evidence-based practice to undergraduate health students: systematic review. Journal of Educational Evaluation for Health Professions. 2016; 13: 34.
12. Reynolds S. Teaching Evidence-Based Practice in a Distance Education Occupational Therapy Doctoral Program: Strategies for Professional Growth and Advancing the Profession. Occupational Therapy in Health Care. 2010, Vol 24 (1), pp.56–67.
13. Olsen NR, Larun L, Strømme H. KBP-læringsverktøy. 2017. [Available from: https://www.helsebiblioteket.no/kunnskapsbasert-praksis/verktoy].
14. Vandvik PO, Bretthauer M, Kongerud IC. Fra kliniske spørsmål til troverdige svar. Tidsskrift for Den norske legeforening. 2013; 133(15): 1611–4.
15. Kongerud IC, Vandvik PO. Arbeidsfiler som læringsverktøy i kunnskapshåndtering. Tidsskrift for Den norske legeforening. 2013; 133(15): 1587–90.
16. Kongerud IC, Vandvik PO. Work files as learning tools in knowledge management. Arbeidsfiler som laeringsverktöy i kunnskapshåndtering. 2013; 133(15).
17. Nelson DL. Group comparison studies: quantitative research designs. In: Kielhofner G, editor. Research in occupational therapy: methods of inquiry for enhancing practice. Philadelphia: F.A. Davis; 2006.
18. Berg M, Bruset EB, Dahl M, Sveen U, Andersson L, Michelet. M, et al. Samarbeidsprosjekt for studenter og klinikere. Utvikling av ferdigheter i kunnskapsbasert praksis. Norske Ergoterapeuten. 2012; 55(2): 30–5.
19. Melnyk BM, Fineout-Overholt E, Mays MZ. The Evidence-Based Practice Beliefs and Implementation Scales: Psychometric Properties of Two New Instruments. Worldviews on Evidence-Based Nursing. 2008; 5(4): 208–16.
20. Snibsøer AK, Olsen NR, Espehaug B, Nortvedt MW. Holdning og atferd knyttet til kunnskapsbasert praksis. Sykepleien forskning. 2012(3): 232–41.
21. Stube JE, Jedlicka JS. The acquisition and integration of evidence-based practice concepts by occupational therapy students. The American Journal of Occupational Therapy: official publication of the American Occupational Therapy Association. 2007; 61(1): 53.
22. Stokke K, Olsen NR, Espehaug B, Nortvedt MW. Evidence based practice beliefs and implementation among nurses: A cross-sectional study. 2014; 13(8).

Tables

Table 1. Overview of students in each cohort after clinical placement (HVL and OsloMet)

Year of Data Collection	Cohort	Total Number of Students in Each Class	Number of Students Who Answered Questionnaires Following Clinical Placement (response rate)	Given Additional Instruction on the EBP Work File?
2015	1	35 (HVL)	30 (85.0%)	No
2016	2	27 (HVL)	19 (70.4%)	Yes
2017	3	36 (HVL)	23 (63.9%)	Yes
2015	4	63 (OsloMet)	11 (17.5%)	No
2016	5	59 (OsloMet)	43 (72.9%)	Yes
Total		**220**	**126 (57.3%)**	

Table 2. EBP Beliefs Scale scores of second-year occupational therapy students (n = 126)

EBP Beliefs Scale Questions	n	Minimum	Maximum	Mean	Standard Deviation
1. I believe that EBP results in the best clinical care for patients.	123	2	5	4.4	0.6
4. I believe that critically appraising evidence is an important step in the EBP process.	120	2	5	4.4	0.6
5. I am sure that evidence-based guidelines can improve clinical care.	122	2	5	4.1	0.7
9. I am sure that implementing EBP will improve the care that I deliver to my patients.	120	1	5	4.1	0.7
2. I am clear about the steps of EBP.	123	1	5	4.0	0.9
3. I am sure that I can implement EBP.	123	1	5	3.7	0.9
16. I believe that the care that I deliver is evidence based.	120	2	5	3.8	0.8
7. I believe that I can overcome barriers to implementing EBP.	117	1	5	3.7	0.7
6. I believe that I can search for the best evidence to answer clinical questions in a time-efficient way.	122	1	5	3.3	0.9
12. I am sure that I can access the best resources in order to implement EBP.	122	1	5	3.2	0.8
11. I believe that EBP takes too much time.	120	1	5	3.1	0.9
8. I am sure that I can implement EBP in a time-efficient way.	121	1	5	3.1	0.8
15. I am confident about my ability to implement EBP where I work.	122	1	5	3.0	0.9
14. I know how to implement EBP sufficiently to make practice changes.	120	1	4	3.0	0.7
10. I am sure about how to measure the outcomes of clinical care.	119	1	5	3.0	0.8
13. I believe that EBP is difficult.	122	1	5	2.9	1.0
Mean total score				**56.8**	

Table 3. Results of the ANOVA Bonferroni test, comparing answers in relation to the EBP Beliefs Scale from the five cohorts of bachelor's students

Cohorts: HVL or OsloMet (I)	Cohorts: HVL or OsloMet (J)	Mean Difference (I–J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Cohort 1 HVL	Cohort 2 HVL	-0.1	1.8	1.0	-5.4	5.2
	Cohort 3 HVL	0.9	1.7	1.0	-4.1	5.8
	Cohort 4 OsloMet	0.7	2.4	1.0	-6.1	7.5
	Cohort 5 OsloMet	2.6	1.6	1.0	-1.9	7.1
Cohort 2 HVL	Cohort 1 HVL	0.1	1.8	1.0	-5.2	5.4
	Cohort 3 HVL	1.0	1.9	1.0	-4.4	6.3
	Cohort 4 OsloMet	0.8	2.5	1.0	-6.3	8.0
	Cohort 5 OsloMet	2.7	1.7	1.0	-2.2	7.6
Cohort 3 HVL	Cohort 1 HVL	-0.9	1.7	1.0	-5.9	4.1
	Cohort 2 HVL	-1.0	1.9	1.0	-6.3	4.4
	Cohort 4 OsloMet	-0.2	2.4	1.0	-7.0	6.7
	Cohort 5 OsloMet	1.7	1.6	1.0	-2.8	6.3
Cohort 4 OsloMet	Cohort 1 HVL	-0.7	2.4	1.0	-7.5	6.1
	Cohort 2 HVL	-0.8	2.5	1.0	-8.0	6.3
	Cohort 3 HVL	0.2	2.4	1.0	-6.7	7.0
	Cohort 5 OsloMet	1.9	2.3	1.0	-4.6	8.4
Cohort 5 OsloMet	Cohort 1 HVL	-2.6	1.6	1.0	-7.1	1.9
	Cohort 2 HVL	-2.7	1.7	1.0	-7.6	2.2
	Cohort 3 HVL	-1.7	1.6	1.0	-6.3	2.8
	Cohort 4 OsloMet	-1.9	2.3	1.0	-8.4	4.6

* The mean difference is significant at the 0.05 level.

Table 4. EBP Implementation scores of second-year occupational therapy students (n = 126)

EBP Implementation Scale Questions	n	Minimum	Maximum	Mean	Standard Deviation
1. Used evidence to change my clinical practice...	118	0	4	2.0	1.3
5. Collected data on a patient problem...	120	0	4	1.6	1.4
12. Accessed the Cochrane database of systematic reviews...	119	0	4	1.5	1.4
2. Critically appraised evidence from a research study...	122	0	4	1.4	1.0
11. Read and critically appraised a clinical research study...	120	0	4	1.4	1.0
4. Informally discussed evidence from a research study with colleagues...	122	0	4	1.2	0.9
3. Generated PICO questions about my clinical practice...	116	0	4	0.9	0.9
18. Promoted the use of EBP to my colleagues...	114	0	4	0.8	1.0
16. Shared the outcome data collected with colleagues...	119	0	4	0.7	1.2
7. Evaluated the outcomes of a practice change...	117	0	3	0.6	0.8
10. Shared evidence from a research study with a multi-disciplinary team member...	119	0	4	0.6	0.8
14. Used EBP guidelines or systematic review to change clinical practice where I work...	117	0	4	0.6	0.9
8. Shared EBP guidelines with a colleague...	120	0	3	0.6	0.7
9. Shared evidence from a research study with a patient/family member...	119	0	4	0.5	0.8
6. Shared evidence from a study or studies in the form of a report or presentation to more than two colleagues...	120	0	3	0.5	0.7
17. Changed practice based on patient outcome data...	117	0	4	0.5	0.9
15. Evaluated a care initiative by collecting patient outcome data...	115	0	4	0.4	0.8
13. Accessed the National Guidelines Clearinghouse...	120	0	1	0.0	0.2
Mean total score				**15.8**	

Table 5. Results of the ANOVA Bonferroni test, comparing answers relating to the EBP Implementation Scale from the five cohorts of bachelor’s students

Cohorts: HVL or OsloMet (I)	Cohorts: HVL or OsloMet (J)	Mean Difference (I–J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Cohort 1 HVL	Cohort 2 HVL	4.9	2.9	0.9	-3.4	13.2
	Cohort 3 HVL	6.7	2.7	0.1	-0.9	14.4
	Cohort 4 OsloMet	6.3	4.3	1.0	-6.1	18.6
	Cohort 5 OsloMet	7.3	2.3	0.0*	0.6	14.1
Cohort 2 HVL	Cohort 1 HVL	-4.9	2.9	0.9	-13.2	3.4
	Cohort 3 HVL	1.9	3.0	1.0	-6.7	10.4
	Cohort 4 OsloMet	1.4	4.5	1.0	-11.5	14.3
	Cohort 5 OsloMet	2.5	2.7	1.0	-5.3	10.2
Cohort 3 HVL	Cohort 1 HVL	-6.7	2.7	0.1	-14.4	0.9
	Cohort 2 HVL	-1.9	3.0	1.0	-10.4	6.7
	Cohort 4 OsloMet	-0.5	4.4	1.0	-13.0	12.1
	Cohort 5 OsloMet	0.6	2.4	1.0	-6.4	7.6
Cohort 4 OsloMet	Cohort 1 HVL	-6.3	4.3	1.0	-18.6	6.1
	Cohort 2 HVL	-1.4	4.5	1.0	-14.3	11.5
	Cohort 3 HVL	0.5	4.4	1.0	-12.1	13.0
	Cohort 5 OsloMet	1.1	4.2	1.0	-11.0	13.0
Cohort 5 OsloMet	Cohort 1 HVL	-7.3	2.3	0.0*	-14.1	-0.6
	Cohort 2 HVL	-2.5	2.7	1.0	-10.2	5.3
	Cohort 3 HVL	-0.6	2.4	1.0	-7.6	6.4
	Cohort 4 OsloMet	-1.1	4.2	1.0	-13.0	10.9

* The mean difference is significant at the 0.05 level.

Table 6. Mean total score for cohort 1 on the Implementation Scale

	n	Minimum	Maximum	Mean	Std. Deviation
Sum Impl. Cohort 1 HVL	23	7.0	39.0	20.5	7.4

Table 7. Mean total score for cohort 5 on the Implementation Scale

	n	Minimum	Maximum	Mean	Std. Deviation
Sum Impl. Cohort 5 OsloMet	35	1.0	32.0	13.1	9.0