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Systematic review

What do physical therapists think about evidence-based practice? A systematic review

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ABSTRACT

Evidence-Based Practice (EBP) has been widely implemented in different health-related areas. Several studies investigated important characteristics in EBP by physiotherapists and systematic review is needed. Therefore the aim of this study is to describe the current evidence on EBP knowledge, skills, behaviour, opinions and barriers by physiotherapists. Searches were conducted on MEDLINE, EMBASE, CINAHL, PSYCINFO, LILACS, and SciELO in September 2014. We retrieved quantitative cross-sectional studies that investigated EBP knowledge, skills, behaviour, opinions, and barriers in physiotherapy. Risk of bias was assessed using a scale to evaluate representativeness of the sample, response rate, the accuracy of the data, evidence of power calculation and the instrument used. The search yielded 12,392 potentially eligible studies. Of these, 12 studies were included in the review (pooled sample = 6411 participants). In 3 studies that analysed knowledge, approximately 21–82% of respondents claimed to have received prior information on EBP. In 2 studies that reported skills and behaviour, nearly half of the sample had used databases to support clinical decision-making. In 6 studies that investigated opinions, the majority of the samples considered EBP necessary or important. The barriers most frequently reported were: lack of time, inability to understand statistics, lack of support from employer, lack of resources, lack of interest and lack of generalisation of results. Although the majority of physiotherapists have a positive opinion about EBP, they consider that they need to improve their knowledge, skills and behaviour towards EBP. They also faced barriers that might hinder the implementation of EBP.

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1. Introduction

Evidence-Based Practice (EBP) has been increasingly recognised and used by physiotherapists as a result of the growing volume and accessibility of high-quality research (Maher et al., 2004). Currently, the term Evidence-Based Physiotherapy can be applied to physiotherapy based on high-quality clinical research (Herbert et al., 2011). However decision-making must also take into account the wishes, expectations, and values of the patient as well as the therapist's experience and knowledge (Herbert et al., 2005).

Although the concepts of EBP are well-defined, EBP faces a variety of challenges with regards to its implementation (Haynes and

Haines, 1998). These challenges are closely related to current health policies, the complexity of physiotherapy practice, access to the studies and continued education programs (Haynes and Haines, 1998). Previous studies on different health professions have identified multiple barriers such as lack of time (McColl et al., 1998; Metcalfe et al., 2001; Jette et al., 2003; Majid et al., 2011), lack of access to full-text articles (Maher et al., 2004; Bennett et al., 2007) and/or lack of skills in finding and understanding the studies (Jette et al., 2003; Bennett et al., 2007; Caldwell et al., 2007; Ahmadi et al., 2012). The inability of health professionals to comprehend and select high-quality studies has been attributed to poor training in EBP due to great variability of teaching methods during university training (Ahmadi et al., 2012). Other barriers include the questionable quality of the studies (Petrisor and Bhandari, 2006; Caldwell et al., 2007; Spallek et al., 2010) and the conflicting results of different studies investigating the same topic (Metcalfe et al., 2001; Spallek et al., 2010). Some studies have different characteristics which do not represent the real clinical practice

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which can make the clinical application more difficult (Flores et al., 2000; Cranney et al., 2001; Jette et al., 2003). Another factor that can interfere in the application of EBP is the language of publication. Most studies are published in English (Shiwa et al., 2013), which can hinder their use by non-English proficient readers (Maher et al., 2004).

EBP has also been progressively used in different areas of health, such as medicine, nursing, physiotherapy, occupational therapy, nutrition, dentistry, and in the area of healthcare management and economics (Evidence-Based Medicine Working Group, 1992). There are several studies that investigated different aspects required in EBP in a specific population of physiotherapists (Jette et al., 2003; Iles and Davidson, 2006; Bauer et al., 2007; Grimmer-Somers et al., 2007; Salbach et al., 2007, 2009; Buchard, 2009; Nilsagård Ylva, 2010; Gorgon et al., 2013; Scholten-Peeters et al., 2013). Another review (Scurlock-Evans et al., 2014) has showed that physiotherapists tend to present favourable opinions toward EBP and the mainly barriers faced by them are usually related with lack of time and skills, and also misperceptions of EBP. Besides, this review identified some interventions that seem to be promising to a better implementation of EBP. Although this review has assessed some important characteristics about EBP in physiotherapy, the results were presented as a textual synthesis, without presenting the frequencies of the analysed characteristics, and included only studies published in English. Although there are studies about this topic, our systematic review can potentially contribute with more detailed information about this topic from retrieving all available evidence. Then, we considered important a new systematic review to better inform professionals about these characteristics and to identify the most important difficulties faced by physiotherapists with regards to EBP. Therefore we aimed to systematically review the evidence on EBP knowledge, skills, behaviour, opinions, and barriers faced by physiotherapists.

2. Methods

2.1. Search strategy

Systematic searches were conducted on the following electronic databases MEDLINE, EMBASE, CINAHL, PSYCINFO, LILACS, and SciELO including publications since the inception of these databases until 05th September 2014. These searches were adjusted to each of the databases used. Detailed search strategies used in each database are described in Appendix 1.

2.2. Inclusion and exclusion criteria

Studies were considered for inclusion if they met the following criteria: (1) quantitative cross-sectional studies, (2) studies that investigated EBP characteristics by physiotherapy graduates (regardless of degree) who are working in the field and (3) studies that investigated EBP knowledge, skills, behaviour, opinions, and barriers in physiotherapy.

2.3. Study selection

The study selection process included: (1) analysis and selection by screening the titles; (2) analysis and selection by reading the abstracts, and (3) analysis and selection by reading the full texts. Potentially eligible studies were also searched by reading the references lists of eligible article. If an eligible study was published in a language different than English, Portuguese and Spanish, all possible attempts were taken to translate it. The data were extracted by two independent reviewers and, in case of disagreement; consensus was reached by discussion between the reviewers or by arbitration by a third reviewer.

2.4. Data extraction

A data-extraction form based on similar studies (Dijk et al., 2010; Ubbink et al., 2013) was designed for recording information on: (1) year of publication, (2) country of origin, (3) source of sample, (4) number of participants, (5) the aspects of EBP that were analysed, including knowledge, skills, behaviour, opinions, and barriers. The data were extracted by two independent reviewers and, in case of disagreement; consensus was reached by discussion between the reviewers or by arbitration by a third reviewer. The authors were contacted by email in order to obtain any additional information that might not be reported in the original articles.

2.5. Risk of bias

Risk of bias was assessed using the criteria developed by Ferreira (Ferreira et al., 2010) and Leboeuf-Yde and Lauritsen (1995). These criteria described the representativeness of the sample (measured by 2 items), the response rate, the accuracy of the data, evidence of power calculation and the instrument used. Some of these criteria have been adapted for our study and are described in Appendix 2. Each study received a score as risk of their bias, expressing the number of criteria met on a 6-point scale, higher scores being representing low risk of bias (Leboeuf-Yde and Lauritsen, 1995; Ferreira et al., 2010). The risk of bias was rated by two independent reviewers and, in case of disagreement; consensus was reached by discussion or by arbitration by a third reviewer.

2.6. Data analysis

We considered as outcomes: EBP knowledge, skills, behaviour, opinions, and barriers in physiotherapy. We defined the outcomes of our review as follows:

Knowledge: “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject”; (University, 2013)

Skill: “the ability to do something well; expertise, a particular ability”; (University, 2013)

Behaviour: “the way in which one acts or conducts oneself, especially towards others, behaviour patterns”; (University, 2013)

Opinion: “a view or judgement formed about something, not necessarily based on fact or knowledge, the beliefs or views of a group or majority of people”; (University, 2013)

Barrier: “a circumstance or obstacle that keeps people or things apart or prevents communication or progress” (University, 2013).

It was not possible to perform a meta-analysis of the studies included in the review due to the large heterogeneity among the studies. This heterogeneity is largely related to different data collection methods, different measurement instruments used, and different response options used on each instrument. Therefore, our results were reported descriptively. Although our data precluded the use of a meta-analysis approach, we aggregated the response options by presenting the range of responses (minimum and maximum) for each characteristic analysed.

3. Results

3.1. Study inclusion

The search yielded 12,392 potentially eligible studies, of which 12,313 were excluded after the titles and abstracts were read. Moreover, a total of 20 studies were excluded after we have read the full-text. One abstract was considered potentially eligible but

was not included in the analysis because a full text could not be obtained (Hamzat and Amusat, 2002). No additional studies were found in the references of the selected studies. The entire process of eligibility assessment is described in Fig. 1.

3.2. Characteristics of the studies

Twelve studies were included in the analysis (total sample = 6411 participants; mean = 534 participants per study). The studies were conducted in 9 different countries from 5 different continents. The participants were recruited from different sources, such as registration boards (Grimmer-Somers et al., 2007; Salbach et al., 2007, 2009; Nilsagård Ylva, 2010), associations (Jette et al., 2003; Buchard, 2009), hospitals (Iles and Davidson, 2006; Gorgon et al., 2013; Queiroz and Santos, 2013; Bernhardsson et al., 2014) or clinics (Queiroz and Santos, 2013; Bernhardsson et al., 2014) and university (Scholten-Peeters et al., 2013). Table 1 summarises the characteristics of the studies. The results of two articles (Salbach et al., 2007, 2009) were reported together as they came from the same study. We contact eight authors by email to ask additional information during the extraction process (Jette et al., 2003; Iles and Davidson, 2006; Bauer et al., 2007; Buchard, 2009; Salbach et al., 2009; Nilsagård Ylva, 2010; Queiroz and Santos, 2013; Bernhardsson et al., 2014), and got information from 5 of them (Grimmer-Somers et al., 2007; Salbach et al., 2007; Nilsagård Ylva, 2010; Gorgon et al., 2013; Bernhardsson et al., 2014). The aspects of EBP described by each study are found in the Appendix 3.

A total of six studies (Jette et al., 2003; Iles and Davidson, 2006; Salbach et al., 2007, 2009; Nilsagård Ylva, 2010; Gorgon et al., 2013) were based on the questionnaire developed by McColl (McColl et al., 1998), which measures the EBP knowledge, behaviour,

opinions, and barriers of general practitioners. Data collection was conducted in different ways, including:

- Emails (Jette et al., 2003; Salbach et al., 2007, 2009; Nilsagård Ylva, 2010; Gorgon et al., 2013; Queiroz and Santos, 2013; Scholten-Peeters et al., 2013; Bernhardsson et al., 2014);
- Telephone calls (Iles and Davidson, 2006; Gorgon et al., 2013);
- Letters delivered in person (Iles and Davidson, 2006; Gorgon et al., 2013);
- Letters delivered by post services (Iles and Davidson, 2006; Grimmer-Somers et al., 2007; Buchard, 2009; Gorgon et al., 2013);
- and internet (Grimmer-Somers et al., 2007).

The studies obtained responses from 39 (Bauer et al., 2007) to 833 (Nilsagård Ylva, 2010) participants. The response rates ranged from 20% (Scholten-Peeters et al., 2013) to 81% (Salbach et al., 2007, 2009; Gorgon et al., 2013).

3.3. Risk of bias of included studies

The total score ranged from 2 to 5 points (on a scale ranging from 0 to 6, median score = 3 points; mean score = 3.4 points; Standard deviation (SD) = 0.64), reflecting moderate risk of bias. The items most frequently satisfied were the description of the sample, response rate, and data primarily collected to describe knowledge, skills, behaviour, opinions and barriers in EBP. The items less frequently satisfied were about the non-responders, failure to validate the questionnaire used and description of power calculation. The results of the risk of bias are shown in Table 2.

3.4. EBP knowledge

Ten studies (Jette et al., 2003; Iles and Davidson, 2006; Bauer et al., 2007; Salbach et al., 2007; Buchard, 2009; Nilsagård Ylva, 2010; Gorgon et al., 2013; Queiroz and Santos, 2013; Scholten-Peeters et al., 2013; Bernhardsson et al., 2014) reported information on EBP knowledge. In three studies between 21% (Nilsagård Ylva, 2010) and 82% (Jette et al., 2003) of the respondents reported having previous knowledge on EBP. In 2 studies, 47% (Salbach et al., 2007) and 70% (Jette et al., 2003) of the sample reported having learned how to perform a search in databases, and 59% (Iles and Davidson, 2006) and 70% (Nilsagård Ylva, 2010) reported they knew how to formulate a clinical question. In three studies, between 27.3% (Buchard, 2009) and 84% (Gorgon et al., 2013) reported they performed searches in databases, and 48% (Gorgon et al., 2013), 67% (Jette et al., 2003) and 70% (Nilsagård Ylva, 2010) of the sample reported having critical appraisal skills. Table 3 illustrates the data most frequently reported with regards to aspects of EBP, and Appendix 2 presents all of the aspects included in each study.

3.5. EBP skills and behaviour

Ten studies analysed skills or behaviour (Jette et al., 2003; Iles and Davidson, 2006; Bauer et al., 2007; Buchard, 2009; Salbach et al., 2009; Nilsagård Ylva, 2010; Gorgon et al., 2013; Queiroz and Santos, 2013; Scholten-Peeters et al., 2013; Bernhardsson et al., 2014). In 4 studies, 8% (Nilsagård Ylva, 2010), 16% (Gorgon et al., 2013), and 32.8% (Salbach et al., 2009) of the participants reported that they use databases sometimes in a typical week and 20% (Nilsagård Ylva, 2010), 62.3% (Salbach et al., 2009), and 65% (Jette et al., 2003) use monthly. In two studies, nearly half of the sample had used Cochrane, CINAHL or PEDro – 47% (Gorgon et al., 2013) and 10.6% had used PEDro, 15.3% Cochrane and 26.6% CINAHL (Iles and Davidson, 2006). In 4 studies, 15% (Nilsagård Ylva, 2010), 56% (Salbach et al., 2009), and 66% (Jette et al., 2003) of the

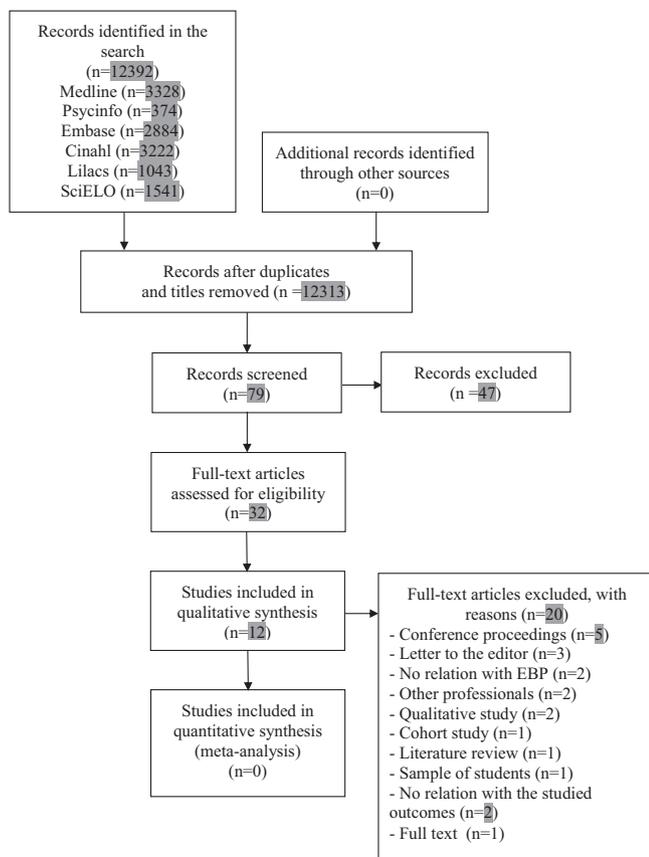


Fig. 1. Selection process for the studies included in the analysis.

Table 1
Description of studies included in the analysis.

Author (year)	Country of origin	Sample	Number of participants (responded-response rate)	Aspects of EBP
Bauer (2007) (Bauer et al., 2007)	Germany	Not reported	149 (39–26.2%)	Knowledge, use of EBP, interest and importance of EBP.
Bernhardsson (2014) (Bernhardsson et al., 2014)	Sweden	Physical therapists employed in primary care by the Region Vastra Gotaland.	419 (271–64.7%)	Attitudes, knowledge, behaviour, prerequisites, and barriers related to EBP.
Buchard (2009) (Buchard, 2009)	France	Physical therapists working in public and private settings recruited from the Physiotherapy Association of Valais, a health network, and a local clinic.	194 (98–50.5%)	Behaviour, attention to scientific literature, knowledge, skills, and barriers.
Gorgon (2013) (Gorgon et al., 2013)	Philippines	Physical therapists of school hospitals in Manila.	188 (152–81%)	Behaviour, specific sources of evidence, personal barriers and barriers at work.
Grimmer-Somers (2007) (Grimmer-Somers et al., 2007)	Australia	Physical therapists working in South Australia.	335 (171–51%)	Perspectives of barriers and facilitators in EBP.
Iles (2006) (Iles and Davidson, 2006)	Australia	Physical therapists from four hospitals and clinics in Melbourne.	230 (124–53.9%)	Current practice, skills and knowledge in EBP.
Jette (2003) (Jette et al., 2003)	USA	Physical therapists affiliated with the American Physical Therapy Association.	1000 (488–48.8%)	Opinions and beliefs; education, knowledge and skills; attention to the literature; access to the literature; barriers.
Nilsagard (2010) (Nilsagård Ylva, 2010)	Sweden	Swedish physical therapists.	1848 (833–45%)	Knowledge, opinions, behaviour, and pre-requisites in EBP.
Queiroz (2013) (Queiroz and Santos, 2013)	Brazil	Physiotherapists from Florianopolis.	Not given (67-not given)	Facilities and skills in EBP.
Salbach (2007) (Salbach et al., 2007, 2009)	Canada	Physical therapists working in Ontario and recruited from health centres for patients with stroke.	334 (270–80.8%)	Education, opinions and beliefs, interest, perceived role, self-efficacy, support at work and from peers, resources, and barriers.
Scholten-Peeters (2011) (Scholten-Peeters et al., 2013)	Netherlands	Second and fourth year students, lecturers, and supervisors of the University of Applied Sciences in Breda and physical therapists who work in the vicinity.	814 (165–20.2%)	Awareness, knowledge and skills, opinions and supporting factors in adopting EBP.

respondents reported reading scientific articles sometimes in a typical week and 10% (Gorgon et al., 2013), 17% (Jette et al., 2003), 26.7% (Salbach et al., 2009), and 40% (Nilsagård Ylva, 2010) monthly. Two studies reported that 25.8% (Iles and Davidson, 2006) and 86% (Nilsagård Ylva, 2010) use guidelines in clinical practice. In other four studies, 23.9% (Queiroz and Santos, 2013), 48% (Nilsagård Ylva, 2010), 62% (Bernhardsson et al., 2014) and 67% (Jette et al., 2003) claimed to have support from work to use EBP.

3.6. EBP opinions

Seven studies reported information on EBP opinions (Jette et al., 2003; Bauer et al., 2007; Grimmer-Somers et al., 2007; Salbach et al., 2007; Buchard, 2009; Queiroz and Santos, 2013; Bernhardsson et al., 2014). In 6 studies, 48% (Queiroz and Santos, 2013), 69.2% (Bauer et al., 2007; Queiroz and Santos, 2013; Bernhardsson et al., 2014), 80% (Buchard, 2009), 90% (Jette et al., 2003; Bernhardsson et al., 2014), and 93.2% (Salbach et al., 2007) of the sample considered EBP

necessary or important and 78.1% (Salbach et al., 2007), 82% (Jette et al., 2003), and 90.3% (Grimmer-Somers et al., 2007) believed that scientific literature is important to clinical practice. Additionally, 51.4% (Buchard, 2009), 79% (Jette et al., 2003), and 84% (Salbach et al., 2007) believed that EBP improves the quality of care, and between 66% (Queiroz and Santos, 2013) and 83% (Bernhardsson et al., 2014) of the sample from four studies believed that scientific evidence helps in making clinical decisions. In 3 studies, 70% (Buchard, 2009), 85% (Jette et al., 2003), and 90.2% (Salbach et al., 2007) of the respondents reported interest in learning more about EBP.

3.7. EBP barriers

The most frequently reported barriers were: lack of time varying from 31.2% (Grimmer-Somers et al., 2007) to 93.8% (Buchard, 2009) of respondents, inability to understand statistical data 30.4% (Salbach et al., 2007) to 54.3% (Grimmer-Somers et al., 2007), lack of support from employer – 6.7% (Grimmer-Somers et al., 2007) to

Table 2
Risk of bias assessment of the include studies.

Author	Description of the sample	Non-responders	Response rate	Data collection	Questionnaire validated	Power calculation	Total score (0–6)
Bauer (2007) (Bauer et al., 2007)	+	–	+	+	–	–	3
Bernhardsson (2014) (Bernhardsson et al., 2014)	+	–	+	+	–	–	3
Buchard (2009) (Buchard, 2009)	+	–	+	+	–	–	3
Gorgon (2013) (Gorgon et al., 2013)	+	–	+	+	–	–	3
Grimmer-Somers (2007) (Grimmer-Somers et al., 2007)	+	+	+	+	–	+	5
Iles (2006) (Iles and Davidson, 2006)	+	–	+	+	–	–	3
Jette (2003) (Jette et al., 2003)	+	–	+	+	+	–	4
Nilsagard (2010) (Nilsagård Ylva, 2010)	+	–	+	+	–	–	3
Salbach (2007) (Salbach et al., 2007)	+	+	+	+	–	–	4
Queiroz (2013) (Queiroz and Santos, 2013)	+	–	–	+	–	–	2
Salbach (2009) (Salbach et al., 2009)	+	–	+	+	–	–	3
Scholten-Peeters (2011) (Scholten-Peeters et al., 2013)	+	–	+	+	–	–	3

+ Item scored, – item not scored.

Table 3

Description of the characteristics most often reported in the studies.

	% (min–max)
Knowledge	
Received information on EBP (Jette et al., 2003; Salbach et al., 2009; Nilsagård Ylva, 2010)	21–82
Learned to do a database search (Jette et al., 2003; Salbach et al., 2009)	47–70
Can formulate a clinical question (Iles and Davidson, 2006; Nilsagård Ylva, 2010)	59–70
Can perform a database search (Buchard, 2009; Gorgon et al., 2013)	27.3–84
Can critically appraise a study (Jette et al., 2003; Nilsagård Ylva, 2010; Gorgon et al., 2013)	48–70
Skills and behaviour	
Use databases sometimes in a typical week (Salbach et al., 2009; Nilsagård Ylva, 2010; Gorgon et al., 2013)	8–32.8
Have used Medline, CINAHL or PEDro (Iles and Davidson, 2006; Gorgon et al., 2013)	47–64.5
Read articles weekly (Jette et al., 2003; Salbach et al., 2009; Nilsagård Ylva, 2010; Gorgon et al., 2013)	15–66
Critically appraise articles (Iles and Davidson, 2006; Nilsagård Ylva, 2010)	25.8–66
Have support from work to use EBP (Jette et al., 2003; Nilsagård Ylva, 2010; Queiroz and Santos, 2013; Bernhardsson et al., 2014)	23.9–67
Opinions	
Believe EBP is necessary or important (Jette et al., 2003; Bauer et al., 2007; Buchard, 2009; Salbach et al., 2009; Queiroz and Santos, 2013; Bernhardsson et al., 2014)	48–93.2
Believe that scientific literature is important to practice (Jette et al., 2003; Grimmer-Somers et al., 2007; Salbach et al., 2009)	78.1–90.3
Believe that EBP improves quality of care (Jette et al., 2003; Buchard, 2009; Salbach et al., 2009)	51.4–84
Believe that evidence aids decision-making (Salbach et al., 2007; Buchard, 2009; Queiroz and Santos, 2013; Bernhardsson et al., 2014)	66–83
Show interest in gaining more EBP knowledge (Jette et al., 2003; Buchard, 2009; Salbach et al., 2009)	70–90.2
Barriers	
Lack of time (Jette et al., 2003; Iles and Davidson, 2006; Grimmer-Somers et al., 2007; Buchard, 2009; Salbach et al., 2009; Nilsagård Ylva, 2010; Gorgon et al., 2013; Queiroz and Santos, 2013; Bernhardsson et al., 2014)	31.2–93.8
Inability to understand statistical data (Jette et al., 2003; Grimmer-Somers et al., 2007; Salbach et al., 2007; Gorgon et al., 2013)	30.4–54.3
Lack of support from employer (Grimmer-Somers et al., 2007; Salbach et al., 2007; Nilsagård Ylva, 2010; Gorgon et al., 2013)	6.7–56
Lack of resources (Iles and Davidson, 2006; Grimmer-Somers et al., 2007; Salbach et al., 2007; Nilsagård Ylva, 2010; Gorgon et al., 2013; Queiroz and Santos, 2013)	15.6–53
Lack of generalisation of results (Jette et al., 2003; Grimmer-Somers et al., 2007; Salbach et al., 2007; Gorgon et al., 2013; Queiroz and Santos, 2013)	16.3–33.7

56% (Gorgon et al., 2013), lack of resources (computer and internet access) – 15.6% (Salbach et al., 2007) to 53% (Gorgon et al., 2013), colleagues not favourable to EBP implementation – 3.7% (Salbach et al., 2007) to 42% (Nilsagård Ylva, 2010), lack of interest – 3.3% (Salbach et al., 2007) to 36% (Nilsagård Ylva, 2010) and lack of generalisation of results – 20% (Grimmer-Somers et al., 2007) to 33.7% (Salbach et al., 2007).

4. Discussion

Evidence-Based Physiotherapy has been increasingly discussed and disseminated over the last few years. This review shows that only 21% (Nilsagård Ylva, 2010) and 82%, (Jette et al., 2003) of professionals had received a formal training on EBP. The data related to skills and behaviour show a rate of use sometimes in a typical week of databases ranging between 8% (Nilsagård Ylva, 2010) and 32.8% (Salbach et al., 2009) and a rate of monthly use between 20% (Nilsagård Ylva, 2010) and 65% (Jette et al., 2003). Nearly half of the professionals had used databases to aid in clinical decision-making (Iles and Davidson, 2006; Gorgon et al., 2013). The data related to opinions about EBP shows that part of the professionals seems to be favourable with the implementation of EBP, considering that the majority of them believe that scientific evidence is an important component to be considered in clinical practice. The barriers reported by the studies were often related to lack of time, inability to understand statistical data, lack of support from employer, lack of resources, colleagues who are not favourable to EBP implementation, lack of interest, and lack of generalisation of results.

Comparing the characteristics among different countries, it was not possible to observe a clear pattern of knowledge or skills. In a study conducted in the USA (Jette et al., 2003) 82% of physiotherapists received some information or prior training in EBP, 67% believed to have skills to perform a search strategy for articles, and

66% read 2–5 articles in a typical month. In a study conducted in Australia (Iles and Davidson, 2006), 80% assumed to have a lack of knowledge in EBP, however, 59% stated that they were able to formulate clinical questions often and 69% read articles regularly. Paradoxically, in a German study (Bauer et al., 2007), only 30.8% of physiotherapists reported having received prior information about EBP and 41% claimed to use scientific evidence in their daily practice. Also, a French study (Buchard, 2009), found that 74.6% of physiotherapists reported to have no knowledge in EBP, 71.6% have difficulty applying the information of scientific articles in clinical practice, and 79.1% considered to have little ability to access articles. These findings from studies conducted in Germany and France can be explained because physiotherapists from these countries did not receive their training at a university level.

We observed some inconsistencies about EBP over time. In 2003 (Jette et al., 2003) 82% of respondents agreed that they had received information on the principles about EBP, 65% said they had research skills and 55% felt confident regarding these skills. In 2006 (Iles and Davidson, 2006), 80% of respondents agreed that there were gaps in EBP knowledge, in 2007 (Bauer et al., 2007) 48.7% did not know the concept of EBP and 41% do not work based on evidence. In 2009 (Buchard, 2009) 74.6% believed they did not have full knowledge of the main sources of information in research, but 58.6% based their clinical reasoning on EBP. In 2010 (Nilsagård Ylva, 2010) nearly 70% reported good ability to formulate a clinical question and critically appraise scientific literature, but only 21% reported that they have received education in EBP. In 2011 (Scholten-Peeters et al., 2013), 46.3% of physiotherapists rated their EBP knowledge as average, and in 2013 (Queiroz and Santos, 2013) 59.7% of the participants were confident to critically appraise scientific articles, approximately 75% confirmed having knowledge about EBP and 50% agreed that they have learned the foundations of EBP. Finally in 2014 (Bernhardsson et al., 2014) 62% of the respondents agreed or

strongly agreed that they felt confident in their ability to find relevant research for their clinical questions. In conclusion, there is no clear pattern of improvement knowledge about EBP over time.

In addition, although the lack of time was considered the most important barrier in the studies included, there are some considerable barriers reported related to the workplace like no access to scientific literature at work (Gorgon et al., 2013), no policies at work to stimulate the use of evidence (Gorgon et al., 2013), lack of training at work to use the evidence (Gorgon et al., 2013), inability to make changes in the workplace (Iles and Davidson, 2006), and employers' lack of interest (Nilsagård Ylva, 2010). There were some barriers related to specific skills such as lack of skills in searching for evidence (Jette et al., 2003; Iles and Davidson, 2006; Gorgon et al., 2013), lack of skills to critically appraise an article (Grimmer-Somers et al., 2007; Salbach et al., 2007; Gorgon et al., 2013), and lack of skills for statistical interpretation (Jette et al., 2003; Grimmer-Somers et al., 2007; Salbach et al., 2007; Gorgon et al., 2013). Besides, there are some barriers related to lack of resources to perform a search strategy (Gorgon et al., 2013), lack of access to computers (Iles and Davidson, 2006), lack of technological equipment (Nilsagård Ylva, 2010), and other related to lack of generalisation of the data for the patient (Jette et al., 2003; Salbach et al., 2007; Queiroz and Santos, 2013). Most of these barriers can be overtaken with training as well as by promoting workplace changes with regard to a better use of EBP.

Some studies in other health professions point out similar difficulties about knowledge (Hadley et al., 2008; Ubbink et al., 2013) and skills (Ubbink et al., 2013), report that the professionals agreed that EBP is important to optimise treatment (Hadley et al., 2008; Ubbink et al., 2013) and that EBP is essential to clinical practice (Hadley et al., 2008). Other studies (Dijk et al., 2010; Zwolsman et al., 2012) with medical students and general practitioners corroborate some of our findings about barriers that also identified lack of time as the main barrier (Dijk et al., 2010; Zwolsman et al., 2012), in addition to factors related to knowledge and skills (Dijk et al., 2010; Zwolsman et al., 2012), factors associated with the profession (Dijk et al., 2010), and attitudes such as lack of motivation or lack of support from colleagues (Dijk et al., 2010), problems with conflicting evidence (Zwolsman et al., 2012), lack of access (Zwolsman et al., 2012) and patient-related barriers (Zwolsman et al., 2012).

4.1. Limitations

This systematic review included all studies about the main characteristics that might influence the use of evidence-based physiotherapy. For this review, a sensitive search was performed in the main databases over a wide period of time, and all efforts were made to read and extract the data of all potentially eligible studies and for translation the studies that were reported in another language. Also, all data were presented using frequency analysis, to show clearly the points of view of the professionals. However, it was not possible to find one potentially eligible article in full (Hamzat and Amusat, 2002), which may have biased our estimates.

Besides, we consider that some of the response options to the questions used in the included papers were quite vague (e.g. having critical appraisal skills – different people will interpret what this means differently and have different levels of skill, but these differences cannot be ascertained from the data). Similarly, the question responses around using databases and reading scientific articles 'sometimes in a typical week' or 'monthly' – there is likely to be large variation in these.

4.2. Implications for future studies

The study shows many difficulties about the implementation of evidence-based physiotherapy mostly related with lack of

knowledge and skills. Lack of support from the employer or the colleges, and limitations related with the profession as lack of time, or lack of autonomy were cited as major barriers for implementing EBP in real life. Nevertheless, our study can be used for rethinking about academic, work, councils, or association initiatives to encourage the access, understanding and use of research in the practice.

Although evidence-based physiotherapy have been increasingly recognised and used, the profession does not seem to follow such development. Our review shows many difficulties that professionals have about knowledge, skills, behaviour and barriers the implementation of EBP. However, the original studies do not explain likely explanations for these limitations and do not suggest any interventions for improving these problems. It is clear that more information is needed for a better understanding about EBP.

5. Conclusion

Physiotherapists need to improve their knowledge, skills and behaviour towards EBP, however, they have a positive opinion of EBP. Additionally, the main barriers that hinder the implementation of EBP in physiotherapy are lack of time, inability to understand statistical data, lack of support from employer, lack of resources, lack of support from colleagues for EBP implementation, lack of interest, and lack of generalisation of results.

Acknowledgements

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Appendix 1

Description of the search strategies used in each database

Medline

1. evidence-based.mp.
2. evidence-based medicine.mp.
3. evidence-based practice.mp.
4. evidence-based clinical practice.mp.
5. evidence-based treatment.mp.
6. evidence-based management.mp.
7. evidence based.mp.
8. evidence based medicine.mp.
9. evidence based practice.mp.
10. evidence based clinical practice.mp.
11. evidence based treatment.mp.
12. evidence based management.mp.
13. research.mp.
14. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13
15. attitude*.mp.
16. behavior*.mp.
17. self-efficacy.mp.
18. self efficacy.mp.
19. knowledge*.mp.
20. perception*.mp.
21. research.mp.
22. barrier*.mp.
23. skill*.mp.
24. intention.mp.
25. belief*.mp.
26. self-reported practice.mp.
27. education.mp.
28. interest.mp.

29. resource*.mp.
30. opinion*.mp.
31. research characteristic*.mp.
32. participation.mp.
33. abilit*.mp.
34. implement*.mp.
35. access.mp.
36. problem*.mp.
37. 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36
38. physical therapist*.mp.
39. physiotherapist*.mp.
40. 38 or 39
41. 14 and 37 and 40

Embase

- #1'evidence based'/de AND [embase]/lim
- #2evidence AND based AND 'medicine'/de AND [embase]/lim
- #3evidence AND based AND practice AND [embase]/lim
- #4evidence AND based AND clinical AND practice AND [embase]/lim
- #5evidence AND based AND treatment AND [embase]/lim
- #6evidence AND based AND 'management'/de AND [embase]/lim
- #7'research'/de AND [embase]/lim
- #8#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7
- #9attitude* AND [embase]/lim
- #10behavior* AND [embase]/lim
- #11'self efficacy'/de AND [embase]/lim
- #12knowledge* AND [embase]/lim
- #13perception* AND [embase]/lim
- #14'research'/de AND [embase]/lim
- #15barrier* AND [embase]/lim
- #16skill* AND [embase]/lim
- #17'intention'/de AND [embase]/lim
- #18belief* AND [embase]/lim
- #19'self'/de AND reported AND practice AND [embase]/lim
- #20'education'/de AND [embase]/lim
- #21interest AND [embase]/lim
- #22resource* AND [embase]/lim
- #23opinion* AND [embase]/lim
- #24'research'/de AND characteristic* AND [embase]/lim
- #25participation AND [embase]/lim
- #26abilit* AND [embase]/lim
- #27implement* AND [embase]/lim
- #28access AND [embase]/lim
- #29problem* AND [embase]/lim
- #30#9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29
- #31physical AND therapist* AND [embase]/lim
- #32physiotherapist* AND [embase]/lim
- #33#31 OR #32
- #34#8 AND #30 AND #33

Cinahl

- S1 evidence-based
- S2 evidence-based medicine
- S3 evidence-based practice
- S4 evidence-based clinical practice
- S5 evidence-based treatment

- S6 evidence based
- S7 evidence-based management
- S8 evidence based medicine
- S9 evidence based practice
- S10 evidence based clinical practice
- S11 evidence based treatment
- S12 evidence based management S13 research
- S14 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13
- S15 attitude*
- S16 behavior*
- S17 self-efficacy
- S18 self efficacy
- S19 knowledge*
- S20 perception*
- S21 research
- S22 skill*
- S23 intention
- S24 barrier*
- S25 belief*
- S26 self-reported practice
- S27 education
- S28 interest
- S29 resource*
- S30 opinion*
- S31 research characteristic*
- S32 participation
- S33 abilit*
- S34 implement*
- S35 problem*
- S36 access
- S37 S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36
- S38 physical therapist*
- S39 physiotherapist*
- S40 S38 OR S39
- S41 S14 AND S37 AND S40

Psycinfo

1. evidence-based.mp.
2. evidence-based medicine.mp.
3. evidence-based practice.mp.
4. evidence-based clinical practice.mp.
5. evidence-based treatment.mp.
6. evidence-based management.mp.
7. evidence based.mp.
8. evidence based medicine.mp.
9. evidence based practice.mp.
10. evidence based clinical practice.mp.
11. evidence based treatment.mp.
12. evidence based management.mp.
13. research.mp.
14. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13
15. attitude*.mp.
16. behavior*.mp.
17. self-efficacy.mp.
18. self efficacy.mp.
19. knowledge*.mp.
20. perception*.mp.
21. research.mp.
22. barrier*.mp.
23. skill*.mp.
24. intention.mp.

25. belief*.mp.
26. self-reported practice.mp.
27. education.mp.
28. interest.mp.
29. resource*.mp.
30. opinion*.mp.
31. research characteristic*.mp.
32. participation.mp.
33. abilit*.mp.
34. implement*.mp.
35. access.mp.
36. problem*.mp.
37. 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36
38. physical therapist*.mp.
39. physiotherapist*.mp.
40. 38 or 39
41. 14 and 37 and 40

Lilacs

(evidence-based* OR evidence based*) AND (attitude* OR behavior* OR "self-efficacy" OR "self-efficacy" OR knowledge* OR perception* OR research OR barrier* OR skill* OR intention OR belief* OR "self-reported practice" OR education OR interest OR resources OR opinion* OR "research characteristic*" OR participation OR abilit* OR implementation OR implementing OR access OR problem*) AND (physical therapy OR physiotherapy)

Scielo

(evidence-based* OR evidence based*) AND (attitude* OR behavior* OR "self-efficacy" OR "self-efficacy" OR knowledge* OR perception* OR research OR barrier* OR skill* OR intention OR belief* OR "self-reported practice" OR education OR interest OR resources OR opinion* OR "research characteristic*" OR participation OR abilit* OR implementation OR implementing OR access OR problem*) AND (physical therapy OR physiotherapy)

Appendix 2

Definition of methodological quality criteria

Representative sample

- A – At least one of the following: whole target population, randomly selected sample, or sample stated to represent the population;
- B – At least one of the following: reasons for non-response described, non-responders described, comparison of responders and non-responders or comparison of sample and target population given;
- C – Response rate and, if applicable, drop-out rate reported;

Quality of data

- D – Data primarily collected to describe knowledge, skills and behavior, opinions and barriers in EBP;
- E – At least one questionnaire to identify describe knowledge, skills and behavior, opinions and barriers in EBP has been validated;
- F – Power calculation presented.

Appendix 3

Description of the characteristics related to knowledge, skills, attitudes, opinions, and barriers reported by each study.

Author/country (year)	Knowledge	Skills and behaviour	Opinions	EBP barriers
Bauer/Germany (2007)	<ul style="list-style-type: none"> ● 51.3% Knew the concept of EBP and 48.7% did not know, ● 30.8% of Physiotherapists did not receive information on PBE. 	<ul style="list-style-type: none"> ● 41% Do not work based on evidence and 28.2% work-based evidence, ● 28.2% Always or frequently use the evidence to help the clinical decision making, ● 20.5% Never use the evidence to help the clinical decision making. 	<ul style="list-style-type: none"> ● 64.1% Has interest in EBP, ● 69.2% Believe that EBP is important. 	<ul style="list-style-type: none"> ● Not reported
Bernhardsson/Sweden (2014)	<ul style="list-style-type: none"> ● 21% Agreed or strongly agreed that they wanted to learn or improve the skills necessary to apply EBP in their practice, ● 62% of the Respondents agreed or strongly agreed that they felt confident in their ability to find relevant research for their clinical questions, ● 69% Reported that they felt confident about treating 	<ul style="list-style-type: none"> ● 44% of the Respondents reported reading fewer than 2 articles in an average month; ● 46% Reported reading 2–5 articles per month, and 10% reported reading more than 5 articles per month; ● 71% of the Respondents reported performing fewer than 2 database searches on average per month; 23% reported performing database searches 2–5 	<ul style="list-style-type: none"> ● 90% of the Respondents agreed or strongly agreed that EBP is necessary to practice and 83% of them think that it helps in decision making, ● 56% of the Respondents disagreed or strongly disagreed that EBP creates unreasonable demands on them, ● 55% Believe that strong evidence was lacking for most interventions used in their clinical practice. 	<ul style="list-style-type: none"> ● Lack of time (68%), ● Don't know where to find guidelines (45%), ● Guidelines are too general/unspecific (40%), ● Guidelines take too long to read (38%), ● No/too few guidelines exist (32%), ● Guidelines are too much "recipe" (20%), ● Lack of support from colleagues (4%), ● Lack of interest (4%), ● Other (10%).

	<p>patients according to current best evidence,</p> <ul style="list-style-type: none"> ● 62% Stated that they agreed or strongly agreed that the use of research was encouraged at their place of work, ● 48% Agreed or strongly agreed that they knew how to access online databases through the electronic library. 	<p>times per month, and 6% reported performing database searches more than 5 times per month.</p>		
Buchard/France (2009)	<ul style="list-style-type: none"> ● 62.1% Believed that they are able to identify gaps in EBP knowledge, ● 74.6% Believed they did not have full knowledge of the main sources of information in research, ● 71.2% Had difficulty identifying the validity of study results, ● 71.6% Had difficulty applying the information to clinical practice. 	<ul style="list-style-type: none"> ● 89.2% Believed they had the skills to access the Cochrane library, 87.9% PEDro, 72.7% Medline. ● 79.1% Believed they had little skills in accessing articles and 78.1% believed they had little skills in research. ● 58.6% Based their clinical reasoning on EBP and 51.4% attributed the choice of interventions in clinical practice to scientific evidence. 	<ul style="list-style-type: none"> ● 57.1% Considered the use of EBP reasonable, 80% considered it necessary, and 81.4% considered it useful in clinical practice, ● 60% Were willing to apply EBP more often and 70% were interested in improving EBP skills, ● 51.4% Believed that the use of EBP improves quality of care, ● 54.3% Believed that EBP does not take workplace limitations into account and 44.3% believed that it does not take the patient's preferences and expectations into account, ● 38.6% Agreed that only interventions based on evidence should be paid. ● The respondents agreed that there is a need to use and recognise evidence in clinical practice and to develop EBP skills. 	<ul style="list-style-type: none"> ● Lack of time (93.8%), ● No access to full articles (76.2%), ● No access to abstracts (65.6%), ● Few articles on their field of clinical practice (73.8%), ● Resistance to change, ● Poor English skills, ● Lack of personal skills.
Gorgon/Philippines (2012)	<ul style="list-style-type: none"> ● More than half agreed that they learned the fundamentals of EBP at undergraduate level, with training on the use of databases. 	<ul style="list-style-type: none"> ● Many were confident of their skill to search for scientific studies and 84% said they had the skill to access databases, ● 85% Were aware that there is scientific evidence available online, ● 47% Were familiar with simple searches on health databases (Medline, Pubmed, CINAHL, PEDro), ● 48% Were confident of their critical appraisal skills, ● Less than 50% used research evidence regularly and 35–47% occasionally, ● In a specific month, 16% performed searches, 10% read scientific articles, 13% appraised studies, and 18% applied the evidence to specific treatments of patients. 		<ul style="list-style-type: none"> ● Lack of time (84%), ● Lack of time at work to search and assess the evidence (72%), ● No access to scientific literature at work (60%), ● No policies at work to stimulate the use of evidence (56%), ● Lack of resources to perform a search (53%), ● Lack of training at work to use the evidence (52%), ● Lack of skills to critically appraise an article (45%), ● Lack of access to evidence in research (43%), ● Lack of skills for statistical interpretation (43%), ● Lack of authority in patient's decision-making (41%), ● Lack of skills in searching for evidence (40%), ● Lack of skills in interpreting study results (36%), ● Lack of skills in applying the search results to patients (27%), ● Lack of support from colleagues at work (26%), ● Lack of generalisation of data (26%), ● Lack of interest (16%). ● The relevant literature is not concentrated in one place (57.2%),
Grimmer-Somers/Australia (2007)	<ul style="list-style-type: none"> ● Not reported 	<ul style="list-style-type: none"> ● Not reported 	<ul style="list-style-type: none"> ● 90.3% Reported that research is important to professional growth, 	

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(continued)

Author/country (year)	Knowledge	Skills and behaviour	Opinions	EBP barriers
			<ul style="list-style-type: none"> • 61.8% Reported that research is not a priority for them, • 41.8% Reported that treating patients is more important than conducting research, • 27.9% Reported that treating patients is more important than searching and reading studies, • 23% Reported that searching and reading studies are not high priorities for them, • 20% Are not interested in performing research, • 4.2% Have no interest in searching and reading about research evidence. 	<ul style="list-style-type: none"> • Large volume of research information (56.1%), • Inability to interpret statistical data (54.3%) • Inability to assess the quality of the research (42.9%), • Conflicting results in the literature (40%), • Implications of research are not clear for clinical practice (32.7%), • Lack of time for reading (31.2%), • Inadequate resources (27.6%), • Methodological deficiencies of the studies (27.3%), • Research not reported in a clear and legible manner (25.5%), • Lack of confidence in the results (25.5%), • Lack of discussion with colleagues on the research (24.9%), • Lack of authority to change the practice (21.2%), • Lack of articles available in full (20.7%), • Lack of generalisation of results (20%), • Lack of medical support with implementation of research findings (18.2%), • Non-replication of research (16.2%), • Lack of research knowledge (10.9%), • Non-relevance of research to practice (10.9%), • Lack of support from colleagues to implement research findings (9.8%), • Lack of support from employer to implement research findings (6.7%) • Conclusions of research are not justified (3.6%).
Iles/Australia (2006)	<ul style="list-style-type: none"> • 80% of Respondents agreed that there are gaps in EBP knowledge, • 59% Reported that they often formulate questions to improve knowledge. 	<ul style="list-style-type: none"> • 69% of Physiotherapists said they read scientific articles regularly, regardless of whether they answer a specific clinical question, • 10.6% Had searched in the PEDro database, 15.3% in Cochrane and Medline, and 26.6% in Cinahl. 	<ul style="list-style-type: none"> • Not reported 	<ul style="list-style-type: none"> • Lack of access to computers, • Inability to make changes in the workplace, • Lack of relevant research, • Lack of personal skills in search and assessment, • Lack of access to journals, • Incomprehensible abstracts, • Lack of time.
Jette/USA (2003)	<ul style="list-style-type: none"> • 82% of Respondents agreed that they had received information on the fundamentals of EBP, • 42% on Search strategies, • 70% on the Use of databases such as MEDLINE and CINAHL, • 67% on Critical appraisal of research, 	<ul style="list-style-type: none"> • 17% of Respondents said they read 2 articles a month, • 66% Read 2–5 articles a month, • 65% Performed less than 2 searches in databases in a given month, • 74% Claimed to use professional literature to make decisions up to 5 times a month, 	<ul style="list-style-type: none"> • 90% Agreed that EBP is necessary, • 82% That literature is useful for practice, • 79% That EBP improves the quality of patient care, • 72% That the evidence helps decision-making, • 61% Disagreed that the use of evidence imposes too many requirements on the workplace, 	<ul style="list-style-type: none"> • Lack of time (67%), • Lack of generalisation of the data for the patient (30%), • Patient peculiarities, • Inability to understand statistical data, • Lack of skills in searches, • Lack of means of information, • Lack of educational support, • Inability to critically appraise studies • Lack of interest (11%).

- 65% Said they had research skills and 55% felt confident regarding these skills.
 - 89% Used databases at home and 65% at work,
 - 96% Had access to specialised journals,
 - 67% Said that their workplace support the use of evidence in clinical practice.
 - 47% Were neutral on whether EBP takes into consideration the limitations of their practice at work,
 - 46% Were neutral on whether EBP increases refund rates,
 - 46% Take patient preferences into account,
 - 84% Agreed that they need to increase their use of evidence in clinical practice,
 - 85% Were interested in learning and improving the skills necessary to implement EBP.
 - 79.95% of Respondents believed that EBP improves the quality of care,
 - 60% Considered the interest of colleagues at work as an important alternative in EBP promotion, 56% government recommendations, 49% change in personal conduct, 18% EBP promotion based on patient request, and 20% based on the attitudes of health politicians,
 - 81% did not Believe that EBP generates conflicts with patient preferences.
 - Lack of time (86%),
 - Lack of advisors (80%),
 - Lack of knowledge (55%),
 - Employers' lack of interest (46%),
 - Lack of technological equipment (45%),
 - Lack of interest in EBP (36%),
 - Colleagues' lack of interest (42%),
 - Conflicts generated by EBP between patients and carers (19%).
- Nilsagard/Sweden (2010)
- The most common sources of EBP updates were: the literature (71%), courses (65%) and basic and continuous education (51%), Registration Association of Swedish Physiotherapists (39%), colleagues (38%) and opinion of specialists (6%),
 - 36% Correctly identified the EBP components,
 - Nearly 70% reported good ability to formulate a clinical question and critically appraise scientific literature,
 - 37% Believed they were able to search in databases,
 - The term "randomised controlled study" was understood by 98% of the respondents, "statistical significance" by 97%, "systematic review" (79%), "blinding" (78%), "number needed to treat" (61%), "intention to treat" (60%), "meta-analysis" (54%), "confidence interval" (52%), and "publication bias" (44%).
 - 8% of Professionals performed database searches weekly, 20%–50% used it a few times a month, and 23% never used them,
 - 15% Read scientific journals weekly, 40% monthly, and 44% a few times a year,
 - 47% Critically appraised the scientific literature frequently, 5% weekly, and 14% monthly,
 - 34% Had never conducted a critical appraisal,
 - 48% Received support at work to use the evidence, 35% had time to read at work, and 79% read the scientific literature at home,
 - 63% Had access to a health library and 53% used electronic databases,
 - 28% Received support from superiors to seek EBP education,
 - 84% Did not have access to a tutor,
 - 35% Assessed articles with their colleagues, 24% took part in guideline design, 26% adjusted guidelines to local conditions,
 - 21% Received education in EBP,
 - 86% Reported using evidence-based guidelines in clinical practice, 9% had not used them, 5% were not aware of them.
 - 77.6% Had no access to current research in printed scientific journals,
 - 49.3% Reported accessing databases,
 - 40.3% Said they almost always used the database as
 - 48% Agreed and 40% totally agreed that the implementation of EBP is required for practice of physical therapy,
 - About 56% showed neutral as the PBE does not take into account the
 - Lack of time (48.8%),
 - Lack of generalisability of the findings of the scientific literature for specific population (32.6%),
 - Lack of information sources (25.6%),
 - Inability to apply the results to individual patients (16.3%).
- Queiroz/Brazil (2013)
- 20.9% Disagreed and 25.4% totally disagreed that they have received formal training in search strategies to find relevant literature online,
 - 43.3% Agree and 19.4% totally agree that they have received

(continued on next page)

(continued)

Author/country (year)	Knowledge	Skills and behaviour	Opinions	EBP barriers
	<p>formal training in critical appraisal of scientific articles,</p> <ul style="list-style-type: none"> • 59.7% Was confident to critical analyse scientific articles, • 60% Agreed that they are interested in learning or improving skills required in PBE, • Approximately 75% confirmed having knowledge about EBP, • 50% Agreed that they have learned the foundations for EBP. 	<p>LILACS, SciELO, PEDro to search relevant scientific literature,</p> <ul style="list-style-type: none"> • 65.7% Said reading 2–5 scientific articles per month • 68% Said that they use EBP in their clinical practice, • 47.8% Showed neutral, 23.9% agreed and 16.4% totally agreed that they receive incentive of workplace to implement EBP. 	<p>limitations of the clinical practice of each professional,</p> <ul style="list-style-type: none"> • 76% Showed neutral as the PBE not take into account the patient's preferences, • 66% Agreed that the PBE aids clinical decision making, • 44% Showed neutral and 34% disagreed that the implementation of EBP requires too much responsibility of the physiotherapist, • 44% Showed neutral and 40% disagreed that their financial gain will increase with the implementation of EBP in their clinical practice, • 46% Reiterated that it is necessary to increase the use of scientific evidence in their daily practice. 	
Salbach/Canada (2007)	<ul style="list-style-type: none"> • 44.5% Learned the foundations of EBP as part of their academic preparation, • 47% Received formal training in search strategies for finding research relevant to their practice, • 56% Received formal training in how to critically appraise research literature as part of their academic preparation. 	<ul style="list-style-type: none"> • Not applicable 	<ul style="list-style-type: none"> • 93.2% Agreed that EBP is necessary in physiotherapy practice, • 89.8% Reported the need to increase the use of evidence in daily practice, • 90.2% Reported interest in developing skills to implement EBP, • 84% Agreed that EBP improves the quality of patient care, • 78.1% Agreed that EBP aids decision-making, • 78% Agreed that research findings are useful in daily practice, • 55.3% Agreed that a divide exists between research and practice, • 34.2% Agreed that EBP does not take patient preferences into account, • 13.2% Agreed that the adoption of EBP places an unreasonable demand on physical therapists, • 49.4% Agreed that the physiotherapist should be responsible for conducting their own literature reviews to answer their clinical questions, • 64.9% Agreed that the physiotherapist is responsible for critically evaluating the literature, • 84.5% That the physiotherapist is responsible for interpreting the findings. 	<ul style="list-style-type: none"> • Lack of time (74.4%), • Lack of generalisability of research findings (33.7%), • Lack of research skills (30.7%), • Inability to understand statistical data (30.4%), • Inapplicability of research to unique patients (24.1%), • Inability to critically appraise articles (19.2%), • Isolation from peers (17%), • Lack of information resources (15.6%), • Lack of an organisational mandate (11.1%), • Lack of support from colleagues (3.7%), • Lack of interest (3.3%).
Salbach/Canada (2009)	<ul style="list-style-type: none"> • Not reported 	<ul style="list-style-type: none"> • 62.3% Used databases once a month, 32.8% between 2 and 5 times, • 26.7% Read studies once a month and 56% between 2 and 5 times, • 20% Have access to online databases at work, 	<ul style="list-style-type: none"> • Not reported 	<ul style="list-style-type: none"> • Not reported

- Scholten-Peeters/
Netherlands
(2011)
- 70% Reported lack of time at work for research activities and the rest reported little time.
 - 66.7% of Teachers, 51.9% of physiotherapists, and 42.3% of supervisors use national guidelines frequently to answer clinical questions.
 - 100% of Teachers, 49.4% of physiotherapists, and 42.3% of supervisors reported the use of Cochrane reviews to answer a clinical question.
 - 88.9% of Teachers, 37% of physiotherapists, and 23.1% of supervisors use PEDro to answer a clinical question.
 - 66.7% of Teachers, 42% of physiotherapists, and 42.3% of supervisors use PubMed to answer a clinical questions.
 - 48.1% of Physiotherapists and 42.3% of supervisors reported that they formulated a clinical question when confronted with a clinical problem in 50% of cases.
 - 16% of Physiotherapists and 11.5% of supervisors had never formulated a clinical question.
 - The sources used by teachers to answer clinical questions are systematic reviews (88.9%), Pubmed (77.8%), national guidelines (77.8%),
 - 46.3% of Physiotherapists rated their EBP knowledge as average, 77.8% of teachers rated it as good, and 42.3% of supervisors as average or good.
- Not reported
- Not reported

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