

ORIGINAL RESEARCH ARTICLE

Assessing the Quality of Western Medicine Practitioners' education on Traditional Chinese Medicine: A Modified Importance-Performance Analysis

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Keywords: Integrated Chinese-Western medicine; Medical education; Quality evaluation; Donabedian model; Importance-performance analysis

ABSTRACT

Background: To identify and assess factors influencing Western medicine practitioners' motivation to learn Traditional Chinese Medicine (TCM). A cross-sectional study conducted in Shandong Province, China.

Methods: In 2024, 207 Western medicine practitioners participating in TCM training sessions were enrolled. Validated questionnaires collected demographic and experiential data, followed by univariate and binary logistic regression analyses to identify independent predictive factors.

Results: The overall satisfaction score was 4.54 ± 0.58 (mean $\pm$ SD), with structural dimensions scoring lowest (4.45 ± 0.64). Importance-Performance Analysis (IPA) revealed seven critical improvement areas, predominantly policy clarity (structural dimension) and clinical applicability (process dimension).

Conclusion: While Shandong's Western Medicine-TCM (WM-TCM) integration program demonstrates high participant satisfaction, strategic enhancements in policy transparency, equitable resource allocation, and curriculum integration are essential to ensure long-term efficacy. Insights from global integrative medicine frameworks provide actionable pathways for program optimization.

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What do we already know about this topic?

Existing research highlights the growing integration of Traditional Chinese Medicine (TCM) and Western medicine in China, particularly through programs like WMP-LCM, which train Western medicine physicians in TCM. Policymakers support this initiative, as seen in the *14th Five-Year Plan*, with pilot regions like Shandong Province reporting success. However, gaps remain in assessing training quality, trainee experiences, and evidence-based optimization. Current studies focus on curriculum and policy, lacking systematic evaluations of efficacy. This study aims to address these gaps using Donabedian's SPO model and IPA method to improve training outcomes.

What is the main contribution to Evidence-Based Practice from this article?

The main contribution of this article to evidence-based practice is that a multidimensional evaluation system was constructed based on Donabedian's SPO model, combined with the improved IPA method, to systematically assess the quality of the training program of "Learning from the West, Learning from China," and identify the key points of improvement in the structural dimension (policy awareness, resource allocation) and the process dimension (clinical applicability of the curriculum), and provide evidence-based optimization strategies (e.g., policy transparency, standardized subsidies, clinical practice enhancement, etc.) for the cultivation of talents of integrative Chinese and Western medicine. This study provides evidence-based optimization strategies (e.g., policy transparency, standardized subsidies, clinical practice enhancement, etc.) for the training of TCM personnel, and fills the gap in the systematic assessment of training effectiveness in existing studies.

What are this research's implications towards health policy?

1. Policy Clarity & Dissemination: Strengthen policy awareness through dedicated platforms and assessments to ensure compliance. 2. Resource Equity: Standardize subsidies and social insurance to enhance participant engagement and retention. 3. Curriculum Reform: Integrate hands-on TCM training and diversify assessments (e.g., OSCEs) to bridge theory-practice gaps. 4. Institutional Oversight: Establish cross-departmental committees to monitor implementation and address disparities. These measures can optimize WMP-LCM programs, fostering effective integrative medicine practices.

Authors' Contributions Statement:

Chen and Wang were responsible for the conception and design of the study. Chen worked on the article search and articles revision. Chen wrote the paper and Wang reviewed it thoroughly.

Introduction

The integration of Traditional Chinese Medicine (TCM) and Western medicine has emerged as a distinctive pathway to advancing holistic healthcare in China. The Western Medicine Practitioners Learning Chinese Medicine (WMP-LCM) training program exemplifies this effort by systematically equipping Western medicine physicians with TCM theory and clinical skills to foster complementary synergies between the two paradigms (State Council of China, 2022). This initiative aligns with global trends in integrative medicine, where hybrid training models have demonstrated enhanced diagnostic and therapeutic outcomes (World Health Organization [WHO], 2019).

Policymakers have prioritized institutionalizing WMP-LCM programs, as evidenced by the

14th Five-Year Plan for the Development of Traditional Chinese Medicine* (2022), which advocates for refining the WMP-LCM system to cultivate a robust talent pool. Shandong Province, a national pilot zone for TCM reform, exemplifies this commitment, with over 2,100 Western medicine clinicians transitioning to integrated practice through structured training—significantly elevating TCM service capacity in participating hospitals (Shandong Health Commission, 2023). Despite these advances, critical gaps persist in evaluating training quality, trainee experiences, and evidence-based optimization strategies (Liu et al., 2021).

Current research on WMP-LCM programs predominantly focuses on curricular design or policy frameworks, neglecting systematic assessments of training efficacy (Zhang &

Chen, 2020). To address this gap, this study leverages Donabedian's Structure-Process-Outcome (SPO) model—a widely adopted framework for healthcare quality evaluation (Donabedian, 1988)—to construct a multidimensional assessment system. By integrating a modified Importance-Performance Analysis (IPA), we identify key determinants of training quality and propose targeted improvements. Our findings aim to inform policy adjustments and pedagogical innovations, advancing the development of integrated Chinese-Western medicine professionals.

Materials and Methods

2.1 Study Design and Setting

This cross-sectional study enrolled Western medicine practitioners participating in TCM training sessions in Jinan, Shandong Province, from June to July 2024. A sample size of 207 participants was determined based on 37 independent variables in the IPA framework, accounting for a 10% allowance for incomplete questionnaires.

2.2 Participants

Inclusion criteria comprised: (a) Western medicine practitioners enrolled in TCM training sessions; (b) employment in Shandong Province; (c) proficiency in communication; and (d) voluntary written consent. Exclusion criteria included a documented history of mental health disorders.

2.3 Data Collection

Data were collected online using a multi-stage stratified sampling method. First, 16 cities in Shandong Province were stratified into high-, medium-, and low-development tiers based on 2023 GDP data. Two tertiary TCM hospitals were randomly selected from each tier. Cluster sampling was then applied to the first five

training cohorts via hospital teaching management systems.

2.4 Instruments

2.4.1 General Information Questionnaire

Developed through literature review and expert consultation, this tool captured demographic and TCM training-related data.

2.4.2 WMP-LCM Satisfaction Questionnaire

Validated via the Delphi method with 15 experts (8 integrative medicine professors, 4 health policy specialists, and 3 medical education administrators), the questionnaire demonstrated strong content validity (I-CVI > 0.78; S-CVI/UA = 0.91). It assessed three SPO dimensions:

Structure: Organizational frameworks, policies, and resource allocation (12 items).

Process: Curriculum design, faculty quality, and training infrastructure (15 items).

Outcome: Assessment systems and training efficacy (10 items).

Responses used a 5-point Likert scale (1 = "very dissatisfied" to 5 = "very satisfied").

2.4.3 Validation and Analysis

Confirmatory factor analysis (CFA) confirmed SPO model fitness ($\chi^2/df = 2.13$, RMSEA = 0.074, CFI = 0.962). Structural equation modeling (SEM) analyzed dimension-specific impacts on satisfaction. A modified IPA matrix mapped mean satisfaction scores against derived importance values for 37 items.

2.5 Data Analysis

SPSS 26.0 facilitated statistical analyses.

Descriptive statistics included frequencies (%) and means $\pm$ standard deviations (SD).

Between-group comparisons employed independent t-tests, chi-square tests, or Fisher's exact tests ($\alpha = 0.05$, two-tailed).

3. Results

This study analyzed data from 207 trainees enrolled in Shandong Province's Western Medicine Practitioners Learning Chinese Medicine (WMP-LCM) program. Demographic characteristics revealed a female majority (52.66%, $n=109$) compared to males (47.34%, $n=98$). Age distribution was as follows: 3.4% ($n=7$) under 30 years, 30.9% ($n=64$) aged 31–40, 50.7% ($n=105$) aged 41–50, and 15% ($n=31$) over 50. Educational attainment included 9.18% ($n=19$) with master's degrees, 77.29% ($n=160$) with bachelor's degrees, and 13.53% ($n=28$) with associate degrees or lower. Professional titles comprised 3.38% ($n=7$) senior, 14.49% ($n=30$) associate, 55.56% ($n=115$) intermediate, and 26.57% ($n=55$) junior or unclassified. Work experience ranged from ≤ 10 years (14.01%, $n=29$), 11–20 years (45.89%, $n=95$), 21–30 years (32.37%, $n=67$), to >31 years (7.73%, $n=16$). While 45.89% ($n=95$) had completed training, 54.11% ($n=112$) remained active participants. Of note, 90.82% ($n=188$) held program completion certificates qualifying them to prescribe proprietary Chinese medicines (pCMs), whereas 9.18% ($n=19$) held non-qualifying certificates. The scale demonstrated robust psychometric properties: exploratory factor analysis revealed excellent structural validity ($KMO = 0.957$;

Bartlett's test: $\chi^2 = 14,044.737$, $P < 0.001$) and high internal consistency (Cronbach's $\alpha = 0.987$ for the total scale).

Trainees reported high overall satisfaction (4.54 ± 0.58 , mean $\pm$ SD), with process-level satisfaction scoring highest (4.59 ± 0.55), followed by outcome-level (4.57 ± 0.55), and structural-level (4.45 ± 0.64).

Derived importance values were calculated using Deng Weizhao's transformation method. Natural logarithms of item-specific satisfaction scores ($\ln(S_i)$) were regressed against overall satisfaction (OS) to obtain partial correlation coefficients (p_i), representing implicit importance. A modified Importance-Performance Analysis (IPA) matrix was constructed with mean satisfaction (4.54) and derived importance (0.71) as axes (Figure 1). Among 37 training-related items, 18.92% ($n=7$) fell in Quadrant IV (high importance, low satisfaction), identifying priority areas for improvement. Key issues included policy transparency and resource allocation. Quadrant I (high importance/high satisfaction) reflected strengths, while Quadrant II (low importance/high satisfaction) and III (low importance/low satisfaction) indicated non-critical areas.

Table 1 Results of reliability and validity analysis of the formal questionnaire

Clonbach Alpha based on standardized terms	KMO Sampling Suitability Quantity	Approximate chi-square	Significance	Number of terms
0.987	0.957	14044.737	0.000	37

Table 2 Scores for each level of satisfaction

Level	mean (standard deviation)	item	mean (standard deviation)
Structural level	4.45±0.64	Organization	4.73±0.51
		Policies and Regulations	4.18±0.71
		Guarantee Mechanism	4.45±0.70
Process level	4.59±0.55	Curriculum System	4.55±0.57
		Teachers	4.63±0.53
		Training Base	4.58±0.54
Outcome level	4.57±0.55	Assessment System	4.59±0.54
		Training Effect	4.50±0.56
Overall Mean	4.54±0.58		

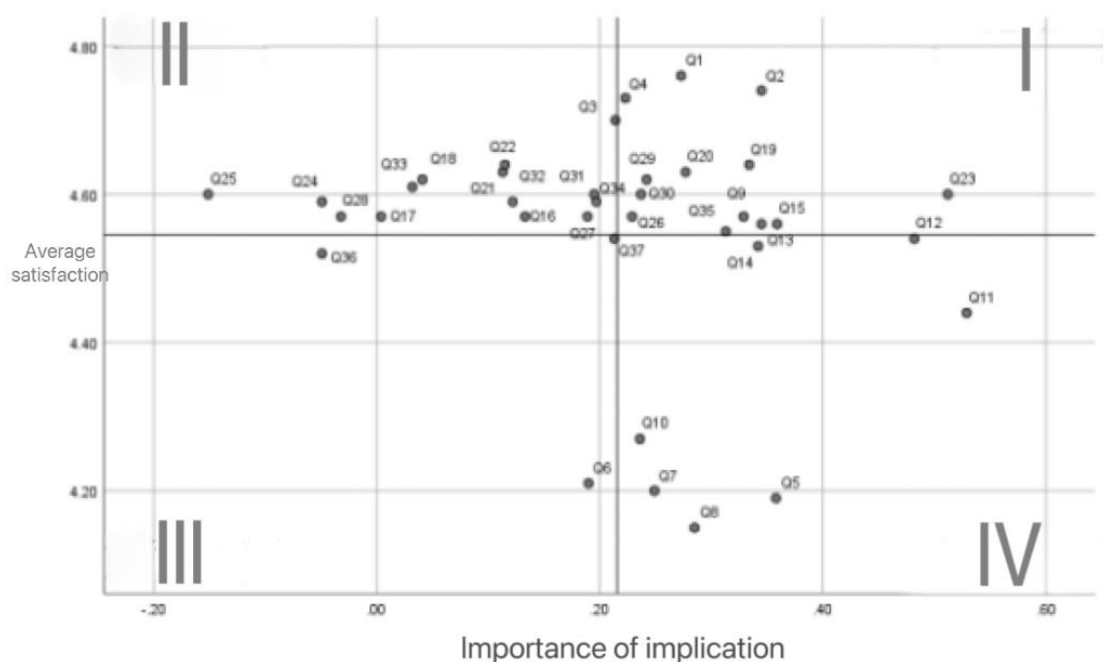


Figure 1 Satisfaction and Self-Reported Importance IPA Analysis Chart

4. Discussion

This study reveals high participant satisfaction (mean score: 4.54/5) with Shandong Province's Western Medicine Learning

Traditional Chinese Medicine (WMTTCM) program, reflecting its overall efficacy across structural, procedural, and outcome dimensions. However, the modified

Importance-Performance Analysis (IPA) identified six structural and one process-related improvement areas, underscoring opportunities for program optimization.

Key challenge

Structural Dimension: Policy Awareness and Resource Allocation

Participants demonstrated limited familiarity with WMTCM policies, often sourcing information informally (e.g., workplace notices), mirroring systemic gaps in continuing medical education (CME) policy dissemination (Chen et al., 2018; Liu et al., 2021). Similar inconsistencies in regional TCM programs hindered implementation fidelity (Li et al., 2020). Financial instability—irregular subsidies and social insurance tied to ambiguous guidelines—further weakened engagement, echoing challenges in rural healthcare training (Li et al., 2020; Wang et al., 2019). Equitable resource models, like standardized subsidy systems, have shown potential to improve retention (Liu et al., 2021), aligning with recommendations for strengthening health workforce training (World Health Organization [WHO], 2016).

Process Dimension: Clinical Applicability and Curriculum Design

A persistent theory-practice gap impeded the integration of TCM into Western clinical workflows, consistent with hybrid training shortcomings reported elsewhere (Tian et al.,

2022; Zhang et al., 2020). Overreliance on theoretical instruction, coupled with inadequate hands-on training (e.g., acupuncture), reflects challenges in dual-track education (Huang et al., 2021; Xie et al., 2020). Written exams dominated assessments, failing to evaluate clinical competency—a flaw observed in competency-based medical education (Li et al., 2022). Diversified evaluations, such as OSCEs, are recognized as effective in competency-based reforms (Norcini et al., 2018).

Recommendations

Policy Dissemination: Develop centralized platforms (e.g., WeChat portals) for policy updates, paired with mandatory competency assessments, as successfully implemented in digital health education initiatives (Liu et al., 2021; Yan et al., 2020).

Resource Equity: Adopt tiered subsidy frameworks and establish cross-departmental oversight committees to standardize social insurance protocols, drawing on models for sustainable health workforce funding (Liu et al., 2021; WHO, 2016).

Curriculum Reform: Integrate clinical apprenticeships and case-based modules, mirroring initiatives shown to enhance diagnostic skills in integrated medicine training (Liang et al., 2022; Sun et al., 2023).

Assessment Diversification: Implement multimodal evaluations (OSCEs, peer reviews) aligned with competency-based medical education principles, shown to improve skill

acquisition (Norcini et al., 2018; Sun et al., 2023).

Conclusion

While Shandong's WMTCM program achieves high satisfaction, strategic enhancements in

policy transparency, resource allocation, and pedagogical integration are essential for sustained success. Insights from integrative medicine and health workforce education initiatives provide actionable frameworks for systemic reform.

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