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## Are Attitudes Toward Evidence-Based Practice Different Between the United States and Chinese Occupational Therapy and Physical Therapy Students?

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# Are Attitudes Toward Evidence-Based Practice Different Between the United States and Chinese Occupational Therapy and Physical Therapy Students?

## Abstract

**Purpose:** Evidence-based practice (EBP) integrates the best evidence from research, clinician expertise, and patient preferences and values to deliver the highest quality of care to improve patient outcomes. Occupational therapy (OT), physical therapy (PT), and rehabilitation students gain exposure to EBP through both didactic and experiential learning. The differences in cultural, educational systems, and student learning styles between the United States and China may lead to different students' perceptions and attitudes towards EBP. The purpose of the study was to characterize and compare the perceptions of and attitudes towards EBP between the U.S. and Chinese OT and PT students. **Methods:** A cross-sectional survey of the Evidence-Based Practice Process Assessment Scale (EBPPAS) was sent to professional students enrolled in Doctor of Occupational Therapy (OTD), Doctor of Physical Therapy (DPT), and Master of Occupational Therapy (MOT) programs at three universities in the U.S. (n=1,062) and OT, PT, and rehabilitation students of four-year bachelor programs at four universities in China (n=1,017). Students' perception of the overall and individual domain of EBP was compared between the U.S. and China with independent samples t-test. **Results:** In general, all students showed a positive attitude towards EBP across the five domains. The U.S. DPT students had the highest mean score of 3.90 in the domain of "attitude about EBP" followed by the U.S. MOT students (mean=3.88), and the U.S. OTD students (mean=3.84). On average, the U.S. students scored 0.44 (13.8%) higher than Chinese students in all domains combined. Responses from both countries showed the highest scores in the domain of "attitude about EBP" followed by "familiarity with EBP" and "intention to engage in EBP". In addition, the overall mean score increased non-significantly by 0.07 for the U.S. students from 1<sup>st</sup> year to 3<sup>rd</sup> year while it increased significantly by 0.15 (pnd year to 4<sup>th</sup> year. **Conclusion:** Few research studies have compared professional students' attitudes towards EBP between the U.S. and China. This study demonstrated that the U.S. students were more positive overall and in all five domains. Future studies may focus on novice ways to promote EBP in didactic teaching and in clinical practice.

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### Abstract

**Purpose:** Evidence-based practice (EBP) integrates the best evidence from research, clinician expertise, and patient preferences and values to deliver the highest quality of care to improve patient outcomes. Occupational therapy (OT), physical therapy (PT), and rehabilitation students gain exposure to EBP through both didactic and experiential learning. The differences in cultural, educational systems, and student learning styles between the United States and China may lead to different students' perceptions and attitudes towards EBP. The purpose of the study was to characterize and compare the perceptions of and attitudes towards EBP between the U.S. and Chinese OT and PT students. **Methods:** A cross-sectional survey of the Evidence-Based Practice Process Assessment Scale (EBPPAS) was sent to professional students enrolled in Doctor of Occupational Therapy (OTD), Doctor of Physical Therapy (DPT), and Master of Occupational Therapy (MOT) programs at three universities in the U.S. ( $n=1,062$ ) and OT, PT, and rehabilitation students of four-year bachelor programs at four universities in China ( $n=1,017$ ). Students' perception of the overall and individual domain of EBP was compared between the U.S. and China with independent samples t-test. **Results:** In general, all students showed a positive attitude towards EBP across the five domains. The U.S. DPT students had the highest mean score of 3.90 in the domain of "attitude about EBP" followed by the U.S. MOT students (mean=3.88), and the U.S. OTD students (mean=3.84). On average, the U.S. students scored 0.44 (13.8%) higher than Chinese students in all domains combined. Responses from both countries showed the highest scores in the domain of "attitude about EBP" followed by "familiarity with EBP" and "intention to engage in EBP". In addition, the overall mean score increased non-significantly by 0.07 for the U.S. students from 1<sup>st</sup> year to 3<sup>rd</sup> year while it increased significantly by 0.15 ( $p<0.01$ ) for the Chinese students from 2<sup>nd</sup> year to 4<sup>th</sup> year. **Conclusion:** Few research studies have compared professional students' attitudes towards EBP between the U.S. and China. This study demonstrated that the U.S. students were more positive overall and in all five domains. Future studies may focus on novice ways to promote EBP in didactic teaching and in clinical practice.

**Keywords:** Evidence-based practice (EBP), Occupational Therapy (OT), Physical Therapy (PT), Attitude

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## INTRODUCTION

Evidence-based practice (EBP) is an expected practice by healthcare professionals and drives quality of care.<sup>1,2</sup> The American Occupational Therapy Association (AOTA) promotes EBP, which “is based on integrating of critically appraised research results with the practitioner’s clinical expertise, and the client’s preferences, beliefs and values.”<sup>3</sup> The American Physical Therapy Association (APTA) also recognizes the use of EBP as “central to providing high-quality care and decreasing unwarranted variation in practice”.<sup>4</sup> EBP involves using clinical expertise to select the safest, most effective treatment based on available research to provide client-centered care and improve patient outcomes.<sup>5,6</sup> EBP was first introduced more than 20 years ago by the medical profession and has since been embedded within medical education as well as other health professional education including occupational therapy (OT) and physical therapy (PT).<sup>7</sup>

Students gain exposure to EBP through both didactic and experiential learning. Didactic learning may improve students’ knowledge and familiarity of EBP, but it does not necessarily improve students’ attitude towards EBP and the application of EBP.<sup>8</sup> However, significant correlation between the level of EBP exposure and the ability to critically appraise research evidence has been reported.<sup>5</sup> High level of exposure to EBP may improve students’ critical thinking about EBP. In a retrospective cohort study, Olsen and colleagues categorized three levels of EBP exposure. Students who received 7 hours of teaching on EBP were considered as ‘low’ exposure to EBP while those who received 16-26 hours of teaching on EBP and used EBP in problem-based learning were categorized as ‘medium exposure’. The ‘high’ exposure to EBP group referred to students completing 30 hours of didactic learning and used EBP in several other learning activities.<sup>5</sup> Strongest correlation was noted between the level of EBP exposure and ability to critically appraise research evidence. Additionally, problem-based learning methods were reported to significantly increase students’ confidence of using research evidence to analyze a client case.<sup>9</sup> Given the close relationship between attitude and behavior, OT and PT students’ attitudes toward EBP could affect their use of EBP post-graduation.<sup>10</sup> Students’ consistent application of EBP is attributed to a positive attitude towards research and confidence in clinical skills.<sup>6,8</sup> Experiential learning gained through fieldwork education provides a way for students “to develop advocacy, leadership, and managerial skills in a variety of practice setting, while incorporating principles of evidence-based practice and client-centered care”.<sup>11</sup> Students believe that EBP is essential to clinical practice as they expect to be evidence-based practitioners upon graduation.<sup>12</sup>

Since EBP has been shown to “increase patient safety, improve clinical outcomes, reduce healthcare costs, and decrease variation in patient outcomes”, many countries including China have integrated EBP into professional education.<sup>13</sup> The first structured evidence-informed physiotherapy curriculum that met international standards was developed in 2004 for a master-level program.<sup>14</sup>

China adopted the concept of EBP from the United States, but likely developed different approaches to implement and promote EBP due to cultural and sociological differences as well as difference in higher education. The curriculum provides opportunities for students to apply knowledge, skills, and professional behaviors to clinical practice in hospitals, clinics, and community settings. Modern rehabilitation in China has emerged only since 1980’s and its educational system for professional students is largely based on 4-year bachelor programs or 3-year junior-college degree programs.<sup>15,16</sup> While in the United States, doctoral and master level professional programs are overwhelming and encourage students to be involving assertive, independent, self-confident, and willing to ask questions. In contrast, Asian students are more likely to engage in passive learning, exhibit compliance and obedience, and focus on absorbing knowledge.<sup>17</sup>

The differences in cultural, educational systems and student learning style may contribute to different perceptions and attitudes towards EBP. Given the importance of informing effective treatment options, EBP plays a critical role in OT and PT clinical practices. The literature has reported therapists’ perception and attitude towards EBP, compared different professional therapists’ perspectives, and investigated current and future therapists’ attitudes.<sup>12,18-24</sup> However, there have been no studies comparing OT and PT students’ attitudes towards EBP between American and Chinese students. Therefore, the purpose of the study was to characterize and compare the perceptions of and attitudes towards EBP between American and Chinese OT and PT students.

## METHODS

### Study Design

We conducted a cross-sectional survey of OT and PT students in the first, second, and third years of the Doctor of Occupational Therapy (OTD), Doctor of Physical Therapy (DPT), and Master of Occupational Therapy (MOT) programs at three universities in the United States. Simultaneously, the survey was also sent to first year through fourth years of OT, PT, and rehabilitation students of four-year bachelor programs at four universities in China.

### Participants

A total of 1,062 OT and PT students in either master’s or doctoral programs from three U.S. universities and 1017 OT, PT, and rehab students in bachelor’s programs from four Chinese universities were invited to participate in the survey. Participating

universities in China were approved by the World Federation of Occupational Therapists (WFOT). Participants included students enrolled in respective programs in their 1st, 2nd, 3rd, as well as 4th (Chinese students only) years of study.

### Instrument

The study used the Evidence-Based Practice Process Assessment Scale (EBPPAS) developed by Rubin and Parrish (2010). The validated questionnaire consisted of 51-items categorized in five domains that intended to understand participants' familiarity with EBP, attitudes about EBP, perceived feasibility of engagement in EBP, intention to engage in EBP, and frequency of engagement of EBP. The questionnaire demonstrated excellent or good internal consistency for the entire 51-item scale ( $\alpha=0.94$ ), familiarity with EBP ( $\alpha=0.92$ ), attitude about EBP ( $\alpha=0.90$ ), intentions to engage in EBP ( $\alpha=0.80$ ), and currently engage in EBP ( $\alpha=0.87$ ). Only the domain of perceived feasibility to engage in EBP showed relatively low alpha (0.57) but keeping this domain in the questionnaire was considered beneficial for the entire scale.<sup>25</sup>

### Procedures

Upon the approval of the study proposal by the university's Institutional Review Board (IRB approval #: 963329-2), a web-based questionnaire was created using university owned Qualtrics software. A designated faculty of the respective program at each of the participating universities was contacted via emails and a link to the survey was provided. The contact person introduced the survey to the students enrolled in the programs and explained the purpose of the study and how the data collected was to be analyzed, summarized, and reported. Participation was completely voluntary and responses to the survey were anonymous. Students were given four weeks to answer the questionnaire and two reminders were sent by the university contact to encourage more involvement in the survey.

### Data Analysis

Survey data were downloaded from Qualtrics website and analyzed using Statistical Package for Social Science (SPSS) for Windows version 25. Overall and individual domain scores of the questionnaire were analyzed in terms of the mean, range, and standard deviation. Researchers performed comparisons of students' perception on EBP between the U.S. and Chinese participants using an independent sample t-test. Investigations on the perceptions of EBP for OT and PT students separately and between the two countries were conducted with an independent samples t-test. A p value less than 0.05 was considered statistically significant.

### RESULTS

Three hundred and twenty-two U.S. students and 664 Chinese students completed all or part of the survey yielding 30% and 65% response rates respectively. Participant demographics are summarized in Table 1. For the U.S. cohort, only 25 students completed all 10 questions for the familiarity domain. The sample size for other domains ranged from 284 to 297. For the Chinese cohort, a small number of missing responses was noted ranging from 3 to 12 missing data points across five domains. Most participants were female with 69.9% in OT and 61.7% in PT. There were only 20 rehabilitation students (1.9%) from the Chinese cohort who completed the survey. Students in their 1st, 2nd, 3rd, and 4th years of the program accounted for 16.6%, 32.6%, 30.5%, and 20.3% respectively, and all 4th year students were Chinese participants because the U.S. programs conclude within 3 years.

**Table 1.** Demographics of the participants (n=986)

		U.S. Program			China Program			Total
		OTD	MOT	DPT	OT	PT	Rehab	
1 <sup>st</sup> year	Male	2	3	7	2	14	0	28
	Female	34	11	23	4	25	1	98
	No data	15	2	4	0	0	0	21
	Total	51	16	34	6	39	1	147
2 <sup>nd</sup> year	Male	5	1	11	2	49	0	68
	Female	43	9	25	31	124	5	237
	No data	10	3	5	0	0	0	17
	Total	58	13	41	33	173	5	323
3 <sup>rd</sup> year	Male	1	12	4	1	35	1	54
	Female	26	30	23	25	125	7	236
	No data	5	1	7	0	0	0	13
	Total	32	43	34	26	160	8	303
4 <sup>th</sup> year	Male	--	--	--	7	43	1	51
	Female	--	--	--	47	110	5	162

	Total	--	--	--	54	153	6	213
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Overall, students showed positive attitude towards EBP across the five domains. The U.S. DPT students had the highest mean score of 3.90 (SD=2.00) in the domain of "attitude about EBP" followed by U.S. MOT students (mean score=3.88, SD=2.14), and U.S. OTD students (mean=3.84, SD=2.14). The same domain was also noted as the highest mean score for Chinese OT students (mean=3.51, SD=1.57) followed by rehabilitation students (mean=3.36, SD=2.00) and PT students (mean=3.31, SD=2.79). The domain of "frequency of engagement in EBP" was reported as showing the lowest scores of all domains across U.S. DPT program (mean=3.13, SD=2.10), the U.S. OTD program (mean=3.21, SD=3.10), and the U.S. MOT program (mean=3.39, SD=2.60). Further lower scores of this domain were observed in China OT program (mean=3.01, SD=2.40), China PT program (mean=3.05, SD=3.10), as well as China rehabilitation program (mean=3.12, SD=1.30). Mean scores and standard deviations of EBP domains and programs at universities in both the U.S. and China are shown in Table 2.

**Table 2.** Mean score of EBPPAS for participating programs from the U.S. and China

Country	Program	EBP domain	Mean	Range
The United States	OTD	Familiarity with EBP	3.73	4.00
		Attitudes about EBP	3.84	2.14
		Feasibility of engagement in EBP	3.46	2.00
		Intention to engage in EBP	3.61	2.80
		Frequency of engagement in EBP	3.21	3.10
		Overall	3.60	2.35
	MOT	Familiarity with EBP	3.66	2.80
		Attitudes about EBP	3.88	2.14
		Feasibility of engagement in EBP	3.44	1.86
		Intention to engage in EBP	3.60	2.60
		Frequency of engagement in EBP	3.39	2.60
		Overall	3.64	1.75
	DPT	Familiarity with EBP	3.82	3.30
		Attitudes about EBP	3.90	2.00
		Feasibility of engagement in EBP	3.56	2.14
Intention to engage in EBP		3.60	1.90	
Frequency of engagement in EBP		3.13	2.10	
Overall		3.63	1.51	
China	OT	Familiarity with EBP	3.17	4.00
		Attitudes about EBP	3.51	1.57
		Feasibility of engagement in EBP	3.03	1.71
		Intention to engage in EBP	3.20	2.60
		Frequency of engagement in EBP	3.01	2.40
		Overall	3.19	2.18
	PT	Familiarity with EBP	3.22	4.00
		Attitudes about EBP	3.31	2.79
		Feasibility of engagement in EBP	3.10	3.00
		Intention to engage in EBP	3.17	2.20
		Frequency of engagement in EBP	3.05	3.10
		Overall	3.17	2.26
	Rehabilitation	Familiarity with EBP	3.07	3.20
		Attitudes about EBP	3.36	2.00
		Feasibility of engagement in EBP	3.14	1.43
		Intention to engage in EBP	3.30	0.90
		Frequency of engagement in EBP	3.12	1.30
		Overall	3.23	0.71

**Table 3.** Comparisons of domain and overall mean scores of EBPPAS between the U.S. and Chinese students

	The United States		China		p-value
	Mean	SD	Mean	SD	
Familiarity with EBP	3.74	0.59	3.20	0.75	<0.01
Attitudes about EBP	3.87	0.39	3.35	0.41	<0.01
Feasibility of engagement in EBP	3.49	0.40	3.09	0.34	<0.01
Intention to engage in EBP	3.60	0.39	3.18	0.47	<0.01
Frequency of engagement in EBP	3.23	0.55	3.05	0.52	<0.01
Overall	3.62	0.32	3.18	0.34	<0.01

SD=standard deviation

Comparisons of overall and individual domain scores between the U.S. and Chinese students are shown in Table 3. On average, the U.S. students scored 0.44 (13.8%) higher than Chinese students in all domains combined, which was highly significant ( $p < 0.01$ ). Significantly higher scores were also found in each of the five domains (all p values were less than 0.01). Regardless of the country where students received OT, PT or rehabilitation education, responses demonstrated the same patterns in terms of the mean domain scores. The domain of “attitude about EBP” had the highest scores followed by “familiarity with EBP” and “intention to engage in EBP”. The lowest mean score was found in domain “frequency of engagement in EBP” followed by “feasibility of engagement of EBP”. The difference in mean domain score was the greatest in the “familiarity with EBP” domain (difference=0.54) and the smallest for the “frequency of engagement in EBP domain (difference=0.18). On average, the U.S. students showed 0.41 higher scores than the Chinese students in each of the five domains.

**Table 4.** Comparisons of domain and overall scores of EBPPAS by profession between the U.S. and Chinese students

		The United States		China		p-value
		Mean	SD	Mean	SD	
Occupational therapy	Familiarity with EBP	3.70	0.59	3.17	0.73	<0.01
	Attitudes about EBP	3.86	0.40	3.51	0.39	<0.01
	Feasibility of engagement in EBP	3.45	0.38	3.03	0.31	<0.01
	Intention to engage in EBP	3.61	0.43	3.20	0.47	<0.01
	Frequency of engagement in EBP	3.28	0.57	3.01	0.51	<0.01
	Overall	3.61	0.33	3.19	0.33	<0.01
Physical therapy	Familiarity with EBP	3.82	0.59	3.22	0.75	<0.01
	Attitudes about EBP	3.90	0.38	3.31	0.39	<0.01
	Feasibility of engagement in EBP	3.56	0.32	3.10	0.35	<0.01
	Intention to engage in EBP	3.60	0.32	3.17	0.47	<0.01
	Frequency of engagement in EBP	3.13	0.49	3.05	0.53	0.180
	Overall	3.63	0.29	3.17	0.35	<0.01

SD=standard deviation

Mean domain and overall scores were compared between the U.S. and Chinese students separately for OT and PT programs (Table 4.). Since there was no counterpart for the Chinese rehabilitation program in the U.S. and only 20 Chinese students in this program participated the survey (accounted for 3% of Chinese participants), responses from this program were omitted. The U.S. OT students showed significantly higher scores than their Chinese counterparts in all five domains as well as in the overall attitude toward EBP. This pattern was also found in PT students with the exception of the “frequency of engagement in EBP” domain in which the higher mean score of 3.13 for the U.S. students was not statistically different than 3.05 for Chinese students ( $p = 0.180$ ).

**Table 5.** Comparisons of domain and overall mean scores of EBPPAS between the U.S. and Chinese students

The United States		Mean	SD	Mean	SD	p-value
		1 <sup>st</sup> year		3 <sup>rd</sup> year		
	Familiarity with EBP	3.70	0.59	3.17	0.73	<0.01
	Attitudes about EBP	3.86	0.40	3.51	0.39	<0.01
	Feasibility of engagement in EBP	3.45	0.38	3.03	0.31	<0.01
	Intention to engage in EBP	3.61	0.43	3.20	0.47	<0.01
	Frequency of engagement in EBP	3.28	0.57	3.01	0.51	<0.01
	Overall	3.61	0.33	3.19	0.33	<0.01



China	2 <sup>nd</sup> year		4 <sup>th</sup> year			
	Familiarity with EBP	3.82	0.59	3.22	0.75	<0.01
	Attitudes about EBP	3.90	0.38	3.31	0.39	<0.01
	Feasibility of engagement in EBP	3.56	0.32	3.10	0.35	<0.01
	Intention to engage in EBP	3.60	0.32	3.17	0.47	<0.01
	Frequency of engagement in EBP	3.13	0.49	3.05	0.53	0.180
	Overall	3.63	0.29	3.17	0.35	<0.01

SD=standard deviation

Comparisons of mean domain and overall scores were also made between 1<sup>st</sup> and 3<sup>rd</sup> year of the U.S. students as well as between 2<sup>nd</sup> and 4<sup>th</sup> year of Chinese students (Table 5). The overall mean score increased non-significantly by 0.07 for the U.S. students while it increased significantly by 0.15 ( $p < 0.01$ ) for the Chinese students. The Chinese student scores for the four separate domains increased significantly, the exception being the “feasibility of engagement in EBP” domain where the amount of increase did not reach the significant level ( $p = 0.618$ ). For the U.S. students, mean scores of the “familiarity with EBP” and “feasibility of engagement in EBP” domains increased significantly while mean score for the “intention to engage in EBP” domain decreased significantly from 3.72 to 3.55 ( $p = 0.005$ ).

## DISCUSSION

The aim of the current study was to investigate OT, PT, and Rehabilitation students' perceptions of and attitudes towards EBP and the differences between the U.S. and Chinese students' outcomes. Findings from the study indicate that both the U.S. and Chinese students generally held a positive attitude about EBP regardless of their degree level or their professional program. The mean overall scores and each EBP domain score follow the same pattern revealing that the “attitude about EBP” and “familiarity with EBP” domains consistently ranked as the top two domains with the highest mean scores across all programs and professions despite different educational structures between the two countries. This finding is in line with the attitudes reported in the previous studies among occupational and physical therapists, among nurses and nursing students, and among a group of health professionals that included physicians, occupational therapists, physical therapists and psychologists.<sup>2,19,24,26-30</sup> On the other hand, the results also suggest that the frequency of “engagement in EBP” and perceived “feasibility of engagement in EBP” are suboptimal, as the mean scores of these two domains were relatively low, and substantially lower than the “attitude about EBP” domain.

Several studies have reported that a positive attitude towards EBP does not necessarily translate to the action of engagement in EBP, which may be related to some identified barriers. Valdes and von der Heyde (2012) surveyed 312 hand therapists and found that the main barriers to EBP included limited time, limited access to journal resources, and lack of evidence treating specific diagnosis.<sup>20</sup> Lack of time has been identified as a main barrier for therapists to implement EBP. This is also true for current students given their busy fieldwork schedules and simultaneous completion of didactic courses. Additionally, two main components of the EBP process require students to search for the best evidence and critically appraise the evidence.<sup>31</sup> To accomplish this, students need to have the knowledge and skills for conducting research and an understanding of how to collect, analyze and interpret research data. Previous studies have reported that one of the barriers among occupational and physical therapists was the difficulty in interpreting study results.<sup>32</sup> In a survey conducted with Dutch occupational therapists, more than 50% of the respondents reported that research is not written in an understandable manner. Another underlying factor may be attributed to a lack of skill and limited knowledge regarding statistical and research methodologies.<sup>27</sup> If students could become more familiar with popular research methodologies used in OT and PT studies with an increased understanding of some commonly used statistical strategies, these barriers could be overcome resulting in greater engagement and more efficient use of EBP as practicing therapists.

The current study not only shows disparities between the attitude towards and perceived feasibility of EBP as well as actual engagement in EBP, but it also shows the disparities between U.S. students and Chinese students. The former overwhelmingly presents higher mean scores in overall scale and the five EBP domains when compared to the latter. The U.S. OT students also demonstrate more positive attitude overall and in the five domain measures as compared to the Chinese OT students. For the U.S. PT students, when compared with the Chinese PT students, the students demonstrated higher mean scores in overall and four of the five domain measures except the domain of frequency of engagement in EBP process. Even though OT and PT students in both the U.S. and China had lower scores in this domain, the mean scores were greater than 3.0 which means students do engage in EBP process at least “some of the time”.

In the U.S., accreditation standards for OT and PT programs require that students have access to library resources, learn principles of scholarly study, and engage in activities related to EBP including critiquing qualitative and quantitative evidence, developing research proposals, critically appraising scientific literature, integrating the best evidence into practice, and developing scholarly reports and presentations.<sup>33,34</sup> This is similar to WFOT educational standards which require students to locate and evaluate relevance and trustworthiness of research findings and make judgements related to clinical practice decisions.<sup>35</sup> However, the U.S. program prerequisite requirements and prior undergraduate research or clinical experiences could contribute to a heightened level of familiarity as compared to the Chinese students. Thus, the U.S. students know there is an expectation that they utilize EBP upon graduation, and the importance of EBP to the credibility and sustainability of their profession is emphasized in their experiences prior to professional school.<sup>12</sup> Most U.S. OT and PT program curricula include an early introduction to EBP in the first year followed by continued application of EBP principles in subsequent years, explaining the significant increase in the domain of familiarity toward EBP noted in this study. Additionally, the U.S. students readily have access to university library resources and have opportunities to engage in EBP and witness the integration of EBP during fieldwork experiences which may contribute to increased feelings of EBP feasibility as a future practitioner.

It is puzzling, however, that even though students feel engagement in EBP is expected, valuable, and feasible, their intention to engage in EBP in their first year as clinicians decreased. It is possible that an intense focus on clinical practice skills, lack of resources, and cost are contributing factors. For example, upon graduation the U.S. students lose access to university library resources and often let their state and professional organizations memberships lapse though they were requirements for their educational program, thus losing additional access to professional literature and EBP resources. Interestingly, a study by Matthys et al. (2019) revealed that OT and PT professionals ranked access to subscription to scholarly journals as a top benefit of professional membership, however only 27% of OTs and 34% of PTs were members of their national associations, with cost being noted as the biggest barrier.<sup>36</sup>

The majority of Chinese students are introduced to EBP relevant information in their second year. This is either offered as independent courses such as “Evidence-based Practice for Occupational Therapy,” “Evidence-based Practice for Physical Therapy,” or incorporated across several courses.<sup>37,38</sup> It is not until the fourth year that students become fully engaged in clinical practice. Compared to the U.S. students, the Chinese students do not necessarily get exposed to EBP until late in curriculum. However, the OT, PT, and rehabilitation programs in China are designed for 4-year bachelor’s degrees and majority of students are enrolled directly after completing high school. In contrast, the U.S. students are either enrolled in master’s or doctorate programs and many of them have OT/PT related work or observational experiences and some experience with the research process in their undergraduate coursework. Therefore, when taking similar EBP relevant courses, the U.S. students may have a better understanding of the concept and relate the knowledge they learned in class to real clinical cases more easily than the Chinese students who lack these important experiences. Furthermore, culturally, the Chinese students generally do not actively ask questions or engage in discussions in class, which may hinder brain-storming and critical thinking necessary for designing individualized therapeutic treatment.

Another reason that Chinese students showed lower mean scores overall and in all five domains of EBP may be because of the preference to respond to Likert scale type surveys. Chinese and Japanese students have been reported to prefer mid points and less favor for extreme values in responding to 5-point Likert scale questions.<sup>39</sup> In our study, approximately 48% of Chinese students selected mid points compared to only 28% of the U.S. students throughout completion of the survey questions. This middling response style may reflect a better fit of the cultural norms for the Chinese students who live in collectivist cultures where interpersonal harmony is greatly emphasized and expressing extreme opinions is avoided.<sup>40</sup> Given the possibility of the impact of this response style to the study results, cautions should be taken when generalizing study findings to a broader population.

Finally, most EBP resources are published in English. Given the relatively short history of OT, PT, and rehabilitation education in China, literature published in Chinese is limited. Language barrier is a potential factor that prevents Chinese students from obtaining the richest perspective on EBP and implementing EBP in clinical practice.<sup>41</sup> Suggestions have been proposed to translate evidence to six official languages of the World Health Organization and interpret for specific cultures.<sup>42</sup>

### **Limitations and Recommendations for Future Research**

There are several limitations to the current study. First, the survey was a self-administered survey examining attitudes towards EBP. Even though the overall response rate was considered satisfactory, the uneven response rates of 30% for the U.S. students and 65% for Chinese students may introduce selection bias and skew the true perspective of the study population. Second, the survey tool was originally developed in English, therefore the translated Chinese version may not have the exact meaning when compared with the English version. Consequently, this may have impacted Chinese students’ understanding and responses. The

English version was fully tested for validity and reliability however this was not tested in the Chinese version. The third limitation is related to the representative of the Chinese OT, PT, and rehabilitation programs. All the Chinese participants were from programs that were accredited by the WFOT, which accounts for a small number of all rehabilitation related programs in China. Future studies should include participation from other non-WFOT accredited programs to better understand the students' attitudes towards EBP and evaluate whether they present similar differences when compared to the U.S. participants. Future studies should also introduce more international participants to see if those disparities regarding attitudes towards EBP still exist in a diverse population.

## CONCLUSION

The study examined the attitudes towards EBP for the U.S. OT, PT as well as Chinese OT, PT, and rehabilitation students and compared the responses between the students from the two countries. Overall, all students presented a positive attitude towards EBP, but they were relatively less positive in actual engagement in EBP. The U.S. students overwhelmingly demonstrated more positive attitude overall and in all five domains. Different degree programs and required pre-requisites, EBP related curriculum, culture related leaning and response style as well as a language barrier may all have played roles in the discrepancies in students' attitude towards EBP between the two countries. Efforts should focus on assisting professional students in both countries with ways to inspire novice clinicians to engage in EBP, maintain membership in professional organizations, advocate for workplace access to scholarly literature, continued mentoring and incentives on use of EBP in clinical practice.

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