Scientific Research Publishing

Open Journal of Therapy and Rehabilitation, 2022, 10, 198-210
https://www.scirp.org/journal/ojtr
ISSN Online: 2332-1830
ISSN Print: 2332-1822

An Exploration of Perceived Barriers to Evidence-Based Practice among Physiotherapy Students during Clinical Placement—A Descriptive Cross-Sectional Study

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How to cite this paper: Hlebš, S. (2022) An Exploration of Perceived Barriers to Evidence-Based Practice among Physiotherapy Students during Clinical Placement—A Descriptive Cross-Sectional Study. *Open Journal of Therapy and Rehabilitation*, **10**, 198-210.
https://doi.org/10.4236/ojtr.2022.104015

Received: August 24, 2022
Accepted: October 30, 2022
Published: November 2, 2022

Abstract

Introduction: Teaching evidence-based practice (EBP) has become part of the standard curriculum for health care students and professionals. Teaching EBP skills should be emphasized in entry level physiotherapy education as physiotherapists are expected to practice in an evidence-based way. Identifying barriers to the application of EBP in clinical placement plays an important role in developing physiotherapy programs. The present study aimed to explore physiotherapy students' perceived barriers toward the use of EBP during their clinical placements. **Methods:** A cross-sectional study was conducted among third-year physiotherapy students at the Faculty of Health Sciences University of Ljubljana, Slovenia. Participants were asked to complete a self-reported questionnaire that was developed by the researcher based on previously developed surveys. The analyses applied included descriptive statistics and calculation of frequencies, percentages, means and standard deviations of the participating students' scores. **Results:** Fifty final-year undergraduate students with a mean age of 23.7 (±4.3, range 23 - 27) years participated in the study. Majority of participants reported lack of formal training, poor ability to critically appraise research evidence, insufficient time, their clinical supervisors, or other therapists not using EBP when treating patients as barriers towards practicing EBP. **Conclusions:** Physiotherapy students face many challenges in terms of training, organizational, and personal barriers toward the use of EBP during clinical placement. Lack of formal training, lack of research skills, insufficient time and their clinical supervisors or other therapists not using EBP when treating patients, emerged as top barriers. This fact underlines the importance of teaching students EBP skills, which would enable them to use EBP when working with patients.

Keywords

Evidence-Based Practice, Physiotherapy, Students, Education, Clinical Placement

1. Introduction

Evidence based medicine (EBM), first introduced in the 20th century by the medical profession, has been described as the conscientious, explicit, and judicious use of the best current evidence in making decisions about the care of individual patients [1]. Its practice means integrating individual clinical expertise with the best available external clinical evidence from systematic research. According to the Sicily statement, to be "evidence based", one must have the knowledge, skills and attitude: 1) to develop a focused clinical question; 2) perform an effective search of the literature; 3) critically appraise the evidence; 4) apply the evidence to the clinical context; and 5) evaluate the effectiveness of the process [2]. The ability to be "evidence based" requires that learners are competent across all domains in evidence-based practice (EBP), which include knowledge, attitudes, skills, and practice, across the five steps of EBP [3] [4]. Knowledge about EBP is defined as the knowledge of basic EBP concepts and terminology in addition to concepts related to quality or levels of evidence. The skills required for the practice of EBM include the ability to form a relevant and searchable clinical question, to search the literature for evidence, and to critically appraise the retrieved evidence for its validity, impact, and usefulness. Attitude toward EBP is defined as the general views to EBP, the possibility of adopting EBP with knowledge of its effect on practice and its requirements, and openness to change in current practices. Practice and use of EBP refer to whether health professionals are able to apply their EBP knowledge to the specific clinical scenarios. This includes the implementation of evidence with the integrity of clinical circumstances [5].

Professional organizations have called for increased training in evidence-based practice for all health care professions, and at all levels of education. Physiotherapy education must be built on evidence-based physiotherapy practice and research to demonstrate and continuously ensure innovation and should be integrated into all educational processes at all levels of physiotherapy education [6]. The inability to perform any of the above mentioned EBP steps can be a barrier to evidence use, therefore, there is a need to implement these steps into the clinical education of health care students so that EBP is integrated into lifelong learning and patient care [1] [7].

It is apparent that there is a significant gap between best practice, as determined by scientific evidence, and actual clinical care [8]. Reflection on EBP implementation failure is critical now to gain a good understanding of the barriers. Healthcare students report various barriers to EBP during clinical placements,

which include inadequately acquired knowledge and skills in understanding and using scientific evidence, lack of time, high workload, students and clinical instructors prioritizing hands-on practice and lack of role models practicing evidence-based in clinical placements [7] [9]-[15]. The students we are educating today will be the future healthcare professionals of the community. The author of this study has observed that students struggle to apply EBP during clinical placements. Therefore, to achieve a better contextual understanding of necessary actions to ensure the use of EBP in clinical education, the present study aimed to explore physiotherapy students' perceived barriers toward the use of EBP during clinical placements in Slovenia.

2. Methods

This research follows a cross-sectional study design among the cohort of final year physiotherapy students enrolled for the 2017 academic year at the Faculty of Health Sciences, University of Ljubljana (FHSUL) in Slovenia. FHSUL offers a 3-year undergraduate program in physiotherapy which consists of theoretical studies (46%) and practical training at the university and in clinical placement (54%). Students must complete a 20-week of minimal 700 hours clinical setting throughout the curriculum. According to the European Credit Transfer and accumulation system—ECTS, the value of the program is 180 ECTS credits. One ECTS credit equals 30 hours of student workload, so a student's total workload over the three years is 5400 hours. The level of EBP exposure in the three-year program is only in two subjects, Basic of Research Methodology and Biostatistics, Research Methodology in Physical Therapy, introduced in the curriculum of the first and last year of study, respectively. Students therefore receive a small number of stand-alone teaching units on EBP steps and processes.

A self-administered, structured questionnaire was developed for data collection based on similar questionnaires reported in the literature designed to assess students' self-reported knowledge, attitudes, and behaviors related to evidence-based practices [16] [17] [18]. Since the aim was to investigate physiotherapy students' perceived barriers toward the use of EBP during clinical placements, we adapted the existing instruments to create an ad hoc survey designed to reflect the above content. Before sending out the survey, we piloted the questionnaire with the help of senior academicians who were experts in EBP teaching to assess its clarity and accuracy. A draft was forwarded to three senior academicians belonging to physiotherapy background for their comments on the layout and content, and the survey tool was then modified considering their comments. The questionnaire was then refined based on an interview with two final year students. They were asked to explain how they understood the items by repeating them in their own words and to report any uncertainties about the wording of the items. As a result, no items were changed. The final questionnaire version consisted of three sections and took approximately 10 minutes to complete. Section one covered respondent socio-demographic characteristics, sections two

and tree consisted of items related to knowledge and ability to critically appraise the literature, use and perceived barriers to the implementation of EBP in clinical practice. We dichotomized most of the responses in section two and three to the five-point items as "disagree" versus "agree" (strongly disagree, disagree and neutral versus agree and strongly agree categories). For some questions, adjectival scales of "agree," "do not know," and "disagree" were offered, with the option for respondents to check the answer they thought was most appropriate. An electronic version of questionnaire was sent to final year students via MojaAneketa.si.web page.

Before completing the questionnaire, all participants were informed of the following: the purpose of the survey, that participation was voluntary, and that responses would remain anonymous. Completion and submission of the questionnaire signified informed consent. We did not collect information that could be used to identify individuals, therefore ethical approval from FHSUL was judged not to be needed. Permission to conduct the survey was obtained from the head of the Department of Physiotherapy after the study materials were reviewed and approved.

Collected data were entered into Microsoft Excel 2013 spreadsheets, and analysis was performed in both Excel and IBM ® SPSS Statistics (v22) (Armonk NY, US). Descriptive statistics, including frequencies and percentages for categorical variables, and mean and standard deviation (SD) for continuous variables were calculated to describe the demographic data.

3. Results

At the time of the survey, all final year students (n = 68) were invited to participate in the study, with a total of 50 students completing the questionnaires and being included in the analysis (response rate of 73.5%). The gender composition was 25 female and 25 male students. Their mean age was 23.7 (±4.3, range 23 - 27) years.

3.1. Training Related Barriers

Seventeen percent of participants (n = 8) reported only some degree of ability to critically appraise research evidence. The extent to which respondents perceived the ability to critically evaluate research findings was rated on a 5-point scale with the following mean scores: difficulty due to time spent searching for relevant evidence 4.68; difficulty understanding foreign language 3.58; ability to integrate the results of studies into practice 3.36; ability to evaluate the practical applicability of studies 3.02; ability to evaluate the validity of study results 2.74, and ability to critically appraise quality assessment of study design 2.54.

3.2. Organisational Related Barriers

The most common reasons for not implementing EBP in clinical placement were lack of time stated by almost a half of the students (40%, n = 22) followed by not

practicing EBP by other therapists (20 %, n = 10), and their fieldwork/placement educators, reported by ten students (20%). Perceived students' organizational barriers are summarized in Table 1.

3.3. Personal Barriers

Very few participants reported lack of personal interest as a barrier towards the use of EBP as shown in Table 2.

Students were asked about their self-reported behaviour of how frequently they access evidence in clinical placements and university, *i.e.*, how many articles they read per month. The percentage of participants reading ten to thirty articles per month to find relevant research was 34 % (n = 17), but more than half (54%, n = 27) read less than ten articles per month. As many as 80% (n = 40) of respondents used reliable online databases (Cochrane, CINAHL, PEDro, PubMed) to search for relevant literature and find valid results. Forty-four percent (n = 22) of respondents indicated that they dislike reading research articles.

Table 1. Organisational barriers.

Variables	Percentage (%), number (n) of students
Time to search for research evidence	40% (22)
Because other therapists do not practice	20% (10)
Because my fieldwork/placement educators did not practice	20% (10)
Because I do not know how to practice evidence-practice	18% (9)
Because previous work experience is more important than research	6% (3)
I do not believe in evidence-practice	0

Table 2. Personal barriers.

Variables	Percentage (%), number (n) of students
I disagree that evidence-based practice is unnecessary theory for practice	80% (40)
I would like to gain more knowledge about research evidence	64% (32)
I would ask clinical supervisor to gain more knowledge on research evidence	70% (35)
I would ask another therapist on clinical placement for evidence	16% (8)
I would find evidence in online databases	8% (4)
I would ask a fellow student for evidence	6% (3)
I would ask my university teacher to gain more knowledge about research evidence	0
I would use textbooks to search for evidence	0

4. Discussion

Evidence-based practice should be included in physiotherapy curriculum to support student's utilization of EBP in their clinical practice. The results of our study indicated that the physiotherapy students regarded EBP as important for clinical practice, but they experienced problems in applying EBP.

4.1. Training Related Barriers

The FHSUL physiotherapy programme, which was the setting for this study, teaches some principles of evidence-based practice in the form of research methodology lectures. Although research methods and statistics had been essential components of many undergraduate physiotherapy programmes for several years, students continued to struggle with finding and using relevant and valid research evidence [7] [9] [19]. This highlights that teaching research methodology may equip students with the skills to conduct research, rather than using research for EBP [20]. The literature states that research skills and the skills of searching, appraising, and applying research evidence to individual patients should be taught early and applied as an essential part of learning during the entire curriculum [21]. Because of the time and curricular constraints within professional degree courses, it could be argued that the best place to introduce the principles of EBP is in research methodology modules. Structuring the research methodology subject in the current curriculum using the five-step Sicily approach to evidence-based teaching [2] could successfully prepare our students to be future effective clinicians who are able to ask clinically relevant questions, find and critically evaluate the evidence, and apply the evidence in their daily practice.

The barriers most frequently cited by our respondents were "the time required to find relevant evidence," "the difficulty of understanding foreign languages," and "the ability to evaluate and integrate the results of studies into practice". Several barriers to adopting evidence in clinical practice can be identified in the literature, including lack of time, low confidence in the skills needed to identify and appraise research [12] [14] [22]. Strategies to improve EBP in physiotherapy should focus on ameliorating the barriers identified in previous studies and confirmed in this study. Some solutions, such as providing easy-to-understand summaries and training students to search for and evaluate evidence during their studies, may be relatively easy, whereas others, such as language skills and lack of time, may be more difficult. Also, clinically integrated EBP training might be more interesting than stand-alone training, and it could be integrated with some other subjects during the degree, not only with research methodology. Integrating EBP principles into clinical placement statistically significantly altered physical therapy students' behavior related to EBP [10]. These findings are promising, but lack of a control group makes it difficult to draw conclusions as to whether integrating EBP into clinical training is sufficient to changing undergraduate students' EBP behavior.

4.2. Organisational Related Barriers

Considering perceived students' difficulties with understanding and transferring research evidence into patient care, good EBP role models are most likely essential for students. In our study, 70% of the students reported that they approached their supervisor on clinical placement to gain more knowledge, but 20% of students reported that their clinical supervisors or other therapists do not use EBP when treating patients, despite considering clinical instructors as a source of evidence. This raises the question of the extent to which students in clinical practice received practical guidance on the application of research evidence in real patient care.

The learning process seems to be heavily influenced by the clinical educator, who is the only real connection node between formal education and practice. As confirmed in findings of some studies, the use of EBP was largely tied to the expectations of the clinical educator [12] [23]. Thus, clinical educators potentially play a crucial role in stimulating students' motivation and helping them to overcome the obstacles in practice. Clinically integrated EBP teaching through clinical educator should be the primary focus since students spend a considerable amount of time in their clinical placement. Clinical instructors can be a role model for students where they encourage the use of recent evidence during their daily patient round, while discussing cases and during case presentations [24]. In our case clinical educators, who often lacked EBP experience, were therefore sometimes perceived by the students as a barrier to EBP. Hence, it is worth pondering whether training the trainers (clinical educators) in EBP would help students to develop favourable attitude toward its use. Evidence largely supports the training of physiotherapists in the EBP process [25]. This was similar to the study in Norway, where it was clear that students valued EBP and recognized it as an important part of clinical practice but continued to feel that they needed more education in this area [9].

A high percentage of our students (40%) reported time as a barrier for not implementing EBP. This is not surprising, considering that time is a frequent barrier reported among undergraduate students [9] [22] [23], and a wide range of health care professionals [26] [27] [28] [29]. However, the time issue may be about more than the lack of actual time, e.g., the mental energy required in a busy clinical setting [30]. This is consistent with the findings of a recent focus group study in which clinical instructors and their students felt that there was neither time nor energy to apply EBP; gaining practical hands-on experience was prioritized [9].

4.3. Personal Barriers

Very few participants reported lack of personal interest as a barrier towards the use of EBP. The majority disagreed that evidence-based practice is unnecessary theory for practice and would like to gain more knowledge about research evidence. The findings are consistent with studies in the literature were positive at-

titudes toward EBP and the use of research in practice, with many students [13] [22] [31] [32] and professionals [27] [33] viewing EBP as a necessary part of their role contributing to better clinical decision.

Consistent with barriers identified in previous [7] [34] and in this study, our participants did not often access to evidence in clinical placements or university in terms of the number of research articles they read per month, which may hinder EBP use. Most of the respondents had access to online information and used reliable online databases (Cochrane, CINAHL, PEDro, PubMed) to search for relevant literature. More than half read less than ten articles per month, and nearly half of them indicated that they dislike reading research articles. This could probably mean that they are not aware of the role of the library in terms of providing various research-related facilities like access to paid articles, institutional subscribed research journals apart from regular textbooks. One possible explanation why in our study students indicated they disliked reading research papers, could be related to busy schedules due to clinical placements that students must complete in addition to regular lectures and other academic activities, as well as difficulties in understanding the foreign language.

5. Conclusions

The results of this study show that physiotherapy students had a positive attitude toward EBP, but they found it difficult to practice and implement during clinical placements. This fact highlights the importance of teaching students EBP skills that enable them to apply EBP when working with patients. It is important and necessary to involve clinical instructors in planning and teaching EBP during clinical placements. Therefore, high priority must be given to collaboration between faculty and clinical instructors in curriculum development to increase students' confidence in and positive attitudes toward EBP.

Physiotherapy students face many challenges in terms of training, organizational, and personal barriers toward the use of EBP during clinical placement. Lack of formal training, lack of research skills, insufficient time and their clinical supervisors or other therapists not using EBP when treating patients, emerged as top barriers.

6. Limitation

There are study limitations which must be acknowledged. The main limitation was the use of a questionnaire that had not been evaluated for reliability. We attempted to overcome this limitation by ensuring that topics of interest were adequately covered, and previous research evidence related to EBP guided the questionnaire development. A major limitation was the reliance on self-report. What the students report and what they actually do may be very different. Survey participants often overestimate or report the "right" answer as opposed to the facts. Respondents often do not take the time to read the questions fully and may rush through Likert scales, ticking the boxes to finish quickly [35].

Self-reporting can also introduce social desirability bias where answers reflect an anticipated social norm, as the participants presume about their knowledge which, they do not possess [36]. Authors have recognized and demonstrated the difference between students' perceptions or feelings about their own knowledge and skills and their actual knowledge and skills as measured, for example, by tests or assessments administered by the institution [35] [37] [38].

The sample in this study was relatively small. Furthermore, a sample based on students from a single institution may have hampered generalizability of the study, although our findings were comparable with previous research [11].

7. Recommendation for Further Research

Evidence-based practice is a requirement in the recommendation of Quality Assurance Standards of Physiotherapy Practice and Delivery Statement of Slovenian physiotherapists. The main EBP-related criterion is an expectation that upon graduation from an entry-level program, physiotherapists are able to apply an evidence-based approach to their own clinical practice. To get a more accurate picture of the developmental process of individual students during a three-year program, longitudinal research would be very valuable. For example, ask about students' perceptions at the beginning and end of their studies or after completing internships. It is currently not known whether graduates continue to improve, deteriorate, or retain the level of EBP gained during their entry-level training. Further research is warranted to follow participants as they transition into the workplace and determine how entry-level EBP training translates into real clinical scenarios. This study was conducted in only one discipline, but we believe that the findings of physiotherapy students' self-reported barriers related to evidence-based practice in clinical placement may be also relevant to other health professional students of higher education.

8. Recommendation for Education

Educational programs and associated curricula are a key medium for shaping the knowledge, skills, and attitudes of health care professionals and therefore play an essential role in determining the quality of care provided. Given the time constraints of the curriculum at FHSUL (30 weeks per year), we need to assess how to introduce and align the principles of EBP into the current curriculum. Structuring the research methodology module using an evidence-based teaching framework may successfully prepare our undergraduate students to become effective clinicians. It is essential to identify the best timing and content of EBP that should be addressed in current curricula. Further investigation is needed weather training clinical educators in EBP would help students to develop more skills toward its use, as clinically integrated EBP teaching through clinical educators and training the physiotherapists in EBP process, is largely supported by evidence [12] [24] [26]. Strategies that not only focus on issues such as curriculum structure, content, and program delivery, but also support educators, educa-

tional institutions, and clinicians in meeting the challenges of EBP education need further attention.

To the best of our knowledge, this is the first study to explore and demonstrate the self-reported barriers of physiotherapy students in Slovenia related to evidence-based practice in clinical placement. Since this study was conducted at only one institution, it is not known to what extent the results can be generalized to other physiotherapy students in Slovenia.

Acknowledgements

The author wishes to thank all students who kindly participated in the study and Manja Kropf for data collection.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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