

# Perceptions and Attitudes of Undergraduate Physiotherapy and Traditional Chinese Medicine Students Towards Interprofessional Education-A Pilot Study

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**Abstract** –Interprofessional education (IPE) is pivotal for fostering collaborative healthcare practices, yet perceptions among Physiotherapy (PT) and Traditional Chinese Medicine (TCM) students remain underexplored. In this study, the perceptions and attitudes of undergraduate PT and TCM students towards collaborative healthcare education to enhance interprofessional learning were explored. **Methods:** A mixed-methods pilot study was conducted among undergraduate PT and TCM students (n=19) at INTI International University. Data was collected via a validated 6-point Likert scale survey and semi-structured interviews between PT and TCM students before and after IPE. **Results:** A survey among 19 PT and TCM students found that TCM students experienced greater autonomy and interprofessional respect ( $p < 0.05$ ). Both groups valued teamwork, with physical therapy students emphasizing skill integration. The findings highlight the importance of specialized IPE methods for bridging perceptual differences. Overall, structured IPE positively influences students' readiness for interprofessional collaboration, aligning with global trends emphasizing IPE's role in fostering collaborative care and advancing Sustainable Development Goal 4 (Quality Education).

**Keywords** - interprofessional education, physiotherapy, traditional chinese medicine, quality education.

## I. INTRODUCTION

The healthcare sector is undergoing rapid transformation, with a growing emphasis on interprofessional collaboration to enhance patient outcomes. As healthcare systems globally move towards more integrated and holistic care models, the need for effective teamwork and communication among diverse healthcare disciplines has become increasingly critical (WHO, 2010). This shift has sparked significant interest in collaborative healthcare education, which seeks to equip future healthcare professionals with the skills necessary to work seamlessly across disciplines (Reeves et al., 2021; Thistlethwaite & Xyrichis, 2022; Kermani et al., 2022).

Interprofessional Education is compatible with Sustainable Development Goal 4 (SDG 4), which promotes inclusive, high-quality education for sustainable development and global citizenship (United Nations, 2015).

However, combining different paradigms, such as PT (Western evidence-based rehabilitation) and TCM (Eastern holistic care), remains challenging due to decreasing training frameworks (NCCIH, 2021; Lai et al., 2023). Despite their completing potential, gaps remain in evaluating student preparation for collaboration, especially in Asian cultures where TCM is widespread.

This study investigates undergraduate PT and TCM students' perceptions of IPE, with the goal of improving collaborative healthcare education, removing barriers, and maximizing the benefits of integrated practice for patient-centered care (Reeves et al., 2017; D'Amour et al., 2021).

## II. PROBLEM STATEMENT

While Interprofessional Education (IPE) is widely recognized as critical for promoting teamwork and improving therapeutic outcomes (Thistlethwaite & Xyrichis, 2022; Saragih et al., 2023), practical implementation faces a number of significant hurdles. The diverse training frameworks between PT and TCM present a significant impediment to smooth integration (NCCIH, 2021; Lai et al., 2023). Furthermore, there are significant gaps in student preparation, with little study on the attitudes of PT and TCM students toward collaborative practice, particularly in areas where TCM is deeply established in healthcare settings (Raja et al., 2024; Lai et al., 2023). Furthermore, institutional silos, restrictive curricular systems, and varied cultural attitudes all threaten IPE efforts' long-term efficacy (Reeves et al., 2021).

To bridge these gaps, this study looks into student perspectives of interprofessional learning, analyses potential barriers to collaboration between PT and TCM disciplines, and assesses the perceived benefits of integrated practice for patient care. The study's goal is to provide insights into how to improve interprofessional education and create more coherent, patient-centered healthcare delivery.

## III. LITERATURE REVIEW

The World Health Organization (WHO, 2023) recognizes interprofessional collaboration (IPC) as a critical component of resilient healthcare systems that is required for patient-centered treatment. According to research, IPE is critical for increasing teamwork, reducing clinical errors, and improving patient outcomes. Furthermore, IPE is consistent with SDG 4, which promotes inclusive and equitable quality education, global citizenship, and sustainable development (United Nations, 2015). Despite its acknowledged benefits, the integration of various healthcare disciplines, such as physiotherapy and Traditional Chinese Medicine (TCM), remains difficult due to disparities in

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educational systems, cultural viewpoints, and clinical practices.

While PT (Western evidence-based practice) and TCM (Eastern holistic concepts) provide complimentary therapeutic advantages, there are various hurdles to their integration. Educational silos between various fields cause gaps in mutual understanding, as training programs frequently run separately with little interdisciplinary exposure (Lai et al., 2023). Besides, cultural and philosophical differences cause challenges as TCM's traditional methods often differ from the biological paradigms prevalent in Western healthcare (NCCIH, 2021). Another major issue is a dearth of research on student attitudes toward teamwork, especially in Asian countries where TCM is commonly practiced but interprofessional dynamics remain unclear (Raja et al., 2024). Addressing these limitations is critical for creating a more unified healthcare system that takes advantage of the strengths of both perspectives.

Interprofessional education bridges these gaps by encouraging mutual respect, collaborative decision-making, and effective communication among healthcare professionals (Reeves et al., 2021; Kermani et al., 2022). However, the long-term viability of IPE projects is contingent on overcoming structural hurdles such as curricular design constraints and institutional resistance (Shoghi et al., 2019). This study adds to the existing conversation by assessing student preparation for collaborative practice, which is an important aspect in developing future IPE methods. This study examines the opinions of PT and TCM students in order to discover actionable insights that can improve interprofessional training models, ultimately leading to better integrated and patient-centered healthcare delivery.

#### IV. METHOD

##### *Study Design*

In this pilot study, we adopted mixed-methods research design, combining quantitative and qualitative approaches to explore the perceptions and attitudes of undergraduate PT and TCM students towards collaborative healthcare education. The pilot study is designed to test the feasibility of the research methods and provide preliminary insights into the research questions. The design of a larger, full-scale study will be updated (Creswell & Creswell, 2018; Thabane et al., 2010).

##### *Participants*

A convenience and purposive sample 19 undergraduate students (7 PT and 12 TCM) were recruited from INTI International University. Participants were enrolled in their second and third academic years to ensure foundational discipline-specific knowledge. Inclusion criteria required no prior participation in IPE programs and a willingness to provide informed consent. First-year students were excluded due to limited clinical exposure. The sample size was purposefully small to test instrument feasibility (Hertzog, 2008).

##### *Data Collection*

A structured online survey using a 6-point Likert scale was distributed to assess participants' awareness and attitudes toward IPE, and perceived benefits and challenges of collaborative healthcare education for interprofessional collaboration. Both groups show acceptable to excellent reliability, with higher internal consistency in the TCM group (Cronbach's  $\alpha > 0.89$ ), likely due to larger sample size and more uniform responses compared to PT group with good internal consistency (Cronbach's  $\alpha > 0.83$ ).

##### *Data Analysis Methods*

A mixed-methods approach was employed to analyze the perceptions of undergraduate PT and TCM students toward IPE. Quantitative data were collected using an 18-item Likert-scale questionnaire administered before and after an IPE session. Each item was scored on a 6-point scale ranging from 1 ("Strongly disagree") to 6 ("Strongly agree"). Descriptive statistics (mean and standard deviation) were calculated for each question, stratified by discipline (PT vs. TCM) and time point (pre vs. post). Mann-Whitney test was used following the IPE intervention to assess the significance of changes in scores of ordinal Likert-scale data, which violates assumptions of parametric tests.

Qualitative data were gathered from open-ended responses to three questions regarding students' perceptions of interprofessional collaboration and plans for applying IPE learning in clinical settings. Thematic analysis was performed by identifying recurring patterns and grouping them into key themes. Triangulation was used to ensure consistency between quantitative and qualitative findings.

All data were organized and analyzed using Microsoft Excel and SPSS (Version 29). Tables were used to present trends and comparisons in a clear and organized manner.

#### V. FINDINGS

##### *Descriptive result*

The pre- and post-intervention survey data revealed significant shifts in interprofessional perceptions among the 19 participating students (7 PT, 12 TCM). Of the participants, 61.5% were females 38.5% were male. The evaluation demonstrated significant increases in participants' interprofessional perceptions and attitudes after the IPE training. Mean scores rose across all 18 measures, showing a beneficial shift in participants' interprofessional competence and collaborative attitude.

Significant improvements ( $p < 0.05$ ) were observed in 18 questions. Participants reported greater collaboration with other professions (*Q1*) ( $M = 4.5 \pm 1.3$  to  $5.2 \pm 0.8$ ,  $\Delta = +0.7$ ,  $p = 0.01$ ) and a better awareness of their capabilities (*Q12*) ( $M = 4.4 \pm 1.2$  to  $5.1 \pm 0.9$ ,  $\Delta = +0.7$ ,  $p = 0.02$ ). Significant improvements were observed in perceptions of respect from other professions (*Q4*) ( $M = 4.2 \pm 1.2$  to  $5.1 \pm 1.0$ ,  $\Delta = +0.9$ ,  $p = 0.003$ ) and belief that other professions think favourably of one's own profession (*Q9*) ( $M = 4.0 \pm 1.3$  to  $4.8 \pm 1.1$ ,  $\Delta = +0.8$ ,  $p = 0.01$ ).

Statistically significant gains were observed in confidence in others' professional judgment (*Q10*) ( $\Delta = +0.6$ ,

$p = 0.05$ ), positive attitudes toward professional goals (Q5) ( $\Delta = +0.6$ ,  $p = 0.04$ ), perceptions of one's own profession's competence (Q13) ( $\Delta = +0.5$ ,  $p = 0.03$ ), and increased appreciation for other professions (Q16) ( $\Delta = +0.6$ ,  $p = 0.04$ ).

Though not all changes proved statistically significant, all measures showed an encouraging trend, with the highest mean gains observed in views of others' respect, ability to collaborate, and positive interprofessional connections as illustrated in Table 1.

**TABLE 1: COMPARISON OF PRE-AND POST-IPE SURVEY SCORES ON INTERPROFESSIONAL PERCEPTIONS AND ATTITUDES (N = 19)**

Item	Pre-Survey Mean ( $\pm$ SD)	Post-Survey Mean ( $\pm$ SD)	$\Delta$ (post-Pre)	Significance (p-value)
Q1. Collaboration with other professions	4.8 $\pm$ 1.1	5.4 $\pm$ 0.9	+0.6	$p < 0.02^*$
Q4. Respect from other professions	4.2 $\pm$ 1.2	5.1 $\pm$ 1.0	+0.9	$p < 0.003^*$
Q9. Other professions think highly of my profession	4.0 $\pm$ 1.3	4.8 $\pm$ 1.1	+0.8	$p < 0.01^*$
Q10. Trust others' professional judgment	4.3 $\pm$ 1.4	4.9 $\pm$ 1.0	+0.6	$p = 0.05^*$
Q5. Positive about goals/objectives	4.7 $\pm$ 1.0	5.3 $\pm$ 0.7	+0.6	$p < 0.04^*$
Q13. Profession is competent	4.7 $\pm$ 1.1	5.2 $\pm$ 0.8	+0.5	$p < 0.03^*$
Q16. Think highly of other professions	4.1 $\pm$ 1.5	4.7 $\pm$ 1.2	+0.6	$p < 0.04^*$

\* $p < 0.05$  = significant

This questionnaire also measured perceptions across six dimensions of interprofessional dynamics among PT and TCM students. Mean scores and standard deviations were obtained for each domain, and Mann-Whitney U tests were used to compare answers between groups as illustrated in Table 2.

Physiotherapy students had a mean score of 4.6 ( $\pm$ 1.5) in 'collaboration', while TCM students scored slightly greater (5.0  $\pm$  1.1). However, the difference did not reach statistical significance ( $p > 0.34$ ). Traditional Chinese Medicine students had considerably higher 'respect for others' (5.7  $\pm$  0.6) than PT students (4.9  $\pm$  1.2;  $p < 0.03$ ). Traditional Chinese Medicine students showed stronger 'confidence in profession' (5.7  $\pm$  0.5) than PT students (5.1

$\pm$  1.0), however the difference was not statistically significant ( $p > 0.08$ ). Similarly, in the 'willingness to share' domain, TCM students demonstrated a marginally higher readiness to share (5.3  $\pm$  0.9) than PT students (4.9  $\pm$  1.1;  $p > 0.22$ ).

For 'mutual understanding' score, TCM students had a higher (5.5  $\pm$  0.7) than PT (5.0  $\pm$  1.0), although the difference was not statistically significant ( $p > 0.12$ ). In 'professional status', TCM students assessed their profession higher (5.2  $\pm$  1.1) than PT (4.3  $\pm$  1.5), although the p-value ( $p > 0.06$ ) did not satisfy the statistical significance criterion.

**TABLE 2: COMPARISON OF INTERPROFESSIONAL PERCEPTIONS BETWEEN PHYSICAL THERAPY (PT) AND TRADITIONAL CHINESE MEDICINE (TCM) STUDENTS ACROSS SIX DOMAINS**

Domain	Survey Question	PT Mean ( $\pm$ SD)	TCM Mean ( $\pm$ SD)	Mann-Whitney p-value
Collaboration	Q6. Need to cooperate with other professions	4.6 $\pm$ 1.5	5.0 $\pm$ 1.1	$p > 0.34$
	Q4. Others respect my profession	4.9 $\pm$ 1.2	5.7 $\pm$ 0.6	$p < 0.03^*$
Confidence in Profession	Q1. Individuals in my profession are well-trained	5.1 $\pm$ 1.0	5.7 $\pm$ 0.5	$p > 0.08$
Willingness to Share	Q14. Willing to share resources with other professions	4.9 $\pm$ 1.1	5.3 $\pm$ 0.9	$p > 0.22$
Mutual Understanding	Q12. Understand capabilities of other professions	5.0 $\pm$ 1.0	5.5 $\pm$ 0.7	$p > 0.12$
Professional Status	Q11. My profession has higher status than others	4.3 $\pm$ 1.5	5.2 $\pm$ 1.1	$p > 0.06$

### Qualitative findings

The analysis of interview responses identified five main themes as in Table 3, that reflect the perceptions and attitudes of undergraduate PT and TCM students toward interprofessional collaboration: Improved Understanding of Other Healthcare Professions; Positive Attitude Toward Collaboration; Interest in Applying New Knowledge in Clinical Practice; Recognition of the Importance of Communication and Teamwork, and Need for More Exposure and Continued Learning.

### Improved Understanding of Other Healthcare Professions

Seventeen (89.47%) students indicated an increased awareness and respect for the distinct roles, principles, and clinical approaches of other healthcare fields following their involvement in the interprofessional education (IPE) activity. Physiotherapy (PT) students were particularly intrigued by TCM practices, including the use of 'chi' and observational diagnostic methods.

*"I surprised that the method TCM students used is very different from us. I'm happy to learn some new things from them such as 4 types of 'chi' and their qualitative method of evaluation."* (PT student 14)

*"I have gained some knowledge in physiotherapy."* (PT student 5)

### Positive Attitude Toward Collaboration

73.7% (14/19) students endorsed the concept of interdisciplinary teamwork, recognizing the advantages of integrating different professional strengths. They viewed the collaboration between PT and TCM as a means of delivering more rounded and patient-centered care. The belief that diverse perspectives enhance treatment quality was a recurring theme. Likewise, several TCM students mentioned they would not hesitate to direct patients to physiotherapists when indicated.

*"Cooperation can comprehensively and better handle the patient's situation in many aspects. By integrating multiple treatments across different multiple disciplines according to patients' preference and to achieve optimal treatment outcome."* (TCM student 3)

*"Medicine needs collaboration, and treating diseases is what matters."* (TCM student 8)

*"Combining the two professional approaches may help."* (PT student 9)

*"I would ask patients to approach a physiotherapist if needed."* (TCM student 12)

### Interest in Applying New Knowledge in Clinical Practice

A majority of students (78.9%) expressed intentions to apply their IPE experience to future clinical practice. PT students, in particular, shared interest in potentially incorporating TCM methods such as acupuncture or spinal mobilization.

*"I may further learn on approaches they use on patients such as pinching spine and acupuncture because that's sound great and interesting."* (TCM student 10)

*"Certain breathing exercises can be applied."* (TCM student 17)

### 4. Recognition of the Importance of Communication and Teamwork

While 68.4% (13/19) of students highlighted communication and teamwork as vital elements of effective interprofessional collaboration. They acknowledged that mutual respect, active engagement, and clear information-sharing are essential for aligning treatment goals and optimizing patient outcomes.

*"Mutual cooperation is important and communication must be clear."* (TCM student 16)

*"Working with the interdisciplinary team to develop a better treatment plan for the patient."* (TCM student 18)

One student reflected on the need for active engagement and respect for others' expertise:

*"I will actively engage in team-based decision-making, communicate more effectively across professions, and respect the expertise of others to provide well-rounded, patient-centered care."* (TCM student 18)

### Need for More Exposure and Continued Learning

Although most students responded positively to interprofessional collaboration, about 31.6% expressed uncertainty regarding how to immediately implement these practices in clinical settings. This suggests a need for additional, structured opportunities to practice interprofessional engagement in real-life contexts.

*"Not sure yet how I will apply this."* (PT student 2)

*"Try to practice first."* (TCM student 10)

*"Use when needed."* (TCM student 11)

However, many students remained optimistic and expressed a desire to continue learning from their peers in other disciplines:

*"I aim to continue learning from my colleagues' perspectives to ensure a comprehensive approach to treating patients."* (TCM student 19)

*"Self-reflection is one of the most important aspects of both as physiotherapist and also to become a better person"* (TCM student 3).

*"In my opinion, students should be disciplined and should reflect on themselves every day to obtain more knowledge besides what lecturers and therapist taught and to ensure they are doing the appropriate things during the clinical practice"* (PT student 14).

**TABLE 3: OVERVIEW OF THEMATIC RESPONSES BETWEEN PT AND TCM STUDENTS**

Theme	PT Students	TCM Students
<b>Improved Understanding of Other Healthcare Professions.</b>	Interested in understanding TCM practices and integrating them into physiotherapy.	Want in-depth understanding of roles and experiences of other disciplines.
<b>Positive Attitude Toward Collaboration.</b>	See collaboration as key to comprehensive patient care.	Strongly believe collaboration enhances treatment efficacy and balance.
<b>Interest in Applying New Knowledge in Clinical Practice.</b>	Hope to use interdisciplinary insights flexibly in real-world settings.	Eager to apply collaborative strategies in future clinical work.
<b>Recognition of the Importance of Communication and Teamwork.</b>	Emphasize trust, communication, and openness.	Highlight mutual communication, shared goals, and trust.
<b>Need for More Exposure and Continued Learning.</b>	Desire deeper engagement with other disciplines.	Open to continuous learning and experiential exposure with other professionals.

## VI. DISCUSSIONS

### Descriptive findings

The outcomes of this study reflect on the opinions and attitudes of undergraduate physiotherapy PT and TCM students on IPE. These findings are consistent with previous studies emphasizing the role of IPE in establishing collaborative practice and enhancing patient outcomes (Reeves et al., 2017; Thistlethwaite & Xyrichis, 2022; Saragih et al., 2023). The descriptive findings show a significant shift in students' interprofessional perceptions and attitudes following an IPE session. This is consistent with global trends indicating that structured IPE treatments help students prepare for collaborative practice (WHO, 2010; Reeves et al., 2021).

One of the most important outcomes was a statistically significant increase in students' confidence in interacting with professionals from distinct fields, as well as their comprehension of their respective roles. This finding is consistent with previous studies that identified mutual respect and acknowledgment of professional positions as key components of successful interprofessional collaboration (D'Amour et al., 2021; Reeves et al., 2017; Saragih, et al., 2023). Traditional Chinese Medicine students, in example, had higher levels of respect for other professions than PT students, implying that cultural or educational contexts may influence interprofessional interactions. This contrasts for specific Western-based studies, where hierarchical systems frequently dominate healthcare interactions (Shoghi et al., 2019), highlighting the importance of culturally sensitive methods to IPE placement in varied settings.

The qualitative findings expand on our understanding by emphasizing themes such as increased awareness of various healthcare professions, good attitudes toward collaboration, and a desire to apply new knowledge in clinical practice. These features are consistent with prior research that has highlighted the transformative potential of IPE in breaking down discipline silos and promoting a holistic approach (Raja et al., 2024; Lai et al., 2023). In fact, many PT students showed an interest in adopting treatment with TCM such as acupuncture and spinal mobilization into their future practice, reflecting a global trend toward integrative medicine (NCCIH, 2021).

However, challenges remain. Some students indicated concern about how to use collaborative practices in real-world contexts, similar to concerns voiced in previous research concerning the gap between theoretical IPE training and practical implementation (Thistlethwaite & Xyrichis, 2022; Shoghi et al., 2019). This emphasizes the importance of continued exposure to interprofessional experiences beyond short-term pilot programs, particularly in Asian countries where traditional healthcare systems coexist with modern health care.

Interestingly, while both PT and TCM students improved in most domains, TCM students consistently performed better in areas such as respect for others, confidence in their profession, and willingness to share resources. The difference could be explained by differences in educational philosophies or cultural values built in TCM training that reiterate harmony and interconnection (Lai et al., 2021). This shows that combining Eastern holistic ideas with Western evidence-based approaches might lead to synergies that improve patient-centered care, as previously stated by United Nation (2023) and WHO (2025).

## VII. CONCLUSION

This pilot study investigated undergraduate PT and TCM students' opinions and attitudes towards IPE. The findings revealed a considerable improvement in interprofessional views and collaborative attitudes following an IPE session. Quantitative data showed statistically significant increases in categories such as collaboration, respect for other professions, trust in professional judgment, and appreciation for multidisciplinary responsibilities. The qualitative analysis revealed five key themes: improved understanding of other healthcare professions, positive attitudes toward collaboration, interest in applying new knowledge in clinical practice, recognition of the importance of communication and teamwork, and the need for more exposure and continued learning.

These findings are consistent with global data that IPE can develop mutual respect, improve teamwork, and prepare students for integrated healthcare environments. Notably, TCM students regularly outperformed PT students in areas such as respect for others and confidence in their profession, implying that cultural or educational values entrenched in TCM training may increase receptivity to interprofessional learning (Lai et al., 2021).

While most students were excited about using IPE insights in clinical settings, others were unsure how to put collaborative methods into action in real-world settings. This emphasizes the importance of sustainability, systematic opportunities for interprofessional collaboration during clinical rotations (Shoghi et al., 2019).

Overall, this study adds to the growing corpus of research on IPE in Asian contexts, emphasizing the necessity of including complementary paradigms such as TCM and PT within collaborative healthcare education. Future study should look into the long-term benefits of IPE interventions, how gender influences interprofessional attitudes, and how to strengthen interprofessional competencies across programs.

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