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Evidence based practice beliefs and implementation among Egyptian physical therapists: A cross-sectional study

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ABSTRACT

Adding evidence-based practice (EBP) to physical therapists (PTs) routine practice enhances work environment, healthcare quality and rehabilitation outcomes. Physiotherapy is one of the most developed healthcare professions especially in the last decades, and it is critical for PTs to standardize their practices and to be familiar with evidence-based practice. This study aimed to identify Egyptian

physical therapists' beliefs and implementations of EBP in Cairo Governorate. A sample of 200 PTs, 79% females and 21% males, from Cairo Governorate participated and completed online questionnaires about EBP Belief and EBP Implementation. PTs who attended training courses about EBP reported a mean total belief score of 57.93 (±6.55), and 43.03 (±13.09) for the group who did not attend training courses about EBP. Implementation total score was 59.36 (±12.85) and 45.41 (±13.54) for the group who attended and the group who did not attend training courses about EBP, respectively. To some extent, PTs in Cairo Governorate are aware of the importance of EBP but there are challenges in the implementation. Attending training courses about EBP is critical for better knowledge and implementation in clinical practice. Also experience and educational level are important for knowledge and implementation of EBP.

KEYWORDS

EBP; Implementations; Beliefs; Physical Therapist

1. INTRODUCTION

Evidence-based practice (EBP) is an essential concept for clinical practice, it is a comprehensive clinical approach that integrates patient values with the best evidence and expertise (Sackett et al., 1996). Healthcare professionals are assumed to be good researchers and clinicians (Scurlock-Evans et al., 2014).

EBP encountered many obstacles such as deficiency of resources, time, support and results generalization, and difficulty in statistics understanding (da Silva et al., 2015).

While better physiotherapy programs, rehabilitation outcomes and patient satisfaction can be achieved through EBP (Fristedt et al., 2016; Worum et al., 2020), there is a gap in application of EBP among PTs due to different challenges and barriers that encounter them (Frantz & Rowe, 2013) Moreover, the PTs attitude towards EBP lacks the positivity (Scurlock-Evans et al., 2014).

Among healthcare practitioners, PTs come at the bottom of the list in implementing EBP (Palfreyman et al., 2003; Upton et al., 2012). Research showed that PTs have less opportunities and support to integrate evidence with their colleagues which adversely affects EBP implementation (Bourne et al., 2007).

A diminished EBP awareness is the major obstacle to implementing it. It was found that about 12 to 36% of PTs were aware about EBP (Nilsagård & Lohse, 2010). Such diminished awareness

is found to affect PTs familiarity with EBP, so the researchers begin to explore and look for leadership support to facilitate familiarity with EBP (Nilsagård et al., 2019) The skills of searching in relevant databases, evaluating results, and translating them into clinical practice need higher competencies of PTs to easily implement EBP (Oostendorp et al., 2008)

Post-graduates and even undergraduates should be supplemented with educational curricula that help them to apply EBP as the implementation is a continuous and prolonged process (Darrah et al., 2006). This study aims to identify Egyptian physical therapists' beliefs and implementations of EBP in Cairo Governorate.

2. METHODS

2.1. Participants

This was a descriptive cross-sectional study. A total of 200 physical therapists (PTs) who met the inclusion criteria participated. Licensed male and female PTs with different experience levels were included, while physiotherapy students and interns were excluded.

2.2. Sample size calculation

G*Power 3.1.9.2 (Universitat Kiel, Germany) is used to calculate SSC. The mean ± SD of total of the EBP Implementation Scale was 13.51±11.6 according to a previous study (Pereira et al., 2018). The SSC was based on the following: 0.291 effect size, 95% confidence limit, 80% study power. To overcome the dropout,14 cases were added, so we will recruit 200 PTs.

2.3. Data collection

An online survey was made, EBP beliefs (EBPB) and implementation (EBPI) scales were formulated in a google form, and eligible participants were invited to fill the questionnaires electronically after protocol's ethical approval, No: P.TREC/012/004206. English version of EBPB and EBPI scales were used in the study.

The EBPB Scale is composed of 16 items about beliefs concerning value and importance of EBP. A Likert scale varying from 1 (strongly disagree) to 5 (strongly agree) is used by participants to determine their responses. After reverse scoring for two negative items, total points may range between16–80. Higher scores coincide with positive beliefs about EBP (Melnyk et al., 2008).

Data about age, gender, educational and experience levels were collected, and if they have attended training courses about EBP. The study purpose, significance and the right to withdraw were explained at the beginning of the online form of the survey.

2.4. Statistical analysis

Analysis was done by SPSS v27 (IBM©, Armonk, NY, USA). The Shapiro-Wilk test and histograms were used to test the normality of data distribution. Quantitative non-parametric data were presented as the median and interquartile range (IQR) and were analyzed by Mann Whitney-test. Qualitative variables were shown as frequency and percentage (%). A two-tailed P value < 0.05 was considered statistically significant. Analysis was done by SPSS v26 (IBM Inc., Chicago, IL, USA). Shapiro-Wilks test and histograms were used to test the data normality. Quantitative non-parametric data were shown as median and interquartile range (IQR) and compared between the four groups utilizing Kruskal-Wallis test with Mann Whitney-test to compare each group.

3. RESULTS

Two hundred physical therapists participated in our study, their demographic, educational and experience level data were as shown in Table 1.

Table 1. PTs demographic data

Variable		(n=200)
Sex	**Male**	42 (21%)
	Female	158 (79%)
Qualification	**Bachelor**	69 (34.5%)
	Master	116 (58%)
	Doctorate	3 (1.5%)
	Doctor of physical therapy (DPT)	12 (6%)
Years of experience	**< 5 years**	57 (28.5%)
	5-10 years	86 (43%)
	10-15 years	45 (22.5%)
	>15 years	12 (6%)
Woking field	**Hospital**	131 (65.5%)
	University staff member/ researcher	48 (24%)
	Private	21 (10.5%)
Have you attended training courses about EBP		55 (27.5%)

Note. Data are shown as frequency (%).

Item of the EBP beliefs scale were significantly higher in attend training courses about EBP group than non-attend training courses about EBP group (p value<0.05) (Table 2).

Table 2. EBP beliefs scale of the studied group

Items	Attend training courses about EBP group (n=55)	Non attend training courses about EBP group (n=145)	p value
1-I think that EBP results in the optimum patients care.	4 (4 – 5)	3 (2 – 5)	<0.001*
2-I am aware of the EBP steps.	4 (3 – 4)	3 (2 – 3)	<0.001*
3-I have no doubt that I can apply EBP	4 (3 – 4)	3 (2 – 3)	<0.001*
4-I have no doubt that critically evaluating evidence is a crucial step in the EBP process	4 (4 – 5)	3 (2 – 4)	<0.001*
5-I am sure that clinical care can be improved by evidence-based guidelines	4 (4 – 5)	3 (2 – 5)	<0.001*
6-I think that I can look for the optimum evidence to get an answer for clinical questions faster	3 (3 – 4)	3 (2 – 4)	0.002*
7-I believe that I can skip obstacles to apply EB	3 (3 – 4)	3 (2 – 3)	<0.001*
8-I have no doubt that I can apply EBP faster	3 (3 – 4)	3 (2 – 3)	0.005*
9-I have no doubt that applying EBP will enhance the patients care that I deliver	4 (4 – 5)	3 (2 – 3)	<0.001*
10-I have no doubt about how to evaluate the outcomes of clinical care	4 (3 – 4)	3 (2 – 4)	<0.001*
11-I believe that EBP is time consuming (reverse scored)	3 (2 – 4)	2 (2 – 3)	0.013*
12-I have no doubt that I can get the optimum resources to apply EBP	4 (3 – 4)	3 (2 – 3)	<0.001*
13-I think EBP is hard (reverse scored)	3 (2 – 4)	2 (2 – 3)	0.002*
14-I am aware to apply EBP sufficiently well to make changes in practice	4 (3 – 5)	3 (2 – 3)	<0.001*
15-I have no doubt about my ability to apply EBP at my work	4 (3 – 4)	3 (2 – 3)	<0.001*
16-I believe that I deliver care which is based on evidence	4 (3 – 4)	3 (2 – 4)	<0.001*

*Note. Data are shown as median (IQR), *: significant at p value ≤ 0.05.*

Items of the EBP Implementation Scale were significantly higher in attend training courses about EBP group than non-attend training courses about EBP group (P value<0.05) (Table 3).

Table 1. EBP implementation scale of the studied group

Items	Attend training courses about EBP group (n=55)	Non attend training courses about EBP group (n=145)	p value
1-I adjusted my clinical practice based on the evidence	4 (3 – 4)	3 (2 – 3)	**<0.001***
2-I evaluated a clinical research study critically.	4 (3 – 4)	2 (2 – 3)	**<0.001***
3-I developed a PICO question about my clinical practice	4 (3 – 4)	2 (1 – 3)	**<0.001***
4-I informally discussed evidence	4 (3 – 4)	3 (2 – 3)	**<0.001***
5-I gathered data regarding a patient's problem.	4 (4 – 5)	3 (2 – 4)	**<0.001***
6-I presented study evidence in the form of a report/presentation to >2 colleagues	3 (3 – 4)	3 (2 – 3)	**0.002***

7-I evaluated the outcomes of a practice change	4 (3 – 4)	3 (2 – 4)	**<0.001***
8-I presented my colleague with an EBP guideline	4 (3 – 4)	2 (2 – 3)	**0.010***
9-I displayed research evidence with a patient or a family member	4 (2 – 5)	3 (2 – 4)	**0.001***
10-I provided research study evidence to a multidisciplinary team member	3 (3 – 4)	3 (2 – 4)	**<0.001***
11-I reviewed and critically evaluated a clinical research study.	4 (3 – 4)	3 (2 – 3)	**<0.001***
12-I browsed to the Cochrane systematic review database.	4 (3 – 5)	3 (2 – 3)	**<0.001***
13-I changed the clinical practice where I work by using an EBP guideline and systematic review.	3 (2 – 4)	3 (2 – 3)	**0.009***
14-I evaluated a care initiative by gathering patient outcome data	4 (3 – 4)	3 (2 – 4)	**<0.001***
15-The collected outcome data are shared with my colleagues	3 (3 – 4)	3 (2 – 3)	**<0.001***
16-Based on patient outcomes data, I altered my practice.	4 (3 – 5)	3 (2 – 4)	**<0.001***
17-I encouraged my colleagues to apply EBP.	4 (3 – 5)	3 (2 – 4)	**<0.001***

*Note. Data are shown as median (IQR), *: significant at p value ≤ 0.05.*

Total score of belief and implementation score were significantly higher in attending training courses about EBP group than non-attend training courses about EBP group (p value<0.001) (Table 4).

Table 2. Total score of belief and implementation score of the studied group

	Attend training courses about EBP group Mean (SD)	**Non attend training courses about EBP group Mean (SD)**	**Test**	**df**	**p value**	**Mean difference**
Beliefs total score	57.93 (±6.55)	43.03 (±13.09)	8.05	199	**<0.001***	14.89
Implementations total score	59.36 (±12.85)	45.41 (±13.54)	6.6	199	**<0.001***	13.96

*Note. Data are shown as mean (±SD), *: significant as P value ≤ 0.05.*

Regarding EBPB scale, items 4 and 11 were insignificantly different among the four groups. Items (1), (9), (10) and (14) were insignificantly between <5 years group and 5-10 years group, were significantly higher in <5 years group than 10-15 years group and were significantly higher in >15 years group than (<5 years group, 5 -10 years group and 10-15 years group) (P value<0.05).

Items (2), (3) and (15) were insignificantly different between <5 years group and (5-10 years group and 10-15 years group), were significantly higher in 5-10 years group than 10-15 years group and significantly higher in >15 years group than (<5 years group, 5 -10 years group and 10 -15 years group) (P value<0.05).

Item (5) was insignificantly different between <5 years group and (5-10 years group, 10-15 years group and >15 years group), insignificantly different between 5-10 years group and 10-15 years group and was significantly higher in >15 years group than (5 -10 years group and 10 -15 years group) (P value<0.05).

Item (6) was insignificantly different between <5 years group and (5-10 years group and 10-15 years group), insignificantly different between >15 years group and (<5 years group, 5 -10 years group and 10 -15 years group) and was significantly higher in 5 -10 years group than10 -15 years group (P value=0.012).

Item (7) was insignificantly different between (<5 years group and >15 years group) and 5-10 years group and were significantly higher in (>15 years group and 5-10 years group) than (<5 years group and 10-15 years group).

Items (8) and (12) were insignificantly different between <5 years group and 5-10 years group, insignificantly different between 10-15 years group and (<5 years group and 5-10 years group) and were significantly higher in >15 years group than (<5 years group, 5 -10 years group and 10 -15 years group) (P value<0.05).

Item (13) was insignificantly different between <5 years group and (5-10 years group and 10-15 years group), insignificantly different between 5-10 years group and 10-15 years group, insignificantly different between>15 years group and (5-10 years group and 10-15 years group) and was significantly higher in >15 years group than 10-15 years group.

Item (16) was insignificantly different between 5-10 years group and (<5 years group, 10-15 years group and >15 years), insignificantly different between <5 years group and >15 years group and was significantly higher in (<5 years group and >15 years group) than 10-15 years group.

Table 5. EBP beliefs scale of the studied group

Items	<5 years (n=57)	5-10 years (n=84)	10-15 years (n=47)	>15 years (n=12)	P value
Item (1)	4 (2 – 5)	3 (2 – 4.25)	3 (2 – 4)	4.5 (4 – 5)	**0.004***
P1		0.158	**0.030***	**0.040***	
P2			**0.038***	**0.004***	
P3				**<0.001***	
Item (2)	3 (2 – 4)	3 (2 – 4)	3 (2 – 3)	4 (3.75 – 4)	**<0.001***
P1		0.347	0.086	**0.004***	
P2			**0.006***	**0.016***	
P3				**<0.001***	
Item (3)	3 (2 – 4)	3 (2 – 4)	3 (1 – 3)	4 (3.75 – 4.25)	**<0.001***
P1		0.180	0.259	**<0.001***	
P2			**0.013***	**0.003***	
P3				**<0.001***	
Item (4)	4 (2 – 5)	3 (2 – 4)	3 (1 – 4)	4 (3.75 – 4)	0.208
Item (5)	4 (2 – 5)	3.5 (2 – 5)	4 (2 – 4.5)	4.5 (4 – 5)	**0.030***
P1		0.249	0.152	0.054	
P2			0.642	**0.009***	
P3				**0.006***	
Item (6)	3 (2 – 4)	3 (2 – 4)	3 (2 – 3)	3 (3 – 3.25)	**0.042***
P1		0.097	0.386	0.174	
P2			**0.012***	0.634	
P3				0.063	
Item (7)	3 (2 – 4)	3 (3 – 4)	3 (1 – 3.5)	3.5 (3 – 4)	**0.002***
P1		**0.014***	0.707	**0.007***	
P2			**0.007***	0.163	
P3				**0.004***	
Item (8)	3 (2 – 3)	3 (2 – 3)	3 (1 – 3)	4.5 (3.75 – 5)	**<0.001***
P1		0.290	0.821	**<0.001***	
P2			0.452	**<0.001***	
P3				**<0.001***	
Item (9)	4 (2 – 5)	3.5 (2 – 5)	3 (1 – 4)	4.5 (4 – 5)	**0.002***
P1		0.936	**0.034***	**0.014***	
P2			**0.027***	**0.010***	
P3				**<0.001***	
Item (10)	3 (2 – 4)	3 (2 – 4)	2 (1 – 3.5)	4.5 (3.75 – 5)	**<0.001***
P1		0.492	**0.032***	**<0.001***	
P2			**0.003***	**0.002***	
P3				**<0.001***	
Item (11)	2 (2 – 3)	2.5 (2 – 4)	3 (2 – 3)	3 (2.75 – 3.25)	0.092
Item (12)	3 (2 – 4)	3 (2 – 4)	2 (2 – 3.5)	4 (3.75 – 4)	**0.005***
P1		0.980	0.1	**0.010***	
P2			0.079	**0.008***	
P3				**<0.001***	

Item (13)	2 (2 – 3)	3 (2 – 3)	2 (2 – 3)	3.5 (2.75 – 4)	
P1		0.092	0.114	**0.009***	**0.049***
P2			0.905	0.081	
P3				0.110	
Item (14)	3 (2 – 4)	3 (2 – 3.25)	2 (2 – 3)	4 (3.75 – 4.25)	
P1		0.756	**0.033***	**0.003***	**<0.001***
P2			**0.043***	**0.001***	
P3				**<0.001***	
Item (15)	3 (2 – 3)	3 (2.75 – 4)	3 (1 – 3)	4 (3.75 – 4.25)	
P1		0.194	0.114	**<0.001***	**<0.001***
P2			**0.003***	**0.005***	
P3				**<0.001***	
Item (16)	3 (2 – 4)	3 (2 – 4)	2 (2 – 3.5)	3.5 (3 – 4)	
P1		0.420	**0.032***	0.253	**0.047***
P2			0.117	0.104	
P3				**0.015***	

*Note. Data are shown as median (IQR), *: significant at p value ≤ 0.05.*

Regarding EBPI scale scores, it is found that items (6), (9) (10) were insignificantly different among the four groups.

Item (1) was insignificantly different between <5 years group and 5-10 years group, insignificantly different between 10-15 years group and (<5 years group and 5-10 years group and was significantly higher in >15 years group than (<5 years group, 5 -10 years group and 10 -15 years group) (P value<0.05).

Items (2), (3), (11), (14) and (16) were insignificantly between <5 years group and 5-10 years group, were significantly higher in <5 years group than 10-15 years group and were significantly lower in (<5 years group, 5 -10 years group and 10 -15 years group) than >15 years group (P value<0.05).

Items (4), (8) and (13) were insignificantly between <5 years group and (5-10 years group and >15 years group), were insignificantly between 5-10 years group and >15 years group and were significantly higher in (<5 years group, 5-10 years group and >15 years group) than10-15 years group.

Item (5) was insignificantly between <5 years group and >15 years group, was significantly higher in (<5 years group and >15 years group) than (5-10 years group and 10-15 years group) and was significantly higher in 5-10 years group than 10-15 years group (P value<0.05).

Items (7), (15) and (17) were insignificantly different between <5 years group and (5-10 years group and 10-15 years group), were significantly higher in 5-10 years group than 10-15 years group

and significantly higher in >15 years group than (<5 years group, 5 -10 years group and 10 -15 years group) (P value<0.05).

Item (12) was insignificantly different between <5 years group and (5-10 years group and >15 years group), was insignificantly different between 5-10 years group and 10-15 years group, was significantly higher in <5 years group than 10-15 years group and was significantly higher in >15 years group than (5-10 years group and 10-15 years group) (P value<0.05).

Table 6. EBP implementation scale of the studied group

Items	<5 years (n=57)	5-10 years (n=84)	10-15 years (n=47)	>15 years (n=12)	P value
Item (1)	3 (2 – 4)	3 (2 – 3.25)	3 (2 – 3.5)	4 (3.75 – 4)	
P1		0.641	0.182	**0.004***	**0.004***
P2			0.316	**0.001***	
P3				**<0.001***	
Item (2)	3 (2 – 4)	3 (2 – 4)	2 (1 – 3)	4 (4 – 4)	
P1		0.460	**0.010***	**<0.001***	**<0.001***
P2			**<0.001***	**0.001***	
P3				**<0.001***	
Item (3)	3 (2 – 4)	3 (1 – 4)	2 (1 – 2.5)	4 (3.75 – 4)	
P1		0.405	**0.001***	**0.013***	**<0.001***
P2			**0.007***	**0.003***	
P3				**<0.001***	
Item (4)	3 (2 – 4)	3 (2 – 4)	2 (2 – 3)	3.5 (2.75 – 4)	
P1		0.783	**0.005***	0.432	**0.009***
P2			**0.006***	0.336	
P3				**0.013***	
Item (5)	4 (2 – 4)	3 (2 – 4)	3 (1 – 3)	4 (3.5 – 4.25)	
P1		**0.030***	**<0.001***	0.118	**<0.001***
P2			**0.034***	**0.005***	
P3				**<0.001***	
Item (6)	3 (2 – 4)	3 (2 – 3)	3 (2 – 3)	3.5 (2.5 – 4)	0.401
Item (7)	3 (2 – 4)	3 (2 – 4)	3 (2 – 3)	4 (4 – 4)	
P1		0.452	0.1	**0.002***	**<0.001***
P2			**0.013***	**0.006***	
P3				**<0.001***	
Item (8)	4 (2 – 4)	3 (2 – 4)	2 (2 – 3)	3.5 (2.75 – 4)	
P1		0.282	**<0.001***	0.892	**<0.001***
P2			**0.001***	0.460	
P3				**0.011***	
Item (9)	3 (2 – 4)	3 (2 – 4)	2 (2 – 3)	3.5 (2.5 – 4)	0.157
Item (10)	3 (2 – 4)	3 (2 – 4)	3 (2 – 3.5)	4 (3.25 – 4)	0.265
Item (11)	3 (2 – 4)	3 (2 – 4)	3 (2 – 3)	4 (4 – 4)	
P1		0.576	**0.039***	**0.001***	**<0.001***
P2			**0.006***	**0.003***	

	P3			**<0.001***	
Item (12)	3 (2 – 4)	3 (1.75 – 4)	2 (2 – 3)	3.5 (3 – 4)	**0.003***
P1		0.118	**0.005***	0.128	
	P2		0.111	**0.015***	
	P3			**0.001***	
Item (13)	3 (2 – 4)	3 (2 – 4)	3 (2 – 3)	3.5 (3 – 4)	**0.002***
P1		0.753	**0.006***	0.085	
	P2		**0.008***	0.052	
	P3			**<0.001***	
Item (14)	3 (2 – 4)	3 (2.75 – 4)	3 (2 – 3)	4 (4 – 4)	**<0.001***
P1		0.385	**0.016***	**0.002***	
	P2		**<0.001***	**0.008***	
	P3			**<0.001***	
Item (15)	3 (2 – 3)	3 (2.75 – 4)	2 (1 – 3)	4 (3.75 – 4)	**<0.001***
P1		0.086	0.077	**0.004***	
	P2		**<0.001***	**0.043***	
	P3			**<0.001***	
Item (16)	3 (2 – 4)	3 (2.75 – 4)	2 (1 – 3)	4 (4 – 4)	**<0.001***
P1		0.225	**0.026***	**0.002***	
	P2		**<0.001***	**0.014***	
	P3			**<0.001***	
Item (17)	3 (2 – 4)	3 (3 – 4)	3 (1 – 4)	4 (4 – 4)	**0.001***
P1		0.595	0.059	**0.008***	
	P2		**0.011***	**0.014***	
	P3			**<0.001***	

*Note. Data are shown as median (IQR), *: significant at ≤ 0.05.*

4. DISCUSSION

The study compared the EBP beliefs between 2 groups: attended EBP training group (n=55) and another one who had not (n=145). The trained group reported higher median scores, with statistically significant differences ($P < 0.05$) in most areas. For example, belief in EBP resulting in the best clinical care had a median score of 4 (IQR 4–5) for the trained group, versus 3 (IQR 2–5) for the non-trained group ($P < 0.001$). Similarly, clarity about EBP steps ($P < 0.001$), confidence in implementing EBP ($P < 0.001$), and critical appraisal of evidence ($P < 0.001$) were significantly higher among those with training.

Regarding EBP implementation, there were significant differences between the trained and non-trained groups. Trained group reported a higher frequency of using evidence to change practice (median 4 vs. 3, $P < 0.001$) and critically appraising research studies (median 4 vs. 2, $P < 0.001$). The trained group also demonstrated more familiarity in generating PICO questions, sharing evidence, and using EBP guidelines. For example, generating PICO questions had a median score of 4 (IQR 3–4) among the trained group, compared to 2 (IQR 1–3) for the non-trained group ($P < 0.001$).

The mean total belief scores were significantly higher in the trained group (57.93 ± 6.55) compared to the non-trained group (43.03 ± 13.09), with a mean difference of 14.89 ($P < 0.001$). Similarly, the total implementation score was notably higher in the trained group (59.36 ± 12.85) versus the non-trained group (45.41 ± 13.54), with a mean difference of 13.96 ($P < 0.001$). This demonstrates the impact of EBP training on both belief and implementation.

Concerning years of experience, significant variations in EBP beliefs were observed across groups. PTs with more than 15 years of experience had the highest belief scores, particularly in terms of believing that EBP leads the optimum clinical care (median 4.5, IQR 4–5, $P = 0.004$). There were significant differences between some experience categories, with those in the 5–10 year and 10–15-year groups generally showing lower confidence compared to their more experienced peers.

Significant differences in EBP implementation were noted across experience levels. PTs with more than 15 years of experience consistently reported higher implementation scores, particularly in using evidence to change clinical practice (median 4, IQR 3.75–4, $P = 0.004$) and appraising clinical research studies (median 4, IQR 4–4, $P < 0.001$). Less experienced therapists (<5 years) had lower implementation scores, especially in areas like generating PICO questions ($P < 0.001$) and critically appraising research.

Our study revealed a clear distinction in EBP beliefs between physical therapists who had received EBP training and those who had not. The trained group consistently reported higher median scores across all items, with statistically significant differences in most areas. This finding aligns with previous research highlighting the importance of EBP training in shaping healthcare professionals' attitudes and beliefs. For instance, Melnyk et al. found that the strength of EBP beliefs increased significantly with higher educational levels and greater workplace responsibilities (Melnyk et al., 2008). Similarly, Alshehri et al. reported a significant association between PTs' attitudes towards EBP and education level (Alshehri et al., 2017).

The observed difference in EBP beliefs between trained and untrained groups underscores the value of formal EBP education in fostering positive attitudes towards evidence-based practice. This is particularly important given that positive attitudes are often considered a precursor to successful EBP implementation (Scurlock-Evans et al., 2014). However, it is crucial to notice that while positive attitudes are necessary, they are not always sufficient for consistent or high-quality EBP implementation, as highlighted by Scurlock-Evans et al. in their systematic review (Scurlock-Evans et al., 2014).

The higher scores among trained PTs in areas such as belief in EBP resulting in the optimum clinical care, clarity about EBP steps, confidence in implementing EBP, and critical appraisal of evidence suggest that EBP training not only enhances knowledge but also improves PTs' efficacy in applying EBP principles. This finding is in line with the results reported by Nilsagård & Lohse (2010), who found that higher levels of education were associated with more knowledge and positive attitudes towards EBP

The significant differences in EBP implementation between trained and untrained groups in our study provide strong evidence for the effectiveness of EBP training in converting knowledge into practice. The higher frequency of using evidence to change practice and critically appraising research studies among trained physical therapists aligns with the findings of Iles & Davidson (2006) who demonstrated that higher levels training PTs were more likely to search databases and had a better understanding of EBP terminology.

Our results also showed that trained PTs demonstrated more familiarity in generating PICO questions, sharing evidence, and using EBP guidelines. This increased familiarity in various aspects of EBP is critical for integrating research evidence into clinical decision-making. However, we should consider that despite these positive findings, barriers to EBP implementation may still exist. As highlighted by Ramírez-Vélez et al. factors such as lack of research skills, lack of time, and difficulty understanding English in which papers are written can hinder EBP implementation (Ramírez-Vélez et al., 2015).

The observed differences in implementation between trained and untrained groups emphasize the need for continuous professional development and EBP training opportunities for PTs. This aligns with the recommendations of Scurlock-Evans et al. (2014) who suggested providing indoor continuing education on EBP and increasing access to and skills in using research resources.

The significantly higher mean total belief and implementation scores in the trained group compared to the non-trained group provide reasonable evidence for the overall impact of EBP training on PTs' familiarity with EBP.

The substantial mean differences in both belief and implementation scores between trained and untrained groups highlight the potential of EBP training to fill the gap between practice and knowledge. This is particularly important considering the findings by Pereira et al. (2018) who observed that despite positive beliefs about EBP among community health nurses, the systematic implementation of EBP in their practice was infrequent. These results underscore the value of investing in EBP training

programs for PTs and other healthcare professionals. However, it is important to note that training alone may not be sufficient to ensure sustained EBP implementation. Environmental empowerment, including supportive leadership and adequate resources, plays a crucial role in enhancing physiotherapists' capabilities for using EBP (Worum et al., 2020).

Our study revealed significant variations in EBP beliefs across different experience levels, with those having more than 15 years of experience generally showing the highest belief scores. This finding adds nuance to the existing literature on the relationship between experience and EBP engagement. While some studies, found that recent graduates rated their EBP skills more highly, our results suggest that extensive clinical experience may contribute to stronger beliefs in the value of EBP (Iles & Davidson, 2006).

The higher belief scores among more experienced physical therapists, particularly in terms of believing that EBP results in the best clinical care, may reflect a cumulative effect of exposure to evidence-based practices throughout their careers. This aligns with the findings of Rudman et al. (2020) who observed a significant increase in the extent of EBP activities among higher experience compared to less experienced nurses.

However, the observed pairwise differences between some experience categories, with those in the 5-10 year and 10–15 year groups generally showing lower confidence, suggest that the relationship between experience and EBP beliefs is not linear. This complexity highlights the need for targeted EBP support and training at different career stages, as recommended by Scurlock-Evans et al. (2014) in their systematic review.

The significant differences in EBP implementation across experience levels, with physical therapists having more than 15 years of experience consistently reporting higher implementation scores, provide valuable insights into the role of clinical experience in EBP engagement. This finding is particularly interesting when considered alongside the results of Johansson et al. (2010) who found that a greater number of years was positively correlated with higher research utilization.

The higher implementation scores among more experienced therapists, especially in areas such as using evidence to change clinical practice and appraising clinical research studies, suggest that clinical experience may enhance practitioners' ability to integrate research evidence into their decision-making processes. This aligns with the concept of clinical expertise as a key component of EBP, as discussed by Oostendorp et al. (2008) in their critical examination of EBM.

However, the lower implementation scores among less experienced therapists, particularly in areas like generating PICO questions and critically appraising research, highlight the need for targeted support and mentoring for early-career physical therapists. This finding coincides with the recommendations of Nilsagård et al. (2019) who emphasized the importance of designated time for research and support from leaders in enhancing research familiarity among PTs.

The observed variations in EBP implementation across experience levels underscore the complex interplay between clinical experience, EBP knowledge, and practical application. As suggested by Rousseau & Stiegler (2024), a delicate approach to EBP that recognizes both its benefits and limitations, while considering practitioners' specific contexts and values, may be necessary to enhance EBP implementation across all experience levels.

This cross-sectional study has several limitations. The sample was limited to physical therapists in Cairo Governorate, potentially compromising generalizability to other regions or countries. Self-reported data may be subjected to some bias. The study did not control potential confounding factors such as workplace environment or access to resources. The causal relationship between EBP training and improved beliefs and implementation cannot be definitively established due to the cross-sectional design. Future longitudinal studies with larger, more diverse samples and objective measures of EBP implementation could address these limitations.

5. CONCLUSIONS

This study demonstrates that EBP training significantly impacts both beliefs and implementation among Egyptian PTs. Trained therapists consistently showed higher scores in EBP beliefs and implementation compared to untrained therapists. Years of experience also play a crucial role, with more experienced therapists generally demonstrating stronger beliefs and higher implementation scores. These findings highlight the importance of EBP training in enhancing therapists' familiarity with EBP and suggest that targeted support at different career stages may be beneficial for optimizing EBP implementation in physical therapy practice

It is a must for PTs not only to appreciate EBP but also to implement these rules correctly in daily practice to improve their knowledge practices and their patient outcomes. Studies are needed to determine beliefs and implementation of EBP not only in Cairo governorate but in all Egypt.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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